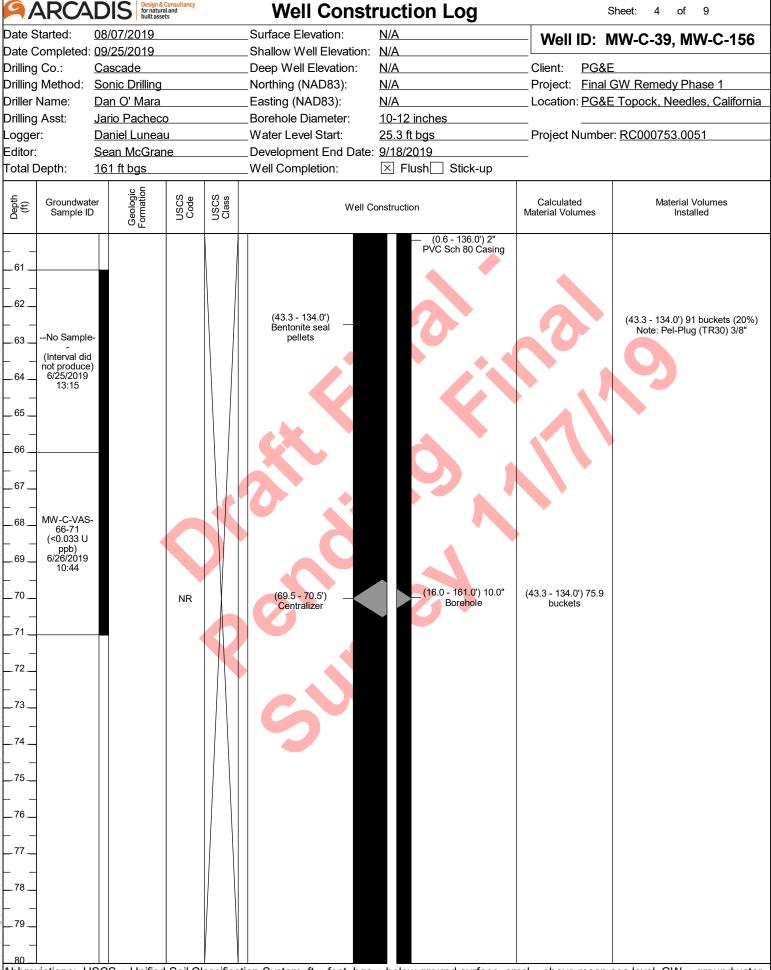
9/	ARCA	DIS Design & for natura built asse	Consultancy al and ets		Well Consti	ruction Log	5	Sheet: 1 of 9	
Drilling	completed: Co.: Method: Name: Asst:	08/07/2019 d: 09/25/2019 Cascade			Surface Elevation:Shallow Well Elevation:Deep Well Elevation:Northing (NAD83):Easting (NAD83):Borehole Diameter:Water Level Start:Development End Date:Well Completion:	N/A N/A N/A 10-12 inches 25.3 ft bgs	Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, Ca Project Number: RC000753.0051		
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed	
1					(0.5 - 24.0') 2" PVC Sch 40 Casing (0.0 - 2.0') Concrete Pad (0.9 - 16.0') Portland Cement 6% Bentonite (9.5 - 10.5') Centralizer	(0.6 - 136.0') 2" PVC Sch 80 Casing (0.0 - 16.0') 12.0" Borehole	(0.9 - 16.0') 69.4 gallons	(0.0 - 2.0') 16.5 bags Note: 30 Inch diameter sonotube incased concrete pad with 18 inch dia lockable vault, King Kon-Crete 4000 PSI (0.9 - 16.0') 75 gallons (8%) Note: Type I, Type II, Type V with Hydrogel.	
17	iotiono: III	Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits	GM ML ML		(16.0 - 22.0') — Bentonite seal chips	(16.0 - 161.0') 10.0" Borehole	(16.0 - 22.0') 4.2 bags	(16.0 - 22.0') 5 bags (19%) Note: Puregold Medium Chips	

PARCADIS Design & Consultancy for natural and built assets					Well Consti	ruction Log	Sheet: 2 of 9		
Date S	Started:	08/07/2019			_Surface Elevation:	N/A	Well ID: N	MW-C-39, MW-C-156	
Date C	Completed:	09/25/2019			_Shallow Well Elevation:	N/A		3 00, 3 100	
Drilling	Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	<u> </u>	
Drilling	Method:	Sonic Drilling			_Northing (NAD83):	N/A	Project: Final (GW Remedy Phase 1	
Driller I	Name:	Dan O' Mara			_Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, California	
Drilling	Asst:	Jario Pachece)		_Borehole Diameter:	<u>10-12 inches</u>			
Loggei	r:	Daniel Lunea	u		_Water Level Start:	25.3 ft bgs	Project Number	r: RC000753.0051	
Editor:					_Development End Date:	9/18/2019			
Total D	Depth:	161 ft bgs	1		_Well Completion:				
Depth (ft)	Groundwat Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed	
		Topock -			(0.5 - 24.0') 2" PVC — Sch 40 Casing	— (0.6 - 136.0') 2" PVC Sch 80 Casing			
21		Alluvium Deposits	ML		(16.0 - 22.0') Bentonite seal chips		(16.0 - 22.0') 4.2 bags	(16.0 - 22.0') 5 bags (19%) Note: Puregold Medium Chips	
 22					·				
		Tamada							
23		Topock - Alluvium Deposits	ML						
		Bopoono							
24					(24.0 - 39.0') 2" Sch — :				
25					Screen				
26									
27									
28	MW-C-VAS- 26-31								
 29	(380 ppb) 6/19/2019								
	10:35								
30		Topock - Alluvium	ML			(16.0 - 161.0') 10.0" Borehole			
 31		Deposits			(22.0 - 43.3') Cemex	Borehole	(22.0 - 43.3') 20.5	(22.0 - 43.3') 26 bags (27%)	
			•		#3 MESH (8x10)		bags	Note: Lapis Lustre Sand	
32									
33									
34									
						11 11			
35									
 36									
		Topock -							
37		Alluvium Deposits	SM						
 38			-						
		Topock -							
39		Alluvium Deposits	SM		(39.0 - 39.2') Sum pand End Cap				
 40					(39.5 - 40.5') Centralizer			Note: PVC plug installed to isolate filter pack sand in sump	

ARCADIS Design & Consultancy for natural and built assets					Well Consti	ruction Log	5	Sheet: 3 of 9		
Date S	Started:	08/07/2019			_Surface Elevation:	N/A	Well ID: N	MW-C-39, MW-C-156		
		09/25/2019			_Shallow Well Elevation:	N/A				
Drilling		Cascade			Deep Well Elevation:	N/A	Client: PG&E			
_		Sonic Drilling			Northing (NAD83):	N/A	•	GW Remedy Phase 1		
		Dan O' Mara			Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, California		
Drilling		Jario Pachec			Borehole Diameter:	10-12 inches				
Logge		<u>Daniel Lunea</u>			_Water Level Start:	25.3 ft bgs	Project Numbe	r: RC000753.0051		
Editor:		Sean McGrar	ne		Development End Date:					
Total [Depth:	161 ft bgs			Well Completion:	区 Flush Stick-up	Т	Ι		
Depth (ft)	Groundwate Sample ID		Code	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed		
		Topock - Alluvium Deposits	SM		· · · · · · · · · · · · · · · · · · ·	(0.6 - 136.0') 2" PVC Sch 80 Casing		Note: Sump compromised and filled with filter pack sand		
42 42 43	No Sample - (Interval did	Topock -	CM				(22.0 - 43.3') 20.5 bags			
44 45 46	not produce) 6/19/2019 14:15	Alluvium Deposits	SM							
47	No Sample - (Interval did not produce) 6/20/2019 09:55					(16.0 - 161.0') 10.0" Borehole				
5253545556575858	- MW-C-VAS- 51-56 (0.146 J ppb 6/25/2019 12:00		NR		(43.3 - 134.0') Bentonite seal pellets		(43.3 - 134.0') 75.9 buckets	(43.3 - 134.0') 91 buckets (20%) Note: Pel-Plug (TR30) 3/8"		
59 59 60										



9/	ARCA	DIS	Design & Consultancy for natural and built assets		Well Const	ruction Log		Sheet: 5 of	9
Date S	Started:	08/07/20	19		_Surface Elevation:	N/A	Well ID:	MW-C-39, MV	N-C-156
	Completed:				_Shallow Well Elevation:				
Drilling		Cascade			Deep Well Elevation:	N/A	Client: PG		
-		Sonic Dri	-		Northing (NAD83):	N/A	-	al GW Remedy Pha	
	Name:	Dan O' M			Easting (NAD83):	N/A	Location: <u>PG</u>	&E Topock, Needle	s, California
Drilling		Jario Pad			_Borehole Diameter:	<u>10-12 inches</u>			
Logge		Daniel Lu			_Water Level Start:	25.3 ft bgs	Project Numb	per: <u>RC000753.005</u>	<u>51 </u>
Editor:		Sean Mc			Development End Date:				
Total I	Depth:	161 ft bg			Well Completion:				
Depth (ft)	Groundwat Sample II	er Sold	USCS Code	USCS Class			Calculated Material Volumes	Material Vo Install	
81	- MW-C-VAS 81-86 (<0.17 U ppt 6/27/2019 10:58		NR			— (0.6 - 136.0') 2" PVC Sch 80 Casing	(43.3 - 134.0') 75.1 buckets		
100	l					= =	<u> </u>		

9/	ARCA	DIS	sign & Consultancy r natural and ilt assets		Well Const	ruction Log		Sheet: 6 of 9	
Date S	Started:	08/07/201	9		_Surface Elevation:	N/A	Well ID:	MW-C-39, MW-C-156	
Date C	Completed:	09/25/201	9		_Shallow Well Elevation:	N/A			
Drilling		Cascade			Deep Well Elevation:	N/A	Client: PG8		
		Sonic Drill	-		Northing (NAD83):	N/A		I GW Remedy Phase 1	
Driller		Dan O' Ma			Easting (NAD83):	N/A	Location: <u>PG8</u>	E Topock, Needles, Californ	<u>ıia</u>
Drilling		Jario Pach			Borehole Diameter:	10-12 inches		D0000750 0054	
Logge	ogger: <u>Daniel Luneau</u> ditor: <u>Sean McGrane</u>		Water Level Start:	25.3 ft bgs	Project Numb	er: RC000753.0051			
Total D		161 ft bgs			Development End Date: Well Completion:	× Flush Stick-up			
Total	Јерин.				vveii Completion.	Otick-up	T		
Depth (ft)	Groundwat Sample ID	Geologic Formation	USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed	
						— (0.6 - 136.0') 2" PVC Sch 80 Casing			
101 102 103									
104									
<u> </u>									
105									
106									
<u> </u>									
107									
108									
109									
<u> </u>									
_110			NR		(109.5 - 110.5')	(16.0 - 161.0') 10.0" Borehole	(43.3 - 134.0') 75.9 buckets		
<u> </u>					Centralizer	Boichoic	Duckets		
111			-						
<u> </u>									
112									
<u> </u>									
113									
- -									
114									
- -									
115									
- -									
116									
117		-							
118									
- -	117-122 (<0.17 U ppb)							
119	6/28/2019 14:59								
- -									
120				ليبا			<u> </u>		

9/-	ARCADIS Obesign & Consultancy for natural and built assets				Well Consti	ruction Log	Sheet: 7 of 9		
Date C Drilling Driller I Drilling Loggel Editor:	Pate Started: 08/07/2019 Pate Completed: 09/25/2019 Prilling Co.: Cascade Prilling Method: Sonic Drilling Priller Name: Dan O' Mara Prilling Asst: Jario Pacheco Prilling Asst: Daniel Luneau Editor: Sean McGrane Potal Depth: 161 ft bgs				_Surface Elevation: _Shallow Well Elevation: _Deep Well Elevation: _Northing (NAD83): _Easting (NAD83): _Borehole Diameter: _Water Level Start: _Development End Date: _Well Completion:	N/A N/A N/A N/A N/A 10-12 inches 25.3 ft bgs 9/18/2019 Flush Stick-up	Client: PG& Project: Final Location: PG&	MW-C-39, MW-C-156 E GW Remedy Phase 1 E Topock, Needles, California er: RC000753.0051	
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed	
121	MW-C-VAS- 117-122 (<0.17 U ppb 6/28/2019 14:59		NR			— (16.0 - 161.0') 10.0" Borehole	(43.3 - 134.0') 75.9 buckets		
135 136 137 138 139		Topock - Alluvium Deposits Topock - Alluvium Deposits	ML SM		(134.0 - 161.0') Cemex #3 MESH — (8x10)	(136.0 - 156.0') 2" PVC Sch 80 Screen	(134.0 - 161.0') 28.3 bags	(134.0 - 161.0') 36 bags (27%) Note: Lapis Lustre Sand, used >20% of the calculated volume due to potential voids that formed during drilling.	
140 Abbres	viations: 11		Soil Cl	escifica	tion System ft = feet has	= below ground surface as	mel = ahove mean	sea level. GW = groundwater.	

ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measurement and groundwater samples collected during drilling of MW-Cd

9/.	ARCA	DIS Design 8 for natur built ass	Consultancy al and ets		Well Const	truction Log	:	Sheet: 8 of 9
Date S	Started:	08/07/2019			_Surface Elevation:	N/A	Well ID: I	MW-C-39, MW-C-156
Date C	Completed:	09/25/2019			_Shallow Well Elevation:	: <u>N/A</u>		
Drilling		Cascade			Deep Well Elevation:	N/A	Client: PG&I	
_		Sonic Drilling			Northing (NAD83):	N/A	•	GW Remedy Phase 1
Driller		Dan O' Mara			Easting (NAD83):	N/A	Location: <u>PG&I</u>	E Topock, Needles, California
Drilling		Jario Pachec			Borehole Diameter: <u>10-12 inches</u>			
Logge		Daniel Lunea			Water Level Start:	25.3 ft bgs	Project Numbe	r: RC000753.0051
Editor:					Development End Date			
I otal L	Jeptn:	161 ft bgs			Well Completion:			T
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well C	Construction	Calculated Material Volumes	Material Volumes Installed
	MW-C-VAS- 147-152 (<0.17 U ppt 6/29/2019 13:58	Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits	SM ML SP-SM		(134.0 - 161.0') Cemex #3 MESH (8x10)	(16.0 - 161.0') 10.0" (16.0 - 161.0') 10.0" Borehole	(134.0 - 161.0') 28.3 bags	(134.0 - 161.0') 36 bags (27%) Note: Lapis Lustre Sand, used >20% of the calculated volume due to potential voids that formed during drilling.
156 157 158 159					(156.5 - 157.5') Centralizer	(156.0 - 156.3') Sump and End Cap		Note: PVC plug installed to isolate filter pack sand in sump Note: Sump compromised and filled with filter pack sand
- -								
160 Abbres	riotions: II	SCS - Unifica	1 Soil C	· · ·	tion System ft = feet has	s = bolow ground surface, an	acl = abovo moan	sea level GW = groundwater

PARCADIS Design & Consultancy for natural and built assets					Well Const	ruction Log	Sheet: 9 of 9		
Date O Drilling Drilling Driller Drilling Logge Editor:	Date Started: 08/07/2019 Date Completed: 09/25/2019 Drilling Co.: Cascade Drilling Method: Sonic Drilling Driller Name: Dan O' Mara Drilling Asst: Jario Pacheco Logger: Daniel Luneau Editor: Sean McGrane Total Depth: 161 ft bgs		o u		Surface Elevation: Shallow Well Elevation: Deep Well Elevation: Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Date: Well Completion:	N/A N/A N/A N/A N/A 10-12 inches 25.3 ft bgs 9/18/2019 Flush Stick-up	Client: PG&I Project: Final Location: PG&I	WW-C-39, MW-C-156 GW Remedy Phase 1 Topock, Needles, California r: RC000753.0051	
Depth (ft)	Groundwat Sample ID	Geol	USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed	
		Topock - Alluvium Deposits	SP-SM		(134.0 - 161.0') Cemex #3 MESH (8x10)	(16.0 - 161.0') 10.0" Borehole	(134.0 - 161.0') 28.3 bags		
					End of Boring at 161.0 'bgs.				

ARC4	DIS Design & C for natural built asset	onsultancy and s		Well Colleti	ruction Log	· ·	Sheet: 1 of 12	
ate Started:	07/17/2019			_Surface Elevation:	N/A	Well ID: I	MW-C-181, MW-C-2 ⁻	
ate Completed:				_Shallow Well Elevation:				
rilling Co.:	Cascade			Deep Well Elevation: N/ANorthing (NAD83): N/AEasting (NAD83): N/A		Client: PG&E		
•	Sonic Drilling					Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, Californi		
riller Name:	Dan O'Mara							
rilling Asst:	Jario Pacheco)		Borehole Diameter: <u>10-12 inches</u>				
ogger:	Dave Cornell			_Water Level Start:	Vater Level Start: 28.11 ft bgs		r: RC000753.0051	
ditor:	Grant Willford			_Development End Date:				
otal Depth:	221.5 ft bgs			_Well Completion:				
Groundwar Sample II		Code	USCS	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed	
- . 1 - . 2	Topock - Fill	SW		(0.5 - 171.0') 2" PVC Sch 80 Casing (0.0 - 1.5') Concrete Pad	(0.6 - 198.0') 2" PVC Sch 80 Casing		(0.0 - 2.0') 14.5 bags Note: 30 Inch diameter sonoti incased concrete pad with 18" lockable vault, King Kon-Crete PSI. Note: Removed ~18 inches of general to install pad.	
3					(0.0 - 8.0') 12.0" Borehole		9	
56		NR /	*****			6		
7 — 7 — 8 — 9 —	Topock - Fill	SW						
		NR		(2.0 - 25.7') Portland Cement 6% Bentonite		(2.0 - 25.7') 102.4 gallons	(2.0 - 25.7') 110 gallons (7º Note: Type I, II and V and Ber	
13 14 15 16					(8.0 - 221.5') 10.0" Borehole			
17 17 18	Topock - Fluvial Deposits	SW						
	Topock - Fluvial Deposits	SM						
					 below ground surface, ar mit, J - estimated value, NF 		sea level, GW = groundwa	
sh - name !								

9/	ARCA	DIS	esign & Consultancy or natural and uilt assets		Well Const	ruction Log		Sheet: 2 of 12
Date S		07/17/201			Surface Elevation:	N/A	Well ID:	MW-C-181, MW-C-218
	ompleted:		19		Shallow Well Elevation:	N/A		·
Drilling		Cascade			Deep Well Elevation:	N/A	Client: PG&	
_		Sonic Dril	-		Northing (NAD83):	N/A	-	GW Remedy Phase 1
Driller I		Dan O'Ma			Easting (NAD83):	N/A	Location: <u>PG&</u>	E Topock, Needles, California
Drilling		Jario Pacl			Borehole Diameter:	10-12 inches	— —	
Logger		Dave Cor			Water Level Start:	28.11 ft bgs	Project Numbe	er: RC000753.0051
Editor:		Grant Will			Development End Date:		<u> </u>	
Total D	eptn:	221.5 ft b			Well Completion:			1
Depth (ft)	Groundwate Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
21	MW-C-VAS- 26-31 (380 ppb) 6/19/2019 10:35	Topoc Fluvi Depos	k-al GP		(21.5 - 22.5') Centralizer (2.0 - 25.7') Portland Cement 6% Bentonite	— (8.0 - 221.5') 10.0" Borehole	(2.0 - 25.7') 102.4 gallons	(2.0 - 25.7') 110 gallons (7%) Note: Type I, II and V and Benseal
33 34 35 36 37 38 39		Topoc Alluvit Depos Topoc Alluvit Depos	um ML sits k - um SM		(25.7 - 168.9') Bentonite seal chips		(25.7 - 168.9') 99.8 bags	(25.7 - 168.9') 103 bags (3%) Note: Puregold Medium Chips
40		000 11					<u> </u>	

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, bpb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery

9/	ARCA	DIS Design & for natura built asse	Consultancy all and ts		Well Const	ruction Log	;	Sheet: 3 of 12
Date S	ate Started: 07/17/2019				_Surface Elevation:	N/A	Well ID: I	MW-C-181, MW-C-218
		09/25/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&I	
_		Sonic Drilling			_Northing (NAD83):	N/A	•	GW Remedy Phase 1
Driller I		Dan O'Mara			_Easting (NAD83):	N/A	Location: <u>PG&</u> I	E Topock, Needles, California
_	rilling Asst: <u>Jario Pacheco</u>				_Borehole Diameter:	10-12 inches		
Logge		Dave Cornell			_Water Level Start:	28.11 ft bgs	Project Numbe	er: RC000753.0051
Editor:		Grant Willford			_Development End Date: _Well Completion:			
Total D	лерин.	221.5 ft bgs			_ well Completion.	✓ Flush Stick-up	T	
Depth (ft)	Groundwate Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
41 42 43 44 45	No Sample (Interval did not produce) 6/19/2019 14:15	Deposits	SM		(0.5 - 171.0') 2" — PVC Sch 80 Casing	— (0.6 - 198.0') 2" PVC Sch 80 Casing		9
46 47		Topock - Alluvium Deposits	SM					
 48	No Sample		GW-GM					
 49 	(Interval did not produce) 6/20/2019 09:55	Topock - Alluvium Deposits	SM					
50 51		Topock - Alluvium Deposits	GM		(25.7 - 168.9') — Bentonite seal chips	(8.0 - 221.5') 10.0" Borehole	(25.7 - 168.9') 99.8 bags	(25.7 - 168.9') 103 bags (3%) Note: Puregold Medium Chips
	MW-C-VAS- 51-56 (0.146 J ppb 6/25/2019 12:00		SM		5			
55		Topock - Alluvium Deposits	SW			II		
56		Topock - Alluvium	SW-SM					
 57		Deposits / Topock - Alluvium Deposits	ML					
58		Topock - Alluvium Deposits	ML					
60		Topock - Alluvium Deposits	ML					

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, bpb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery

9/-	ARCA	DIS Design & for nature built asset	Consultancy al and ets		Well Const	ruction Log	Sheet: 4 of 12		
Date S	Started:	07/17/2019			_Surface Elevation:	N/A	Well ID: I	MW-C-181, MW-C-218	
Date C	Completed:	09/25/2019			_Shallow Well Elevation:	N/A		3 131, 3 213	
Drilling	Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	<u> </u>	
Drilling	Method:	Sonic Drilling			_Northing (NAD83):	N/A	Project: Final	GW Remedy Phase 1	
Driller I	Name:	Dan O'Mara			_Easting (NAD83):	N/A	Location: <u>PG&</u>	E Topock, Needles, California	
Drilling	Asst:	Jario Pachec			_Borehole Diameter:	<u>10-12 inches</u>			
Logge					_Water Level Start:	28.11 ft bgs	Project Numbe	r: RC000753.0051	
Editor:		Grant Willford	k		Development End Date:				
Total D	Depth:	221.5 ft bgs			_Well Completion:		_	T	
Depth (ft)	Groundwat Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed	
			ML		(0.5 - 171.0') 2" — PVC Sch 80 Casing	— (0.6 - 198.0') 2" PVC Sch 80 Casing			
61 62 63	No Sample	Topock - Alluvium Deposits	GM		(61.5 - 62.5') — Centralizer		2		
64 65 66	(Interval did not produce 6/25/2019 13:15	Topock - Alluvium Deposits	GW-GM					(9)	
67 68 69 70	MW-C-VAS- 66-71 (<0.033 U ppb) 6/26/2019 10:44	Topock - Alluvium Deposits	SW-SM		(25.7 - 168.9') — Bentonite seal chips	(8.0 - 221.5') 10.0" Borehole	(25.7 - 168.9') 99.8 bags	(25.7 - 168.9') 103 bags (3%) Note: Puregold Medium Chips	
72		Topock - Alluvium Deposits	1						

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, pbb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery

Date Started:	DIS Design & for natura built asse	Consultancy al and ets		Well Construction Log		Sheet: 5 of 12
Oate Completed: (Orilling Co.: (Orilling Method: (Oriller Name: (Orilling Asst: (Orill	te Completed: 09/25/2019 ling Co.: Cascade ling Method: Sonic Drilling ler Name: Dan O'Mara ling Asst: Jario Pacheco gger: Dave Cornell tor: Grant Willford al Depth: 221.5 ft bgs			Surface Elevation: Shallow Well Elevation: Deep Well Elevation: N/A Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Date: Well Completion: N/A 10-12 inches 28.11 ft bgs E8/22/2019 Flush Stick-up	Client: PG Project: Fin- Location: PG Project Numl	MW-C-181, MW-C-21 &E al GW Remedy Phase 1 &E Topock, Needles, Californ per: RC000753.0051
Groundwate Sample ID		USCS	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
	Topock - Alluvium Deposits	ML		(0.5 - 171.0') 2" — — — — — (0.6 - 198.0') 2 — PVC Sch 80 Casing	ing	
_ 85 _ 86	Topock - Alluvium Deposits	SW-SM			6	
	Topock - Alluvium Deposits	GM		(25.7 - 168.9') Bentonite seal chips Borehole	.0" (25.7 - 168.9') 99. bags	8 (25.7 - 168.9') 103 bags (3% Note: Puregold Medium Chip

ARCAL	Design & C for natural built assets	onsultancy and s		Well Consti	ruction Log		Sheet: 6 of 12	
Date Started: 07/17/2019 Date Completed: 09/25/2019 Drilling Co.: Cascade Drilling Method: Sonic Drilling Driller Name: Dan O'Mara Drilling Asst: Jario Pacheco Orgger: Dave Cornell Editor: Grant Willford Date Completed: 09/25/2019 Date Cornell Editor: Grant Willford Date Cornell Date Cornel		(0,0	_ Surface Elevation: _ Shallow Well Elevation: _ Deep Well Elevation: _ Northing (NAD83): _ Easting (NAD83): _ Borehole Diameter: _ Water Level Start: _ Development End Date: _ Well Completion:	/ell Elevation: N/A I Elevation: N/A NAD83): N/A IAD83): N/A Diameter: 10-12 inches ell Start: 28.11 ft bgs ent End Date: 8/22/2019 Veri ID. WVV-C-16 INVV-C-16 INVV-C-16 INVV-C-16 INVV-C-16 INVV-C-16 INVV-C-16 INVV-C-16 INVV-C-16 INVV-C-16 ID. WVV-C-16 ID. WVV-C-1				
Groundwater Sample ID		Code	Class		onstruction	Calculated Material Volumes	Material Volumes Installed	
	Topock - Alluvium Deposits	GM		(0.5 - 171.0') 2" — PVC Sch 80 Casing	— (0.6 - 198.0') 2" PVC Sch 80 Casing			
 _102 _103	Topock - Alluvium Deposits	МН		(101.5 - 102.5') ————————————————————————————————————		2		
	Topock - Alluvium Deposits Topock -	ML					(0)	
 _105 	Alluvium Deposits Topock - Alluvium Deposits	MH						
				6				
				(25.7 - 168.9') — Bentonite seal chips	(8.0 - 221.5') 10.0" Borehole	(25.7 - 168.9') 99.8 bags	(25.7 - 168.9') 103 bags (3' Note: Puregold Medium Ch	
.111_	Topock - Alluvium Deposits	ML						
					II			
MW-C-VAS- 117-122 (<0.17 U ppb) 6/28/2019 14:59		NR						
- →			1/ \					

Design & C for natura built asset	Consultancy all and ts		Well Constru	iction Log		Sheet: 7 of 12	
7/17/2019 1/25/2019 ascade onic Drilling an O'Mara rio Pacheco ave Cornell cant Willford)		Surface Elevation: Shallow Well Elevation: Deep Well Elevation: Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Date:	//A //A //A //A //A 0-12 inches 8.11 ft bgs //22/2019	Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, California Project Number: RC000753.0051		
	USCS	USCS Class	·	·	Calculated Material Volumes	Material Volumes Installed	
Topock - Alluvium Deposits	ML		(0.5 - 171.0') 2" — PVC Sch 80 Casing	— (0.6 - 198.0') 2" PVC Sch 80 Casing			
Topock - Alluvium Deposits	SW-SM					9	
Topock - Alluvium Deposits	ML		(25.7 - 168.9') — Bentonite seal chips	(8.0 - 221.5') 10.0" Borehole	(25.7 - 168.9') 99.8 bags	(25.7 - 168.9') 103 bags (3 ⁰ Note: Puregold Medium Chi	
Topock - Alluvium Deposits	МН						
Topock - Alluvium Deposits	SM		9				
Topock - Alluvium Deposits	МН						
	Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits	Topock - Alluvium Deposits Topock - Alluvium Deposits	Topock - Alluvium Deposits Topock - Alluvium Deposits	Surface Elevation: Notation Shallow Well Elevat	Surface Elevation: N/A Shallow Well Elevation: N/A Shallow W	Surface Elevation: N/A Vell ID: V25/2019 Shallow Well Elevation: N/A Siscade Deep Well Elevation: N/A Northing (NAD83): N/A Northing (NAD83): N/A Northing (NAD83): N/A N/A ID: VABORIC Brohole Diameter: 10-12 inches Size Comell Water Level Start: 28.11 ft bgs Sort Comell	

9/	ARCA	D	S Design & for natural built asset	Consultancy al and ets		Well Consti	ruction Log	;	Sheet: 8 of 12						
Date C Drilling	Completed: Co.: Method: Name: Asst:	Cascade Sonic Drilling Dan O'Mara Jario Pacheco Dave Cornell Grant Willford 221.5 ft bgs				Shallow Well Elevation: N/A Cascade Deep Well Elevation: N/A Sonic Drilling Northing (NAD83): N/A Dan O'Mara Easting (NAD83): N/A Jario Pacheco Borehole Diameter: 10-12 inches Dave Cornell Water Level Start: 28.11 ft bgs Grant Willford Development End Date: 8/22/2019 221.5 ft bgs Well Completion: Flush Stick-up				_ Deep Well Elevation: _ Northing (NAD83): _ Easting (NAD83): _ Borehole Diameter: _ Water Level Start: _ Development End Date:	N/A N/A N/A 10-12 inches 28.11 ft bgs 8/22/2019	Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, California Project Number: RC000753.0051			
Depth (ft)	Groundwat Sample ID		Geologic Formation	USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed						
141 142 143			Topock - Alluvium Deposits	МН		(0.5 - 171.0') 2" — PVC Sch 80 Casing (141.5 - 142.5') — Centralizer	— (0.6 - 198.0') 2" PVC Sch 80 Casing								
144 145 146			Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits	MH MH GW-GM		CA		6							
147 148			Topock - Alluvium Deposits	GM											
149 150 151	MW-C-VAS- 147-152 (<0.17 U ppb 6/29/2019 13:58		Topock - Alluvium Deposits Topock - Alluvium Deposits	ML SW-SM		(25.7 - 168.9') — Bentonite seal chips	(8.0 - 221.5') 10.0" Borehole	(25.7 - 168.9') 99.8 bags	(25.7 - 168.9') 103 bags (3%) Note: Puregold Medium Chips						
152 153			Topock - Alluvium Deposits	SW-SM		CI									
154 155			Topock - Alluvium Deposits	GM											
156 157			Topock - Alluvium Deposits	GW-GM											
158 159 160			Topock - Alluvium Deposits	SW-SM											

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery

Design & Cor for natural as built assets	ind	Well Construction Log	Sheet: 9 of 12			
Pate Completed: 09/25/2019 Prilling Co.: Cascade Prilling Method: Sonic Drilling Priller Name: Dan O'Mara Prilling Asst: Jario Pacheco Prilling Asst: Dave Cornell Editor: Grant Willford Prilling Asst: Grant Willford		Surface Elevation: N/A Shallow Well Elevation: N/A Deep Well Elevation: N/A Northing (NAD83): N/A Easting (NAD83): N/A Borehole Diameter: 10-12 inches Water Level Start: 28.11 ft bgs Development End Date: 8/22/2019 Well Completion: X Flush Stick-to-	Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, Califor Project Number: RC000753.0051			
Geologic Formation	USCS Code USCS Class	Well Construction	Calculated Material Volumes Material Volumes Installed			
Topock - Alluvium Deposits	SM-SM SM-SM	(0.5 - 171.0') 2" — — — — — (0.6 - 198.0' PVC Sch 80 Casing) 2" asing			
Topock - Alluvium Deposits	GW CO	(25.7 - 168.9') Bentonite seal chips	(25.7 - 168.9') 99.8 (25.7 - 168.9') 103 bags (3%) Note: Puregold Medium Chips			
Topock - Alluvium Deposits	GW-GM		16			
b)	SM					
Topock - Alluvium Deposits	SM	(8.0 - 221.5') Borehole	10.0"			
Topock - Alluvium Deposits	ML ML	(171.0 - 181.0') 2" —	(168.9 - 183.1') 15.3 bags (24%) (168.9 - 183.1') 15.3 bags (168.9 - 183.1') 19 bags (24%) Note: Lapis Lustre Sand, used >2 of the calculated volume due to potential voids that formed durin drilling.			
Topock - Alluvium Deposits	GM O					
Alluvium Deposits Topock - Alluvium	ML O					
Deposits Topock - Alluvium Deposits Topock -	ML O					
	O7/17/2019 : 09/25/2019 Cascade Sonic Drilling Dan O'Mara Jario Pacheco Dave Cornell Grant Willford 221.5 ft bgs Topock - Alluvium Deposits Topock - Alluvium Deposits	O7/17/2019 : 09/25/2019 Cascade Sonic Drilling Dan O'Mara Jario Pacheco Dave Cornell Grant Willford 221.5 ft bgs Topock - Alluvium Deposits Topock - Alluvium Deposits	O7/17/2019 Surface Elevation: N/A O9/25/2019 Shallow Well Elevation: N/A N/A Deep Well Elevation: N/A N/A N/A Deep Well Elevation: N/A N/A N/A Deep Well Elevation: N/A N/A Deep Well Elevation: N/A N/A N/A Deep Well Elevation: N/A N/A N/A Deep Well Elevation: N/A N/A Deep Well Elevation: N/A N/A N/A Deep Well Elevation: N/A Well Completion: Well Construction N/A Well Completion: Well Construction N/A N/A N/A N/A N/A N/A Def 10-12 inches N/A N/A N/A N/A Def 10-12 inches N/A N/A N/A N/A N/A N/A N/A Def 10-12 inches N/A N/A N/A N/A N/A N/A N/A N/			

9 ARC4	DIS for natura built asset	Consultancy Land ts		Well Const	ruction Log	8	Sheet: 10 of 12
Date Started: Date Completed:	07/17/2019 09/25/2019			_Surface Elevation: _Shallow Well Elevation:	N/A N/A	Well ID: N	/IW-C-181, MW-C-21
Orilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	<u> </u>
Orilling Method:	Sonic Drilling			_Northing (NAD83):	N/A	•	GW Remedy Phase 1
Oriller Name:	Dan O'Mara			_Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, Californ
Orilling Asst:	Jario Pacheco)		_Borehole Diameter:	10-12 inches		D0000750 0054
Logger: Editor:	Dave Cornell Grant Willford			_Water Level Start: _Development End Date:	28.11 ft bgs	Project Number	:: RC000753.0051
Σαιίοι. Γotal Depth:	221.5 ft bgs			_Development End Date. _Well Completion:	✓ Flush Stick-up		
Total Deptil.					Otick-up	<u> </u>	
Groundwa Sample II	Geol	USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
	Deposits / Topock - Alluvium Deposits	ML		(171.0 - 181.0') 2" — :			(168.9 - 183.1') 19 bags (24%
 _182 _183	Topock - Alluvium Deposits	ML		Cemex #3 MESH (8x10) (181.5 - 182.5') Centralizer (181.0 - 183.3') Sump and End Cap		(168.9 - 183.1') 15.3 bags	Note: Lapis Lustre Sand, used > of the calculated volume due lotential voids that formed duri drilling.
 _184 				Sump and End Cap			(3)
_185 - – _186	Topock - Alluvium Deposits	ML				6	
- – _187 - –	Topock - Alluvium Deposits	SW-SM		3			
		SM		(183.1 - 195.9') Bentonite seal pellets	(8.0 - 221.5') 10.0" Borehole	(183.1 - 195.9') 12.2 buckets	(183.1 - 195.9') 13 buckets (7 Note: Pel-Plug (TR30) 3/8"
_192	Topock - Alluvium	ML	.00				
	Deposits	GW-GM					
_193	Alluvium Deposits /						
	Topock -	ML					
_194	Alluvium Deposits						
	Topock - Alluvium	SM					
_195	Deposits						
_196	Topock -						
	Alluvium Deposits	ML			회 회		
_197	Boposito				성 성		
				(195.9 - 221.5')	회 회	(195.9 - 221.5') 27.8	(105 0 221 EV 21 have (400
_198 _199	Topock - Alluvium Deposits	SM		(195.9 - 221.5') Cemex #3 MESH — (8x10)	(198.0 - 218.0') 2" PVC Sch 80 Screen	(195.9 - 221.5) 27.8 bags	(195.9 - 221.5') 31 bags (129 Note: Lapis Lustre Sand
200							
Abbreviations: L				<u> </u>	<u> </u>		sea level, GW = groundwa
opb = parts per b	oillion, U = not o	detecte	d above	the laboratory reporting l	mit, J - estimated value, N	R = no recovery	

9 ARC	DIS for natura built asse	Consultancy al and ets		Well Consti	ruction Log		Sheet: 11 of 12		
Date Started:	07/17/2019			_Surface Elevation:	N/A	Well ID:	MW-C-181, MW-C-2 ²		
Date Completed					N/A				
Orilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG8			
Orilling Method:	Sonic Drilling			_Northing (NAD83):	N/A	-	GW Remedy Phase 1		
Oriller Name:	Dan O'Mara			_Easting (NAD83):	N/A	Location: <u>PG8</u>	E Topock, Needles, Califor		
Orilling Asst:	Jario Pacheco	0		Borehole Diameter: 10-12 inches					
.ogger:	Dave Cornell			_Water Level Start:	28.11 ft bgs	Project Number: RC000753.0051			
Editor:	Grant Willford	<u> </u>		_Development End Date:					
Total Depth:	221.5 ft bgs	_		_Well Completion:			_		
Groundwa Sample II		USCS	USCS Class	Well Co	onstruction	Calculated Material Volume Material Volumes Installed			
	Doposito	ML			— (198.0 - 218.0') 2" PVC Sch 80 Screen		0		
.204_ .205 .206 .207 .208	Topock - Alluvium Deposits	SM							
209_ - 210_	Topock - Alluvium Deposits	SW-SM		(195.9 - 221.5") Cemex #3 MESH (8x10)	(8.0 - 221.5') 10.0" Borehole	(195.9 - 221.5') 27.8 bags	(195.9 - 221.5') 31 bags (12 Note: Lapis Lustre Sand		
211_ _ 212_ _ 213_ _ 214_	Topock - Alluvium Deposits	ML							
215 _ _ 216	Topock - Weathered Bedrock - conglomerate	MH			8 - 1				
		SM							
.218 (<0.17 U ppi 7/3/2019 11:09 .219 220	Topock - Competent Bedrock - conglomerate			(218.5 - 219.5')					
Abbreviations: L					= below ground surface, ar mit, J - estimated value, NR		sea level, GW = groundwa		

/-	ARCA	DIS for natural built ass	Consultancy ral and ets		Well Const	ruction Log	:	Sheet: 12 of 12
Date St		07/17/2019			_Surface Elevation:	N/A	Well ID: I	MW-C-181, MW-C-21
	•	09/25/2019			_Shallow Well Elevation:			
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&I	
_		Sonic Drilling			_Northing (NAD83):	N/A	· ·	GW Remedy Phase 1
Driller N		Dan O'Mara			_Easting (NAD83):	N/A	Location: <u>PG&I</u>	E Topock, Needles, Californ
Drilling .		Jario Pachec			_Borehole Diameter:	10-12 inches		D0000750 0054
Logger		Dave Cornell			_Water Level Start:	28.11 ft bgs	Project Numbe	r: RC000753.0051
Editor:		Grant Willford	a		_Development End Date:			
Total D	eptn:	221.5 ft bgs			_Well Completion:			Т
Depth (ft)	Groundwate Sample ID	Geologic Formation	USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
		Topock - Competent Bedrock - conglomerate			(195.9 - 221.5') Cemex #3 MESH (8x10)	(218.0 - 220.3') Sump and End Cap	0 (195.9 - 221.5') 27.8 bags	(195.9 - 221.5') 31 bags (12% Note: Lapis Lustre Sand
_222					End of Boring at 221.5 'bgs.	-2		
223							0.	0
226							16	
						79		
				1				
229		•					•	
230						(7)		
231					C III	1		
_232								
_233					6			
_234								
_235								
_236								
_237								
_238								
239								
240	intions: 11	000 - II#	10-110	`loo-:£: (ion Cuntors # = f - t !	- bolou emercade-	amal = abassa	sea level, GW = groundwa

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 1 of	12
Date S			6/2019	5	Surface	Elevat		Borin	a No.:	MW-Cd	
	•	ted: <u>07/1</u>			Northing		,				
Drilling		Caso			Easting	•	•	Client:	PG&E		
Drilling			-			-		•		N Remedy Pha	
Drill Rig			sonic track mo		Borehol			Location:	PG&E I	opock, Needle	es, California
Driller N			O'Mara		-		Water: 28.11 ft bgs od: 4 inch x 10 ft Core Barrel	Drainat N		2000752 005	
Drilling			Pacheco AM / DC		Samplin Samplin	-		Projectiv	umber. <u>r</u>	RC000753.008)
Logger Editor:			t Willford		Convert	-					
Luitor.		Olan	T WIIIIOIG				VCII. A TC3 AV				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
1 _ _ 1 _ 2 _ _ 2 _ _ 3 _	36			Topock - Fill	SW		(0.0 - 3.5') Topock - Fill; Well graded sand (St brown (10YR 4/6); fine grained to medium grasubround; trace granules to medium pebbles, round; trace silt; dry	ined, angular	to	(0.0 - 21.0') Drill rod broke down hole core barrel had to be fished out.	(0.0 - 26.0') No water used
4 5 6					NR		(3.5 - 6.0') No recovery (NR); interpertaion of viost changed from draft logs based on drilling out of core barrel and review of core photo log (6.0 - 9.2') Topock - Fill; Well graded sand (St	notes of core	falling	(3.5') Loose sediments falling out of core barrel leading to no recovery.	
_ 7 _ _ 7 _ _ 8 _ _ 9 _				Topock - Fill	SW		brown (10YR 4/6) trace black (10YR 2/1); fine grained, subangular to subround; trace granul subangular to subround; trace silt; moist (7.7'); dry	grained to mes to small p	edium ebbles,	loose sediments falling out of core barrel leading to no recovery.	
10 11 12 13	38.4	No Sieve Samples Collected		2	NR		(9.2 - 16.0") No recovery (NR); interpertaion of lost changed from draft logs based on drilling out of core barrel and review of core photo log	notes of core			
14											
 17 18	60			Topock - Fluvial Deposits	sw		(16.0 - 18.2') Topock - Fluvial Deposits; Well gravel (SW); dark yellowish brown (10YR 4/52/1); fine grained to medium grained, subangulittle granules to medium pebbles, subangular dry	trace black (ular to subrou to round; tra	10YR ind; ce silt;	(16.0') Loose sediments falling out of core barrel leading to no recovery, with slough at top of core.	
19				Topock - Fluvial Deposits	SM		(18.2 - 20.0') Topock - Fluvial Deposits; Silty s (SM); dark brown (10YR 3/3); very fine grained grained, angular to subangular; some granule pebbles, angular to subangular; little silt; trace subangular; dry	d to very coar s to very large s small cobble	se e es,		

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 2 of	12
Date S					Surface			Borin	q No.:	MW-Cd	
	•	ted: <u>07/14/</u>			Northing	• `	,				
Drilling Drilling		<u>Casca</u>	ade Drilling		Easting Total De	•	•	Client: Project:	PG&E	N Remedy Ph	
Drill Ri			sonic track mo		Borehol	•	<u>221.5 ft bgs</u> leter: <u>10-12 inches</u>	-		<u>Fopock, Needle</u>	
Driller			D'Mara				Water: 28.11 ft bgs	Location.	1 Oak	гороск, гассак	cs, California
Drilling			Pacheco		Samplin		•	Project N	umber: I	RC000753.00	 51
Logge			AM / DC		Samplin	-		•			
Editor:		<u>Grant</u>	Willford		Convert	ed to V	Vell: ⊠ Yes ☐ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
 21				Topock - Fluvial Deposits	GP	X	(20.0 - 21.0') Topock - Fluvial Deposits; Poorly (GP); pulverized boulder	y graded gra	vel		(0.0 - 26.0') No water used
22	60				NR		(26.0 - 36.0") Topock - Alluvium Deposits; Silft (SM) - dark brown (1478, 3/3) little strong brown	Illing notes of oto logs	core	(24.0 - 26.0') Rough drilling.	(26.0 - 36.0') 15
27	120	No Sieve Samples Collected	MW-C-VAS- 26-31 (380 ppb) 6/19/2019 10:35	Topock - Alluvium Deposits	SM		(SM); dark brown (10YR 3/3) little strong brown fine grained to very coarse grained, angular to granules to very large pebbles, angular to subwet; mottled (27'); slight decrease in silt, no mottling (32.5'); little silt; weak cementation; increase i large pebbles, decrease in silt	n granules to	some ne silt;	Approximate depth to water.	gallons of water used; 0 gallons of water recovered; 15 gallons of water lost
37 38	120			Topock - Alluvium Deposits	ML		(36.0 - 38.0') Topock - Alluvium Deposits; Sar (ML); brown (10YR 4/3); no plasticity, no dilate to very large pebbles, subangular to subround coarse grained sand, subangular to subround; cobbles, angular to subround; coarser clasts of metadiorite; wet; soft (38.0 - 45.8') Topock - Alluvium Deposits; Silty (SM); dark vellowish brown (10YR 4/4); very file	ency; some of ; some fine t ; trace small composed of	ravel	Rough drilling.	No water used
39				Topock - Alluvium Deposits	SM		(SM); dark yellowish brown (10YR 4/4); very fit coarse grained, subangular to subround; little large pebbles, angular to subround; little silt; t subangular; coarser clasts composed of meta moderate cementation	race small c idiorite; mois	obbles, t to dry;		
Abbre	viations	: USCS = 1	Unified Soil Cl	assification	System	ft = fe	eet. bas = below around surface, ams	l = ahove	mean sea	a level GW = o	groundwater

ARCA	DI2	for natural and built assets		BO	ring	Log		Sheet: 3 of	12
Date Started:	06/16/2			Surface			Boring No	.: MW-Cd	
Date Completed:				Northing		•	-		
Orilling Co.:	<u>Cascad</u>			Easting	•	•	_ Client: PG&I		
Orilling Method:	Sonic D	•		Total De	•	221.5 ft bgs		GW Remedy Ph	
Orill Rig Type:		nic track mo		Borehol		<u>- </u>	_ Location: PG&I	E Topock, Needl	es, Califorr
Oriller Name:	Dan O'l					Vater: 28.11 ft bgs			
Orilling Asst:	Jario Pa			Samplin	-		_ Project Number	: RC000753.00	51
.ogger:	CS / AN			Samplin	•		_		
Editor:	Grant V	Villford		Convert	ed to V	/ell: ⊠ Yes □ No			
	Sieve Imple ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Flu
41 42 43 120 44 45		No Sample (Interval did not produce) 6/19/2019 14:15	Topock - Alluvium Deposits	SM		(41') brown (7.5YR 4/4) some light reddish be some silt; mottled; moderate cementation; devery large pebbles (44'); little granules to small pebbles, subang little silt; weak cementation; decrease in peblincrease in very fine to very coarse sand	ular to subround;	(36.0 - 46.0') Rough drilling. (41.0') Installed sample screen to get below cemented layer.	(36.0 - 150 No water u
46			Topock - Alluvium Deposits Topock - Alluvium	SM GW-GM		(45.8 - 47.0') Topock - Alluvium Deposits; Sil (SM); strong brown (7.5YR 4/6); very fine gra grained, subangular to subround; some gran subangular to subround; some silt; wet to mo (47.0 - 48.0') Topock - Alluvium Deposits; W. silt and sand (GW-GM); brown (7.5YR 4/4); g	ined to very coarse ules to large pebbles, pist ell graded gravel with granules to very large		
- 60 - 49	Sieve	No Sample (Interval did not produce) 6/20/2019 09:55	Topock - Alluvium Deposits	SM		pebbles, subangular to subround; some fine grained sand, subangular to subround; little s composed of metadiorite; wet (48.0 - 49.5') Topock - Alluvium Deposits; Sil (SM); strong brown (7.5YR 4/6); very fine gra grained, subangular to subround; some grans ubangular to subround; some grans unetadiorite; wet to moist; trace silt nodules	ty sand with gravel ined to coarse ules to large pebbles,		
-50 <u> </u>	mples llected		Topock - Alluvium Deposits	GM		(49.5 - 51.0') Topock - Alluvium Deposits; Sil (GM); brown (7.5YR 4/4); granules to small p to subround; little fine to very coarse grained subround; little silt; coarser clasts composed (51.0 - 54.5') Topock - Alluvium Deposits; Sil	bebbles, subangular sand, subangular to of metadiorite; wet	(50.0 - 51.0') Rough drilling.	
		MW-C-VAS- 51-56 (0.146 J ppb) 6/25/2019 12:00	Topock - Alluvium Deposits	SM		(SM): brown (7.5YR 4/3) trace dark reddish by very fine grained to very coarse grained, angusome granules to very large pebbles, angular silt; trace small cobbles, subangular; coarser metadiorite; wet; mottled; interbeded silt lens	rown (2.5YR 3/4); ular to subround; to subangular; little clasts composed of		
.55			Topock - Alluvium Deposits Topock -	SW SW-SM		(54.5 - 55.5') Topock - Alluvium Deposits; We gravel (SW); brown (10YR 4/3); very fine grained, angular to subround; some granules pebbles, angular to subangular; trace small of trace silt; trace mica; wet; trace silt nodules,	ned to very coarse to very large cobbles, subround;		
56			Alluvium Deposits Topock - Alluvium Deposits	ML	**************************************	consist of conglomerate and metadiorite (55.5 - 56.0') Topock - Alluvium Deposits; W silt and gravel (SW-SM); brown (10YR 4/3); very coarse grained, angular to subround; litt large pebbles, angular to subround; little silt; composed of metadiorite; wet	ell graded sand with very fine grained to le granules to very		
_58 ₁₂₀			Topock - Alluvium Deposits	ML		(56.0 - 57.5') Topock - Alluvium Deposits; Sa (ML); brown (10YR 5/3); angular to subangul some small to medium pebbles, angular to s medium to very coarse grained sand, subang moist; medium stiff	ar; low plasticity; ubangular; some _l ular to subround;		
60	000		Topock - Alluvium Deposits	ML		(57.5 - 59.0') Topock - Alluvium Deposits; Sa (ML); brown (10YR 4/3); low plasticity; some pebbles, angular to subround; some medium	granules to very large to very coarse		
						et, bgs = below ground surface, ams orting limit, J - estimated value, NR =			·
l '		not dotooto	a anove the	e labora	iory rei	AR alled Value NR - Actimated value NR	= no recovery blu	ie water table svr	nnoi

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 4 of	12
Date S	Started:	06/16/	2019		Surface	Elevat	on: <u>N/A</u>	Boring No.	: MW-Cd	
Date C	Comple	ted: <u>07/14/</u>	2019		Northing	• •	,		<u> </u>	
Drilling	Co.:	<u>Casca</u>	ide		Easting	(NAD8	3): <u>N/A</u>	Client: PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	221.5 ft bgs	Project: Final GW Remedy Phase 1		
Drill Ri	д Туре	: <u>Terras</u>	onic track mo	<u>unt</u>	Borehol	e Diam	eter: 10-12 inches	Location: PG&E	Topock, Needle	es, California
Driller	Name:	Dan C)'Mara		Depth to	First \	Vater: 28.11 ft bgs			
Drilling	Asst:	<u>Jario F</u>	Pacheco		Samplin	g Meth	od: 4 inch x 10 ft Core Barrel	Project Number:	RC000753.005	51
Logge	r:	CS / A	M / DC		Samplin	g Inter	val: <u>Continuous</u>			
Editor:		<u>Grant</u>	Willford		Convert	ed to V	/ell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
					ML	.0.	grained sand, subangular to subround; trace s angular to subangular; moist; medium stiff	·		(36.0 - 150.0') No water used
61 62 63	120		No Sample	Topock - Alluvium Deposits	GM		(59.0 - 60.8') Topock - Alluvium Deposits; Gra (ML); (10Y 4/3); low plasticity; and granules to angular to subround; some small cobbles, ang little medium to very coarse grained sand, sub subround; moist (60.8 - 63.0') Topock - Alluvium Deposits; Silty (GM); brown (10YR 4/3); granules to large cot subround; and silt; little fine to very coarse gra subangular to subround; moist; moderate cem	very large pebbles, gular to subangular; langular to y gravel with sand obles, angular to lined sand,	(61.0 - 66.0') Rough drilling.	
64 65 66			(Interval did not produce) 6/25/2019 13:15	Topock - Alluvium Deposits	GW-GM		(63.0 - 65.9') Topock - Alluvium Deposits; Wel silt and sand (GW-GM); brown (10YR 4/3); gra cobbles, subangular to round; some fine to vel sand, subangular to subround; little silt; moist	Il graded gravel with anules to small ry coarse grained	9	
67 68 69 70	60	No Sieve Samples Collected	MW-C-VAS- 66-71 (<0.033 U ppb) 6/26/2019 10:44	Topock - Alluvium Deposits	SW-SM		(65.9 - 71.0') Topock - Alluvium Deposits; Wel silt and gravel (SW-SM); brown (10YR 4/3); fir coarse grained, angular to subround; some grapebbles, angular to subround; little silt; moist;	ne grained to very anules to large weak cementation	(66.0 - 71.0') Soft drilling.	
72	162			Topock - Alluvium Deposits	ML		(71.0 - 84.6') Topock - Alluvium Deposits; Gra (ML); brown (10YR 4/3); some granules to ver angular to subangular; little fine to very coarse angular to subround; moist to dry; coarser class weathered metadiorite	y large pebbles, e grained sand,	(71.0 - 86.0') Rough drilling.	

9/	4RC	ADIS	Design & Consultancy for natural and built assets		Во	ring L	_og	J		She	eet: 5 of	12
	Started:					Elevation		N/A	Borii	na No.:	MW-Cd	
	•	ted: <u>07/14/</u>				g (NAD83	,	N/A		_		
Drilling		<u>Casca</u>			_	(NAD83)		N/A	Client:	PG&E		
_	Metho		Drilling		Total D	-		221.5 ft bgs	Project:		W Remedy Pha	
	ig Type Name:		sonic track mo D'Mara			le Diamet		10-12 inches 28.11 ft bgs	Location	1: <u>PG&E</u>	Topock, Needle	es, Calliornia
Drilling			Pacheco		-	ng Method		_	Project I	Number	RC000753.005	 51
Logge			AM / DC		-	ig Interva		Continuous	. 10,000	turnbor.	1.00007.00.000	, .
Editor:			Willford		-	ed to We						
	2			S	T							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS		Soil Description			Drilling Notes	Drilling Fluid
81	162	No Sieve Samples Collected	MW-C-VAS- 81-86 (<0.17 U ppb) 6/27/2019 10:58	Topock - Alluvium Deposits Topock - Alluvium Deposits	ML SW-SM		ilt and grained mall to 36.0 - 1 GM); brosubros subros sub	36.0') Topock - Alluvium Deposits; We gravel (SW-SM); reddish brown (5YR to very coarse grained, subangular to medium pebbles, angular to subangu (101.0') Topock - Alluvium Deposits; Sil rown (10YR 4/3); granules to very largund; some medium to very coarse granund; some silt; little coarser clasts contrite; moist to dry; moderate cementations and the subangular to	5/3); mediu subround; s lar; little silt Ity gravel wi e pebbles, a ained sand, mposed of	m some t; moist th sand angular	(71.0 - 86.0') Rough drilling.	(36.0 - 150.0') No water used
98 99 100												
		11000	11 'C 10 "0			·					1 1 6)4/	

9/	ARC	ADI	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 6 of	12
Date Started: <u>06/16/2019</u> Date Completed: <u>07/14/2019</u>					Surface	Elevat	tion: <u>N/A</u>	Boring No.	· MW-Cd	
Date C	omple	ted: <u>07/</u>	14/2019		Northing	g (NAD	083): <u>N/A</u>	_ Borning ivo.	. <u>IVIVV-Ou</u>	
Drilling	Co.:				Easting	(NAD8	33): <u>N/A</u>	_ Client: PG&E		
Drilling	Metho	d: <u>Sor</u>	nic Drilling		Total De	epth:	221.5 ft bgs	_ Project: Final G	W Remedy Ph	ase 1
Drill Ri	д Туре	: <u>Ter</u>	rasonic track mo	<u>ount</u>	Borehol	e Diam	neter: 10-12 inches	Location: PG&E	Topock, Needle	es, California
Driller I	Name:	<u>Dar</u>	n O'Mara		Depth to	First \	Water: 28.11 ft bgs			
Drilling	Asst:	<u>Jar</u>	o Pacheco		Samplin	ig Meth	nod: 4 inch x 10 ft Core Barrel	_ Project Number:	RC000753.00	51
Logge			/ AM / DC		Samplin	-		_		
Editor:		<u>Gra</u>	nt Willford		Convert	ed to V	Well: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample	Groundwater D Sample ID	Geologic Formation	SOSO	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
				Topock - Alluvium Deposits	GM				(86.0 - 106.0') Rough drilling.	(36.0 - 150.0') No water used
102				Topock - Alluvium Deposits	МН		(101.0 - 103.0') Topock - Alluvium Deposits; with sand (MH); brown (10YR 4/3); medium granules to very large pebbles, angular to su to very coarse grained sand; little clay; little composed of metadiorite; dry; medium stiff; rementation	plasticity; some bround; little coarse coarser clasts		
103	207.6			Topock - Alluvium Deposits	ML		(103.0 - 104.0') Topock - Alluvium Deposits; (ML); brown (10YR 4/3); low plasticity; some pebbles, angular to subround; some medium grained sand, subangular to subround; trace	small to very large to very coarse	0	
				Topock - Alluvium	ML	.00	subangular to subround; moist; medium stiff;			
105				Deposits Topock -	1		cementation (104.0 - 104.5') Topock - Alluvium Deposits;	Gravelly silt with sand		
				Alluvium	MH		(ML); brown (10YR 4/3); low plasticity; some pebbles, angular to subround; little medium t	granules to very large		
106				Deposits		Ш	sand, subangular to subround; trace small co	obbles, angular to		
100					7.		subangular; dry; medium stiff; moderate cem (104.5 - 106.0') Topock - Alluvium Deposits;		(106.0 - 116.0')	
107							with sand (MH); dark grayish brown / dark ye 4/2); medium plasticity; some granules to lar I to subangular; some clay; little medium to ve sand, subangular to subround; moist	llowish brown(10YR ge pebbles, angular	Rough drilling.	
108							(106.0 - 116.0') Topock - Alluvium Deposits; (ML); brown (7.5YR 4/3); low plasticity; some pebbles, angular to subround; some medium	granules to large		
109							grained sand, angular to subround; moist; so cementation	ft; moderate		
110		No Sieve Samples Collected					100			
111				Topock - Alluvium Deposits	ML					
112										
113	192				C					
114										
115										
_							·[
116					_L		<u> </u>			
 117						\setminus	(116.0 - 120.0') No recovery (NR)		(116.0 - 126.0') Rough drilling. Core fell out during drill run	
 118			MW-C-VAS- 117-122		NR				when core barrel got stuck.	
-			(<0.17 U ppb)			/\				
119			6/28/2Ó19 14:59			/ \				
 						/ \				
120 Abbres	iations	. 11808	- Unified Soil C	laccification	System	\frac{1}{2}	eet has = helow around surface am	el – above mean sa		groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = ground policy poli represents depth to water measurement collected during the first VAS interval

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	SI	neet: 7 of	12
Date Started: 06/16/2019 Date Completed: 07/14/2019 Drilling Co.: Cascade				Surface	Elevat	ion: <u>N/A</u>	Boring No.	: MW-Cd		
	•	ted: <u>07/14/</u>	/2019		Northing	g (NAD	83): <u>N/A</u>			
_					Easting	•	•	Client: PG&E		
_	Metho		Drilling		Total De	epth:	221.5 ft bgs	•	SW Remedy Pha	
	д Туре		sonic track mo		Borehol			Location: PG&E	Topock, Needle	es, California
	Name:		<u>)'Mara</u>		•		Water: 28.11 ft bgs			
Drilling			Pacheco		Samplin	-		Project Number:	RC000753.005	51
Logge			M / DC		Samplin	-		-		
Editor		Grant	Willford		Convert	ea to v	Vell: ⊠ Yes ☐ No		· · · · · · · · · · · · · · · · · · ·	
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
_ 121_ _ 121_ 			MW-C-VAS- 117-122 (<0.17 U ppb) 6/28/2019 14:59	Topock - Alluvium Deposits	ML		(120.0 - 122.0') Topock - Alluvium Deposits; S (ML); brown (7.5YR 4/3); low plasticity; some large pebbles, subangular to subround; some coarse grained sand, subangular to subround cementation	granules to very medium to very l; wet; soft; moderate	(116.0 - 126.0') Rough drilling. Core fell out during drill run when core barrel got stuck.	(36.0 - 150.0') No water used
123 124 125	192			Topock - Alluvium Deposits	SW-SM		(122.0 - 125.1') Topock - Alluvium Deposits; N with silt and gravel (SW-SM); brown (10YR 4/to very coarse grained, subangular to subrour medium pebbles, angular to subround; little s cementation	(3); very fine grained nd; some granules to	9	
				Topock -	ML		(125.1 - 132.0') Topock - Alluwum Deposits; S (ML); dark yellowish brown (10YR 4/4); low pl medium to very coarse grained sand, subang little granules to very large pebbles, angular to small cobbles, subround; moist to wet; very so cementation	asticity; some ular to subround; o subround; trace	(126.0 - 136.0') Soft drilling.	
129 130 131 132	120	No Sieve Samples Collected		Deposits	IVIL					
133				Topock - Alluvium Deposits	МН		(132.0 - 133.0') Topock - Alluvium Deposits; \$ gravel (MH); brown (7.5YR 4/3); medium plas to very coarse grained sand, subangular to su little granules to very large pebbles, angular to small cobbles, subround; wet; soft; moderate	ticity, some medium abround; some clay; o subround; trace cementation		
134 135 136				Topock - Alluvium Deposits	SM		(133.0 - 136.0') Topock - Alluvium Deposits; S (SM); brown (7.5YR 5/4); very fine grained to angular to subround; some granules to mediu to subround; some silt; moist; weak cementat	very coarse grained, ım pebbles, angular		
136 137 138 139 	117.6			Topock - Alluvium Deposits	МН		(136.0 - 140.5') Topock - Alluvium Deposits; (MH); brown (7.5YR 4/3); medium plasticity; s very large pebbles, angular to subround; little coarse grained sand, subangular to subround soft; weak cementation	some granules to very fine to very	(136.0 - 146.0') Rough drilling.	
140	L			<u> </u>		ЩЩ	oot haa - balaw araund aurfaaa ama			

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet: 8 of	12
Date Started: 06/16/2019 Date Completed: 07/14/2019			Surface	Elevat	ion: <u>N/A</u>	Boring No	o.: MW-Cd			
Date C	omple	ted: <u>07/1</u> 4	1/2019		Northing	g (NAD	83): <u>N/A</u>	_ Borning itt	5 <u>INIV Ga</u>	
Drilling	Co.:	Caso			Easting		3): <u>N/A</u>	Client: PG&		
Drilling	Metho	od: <u>Soni</u>	Drilling		Total De	epth:	221.5 ft bgs	Project: Final	GW Remedy Ph	ase 1
Drill Ri	g Type	: <u>Terra</u>	<u>isonic track mo</u>	unt	Borehol	e Diam	eter: 10-12 inches	Location: PG&	E Topock, Needle	es, California
Driller I			O'Mara		-		Water: 28.11 ft bgs			
Drilling		· ·	Pacheco		Samplin	-		Project Numbe	er: RC000753.00	51
Logge			AM / DC		Samplin	•		-		
Editor:		<u>Gran</u>	t Willford		Convert	ed to V	Vell: ⊠ Yes ☐ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
					MH	Ш			(136.0 - 146.0') Rough drilling.	(36.0 - 150.0') No water used
141 142 143 144	117.6			Topock - Alluvium Deposits Topock - Alluvium Deposits	MH		(140.5 - 143.5') Topock - Alluvium Deposits; (MH); brown (7.5YR 4/3); medium plasticity; smedium pebbles, angular to subangular; little to very coarse grained sand, angular to subro soft; weak cementation (143.5 - 143.8') Topock - Alluvium Deposits; (10YR 4/3); no plasticity; trace granules to smubangular to subround; trace very fine to me	some granules to clay; trace medium und; wet to moist; Silt (ML); brown all pebbles,		
 145 _146_				Topock - Alluvium Deposits Topock - Alluvium Deposits	GW-GM		subangular to subround; moist; soft; weak cel (143.8 - 145.0') Topock - Alluvium Deposits; It brown (10YR 4/3); medium plasticity; little cla small pebbles, subangular to subround; trace grained sand, subangular to subround; dry; so cementation	mentation Elastic silt (MH); y; trace granules to ifine to medium oft; weak		
 147 148				Topock - Alluvium Deposits	GM		(145.0 - 145.8') Topock - Alluvium Deposits; with silt and sand (GW-GM); reddish brown very large pebbles, angular to subround; som coarse grained sand, subangular to subround weak cementation (145.8 - 148.5') Topock - Alluvium Deposits; some dish brown (5YR 4/3); granules to large pesubround; some silt; little medium to very coasubangular to subround; moist; weak cement	5YR 4/3); granules to e medium to very it; little silt; moist; Silty gravel (GM); ebbles, angular to urse grained sand.		
149 150 151	120	No Sieve Samples Collected	MW-C-VAS- 147-152 (<0.17 U ppb) 6/29/2019 13:58	Topock - Alluvium Deposits Topock - Alluvium Deposits	ML SW-SM		(148.5 - 149.6') Topock - Alluvium Deposits; Sprown (10YR 4/3); low plasticity; little medium grained sand, angular to subround; trace gran pebbles, angular to subround; trace gran (149.6 - 151.3') Topock - Alluvium Deposits; With silt and gravel (SW-SM); reddish brown (grained to very coarse grained, angular to subtomoist; weak cementation	Silt with sand (ML); n to very coarse nules to medium t; weak cementation Well graded sand (5YR 4/3); medium bround; some		(150.0 - 221.0') 700 gallons of water used; 550 gallons of water
152 153				Topock - Alluvium Deposits	SW-SM		(151.3 - 153.5') Topock - Alluvium Deposits; \ with silt and gravel (SW-SM); reddish brown (\text{grained to very coarse grained, angular to sub to very large pebbles, angular to subround; lit weak cementation	(5YR 4/3); medium bround; and granules tle silt; wet to moist;		recovered; 150 gallons of water lost
154 155				Topock - Alluvium Deposits	GM		(153.5 - 155.3') Topock - Alluvium Deposits; ((GM); reddish brown (5YR 4/3); granules to v some medium to very coarse grained sand, s subround; little silt; moist; weak cementation	ery large pebbles; ubangular to	d	
156 157				Topock - Alluvium Deposits	GW-GM		(155.3 - 157.1') Topock - Alluvium Deposits; \ with silt and sand (GW-GM); reddish brown \ small cobbles, angular to subround; and fine \ grained sand, subangular to subround; little s \ cementation \((156'); moist; weak cementation; slight increa \(very large pebbles, decrease in sand \)	5YR 4/3); granules to to very coarse ilt; moist; weak		
	180			Topock - Alluvium Deposits	SW-SM		(157.1 - 160.3') Topock - Alluvium Deposits; with silt and gravel (SW-SM); reddish brown (grained to very coarse grained, subangular to granules to very large pebbles, angular to submoist; weak cementation	(5YR 4/3); medium subround; and		

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	\$	Sheet: 9 of	12
Date Started: <u>06/16/2019</u> Date Completed: <u>07/14/2019</u>			Surface	Elevat	on: <u>N/A</u>	Boring No	o.: <u>MW-Cd</u>			
Date C	Comple	ted: <u>07/14/</u>	2019		Northing	g (NAD	83): <u>N/A</u>) <u>IVIV Ga</u>	
Drilling	Co.:	<u>Casca</u>			Easting			Client: PG&I	<u>E</u>	
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	221.5 ft bgs	Project: Final	GW Remedy Ph	ase 1
Drill Ri	д Туре	: <u>Terras</u>	onic track mo	<u>unt</u>	Borehol	e Diam	eter: <u>10-12 inches</u>	Location: PG&I	E Topock, Needl	es, California
Driller	Name:	<u>Dan C</u>	'Mara		Depth to	First \	Vater: 28.11 ft bgs			
Drilling	Asst:	<u>Jario F</u>	Pacheco		Samplin	ig Meth	od: 4 inch x 10 ft Core Barrel	Project Number	r: RC000753.00	51
Logge	r:	CS / A	M / DC		Samplin	g Inter	val: <u>Continuous</u>	-		
Editor:		<u>Grant</u>	Willford		Convert	ed to V	√ell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
					SW-SM		(160.3 - 161.5') Topock - Alluvium Deposits; \$	Silty sand with gravel		(150.0 - 221.0') 700 gallons of
161				Topock - Alluvium Deposits	SM		(SM); reddish brown (5YR 4/3); medium grain grained, subangular to subround; some silt; li medium pebbles, angular to subround; moist;	ttle granules to		water used; 550 gallons of water recovered; 150
 162 _163_	180			Topock -			(161.5 - 165.0') Topock - Alluvium Deposits; \(\) with silt and sand (GM); reddish brown (5\)Red large pebbles, angular to subangular; little me grained sand, subangular to subround; little s cementation	Well graded gravel 4/3); granules to edium to very coarse		gallons of water lost
164				Alluvium Deposits	GM				(2)	
165 166 				Topock - Alluvium Deposits	GW-GM		(165.0 - 166.6') Topock - Alluvium Deposits; \(\mathbb{N}\) with silt and sand (GW-GM); reddish brown (small cobbles, angular to subround; little med grained sand, subangular to subround; little scementation	5YR 4/3); granules to lium to very coarse		
167 168 169	60		MW-C-VAS- 165-170 (<0.17 U ppb) 6/30/2019 11:04	Topock - Alluvium Deposits	SM		(166.6 - 169.5') Topock - Alluvium Deposits; \$ (SM); reddish brown (5YR 4/3); medium grain grained, subangular to subround; some granu angular to subround; little silt; moist; weak ce	ned to very coarse ules to large pebbles,		
 170 171		No Sieve Samples Collected		Topock - Alluvium Deposits	SM	No.	(169.5 - 171.0') Topock - Alluvium Deposits; S (SM); reddish brown (5YR 4/3); fine grained to grained, subangular to subround; some granupebbles, angular to subangular; some silt; modernentation	o very coarse iles to very large oist; weak	(170.0 - 171.0') Formation collapsed	
172 				X			(171.0 - 176.0') Topock - Alluvium Deposits; (ML); reddish brown (5YR 4/3); low plasticity; large pebbles, angular to subangular; little fingrained sand, subangular to subround; moist; cementation	some granules to e to very coarse	sampler. (171.0 - 186.0') Rough drilling.	
173 _174_				Topock - Alluvium Deposits	ML					
175										
	180					[166]				
176 177 178			MW-C-VAS- 176-181	Topock - Alluvium Deposits Topock - Alluvium Deposits Topock -	GM		(176.0 - 176.4') Topock - Alluvium Deposits; (GM); brown (7.5YR 4/3); granules to large pe subangular; some silt; little fine to very coarse subangular to subround; moist; weak cement: (176.4 - 177.5') Topock - Alluvium Deposits; with sand (GW); brown (7.5YR 4/3); granules angular to subangular; some very fine to very	ebbles, angular to e grained sand, ation Well graded gravel to large pebbles,		
			(410 ppb) 7/1/2019 16:02	Alluvium Deposits Topock -	ML		sand, subangular to subround; trace silt; mois (177.5 - 178.5') Topock - Alluvium Deposits; (st; weak cementation Gravelly silt (ML);	4	
179 180				Alluvium Deposits Topock - Alluvium	ML		brown (10YR 4/3); low plasticity; little granule pebbles, subangular to subround; trace mediu grained sand, subangular to subround; moist; moderate cementation	um to very coarse		
		11000	1 .c. 10	.c. (:	<u> </u>					

9/-	١RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet: 10 of	12
	tarted:				Surface	Elevat	ion: <u>N/A</u>	Boring N	No.: MW-Cd	
	•		2019		Northing		•			
Drilling 		<u>Casca</u>			Easting	•			3 <u>&E</u>	
_	Metho		<u>Drilling</u>			•	<u> </u>	•	al GW Remedy Pha	
	д Туре		onic track mo		Borehol			Location: PG	<u>6&E Topock, Needle</u>	es, California
	Name:		<u>'Mara</u>				Water: 28.11 ft bgs		D0000750 000	- 4
Drilling		-			Samplin	•		Project Numb	per: <u>RC000753.008</u>	<u>) [</u>
Logge Editor:			Willford		Samplin Convert	•				
Luitoi.		Giani	VVIIIIOIU		T		Veii. A les I NO			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
				Topock -	ML		(178.5 - 179.0') Topock - Alluvium Deposits; G brown (7.5YR 4/3); low plasticity; little granule		(171.0 - 186.0') Rough drilling.	(150.0 - 221.0') 700 gallons of
181				Alluvium Deposits			pebbles, subangular to subround; trace fine to sand, subangular to subround; dry; soft; weak		ned	water used; 550 gallons of water
							(179.0 - 180.0') Topock - Alluvium Deposits; G	Gravelly silt with sa		recovered; 150 gallons of water
182						ا م	(ML); reddish brown (5YR 4/3); low plasticity; s very large pebbles, angular to subround; little i	medium to very		lost
				Topock -		.0.0	coarse grained sa <mark>nd, subangular</mark> to subround; cobbles, subroun <mark>d;</mark> trace clay; moist; soft; wea	trace small ak cementation		
183	180			Alluvium Deposits	ML		(180.0 - 181.0') Topock - Alluvium Deposits; S (ML); brown (7.5YR 4/3); low plasticity; little gr			
				'			pebbles, angular to subround; little fine to very sand, subangular to subround; trace clay; moi	coarse grained		
184						Palo	cementation	'		
						00	(181.0 - 184.5') Topock - Alluvium Deposits; G brown (7.5YR 4/3); low plasticity; little granule	s to large pebbles		
185				Topock -	١.,		angular to subangular; little medium to very co angular to subangular; trace clay; moist; soft; v	earse grained sand weak cementation	d,	
				Alluvium Deposits	ML		(184.5 - 186.0') Topock - Alluvium Deposits; S brown (7.5YR 4/3); low plasticity; little granule			
186						*****	pebbles, angular to subangular; little very fine grained sand, angular to subround; trace clay;	to very coarse	.	
				Topock -			cementation			
187				Alluvium Deposits	SW-SM		(186.0 - 188.0') Topock - Alluvium Deposits; With silt and gravel (SW-SM); reddish brown (5YR 4/3); fine		
			MMA (O) (A O	Deposits			grained to very coarse grained, subangular to granules to large pebbles, angular to subround			
188			MW-C-VAS- 185-191				cementation (188.0 - 191.7') Topock - Alluvium Deposits; S	ilty sand with grav	vel	
			(<0.17 U ppb)				(SM); reddish brown (5YR 4/3); fine grained to grained, subangular to subround; some silt; lit	very coarse		
189			7/1/2019 12:00				pebbles, subangular to subround; moist; weak		ge	
 190		No Sieve		Topock - Alluvium	SM					
190		Samples Collected		Deposits						
 191										
131	120								(191.0 - 196.0') Soft drilling.	
192				Topock -	+	H PI P	(191.7 - 192.4') Topock - Alluvium Deposits; G	Gravelly silt with sa		
				Alluvium Deposits	ML	60.	(ML); reddish brown (5YR 4/3); low plasticity; very large pebbles, subangular to subround; lit			
193				Topock - Alluvium	GW-GM		coarse grained sand, subangular to subround; cementation	moist; moderate		
				Deposits Topock -	/ ML		(192.4 - 193.0') Topock - Alluvium Deposits; With silt and sand (GW-GM); gray (10YR 6/1);		-	
194				Alluvium Deposits			boulders, angular to subangular; little very fine	to medium graine		
				Topock - Alluvium	SM		sand, subangular to subround; little silt; moist; (193.0 - 193.5') Topock - Alluvium Deposits; G	Gravelly silt (ML);		
195				Deposits			reddish brown (5YR 4/3); low plasticity; some large pebbles, angular to subangular; little fine			
							grained sand, subangular to subround; moist; cementation	medium stiff; wea	ak	
196				Topock -			(193.5 - 195.4') Topock - Alluvium Deposits; S (SM); reddish brown (5YR 4/3); medium graine			
				Alluvium	ML		grained, subangular to subround; some silt; lit	tle granules to ver		
197				Deposits			large pebbles, angular to subround; moist; we (195.4 - 197.5') Topock - Alluvium Deposits; S	andy silt (ML);		
					-		reddish brown (5YR 4/3); low plasticity; some grained sand, subangular to subround; little gr	fine to coarse	,	
198	110.4						pebbles, subangular to subround; moist; soft; (197.5 - 200.0') Topock - Alluvium Deposits; S	weak cementatior	n	
<u> </u>				Topock - Alluvium	SM		(SM); reddish brown (5YR 4/3); medium grain	ed to very coarse		
199				Deposits	J GIVI		grained, subangular to subround; some granul subangular to subround; little silt; moist; weak		₩5,	
200	.i.a.ti.a	. 11000 - 1		:c: +:	. 0	<u> </u>	est has - below ground surface, amo	ll		

9/-	١RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	S	heet: 11 of	12
Date Started: 06/16/2019 Date Completed: 07/14/2019 Drilling Co.: Cascade Drilling Method: Sonic Drilling					Surface	Elevat		Boring No	.: MW-Cd	
	•				Northing	- '	,		<u> </u>	
_					Easting	•	•	Client: PG&E		
_			•			•	<u> </u>	•	GW Remedy Ph	
Drill Ri			onic track mo		Borehol			Location: PG&E	: тороск, мееак	es, California
Driller I Drilling			'Mara Pacheco		Samplin		Water: 28.11 ft bgs lod: 4 inch x 10 ft Core Barrel	Project Number	· PC000753 004	 51
Logge					Samplin	-		i roject Number	. <u>10000733.000</u>	<i>)</i>
Editor:			Willford		Convert	-				
					Ī					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
							(200.0 - 203.5') Topock - Alluvium Deposits; S (ML); reddish brown (5YR 4/3); low plasticity; very coarse grained sand, subangular to subro	some medium to		(150.0 - 221.0') 700 gallons of water used; 550
_201							to medium pebbles, subangular to subround; cementation		(201.0 - 206.0')	gallons of water recovered; 150
				Topock - Alluvium	ML		cementation		Soft drilling.	gallons of water
202			MW-C-VAS- 200-205	Deposits	IVIL					lost
			(<0.17 U ppb) 7/2/2019							
203	110.4		7/2/2019 15:24							
							(203.5 - 208.2') Topock - Alluvium Deposits; S	Silty sand with gravel		
_204							(SM); reddish brown (5YR 4/3); medium grain grained, subangular to subround; some silt; lit	ed to very coarse		
							pebbles, subangular to subround; moist; weak			
_205										
				Topock - Alluvium	SM			101		
_206				Deposits	SIVI				(206.0 - 216.0')	
									Rough drilling with slough at	
_207									top of core.	
 208										
200							(208.2 - 210.2') Topock - Alluvium Deposits; V	Vell graded sand	(208.0') Durnig	
209				Topock -			with silt and gravel (SW-SM); reddish brown (grained to very coarse grained, subangular to	5YR 4/3); medium	the casing had	
				Alluvium Deposits	SW-SM		granules to very large pebbles, subangular to small cobbles, subround; some silt; moist; we	subround; some	to be pulled back out to	
210		No Sieve		Deposits			small cobbles, subround, some sit, moist, we	ak cementation	reinstall. The bottom 10 ft. of	
		Samples Collected			74		(210.2 - 214.5') Topock - Alluvium Deposits; S		_ well sreen, sump and	
211_	120						(ML); reddish brown (5YR 4/3); low plasticity; coarse grained sand, subangular to subround		partial sand pack were	
	120						pebbles, angular to subround; moist; weak ce		removed with core barrel and	
212				_					flushing.	
				Topock - Alluvium	ML					
213				Deposits						
_										
_214										
_				L	<u> </u>				1	
215				Topock -		Ш	(214.5 - 216.0') Topock - Weathered Bedrock Sandy elastic silt with gravel (MH); reddish bro	own (5YR 5/3);		
				Weathered Bedrock -	IVID	Ш	medium plasticity; some very fine to very coars subangular to subround; little granules to very			
216				conglomerat	e		angular to subround; little clay; trace small col trace coarser clasts composed of metadiorite;	bbles, subround;	(216.0 224.01)	
				Topock -			hard; moderate cementation		(216.0 - 221.0') Rough drilling,	
_217				Weathered Bedrock -	SM		(216.0 - 218.0') Topock - Weathered Bedrock Silty sand with gravel (SM); reddish brown (5Y	'R 4/3); fine grained	slough at top of core.	
			MW-C-VAS- 216-221	conglomerat	e		to very coarse grained, subangular to subroun large pebbles, angular to subround; little silt; r			
218	60		(<0.17 U ppb)		+		cementation (218.0 - 221.5') Topock - Competent Bedrock	- conglomerate:	 	
			7/3/2019 11:09	Topock -			reddish brown (5YR 5/3); dry; Friable	- congioniciale,		
219			71.00	Competent Bedrock -						
-				conglomerat	e					
220				15		<u> </u>	pot has - below ground ourfood amo			<u> </u>

Date Started: 08/18/2019 Surface Elevation: NA	9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	9		Sheet:	: 12 of	12
Transit Samples Completit Bedrock Completit Bedrock Completit Bedrock Completit Bedrock Completit Completit Bedrock Completit Comple	Date O Drilling Drill Ri Driller Drilling Logge	Comple Comple Co.: Metho Gype Name: Asst:	ted: 07/14/2 Cascad od: Sonic E Terrasc Dan O'l Jario Pa CS / AM	2019 de Drilling onic track mod Mara acheco M / DC	unt	Northing Easting Total De Borehol Depth to Samplin Samplin	g (NAD (NAD8 epth: e Diam o First \ g Meth g Inter	83): 33): neter: Water: nod: val:	N/A N/A 221.5 ft bgs 10-12 inches 28.11 ft bgs 4 inch x 10 ft Core Barrel Continuous	Client: PG Project: Fina Location: PG	&E al GW &E To _l	Remedy Pha	es, California
Competent Comp	Depth (ft)	Recovery (in)			Geologic Formation	USCS Code	USCS		Soil Description		D	Orilling Notes	Drilling Fluid
222. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238.	221	- 60	Samples		Competent Bedrock -								
	222								End of Boring at 221.5 'bg	JS.	•		
225	_223_							.	0.4			0)	
226													
										6			
									(O) A				
230	228_								1, 1				
	229) `								
								•	.01				
	231_			•	0	U			10				
	232							1	•				
235_ 236_ 237_ 237_ 238_ 	_233_					G							
	238												
240													

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Lo	g		She	et: 1 of	9
Date Started: 07/25/2019 Date Completed: 08/07/2019				Surface	Elevat	tion:	N/A	Borin	a No ·	MW-Cs		
Date C	Comple	ted: <u>08/07/</u>	2019		Northing	g (NAD	083):	N/A		9 110	<u>IVIVV-03</u>	
Drilling	Co.:	<u>Casca</u>	ide		Easting	(NAD8	33):	N/A	_ Client:	PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:		161 ft bgs	_ Project:	Final GV	V Remedy Ph	ase 1
Drill Ri	д Туре	: <u>Terras</u>	onic Track Mo	<u>ount</u>	Borehol	e Diam	neter:	10-12 inches	_ Location:	PG&E T	opock, Needle	es, California
Driller I	Name:	Dan C)' Mara		Depth to	First \	Water:	25.3 ft bgs	_			
Drilling	Asst:	<u>Jario F</u>	Pacheco		Samplin	g Meth	nod:	4 inch x 10 ft. Core Barrel	_ Project N	umber: <u>F</u>	RC000753.00	51
Logge		<u>Daniel</u>	Luneau		Samplin	•		Screen Intervals	_			
Editor:		<u>Sean I</u>	McGrane		Convert	ed to V	Vell:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
	0	No Sieve Samples Collected		Topock -	GM		(16.0 - (GM); pebble	17.6') Topock - Fluvial Deposits; Silty light gray (7.5 + F 7/1); medium graine is, angular to subangular; low plasticity	gravel with sa if to very large r, some angula	and —	(16.0 - 17.0') Rough drilling.	(0.0 - 146.0') No water used
17 18 19	128.4			Topock - Fluvial Deposits Topock -	ML		subano (17.6 - brown sand, a subano	gular; little silt; trace angular to subround 19.0') Topock - Fluvial Deposits; Sand / moderate brown(5YR 4/4); and fine to angular to subround; little medium to lagular to subround; trace clay; moist 20.1') Topock - Fluvial Deposits; Sand	nd; dry dy silt (ML); rec o coarse grain arge pebbles, dy silt (ML); da	ddish ned	(17.0 - 26.0') Drilled normally, sediments expanded in bags.	
 20				Fluvial Deposits	ML		graine	ish brown (10YR 3/6); low plasticity; so d sand, subangular to subround; little c	clay; trace grai	nules to		
Ahhre	viations	· 11808 - 1	Unified Soil Cl	accification	System	ft - fa	aat ha	s = helow around surface amo	al – abovo i	maan car	$a \log CW - a$	roundwater

9/-	ARC	ADI	S	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 2 of	9
	Date Started: 07/25/2019 Date Completed: 08/07/2019 Drilling Co.: Cascade				Surface			Boring No.	: MW-Cs		
	•					Northing	• `	•			
						Easting	•	,	Client: PG&E		
_				-			-	-	•	W Remedy Ph	
Drill Ri				nic Track Mo		Borehol			Location: PG&E	Topock, Needle	es, California
Driller I				<u>Mara</u>		•		Water: 25.3 ft bgs			
Drilling				acheco		Samplin	-		Project Number:	RC000753.005	<u> </u>
Logge						Samplin	-				
Editor:		<u>Sea</u>	an ivi	cGrane		Convert	ea to v	Vell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample		Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
 21					Topock - Alluvium Deposits	ML		small pebbles, subangular to subround; moist (20.1 - 21.5') Topock - Alluvium Deposits; San (ML); reddish brown / moderate brown(5YR 4/some fine to coarse grained sand, subangular clay; trace granules to small pebbles, subangular moist	4); no plasticity; to subround; little	(17.0 - 26.0') Drilled normally, sediments expanded in bags.	(0.0 - 146.0') No water used
22 23 	128.4				Topock - Alluvium Deposits	ML		(21.5 - 24.4') Topock - Alluvium Deposits; Silt v reddish brown / moderate brown(5YR 4/4); me very fine to fine grained sand, subangular to su moist	edium plasticity; little		
24 25								(24.4 - 36.0') Topock - Alluvium Deposits; San (ML); reddish brown / moderate brown(5YR 4/	dy silt with g <mark>ra</mark> vel 4); some granules		
25			-					to large pebbles, subangular to subround; som coarse grained sand, angular to subround; little	ne medium to		
27 28				MW-C-VAS- 26-31							
 29 30		No Sieve		(380 ppb) 6/19/2019 10:35	Topock -			(28.5'); moist			
31	132	Samples Collected	1		Alluvium Deposits	ML		70,		(31.0 - 36.0') Core bag	
32 33										melted 31 to 33.5 feet, core disturbed, 32 to 36 ft formation got tight.	
 34								(33.5'); dry to moist			
35 36								126 0 27 71) Tappale Allenders December 2011	roond (SM), dl-	(36.0 - 66.0')	
 37 					Topock - Alluvium Deposits	SM		(36.0 - 37.7') Topock - Alluvium Deposits; Silty brown (10YR 3/3); medium grained to coarse of to subround; and silt; little small pebbles, angumoist to wet	graineḋ, subangular ular to subround;	Normal drilling.	
38 39 _40	106.8				Topock - Alluvium Deposits	SM		(37.7 - 41.0') Topock - Alluvium Deposits; Silty dark grayish brown (10YR 3/2); coarse grained grained, subangular to subround; some silt; litt pebbles, angular to subround; trace large cobb trace clay; moist to wet	d to very coarse tle small to medium		

9/	4RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	g				Sheet:	3 of	9
	Started:				Surface			N/A		Во	rina N	lo.: M	IW-Cs	
	•	ted: <u>08/07</u> /			Northing			N/A						
Drilling		Casca			Easting	•	33):	N/A		Client				
_	Metho		Drilling		Total De	-	otori	161 ft bgs		Proje			Remedy Ph	
	ig Type Name:		sonic Track Mo D' Mara		Borehol			10-12 inche 25.3 ft bgs		Locai	ion: PG	& <u>⊏ 10pc</u>	ock, ineedie	es, California
Drilling			Pacheco		Samplin			-	ft. Core Barrel	 I Proie	ct Numb	er RC0)00753 00!	 51
Logge			l Luneau		Samplin	-		Screen Inte		1 10,0	ot i tairib	or. <u>1100</u>	700700.000	<i>7</i> 1
Editor			McGrane		Convert	-		× Yes						
	>		T	υ <u>Ε</u>										
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS			Soil Description	n			lling Notes	Drilling Fluid
 41				Topock - Alluvium Deposits	SM		(41.0	46 O'\ Tapaak	Allunium Dangaite	o: Silty cond (PM): roddia	Noi	36.0 - 66.0') rmal drilling.	(0.0 - 146.0') No water used
41424344454647485051535355565758	106.8	No Sieve Samples Collected	No Sample (Interval did not produce) 6/19/2019 14:15	Topock - Alluvium Deposits	SM		brown to subraction (43.5');	(5YR 4/3); med ound; some silt gular to subrour	Alluvium Deposits ium grained to coa;; trace small to me d; trace clay; wet	arse grained, edium pebble	subangulai			
59 														
1				161 41										

9/	ARC	ADIS	for natural and built assets		Во	ring Lo	g		Sh	eet: 4 of	9
	Started:					Elevation:	N/A	Borii	ng No.:	: MW-Cs	
	-	ted: <u>08/07/</u>				g (NAD83):	N/A	_			
Drilling		<u>Casca</u>				(NAD83):	N/A	_ Client:	PG&E	VV Damady Db	
	g Metho ig Type		Drilling sonic Track Mo		Total De	թրւո։ e Diameter։	161 ft bgs 10-12 inches	_ Project:		W Remedy Ph Topock, Needle	
	Name:		onic Track ivic O' Mara			e Diameter. o First Water:		_ Location	. FGaE	TOPOCK, Needle	25, Calliottila
Drilling			Pacheco		-	g Method:	4 inch x 10 ft. Core Barrel	Proiect N	Number:	RC000753.00	 51
Logge			Luneau			g Interval:	Screen Intervals	_ ,			
Editor		Sean I	McGrane		Convert	ed to Well:					
	y.			<u>5</u> P	(0 =	(0.12					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
	<u>«</u>	-		ω <u>Υ</u>						(36.0 - 66.0')	(0.0 - 146.0')
61										Normal drilling.	No water used
 62											
63			No					70			
 64			Sample (Interval did not produce) 6/25/2019								
			13:15				, (V)		1		
65								C			
66								W	2),	(66.0 - 126.0')	
67							AU) A			Normal Drilling.	
68			MW-C-VAS- 66-71 (<0.033 U								
_ 69_			ppb) 6/26/2019								
		No Sieve	10:44								
70	0	Samples Collected	i i		NR		400				
71											
 72	-			X							
 73	-										
75											
76											
77											
78											
79											
80_	٠,,.	11000	- I O II OI			<u> </u>	a - bolow ground surface am				

9/	AKC	ADIS	for natural and built assets		Во	ring Lo	g		She	et: 5 of	9
Date S						Elevation:	N/A	Borir	na No.:	MW-Cs	
	•	ted: <u>08/07/</u>				g (NAD83):	N/A				
Drilling		<u>Casca</u>				(NAD83):	N/A	_ Client:	PG&E	N D l - Dl-	4
Drilling			-		Total De		161 ft bgs	_ Project:		V Remedy Ph	
Drill Ri Driller			onic Track Mo ' Mara			e Diameter:	10-12 inches	_ Location	: PG&E I	opock, Needl	es, Calitornia
Drilling			acheco			o First Water: g Method:	4 inch x 10 ft. Core Barrel	— Project N	Jumber F	RC000753.00	 51
Logge			Luneau			g Interval:	Screen Intervals	_ 1 10,0001	turriber. <u>I</u>	10000100.00	J 1
Editor:			McGrane			ed to Well:		_			
	2			.º 5							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
	0	No Sieve Samples Collected	MW-C-VAS- 81-86 (<0.17 U ppb) 6/27/2019 10:58		NR					(66.0 - 126.0') Normal Drilling.	(0.0 - 146.0') No water used
99											

G Sample D Sample D Sample D Sample D G G G G G G G G G G G G G G G G G G	9/	ARC	ADIS	for natural and built assets		Во	ring Lo	g		She	et: 6 of	9
Date Completes DSU/12/13 Some Diffing Date Completes DSU/12/13 Some Diffing Date Completes Some Diffing Date Da	Date S	Started	07/25/2	2019		Surface	Elevation:	N/A	Borir	ua No .	MW-Cs	
Drilling Name: Drilling Asset	Date C	Comple	ted: <u>08/07/2</u>	2019		Northing	g (NAD83):	N/A		.g 110	11111 03	
Dill Fild Type: Daniel Lineau Depth to First West 25.3 ft bgs. Depth Dept												
Dan O Marae				•				•	-		•	
Dalling Asst									_ Location	: <u>PG&E 1</u>	opock, Needle	es, California
Description	l l								_ 		2000250 001	- 4
Editor: Sean McGrane Converted to Well: X yes No Sear									_ Project N	iumber: <u>i</u>	3C000753.00	01
Sevent S									_			
(96.0 - 126.01) (0.0 - 146.01) (0.			County				The state of the s					
Normal Delling No water us	Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic	USCS	USCS Class	Soil Description			-	Drilling Fluid
	-										Normal Drilling.	(0.0 - 146.0) No water used
	103							70	~(0			
	104										7	
	105							· Y ·				
	106	-							16	3		
	107							1				
	108							V.				
	5											
	109											
			No Cievo									
	110	0	Samples			NR						
		_	Collected					10				
	111_	1		•								
	112	-										
	113											
	_114											
	115											
MW-C-VAS- 117-122 (<0.17 U ppb) 6/28/2019	116											
MW-C-VAS- 117-122 (<0.17 U ppb) 6/28/2019												
117-122 (<0.17 U ppb) 6/28/2019	117_											
117-122 (<0.17 U ppb) 6/28/2019	110	-		MW-C-VAS-								
119_	118_			117-122								
	119			` ppb)								
51 												
120	120											

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	eet: 7 of	9
Date S			2019	_		Elevation:	N/A	Borir	na No.:	MW-Cs	
	-	ted: <u>08/07/</u>				g (NAD83):	N/A	_	_		
Drilling		<u>Casca</u>			_	(NAD83):	N/A	_ Client:	PG&E		
Drilling			-		Total De	-	161 ft bgs	_ Project:		W Remedy Ph	
Drill Ri			onic Track Mo	<u>ount</u>		e Diameter:	<u>10-12 inches</u>	_ Location	: <u>PG&E 7</u>	<u> Topock, Needle</u>	es, California
Driller			' Mara		-		: 25.3 ft bgs	_			
Drilling			Pacheco			g Method:	4 inch x 10 ft. Core Barrel	_ Project N	lumber: I	RC000753.005	<u>51</u>
Logge			Luneau		-	g Interval:	Screen Intervals	<u> </u>			
Editor:		Sean N	McGrane		Convert	ed to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
	0	No Sieve Samples Collected	MW-C-VAS- 117-122 (<0.17 U ppb) 6/28/2019 14:59		NR					(126.0 - 136.0') Normal Drilling.	(0.0 - 146.0') No water used
136	117.6			Topock - Alluvium Deposits	 ML	reddi medi large	0 - 138.0') Topock - Alluvium Deposits; sh brown / moderate brown(5YR 4/4); l um grained sand, subangular to subrou pebbles, subangular; little clay; moist	ow plasticity; ind; little medi	some um to	(136.0 - 146.0') Rough Drilling.	
139				Topock - Alluvium Deposits	SM	(SM); medi	0 - 144.0') Topock - Alluvium Deposits; reddish brown / moderate brown(5YR ım grained, subangular to subround; sc ge pebbles, subangular to subround; lit	4/4); fine grain ome silt; little	ned to medium		

9/	4RC	ADIS	Design & Consultancy for natural and built assets		Bo	ring	Log	Sh	eet: 8 of	9
Date S	Started	07/25/2	2019		Surface	Elevati	on: <u>N/A</u>	Boring No.	: MW-Cs	
		ted: <u>08/07/</u> 2	2019		Northing	g (NAD	83): <u>N/A</u>		. <u>iii. 17 GG</u>	
Drilling	-	Casca			Easting		•	Client: PG&E		
_	g Metho		•		Total De	-	<u>161 ft bgs</u>	•	W Remedy Ph	
	ig Type		onic Track Mo		Borehol			Location: PG&E	Topock, Needle	es, California
	Name:				-		Vater: 25.3 ft bgs	Dusis et Number	DC0007E2 00/	- 4
Drilling			acheco Luneau		Samplin Samplin	•		Project Number:	RC000753.003	01
Logge Editor:			<u>IcGrane</u>		Convert	•		-		
Laitor		<u>ocan n</u>					761. 165 170			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid (0.0 - 146.0')
141 142 143 	117.6			Topock - Alluvium Deposits	SM				Rough Drilling.	No water used
_144	-						(144.0 - 146.0') Topock - Alluvium Deposits; S	Sandy silt with gravel		
				Topock -			(ML); dark yellowish brown (10YR 4/4); some grained sand, subangular to subround; little m	fine to medium		
145	-			Alluvium	ML		pebbles, subangular; little clay; dry	nedium to large		
	-			Deposits				16		
146							(146.0 - 150.0') Topock - Alluvium Deposits; S	Sandy silt (ML):	(146.0 - 161.0')	(146.0 - 161.0')
147	_						reddish brown / moderate brown(5YR 4/4); so coarse grained sand, subangular to subround small to medium pebbles; wet	ome medium to	Rough drilling, used water to flush casing prior to well	1430 gallons of water used; 75 gallons of water recovered;
148_				Topock - Alluvium Deposits	ML		(148.5'); moist to wet	•	installation.	1355 gallons of water lost
149	-		MW-C-VAS- 147-152				(148.5), moist to wet			
-	-	No Sieve	(<0.17 U ppb)							
150	1	Samples Collected	6/29/2019 13:58				(150.0 - 161.0') Topock - Alluvium Deposits; F	Poorly graded sand		
	-	Collected					with silt and gravel (SP-SM); reddish brown / brown(5YR 4/4); coarse grained, subangular	moderate		
151	-						granules to large pebbles, angular to subangular, moist to wet	ular; little silt; trace		
450	-			X			oldy, molectic met			
152	1									
153	1									
	189.6									
154										
155				Topock - Alluvium	SP-SM					
<u> </u>				Deposits	0.00					
156										
_157	-									
	-									
158	-									
	-									
159	-									
160_				L		<u> 1 1111</u>			1	_

9/	4RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	9		She	eet: 9 of	9
l l	Started: Comple	07/25/2 ted: <u>08/07/2</u>			Surface Northing			N/A N/A	Borin	g No.:	MW-Cs	
Drilling		Cascac			Easting			N/A	Client:	PG&E		
	g Metho						O).	161 ft bgs	Project:		N Remedy Ph	000 1
					Total De							
	ig Type		onic Track Mo	ount	Borehol			<u>10-12 inches</u>	Location:	PG&E	Fopock, Needle	es, California
	Name:	Dan O'			-			25.3 ft bgs				
Drilling	g Asst:	<u>Jario Pa</u>	acheco		Samplin	ig Meth	od:	4 inch x 10 ft. Core Barrel	Project N	umber: 1	RC000753.005	51
Logge	er:	<u>Daniel I</u>	Luneau		Samplin	g Inter	val:	Screen Intervals				
Editor:		Sean M	<u>//IcGrane</u>		Convert	ed to W	Vell:	Yes □ No				
										Т		
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS		Soil Description			Drilling Notes	Drilling Fluid
161	189.6	No Sieve Samples Collected		Topock - Alluvium Deposits	SP-SM			End of Boring at 161.0 'bgs				
								End of Borning at 101.0 bgs	"			
162	1											
163	-							100	10			
164	_									. A	9	
165												
166	1								11			
<u> </u>	1											
167												
							* . '					
168	1											
100	1											
	1							· ·				
169	-											
	1											
170	1											
171												
	1											
	1						4					
172	†											
<u>-</u>	1						B,	7				
173	-											
<u> </u>	-											
174												
-												
175	1											
175	1											
	1											
176	1											
	-											
177												
-												
470	1											
178	†											
<u> </u>	1											
179	1											
<u> </u>												
180												
		11000		.c	0 1	· ·		a - bolow ground ourfood amo			1 1 0)4/	

			OIS Design for nat built a	tural and ssets		-		h Boring Log			
oate Sta			09/20/2019		Sui	rface l	Elevat	on: <u>N/A</u>	Boring No.	: MW-S	
ate Cor	mplete	d:	09/24/2019)	No	rthing	(NAD	83): <u>N/A</u>		<u> </u>	
illing C	Co.:		Cascade		Eas	sting (NAD	3): <u>N/A</u>	Client: PG&E		
illing M	/lethod:	: :	Sonic Drillir	ng	Tot	tal De _l	oth:	117.1 ft bgs	Project: Final G	W Remedy Ph	ase 1
ill Rig ⁻	Туре:		Prosonic T	ruck Mount	Boı	rehole	Diam	eter: <u>10-12 inches</u>	Location: PG&E	Topock, Needl	es, Californ
iller Na	ame:		Steve Vaso	uez	De _l	pth to	First \	Vater: 89.14 ft bgs	Project Number:	RC000753.00	51
illing A	Asst:		L. Amaya /	O. Floures	Sar	mpling	Meth	od: Split spoon, Cal Mod	-	Auto Hammer	
gger:			Sean McGı		 Sar				Hammer Weight:		
ditor:			Chris Bone			nverte			•	30 inches	
	0					T				90	
(ft) Blow Count	[N Value]	(in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	SOSO	USCS Class	Soil Description		Drilling Notes	Drilling Flui
- 1 _ - 2 _ - 3 _			MW-S-SG- 0.0-5.0 9/20/2019 10:40		Topock - Fluvial Deposits	SM		(0.0 - 3.0') Topock - Fluvial Deposits; Silty sar brown (7.5YR 4/3); very fine grained to very cangular to subround; some granules to very late subangular; little silt; trace small cobbles, a subangular; trace clay; trace mica; well grade staining; 25,55,20 logged from hand auger cu water added for hand augering	parse grained, arge pebbles, angular angular to ed; dry; no odor; no	(0.0 - 3.0') Hand augered for utility clearance, refusal at 3.0 ft.	
'		24	10.40		Topock - Fluvial Deposits	sw		(3.0 - 4.3') Topock - Fluvial Deposits; Well gravel (SW); brown (7.5YR 5/3); very fine grained, angular to subround; some granules pebbles, angular to subround; trace large cob	ined to very coarse to very large	(3)	
]]]		24			Topock - Fluvial	SW		peppies, angular to subround, trace large contrace silt; trace clay, trace mica; well graded; staining; 25,70,5, moisture due to water adde (4.3 - 5.0') Topock - Fluvial Deposits; Well graders and the contract of the contr	wet; no odor; no d for hand augering	(4.0 - 5.0') Hard drilling	
	-25/3	6	MW-S-SP- 5.0-5.6		Deposits Topock -	sw		gravel (SW); reddish brown(2.5YR 5/3); very f	fine grained to		(5.0') 2 gallo
`	1/0.25')		9/20/2019		Fluvial Deposits	 		granules, angular to subangular; and small to angular to subangular; trace small cobbles, so			of water use
· -			\11:10/		_ Бороско	NR	8000	trace clay; coarser clasts composed of metad			recovered;
4	-				Topock -	CVV		dry; no odor; no staining; 45,50,5 (5.0 - 5.6') Topock - Fluvial Deposits; Well gra	aded sand with		gallons of wa
+		6	MW-S-CM-		Fluvial	SW	* <u>****</u>	gravel (SW); weak red (2.5YR 5/2); very fine of	grained to granules,		2 gallons us
	28-30 58)	12	7.0-7.5 9/20/2019 11:38		Deposits Topock - Fluvial	SW		angular to subround; little small to very large subangular; trace silt; trace clay; well graded; odor; no staining; 15,80,5	dry; very loose; no		2 gallons 2 gallons recovered; gallons los
	,		MW-S-CM- 7.5-8.0		<u>Deposits</u>	NR		(5.6 - 6.5') No recovery (NR); very loose; split (6.5 - 7.0') Topock - Fluvial Deposits; Well gra			galloris los
'-			9/20/2019 11:34					gravel (SW); (GLEY1 5/4); very fine grained to subangular; and small to very large pebbles subangular; trace small cobbles, subangular; clasts composed of metadiorite; dry; no odor;	o granules, angular s, angular to trace silt; coarser	(8.5 - 12.0') Rough drilling	
0_		42			Topock - Alluvium Deposits	SW		(7.0 - 8.0') Topock - Fluvial Deposits; Well gragravel (SW); weak red (2.5YR 5/2); very fine gangular to subround; little small to very large subangular; trace silt; trace clay; well graded; dense; no odor; no staining; 20,75,5	grained to granules, pebbles, angular to		
2								(8.0 - 8.5') No recovery (NR); missing from sa (8.5 - 12.0') Topock - Alluvium Deposits; Well gravel (SW); brown (10YR 4/3) and reddish g	graded sand with ray(2.5YR 5/1); very		(40.0) 0
	35-30 65)	4.4	MW-S-SP- 12.0-13.2 9/20/2019 13:59		Topock - Alluvium Deposits	sw		fine grained to granules, angular to subangula large pebbles, angular to subangular; little sm to subangular; trace boulders, subround; trace composed of metadiorite; dry; no odor; lensed	nall cobbles, angular e silt, coarser clasts		(12.0') 2 gallo of water used gallons of wa recovered;
4_					Topock - Allu <mark>viu</mark> m Deposits	NR_		45,50,5 (12.0 - 13.2') Topock - Alluvium Deposits; We gravel (SW); grayish brown (10YR 5/2); very f granules, angular to subround; little small to la	ine grained to	(13.5 - 17.0') Rough drilling	gallons of wa
5_		42			Topock - Alluvium Deposits	SW- SM		angular to subangular; trace silt; trace clay; tr graded; dry; very dense; no odor; 20,75,5 (13.2 - 13.5') Topock - Alluvium Deposits; No slough from casing advancement (13.5 - 16.3') Topock - Alluvium Deposits; We	recovery (NR);		
7	50/4	4.0	MW-S-CM-		Topock - Alluvium Deposits	SM		silt and gravel (SW-SM); dark reddish gray(2. red (2.5YR 5/2); very fine grained to granules, and small to very large pebbles, angular to su trace small cobbles, subangular to subround;	5YR 4/1) and weak , angular to round; lbround; little silt; trace clay; coarser	(17.0 - 18.5')	2 gallona ua
	1/0.35')/	4.8	17.0-17.4 9/20/2019 14:31		Topock - Alluvium Deposits Topock - Alluvium	NR		clasts composed of metadiorite; 40,50,10, col gabbro (16.3 - 17.0') Topock - Alluvium Deposits; Silt (SM); weak red (2.5YR 5/2); very fine grained to subround; some silt; little small to very larg	y sand with gravel to granules, angular e pebbles, angular to	Poor recovery sample maybe slough	2 gallons us 2 gallons recovered; gallons los
9 _		42			Topock - Alluvium Deposits	sw		subangular; trace small cobbles, angular; trac clasts composed of metadiorite; well graded; staining; 20,55,25, some silt content maybe repulverized cobbles and boulders (17.0 - 17.2') Topock - Alluvium Deposits; Silt	dry; no odor; no ock flour from	(18.5 - 22.0') Rough drilling	
	ations:	US	CS = Unifie	ed Soil Class	ification Sv	/stem	ft = fe	et, bgs = below ground surface, ams		ea level, GW =	aroundwate
bbrevia	สแบบเธ.	-									

ARC	Άl	DIS Design for nate built as	a & Consultancy cural and ssets	(Ged	otec	:hB	oring Log	S	heet: 2 of	6
Date Started:		09/20/2019)	Sui	face E	Elevati	ion:	N/A	Boring No	· MW-S	
Date Complete	ed:	09/24/2019)	No	rthing	(NAD	83):	N/A	_ Borning ive	<u>IVIVV-O</u>	
Drilling Co.:		Cascade		Eas	sting (l	NAD8	3):	N/A	Client: PG&E	Ī	
Drilling Method	d:	Sonic Drillin	ng	Tot	al Dep	oth:		117.1 ft bgs	Project: <u>Final (</u>	GW Remedy Ph	ase 1
Drill Rig Type:		Prosonic Tr	ruck Mount	Воі	rehole	Diam	eter:	<u>10-12 inches</u>	Location: <u>PG&E</u>	Topock, Needle	es, California
Driller Name:		Steve Vasq		-				89.14 ft bgs			
Drilling Asst:		L. Amaya /			mpling			Split spoon, Cal Mod	• •		
Logger:		Sean McGr			mpling			Continuous	•		
Editor:		Chris Bone	ssi	Co	nverte	d to V	Vell:		Hammer Drop:	30 inches	
Depth (ft) (Blow Counts [N Value]	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description		Drilling Notes	Drilling Fluid
	42			Topock - Alluvium Deposits	SW	00000	l angula I subang	ark gray / olive gray(5Y 4/1); very fir to subround; little small to medium ular; little silt; trace clay; trace mica no odor; no staining; 20,65,15	pebbles, angular to	(18.5 - 22.0') Rough drilling	
				Topock - Alluvium Deposits	SW- SM		0.3 ft o	18.5') Topock - Alluvium Deposits; I spoon was slough.			
50/6	6	MW-S-SP- 22.0-22.5 9/20/2019		Topock - Alluvium Deposits	SM		gravel (subang	21.0') Topock - Alluvium Deposits; \ SW); weak red (2.5YR 5/2); very fin ular to subround; some small to ver	e grained to granules, y large pebbles,	(22.0 - 23.5') Poor recovery	
23		14:59		Deposits_	NR	X	coarse	to subangular; trace small cobbles clasts composed of metadiorite; dr g; 30,65,5			
24							55, 5, c (21.0 -	and small to very large pebbles, an ecrease in sand 22.0') Topock - Alluvium Deposits; I	Well graded sand with	(23.5 - 27.0') Rough drilling	
25	42			Topock - Alluvium Deposits	GM		silt and granule angula	gravel (SW-SM); olive gray (5Y 4/2 s, angular to subround; some small to subangular; little silt; trace smal); very fine grained to to very large pebbles, I cobbles, subangular;		
 _26 _							metadi	oulders, subangular; coar <mark>ser</mark> clasts orite; dry; no <mark>odor;</mark> no staining; 35,69 om pulver <mark>ized cobble</mark> s and boulders	5,10, some silt rock		
				Topock - Alluvium	SM		(SM); g	22.5') To <mark>pock - Alluviu</mark> m Deposits; \$ ray (2.5Y 5/1); very fine grained to g nd; little small to large pebbles, ang	ranules, angular to		
50/4	4.8	MW-S-CM- 27.0-27.4		Deposits Topock -	SM		silt; tra	ce clay; trace mica; well graded; mo ;; no staining; 15, 70,15, seams of s	ist to dry; very dense;	(27.0 - 28.5')	(27.0') 2 gallons
((null/0.35')/ 28		9/20/2019		Alluvium Deposits	NR		(22.5 -	23.5') No recovery (NR); split spoon 26.3') Topock - Alluvium Deposits;	refusal Silty gravel with sand	Poor recovery sample may have slough in it	of water used; 2 gallons of water recovered; 0 gallons of water
_ 29 _		-					angular sand, a	rayish brown (2.5Y 5/2); granules to to subangular; some very fine to ve ngular to subround; some silt; trace ngular; coarse <mark>r cl</mark> asts composed of	ery coarse grained small cobbles, angular	(28.5 - 32.0') Rough drilling	lost
30	40			Topock -	CM		odor; n (26.3 -	r clast compose <mark>d o</mark> f conglomerate; vo o staining; 35,25,30 27.0') Topock - Alluvium Deposits; \$	Silty sand with gravel		
_ 31 _	42			Alluvium Deposits	SM		angula subang	rayish brown (2.5Y 5/2); very fine gr to round; some small to very large ular; little silt; coarser clasts compo dry; no odor; no staining; 30,55,15	pebbles, angular to		
32		MAY C CD		Topock -			(27.0 - (SM): d	27.4') Topock - Alluvium Deposits; strayish brown (2.5Y 5/2); very fine groot subround; little small to large pe	ained to granules.	(00.000.51)	(00.01) 0 11
50/5 (null/0.40')/ _33 _	4.8	MW-S-SP- 32.0-32.4 9/20/2019 16:17		Alluvium Deposits	SM		subang no staii	ular; little silt; trace clay; dry to mois ning; 20,60,20 28.5') No recovery (NR); Cal Mod re	st; very dense; no odor;	(32.0 - 33.5') Poor recovery top 0.2 ft slough	(32.0') 2 gallons of water used; 2 gallons of water recovered; 0
							(28.5 - (SM); b	32.0') Topock - Alluvium Deposits; s rown (10YR 5/3); very fine grained t	Silty sand with gravel o granules, angular to	(33.5 - 37.0')	gallons of water lost
34 				Topock - Alluvium	SM		graded (31'); li	nd; some silt; coarser clasts compo dry; no odor; 25,40,35 tle silt; trace small cobbles, angular		Normal Drilling	
_35 _	42			Deposits			(32.0 - (SM): d	nd pebbles 32.4') Topock - Alluvium Deposits; \$ rayish brown (2.5Y 5/2); very fine gr	ained to granules.		
_36 _				Topock - Alluvium Deposits	sw		subang dense;	to subround; little small to large pe ular; little silt; trace clay; well grade no odor; no staining; 20,65,15	d; dry to moist; very		
37	8.4	MW-S-CM-		Topock - Alluvium Deposits	SM		(33.5 -	33.5') No recovery (NR); split spoon 35.5') Topock - Alluvium Deposits; s rown (7.5YR 5/3); very fine grained	Silty sand with gravel	(37.0 - 38.5')	(37.0') 2 gallons
(<u>null/0.40')</u> / _38 _	0.4	37.0-37.5 9/21/2019 09:12		Topock - Alluvium Deposits	SIVI NR		subrou subang	nd; some small to very large pebble ular; little silt; trace small cobbles, s clast composed of conglomerate; of	s, angular to subangular; trace		of water used; 2 gallons of water recovered; 0
				Topock - Alluvium			compo: 35,45,2	sed of metadiorite; well graded; dry; 0	no odor; no staining;	to 2 inches of slough in	gallons of water lost
_ 39	102			Topock - Alluvium Deposits	ML		gravel (granule	36.5') Topock - Alluvium Deposits; \ SW); grayish brown (10YR 5/2); ver s, angular to subround; little small to to subangular; trace silt; coarser cl	ry fine grained to o very large pebbles,	(38.5 - 46.5') Rough drilling	
	US	CS = Unifie	ed Soil Class	sification Sv	/stem.	ft = fe	et. ba	s = below ground surface, ar	nsl = above mean s	sea level. GW =	roundwater.

pb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval

ARC	ADIS Design for nat built a	tural and essets		Geote	ch B	oring Log	S	heet: 3 of	6
Date Started:	09/20/2019			face Eleva	tion:	N/A	Boring No	· MW-S	
Date Complete	d: <u>09/24/2019</u>)	Nor	thing (NAI	D83):	N/A			
Drilling Co.:	<u>Cascade</u>			sting (NAD	83):		Client: PG&E		
Drilling Method		ng				•	•	GW Remedy Ph	
Drill Rig Type:		ruck Mount		ehole Diar			Location: PG&E	-	
Driller Name:	Steve Vaso	•	-			-	Project Number:		
Drilling Asst:	•	O. Floures		npling Met		Split spoon, Cal Mod	• •		
Logger: Editor:	Chris Bone	rane ssi		npling inte			Hammer Weight Hammer Drop:		
	Cilis Boile			Iverted to	VVCII.		Tiammer Drop.	<u>50 inches</u>	
Depth (ft) (ft) Blow Counts [N Value]	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code USCS Class		Soil Description		Drilling Notes	Drilling Fluid
41 _ _ 42 _ _ 42 _ _ 43 _	102		Topock - Alluvium Deposits	ML	(36.5 - (SM); bandle angular trace of compo 30,45; (SM); bandle subang lander (37.4 - (ML); of (ML); of (ML); of (ML); of (SM); bandle angular trace of (SM)	37.4') Topock - Alluvium Deposits; Silty brown (10YR 5/3); very fine grained to gind; some small to very large pebbles, a gular; little silt; coarser clasts composed; moist; very dense; no odor; no staining 38.5') Topock - Alluvium Deposits; No	very coarse grained, obles, angular to gular to subangular; e; coarser clasts odor; no staining; v sand with gravel ranules, angular to ingular to d of metadiorite; well g; 25,55,20 recovery (NR); Cal dy silt with gravel m(10YR 4/2); low	(38.5 - 46.5') Rough drilling	
46 47	4.8 MW-S-SP- 47.0-47.4 9/21/2019 09:57		Topock - Alluvium Deposits Topock - Alluvium Deposits	SM SM	suband to subricompo (44') bi (44.5 - (SM); c subrous suband trace cono odo (46.5')	gular; some very fine to very coarse grai round; trace small cobbles, angular; coa sed of metadiorite; dry; no odor; no stai rown (7.5YR 5/3) 47.0') Topock - Alluvium Deposits; Silty gray (2.5Y 5/1); very fine grained to gran ind; some small to very large pebbles, a gular; little silt; coarser clasts composed obarser clast composed of conglomerate r; no staining; 30,55,15 grayish brown (10YR 5/2)	ned sand, angular arser clasts ning; 30,30,40 y sand with gravelules, angular to a for metadiorite; well graded; dry;	(46.5 - 47.0') Very hard drilling (47.0 - 48.5') Split spoon refusal, 2 inches of	(47.0') 2 gallons of water used; 2 gallons of water recovered; 0 gallons of water
49			Topock - Alluvium Deposits	SM :	∵ (SM); g ∵ angula ∷ subang	47.4') Topock - Alluvium Deposits; Silty grayish brown (10 YR 5/2); very fine grair r to subround; some small to large pebl gular; some silt; trace clay; well graded; no odor; no staining; 25,45,30, silt nod	ned to granules, ples, angular to moist to dry; very	slough in spoon not sampled. (48.5 - 57.0') Hard drilling,	lost
_50 _ _51 _ _52 _ _53 _	102		Topock - Alluvium Deposits	SM	(47.4 - (48.5 - (SM); quangular subanque metadi (49.5 - (SM); ruto gran angular angular subanque metadi (49.5 - (SM); ruto gran subanque metad	48.5') No recovery (NR); split spoon ref 49.5') Topock - Alluvium Deposits; Silty grayish brown (10YR 5/2); very fine grain to round; some small to very large peb gullar; little silt; trace clay, coarser clasts orite; well graded; dry; no odor; no stain 53.0') Topock - Alluvium Deposits; Silty eddish brown / moderate brown(5YR 4/ uules, angular to round; some small to v r to subangular; little silt; trace clay; trace sed of conglomerate; coarser clasts co	vsal vith gravel and to granules, obles, angular to composed of sing; 30,50,20 vsand with gravel 4); very fine grained ery large pebbles, se coarser clast	core moist to dry and hot	
			Topock - Alluvium	SM	(53.0 - (SM); to subrou subanç trace c	iorite; well graded; dry; no odor; no stair 57.0') Topock - Alluvium Deposits; Silty brown (7.5YR 5/3); very fine grained to gind; some small to very large pebbles, a gular; some silt; trace small cobbles, an loarser clast composed of conglomerate sed of metadiorite; well graded; dry; no	y sand with gravel granules, angular to ingular to gular; trace clay; e; coarser clasts		
_ 56			Deposits		35,40,2 (55.8') cobble	25 brown (7.5YR 4/3); little silt; 35,50,15, il s	ncrease in sand, no		
50/5 (null/0.40')/ _ 58 _	6 MW-S-CM- 57.0-57.5 9/21/2019 10:39		Topock - Alluvium Deposits	SM NR	(SM); k suband little sil		ranules, angular to ar to subangular; no staining;	(57.0 - 58.5') Poor recovery, top 2 to 3 inchs of sample is slough	(57.0') 2 gallons of water used; 2 gallons of water recovered; 0 gallons of water
_59 _	102		Topock - Alluvium Deposits	SM	(58.5 - (SM); b to gran	58.5') No recovery (NR); Cal Mod refus 62.0') Topock - Alluvium Deposits; Silty brown (7.5YR 5/3) with brown (10YR 5/3) ules, angular to subround; some small s, angular to subangular; little silt; trace	v sand with gravel 3); very fine grained to very large		lost
	USCS = Unifie	ed Soil Class	ification Sy	stem, ft =	feet, bg	s = below ground surface, amsl	l = above mean s	ea level, GW =	groundwater,

ARC	A	DIS for natibuilt a	tural and essets		Ged	otec	ch Boring Log	Sh	neet: 4 of	6
Date Started	:	09/20/2019)	Su	ırface l	Elevat	ion: <u>N/A</u>	Boring No.	: MW-S	
Date Comple	eted:	09/24/2019			orthing	(NAD	•			
Drilling Co.:		Cascade			ısting (•	Client: PG&E		
Drilling Meth			ng				<u>117.1 ft bgs</u>	•	•	
Drill Rig Type			ruck Mount		rehole					
Driller Name		Steve Vaso	•		-		Water: 89.14 ft bgs	Project Number:		51
Drilling Asst:		•	O. Floures		mpling	-		• •		
Logger:		Sean McG			mpling	-		Hammer Weight		
Editor:		Chris Bone	ssi	Co	nverte	ed to V	Vell: ⊠ Yes □ No	Hammer Drop:	30 inches	
Depth (ft) Blow Counts [N Value]	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
61				Topock - Alluvium Deposits	SM		subangular; trace clay; coarser clasts compos well graded; dry; no odor; no staining; 35,45,2 (61') grayish brown (2.5Y 5/2); some silt; 30,4 pebbles, no cobbles	20 5,25, de <mark>cre</mark> ase	(58.5 - 67.0') Hard drilling, hole stayed open running split spoon without casing to 67.	
	102			Topock - Alluvium Deposits	SW- SM		(62.0 - 64.5') Topock - Alluvium Deposits; We silt and gravel (SW-SM); brown (7.5YR 5/4); yranules, angular to subround; some small to angular to subangular; little silt; trace small or trace clay, trace coarser clast composed of collasts composed of metadiorite; well graded; staining; 35,55,10	very fine grained to very large pebbles, obbles, angular; onglomerate; coarser	9	
65 66				Topock - Alluvium Deposits	SM		(64.5 - 67.0') Topock - Alluvium Deposits; Silt (SM); brown (7.5YR 5/3); very fine grained to subround; some small to very large pebbles, a subangular; little silt; trace small cobbles, and coarser clasts composed of metadiorite; well no staining; 35,45,20	granules, angular to angular to gular; trace clay;		
50/6	6	MW-S-SP- 67.0-67.5 9/21/2019 12:53		Topock - Alluvium Deposits	SM		(67.0 - 67.5') Topock - Alluvium Deposits; Silt (SM); dark yellowish brown (10YR 4/4); very fi granules, angular to subround; some small to angular to subangular; some silt; well graded lodor; no staining; 25,45,30, potential slough	ne grained to very large pebbles, dry; very dense; no	(67.0 - 68.5') Spilt spoon refusal, most of sample most likely slough.	(67.0') 2 gallons of water used; 2 gallons of water recovered; 0 gallons of water lost
_ 69 _ _ 70 _				Topock - Alluvium Deposits	GM		(67.5 - 68.5') No recovery (NR); split spoon re (68.5 - 69.0') Topock - Alluvium Deposits; Silt (GM); grayish brown (2.5Y 5/2); granules to wangular to subangular; some very fine to very sand, angular to subround; some silt; trace srangular; trace clay; well graded; moist to dry;	y gravel with sand ery large pebbles, coarse grained mall to large cobbles,	(68.5 - 77.0') Formation tight, lost bottom 1.5 ft of core	iosi
 _71 _ _72 _				Alluvium Deposits	SM		[40,35,25] (69.0 - 72.0') Topock - Alluvium Deposits; Silt (SM); dark yellowish brown (10YR 4/4); very figranules, angular to subround; some small to angular to subangular; some silt; trace clay; to composed of conglomerate; coarser clasts composed.	ine grained to very large pebbles, race coarser clast omposed of		
	84			Topock - Alluvium Deposits	SM		metadiorite; well graded; dry to moist; no odol 35,40,25 (70.5°); little silt; 35,45,20, increase in sand (72.0 - 74.0°) Topock - Alluvium Deposits; Silt (SM); yellowish brown / moderate yellowish brine grained to granules, angular to subround; large pebbles, angular to subround; little silt; if	ry sand with gravel rown(10YR 5/4); very ; and small to very trace clay; coarser		
_ 75 _				Topock - Alluvium Deposits	SM		clasts composed of metadiorite; well graded; odor; no staining; 40,45,15, lithology has rock pebbles (74.0 - 75.5") Topock - Alluvium Deposits; Silt (SM); brown (7.5YR 5/4); very fine grained to subround; some small to very large pebbles,	flour from pulverized y sand with gravel granules, angular to		
_76 _ 	6			Topock -	NR		subangular; little silt; trace small cobbles, and clast composed of conglomerate; well graded odor; no staining; 35,45,20 (75.5 - 77.0') No recovery (NR); see drilling no	; moist to dry; no otes	(77.0 79.51)	(77.01) 2 gallana
				Alluvium Deposits	SM NR		(77.0 - 77.5') Topock - Alluvium Deposits; Silt (SM); dark yellowish brown (10YR 4/4); very fi granules, angular to subround; some small angular to subangular; some silt; coarser clast metadiorite; trace mica; well graded; moist; will no staining; 25,45,30	ine grained to very large pebbles, sts composed of	(77.0 - 78.5') Cal Mod refusal, top 0.3 ft of sample most likely slough	(77.0') 2 gallons of water used; 2 gallons of water recovered; 0 gallons of water lost
_79 _ 80	102			Topock - Alluvium Deposits	SM		(77.5 - 78.5") No recovery (NR); Cal Mod refus (78.5 - 83.5") Topock - Alluvium Deposits; Silt (SM); brown (7.5YR 5/4); very fine grained to subround; little silt; trace clay; well graded; m	y sand with gravel granules, angular to	(78.5 - 87.0') Normal drilling	1031
	s: US	SCS = Unifie	ed Soil Class	sification S	vstem.	ft = fe	eet, bgs = below ground surface, ams	sl = above mean s	ea level, GW = o	groundwater,

ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval

ARC	Άl	DIS Design for nate built as	n & Consultancy tural and ssets		Ged	otec	h Boring Log	St	neet: 5 of	6
Date Started:		09/20/2019)	Sur	face I	Elevati	on: <u>N/A</u>	Boring No.	· MW-S	
Date Complet	ed:	09/24/2019)	Noı	rthing	(NAD	83): <u>N/A</u>	Borning No.	. <u>IVIVV-5</u>	
Drilling Co.:		Cascade		Eas	sting (NAD8	3): <u>N/A</u>	Client: PG&E		
Drilling Metho	d:	Sonic Drillin	ng	Tot	al Dep	oth:	117.1 ft bgs	Project: Final C	SW Remedy Pha	ase 1
Drill Rig Type:		Prosonic Tr	ruck Mount	Bor	ehole	Diam	eter: 10-12 inches	Location: PG&E	Topock, Needle	es, California
Driller Name:		Steve Vasq	uez	Dep	oth to	First V	Vater: 89.14 ft bgs	Project Number:	RC000753.005	51
Drilling Asst:		L. Amaya /	O. Floures	Sar	mpling	Meth	od: <u>Split spoon, Cal Mod</u>	Hammer Type:	Auto Hammer	
Logger:		Sean McGr	rane			Inter		Hammer Weight		
Editor:		Chris Bone	ssi	Coı	nverte	d to V	/ell: ⊠ Yes ☐ No	Hammer Drop:	30 inches	
Depth (ft) Slow Counts [N Value]	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
	102			Topock - Alluvium Deposits	SM		(83.5 - 87.0') Topock - Alluvium Deposits; San (ML); brown (10YR 5/3); some very fine to very sand, angular to subangular; little clay; moist to dry; 20,35,45	y coarse grained ery large pebbles,	(78.5 - 87.0') Normal drilling	
	4.8	MW-S-SP- - 87.0-87.4 9/21/2019 15:17		Topock - Alluvium Deposits	SM_NR		(87.0 - 87.4') Topock - Alluvium Deposits; Silty (SM); brown (7.5YR 5/4); very fine grained to subround; some small to large pebbles, angulittle silt; trace clay; coarser clasts composed	granules, angular to ar to subangular;	(87.0 - 88.5') Spilt spoon refusal	
				Topock - Alluvium Deposits	SM		graded; moist; very dense; no odor; no stainin; (87.4 - 88.5') No recovery (NR) (88.5 - 92.0') Topock - Alluvium Deposits; Silty (SM); brown (7.5YR 5/3); very fine grained to g subround; some small to very large pebbles, a some silt; little clay; trace small cobbles, angu coarser clasts composed of metadiorite; well godor; no staining; 25,40,35 (89.7'); dry (90'); moist	g; 25,60,15 // / y sand with gravel granules, angular to angular to subround; alar to subround;	(88.5 - 97.0') Normal drilling (89.0') Approximate depth to water table	
_ 92 _ _ 93 _ _ 94 _	102		MW-S- VAS-92-97	Topock - Alluvium Deposits	ML		(92.0 - 94.5') Topock - Alluvium Deposits; San (ML); brown (7.5YR 5/2); low plasticity; some vecarse grained sand, angular to subround; littl cobbles, angular to subangular; coarser clasts metadiorite; moist to wet; 25,35,40	granules to very ery fine to very le clay; trace small		
_ 95 _ _ 96 _ 			(26 ppb) 9/22/2019 10:14	Topock - Alluvium Deposits	SM		(94.5 - 97.0') Topock - Alluvium Deposits; Silty (SM); brown (7.5YR 5/3); very fine grained to g subround; some small to very large pebbles, a subangular; little silt; trace clay; coarser clasts metadiorite; well graded; wet; no odor; no stair (96'); little clay; 25,40,35, decrease in sand	granules, angular to angular to s composed of		
97 25-50/2 98 	12	MW-S-CM- 97.0-97.5 9/22/2019 11:29 MW-S-CM- 97.5-98.0		Topock - Alluvium Deposits	ML 		(97.0 - 98.0') Topock - Alluvium Deposits; San (ML); brown (10YR 4/3); low plasticity; some gpebbles, angular to subround; some very fine grained sand, angular to subround; moist to w 25,30,45	granules to very large to very coarse	(97.0 - 98.5') Top 4 to 6 inches of sample most likely slough	
_99 _	102	9/22/2019 11:27		Topock - Alluvium Deposits	SM		(98.0 - 98.5') No recovery (NR) (98.5 - 101.8') Topock - Alluvium Deposits; Sil (SM); brown (10YR 5/3); very fine grained to g subround; some small to very large pebbles, a subrangular; little silt; little clay; coarser clasts	ranules, angular to angular to composed of	(98.5 - 107.0') Tight formation	
appreviations	: US	っしら = Unifie	ea Soil Class	Sitication Sv	/stem,	$\pi = te$	et, bgs = below ground surface, ams	ı = above mean s	ea ievei, GVV = c	roundwater,

9	ARC	A	DIS Design for national built a	n & Consultancy Itural and assets		Ge	oted	ch Boring Log	S	neet: 6 of	6
Date	Started:		09/20/2019	}	Su	rface	Elevat	ion: <u>N/A</u>	Boring No	: MW-S	
		ed:	09/24/2019	<u>}</u>		-	(NAD	•			
	ig Co.:		Cascade			_	(NAD	•	Client: PG&E		
	ig Metho		Sonic Drilling	•		tal De	-	<u>117.1 ft bgs</u>	-	GW Remedy Ph	
	Rig Type:			ruck Mount			Diam		Location: PG&E		
	r Name:		Steve Vaso	•		-		Water: 89.14 ft bgs	Project Number:		
	ig Asst:		Sean McG	O. Floures			g Meth g Inter		Hammer Type:		
Logg Edito			Chris Bone				ed to V		Hammer Weight Hammer Drop:		
Laito			T DOTICE	-331	1	T		Veli. A res into	паппистыюр.	<u>50 inches</u>	<u> </u>
Depth (ft)	Blow Counts [N Value]	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
 101 					Topock - Alluvium Deposits	SM		metadiorite; well graded; wet; no odor; 30,40,	35	(98.5 - 107.0') Tight formation	
102								(101.8 - 110.0') Topock - Weathered Bedrock Sandy silt with gravel (ML); reddish brown (5)			
								plasticity; some very fine to very coarse graine subangular; little granules to very large pebble	ed sand, angular to		
103								subangular; little clay; coarser clasts composition moist to wet; no odor; no staining; 20,35,45			
104		102									
105											
					Topock -						
106					Weathered Bedrock -	ML					
					conglomerate						
107										(107.0 - 115.0')	
					T U					Very hard drilling, could	
108										not advance	
										past 115 ft. sediments	
109				MW-S- VAS-107-						compacted in bag.	
-				(6.8 ppb)							
110				9/24/2019 11:14				(110.0 - 115.0') Topock - Competent Bedrock			
111					AV			reddish brown / moderate brown(5YR 4/4); m pulverized,	oist to dry; friable,		
111		90									
112											
					Topock - Competent						(112.0 - 117.1') 50 gallons of
113_					Bedrock - conglomerate						water used; 50 gallons of water
											recovered; 0 gallons of water
114											lost
				no sample 9/23/2019							
115				10:43		L	<i>X///</i>	(115.0 - 117.1') No recovery (NR); lost core do	ounbala what was	(115.0 - 117.1')	
							\setminus	recovered was highly disturbed and not log at		Lost core down	
116		6				NR	$ \rangle$			hole what was retrevived was	
							$ / \setminus$			highly disturbed.	
117			4				<u>/\</u>	End of Boring at 117.1 'bg	e		
 								End of Donnig at 117.1 bg	<u>.</u>		
118											
110											
119											
120											
Abbr								eet, bgs = below ground surface, ams			groundwater,
nnh -	- norto n	ar bil	lion ND - r	00 r000\/0m/	blue weter	table	ov m	al represents depth to water measure	d during the first \	/AC interval	

9/	ARCA	DIS Design for na built a	n & Consultancy tural and assets		Well Const	ruction Log		Sheet: 1 of 7
Date S		08/13/2019			_Surface Elevation:	N/A	Well ID: I	MW-X-45, MW-X-120
	•	09/24/2019			_Shallow Well Elevation:	N/A		•
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&	
_		Sonic Drillin	•		_Northing (NAD83):	N/A	-	GW Remedy Phase 1
Driller I		Steve Vasq			_Easting (NAD83):	N/A	Location: <u>PG&</u>	E Topock, Needles, California
Drilling		O. Flores / L	-		_Borehole Diameter: _Water Level Start:	10-12 inches	— Project Number	.r. DC000752 0051
Logger Editor:		Anthony Ma Grant Wilfor			_ vv aler Level Start. _Development End Date:	9.6 ft bgs	Project Numbe	er: RC000753.0051
Total D		127 ft bgs	<u>.u</u>		_Development End Date. _Well Completion:	N/AX Flush Stick-up		
Total 2			$\overline{\top}$					<u> </u>
Depth (ft)	Groundwat Sample ID		Code	USCS Class	Well C	Construction	Calculated Material Volumes	Material Volumes Installed
0 1 2 3 3 3 4 5 6 7 6 7 8 9 10 11 12 13			NR		(+0.5 - 3.0') Concrete Pad (0.0 - 24.2') 2" PVC Sch 40 Casing (9.5 - 10.5') Centralizer (3.0 - 17.1') Portland Cement 6% Bentonite	(0.1 - 99.8') 2" PVC Sch 40 Casing	(3.0 - 17.1') 60.7 gallons	(+0.5 - 3.0') 24 bags Note: 30-inch Diameter Concrete Pad with 18-inch Diameter Lockable Vault, Quickcrete Concrete Mix with Buff dye (3.0 - 17.1') 100 gallons (65%) Note: Type I, II and V and Benseal, used >20% of the caluculated volume due to potential voids forming during drilling
14 15 16 17	MW-X-VAS- 12-17 (<0.033 U ppb) 6/25/2019 15:10							
18 18 19			NR		(17.1 - 22.0') — Bentonite seal chips	(17.0 - 127.0') 10.0" Borehole	(17.1 - 22.0') 3.41 bags	(17.1 - 22.0') 4 bags (17%) Note: Puregold Medium Chips
Abbrev	viations: U	SCS = Unifie	ed Soil Cl	assifica	tion System, ft = feet, bas	= below ground surface, a	msl = above mean	sea level, GW = groundwater,

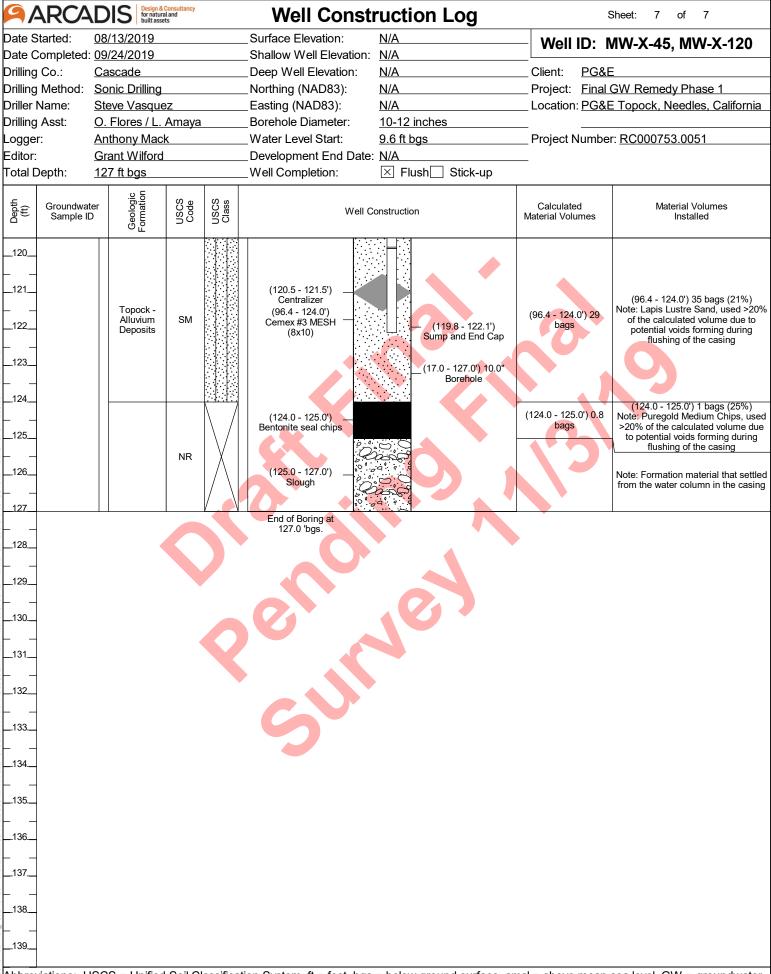
9/	ARCA	DIS Design & for natura built asse	Consultancy I and ts		Well Construction Log		Sheet: 2 of 7		
Date S	Started:	08/13/2019			_Surface Elevation:	N/A	Well ID: N	//W-X-45, MW-X-120	
	-	09/24/2019			_Shallow Well Elevation:	N/A			
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&E		
		Sonic Drilling			_Northing (NAD83):	N/A	Project: Final (GW Remedy Phase 1	
Driller I	Name:	Steve Vasque	Z		Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, California	
Drilling	Asst:	O. Flores / L.	<u>Amaya</u>		_Borehole Diameter:	<u>10-12 inches</u>			
Loggei	r:	Anthony Macl	<		_Water Level Start:	9.6 ft bgs	Project Number	r: RC000753.0051	
Editor:		Grant Wilford			Development End Date:				
Total D	Depth:	127 ft bgs	<u> </u>		Well Completion:				
Depth (ft)	Groundwate Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed	
20				\ /	(0.0 - 24.2') 2" PVC — Sch 40 Casing	— (0.1 - 99.8') 2" PVC Sch 40 Casing			
				\	(47.4 00.01)		(17.1 - 22.0') 3.41	(17.1 - 22.0') 4 bags (17%)	
21				$ \setminus $	(17.1 - 22.0') Bentonite seal chips		bags	Note: Puregold Medium Chips	
				$ \setminus $					
22				$ \setminus $					
				$ \setminus \cdot $					
23				$ \ \ $					
			NR	X					
24				$ \ \ $					
				$ / \rangle $	(24.2 - 44.2') 2" Sch 40 PVC (20-slot)				
 25				/	40 PVC (20-slot)			· ·	
25				/	i. :		4,40		
				$ \rangle $					
26									
27				242					
28									
				//					
29									
			ľ			(17.0 - 127.0') 10.0"			
30						Borehole			
_ 00 _									
			•		(22.0 - 48.5') Cemex		(22.0 - 48.5') 26.5 bags	(22.0 - 48.5') 31 bags (17%) Note: Lapis Lustre Sand	
31					#3 MESH (8x10)		bags	Note: Lapis Lustre Gariu	
		Topock - Fill	SP						
32									
33									
34	MW-X-VAS- 32-37								
⊢ ⊢	(<0.033 U								
35	ppb) 6/26/2019								
L J	11:45								
36									
37					[
		T							
		Topock - Fluvial	SW						
38		Deposits							
\vdash \vdash \vdash									
39									
			<u> </u>	D	<u> </u>				

9/	ARCA	DIS Design & for natura built asset	Consultancy al and its		Well Const	ruction Log	:	Sheet: 3 of 7	
		08/13/2019			_Surface Elevation:	N/A	Well ID: I	MW-X-45, MW-X-120	
		09/24/2019			_Shallow Well Elevation:	N/A			
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&I		
_		Store Versus			_Northing (NAD83):	N/A	-	Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, California	
Driller Drilling		Steve Vasque O. Flores / L.			_Easting (NAD83): _Borehole Diameter:	N/A 10-12 inches	Location: PG&L	<u> Topock, Needles, Calliornia</u>	
Logge		Anthony Mac	-		Water Level Start:	9.6 ft bgs	— Project Numbe	Project Number: <u>RC000753.0051</u>	
Editor:		Grant Wilford			_Development End Date:		1 10,000 140,1100	1. 11. 11. 11. 11. 11. 11. 11. 11. 11.	
Total E		127 ft bgs			 _Well Completion:				
		.2 5	l						
Depth (ft)	Groundwate Sample ID		Code	USCS	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed	
4041424343444546474848		Topock - Fluvial Deposits Topock - Fluvial Deposits	SW		(22.0 - 48.5') Cemex #3 MESH (8x10) (44.2 - 46.5') Sump and End Cap (45.5 - 46.5') Centralizer	Sch 40 Ćasing	(22.0 - 48.5') 26.5 bags	(22.0 - 48.5°) 31 bags (17%) Note: Lapis Lustre Sand	
			NR		(48.5 - 96.4') Bentonite seal chips	(17.0 - 127.0') 10.0" Borehole	(48.5 - 96.4') 34.8 bags	(48.5 - 96.4') 37 bags (6%) Note: Puregold Medium Chips	
59									

AR	CAD	Design & C for natural built asset	onsultancy and s		Well Consti	ruction Log		Sheet: 4 of 7
Date Starte Date Comp Drilling Co. Drilling Met Driller Nam Drilling Ass Logger: Editor: Total Deptl	pleted: 09 .:	08/13/2019 09/24/2019 Cascade Sonic Drilling Steve Vasquez O. Flores / L. Amaya Anthony Mack Grant Wilford 127 ft bgs			_ Surface Elevation: _ Shallow Well Elevation: _ Deep Well Elevation: _ Northing (NAD83): _ Easting (NAD83): _ Borehole Diameter: _ Water Level Start: _ Development End Date: _ Well Completion:	N/A N/A N/A N/A N/A N/A 10-12 inches 9.6 ft bgs N/A	Client: PG& Project: Final Location: PG&	MW-X-45, MW-X-120 E GW Remedy Phase 1 E Topock, Needles, California er: RC000753.0051
	7-X-VAS- 71-76 ample ID 27/2019 08:52	Seologic Bonation Formation	NR Code	USCS Class	· · · · · · · · · · · · · · · · · · ·	onstruction — (0.1 - 99.8') 2" PVC Sch 40 Casing — (17.0 - 127.0') 10.0" Borehole	Calculated Material Volumes (48.5 - 96.4') 34.8 bags	Material Volumes Installed (48.5 - 96.4') 37 bags (6%) Note: Puregold Medium Chips
78 79								

ARCA	DIS Design & C for natura built asset	Consultancy Land es	Well Const	ruction Log	:	Sheet: 5 of 7		
Date Started:	08/13/2019		Surface Elevation:	N/A	Well ID: I	MW-X-45, MW-X-120		
Date Completed:			Shallow Well Elevation:	· · · · · · · · · · · · · · · · · · ·				
Drilling Co.:	Cascade		Deep Well Elevation:	N/A	Client: PG&I			
_	Sonic Drilling		Northing (NAD83):	N/A	•	GW Remedy Phase 1		
Driller Name:	Steve Vasque		Easting (NAD83):	N/A	Location: <u>PG&I</u>	E Topock, Needles, California		
Drilling Asst:	O. Flores / L.	-	Borehole Diameter:	10-12 inches	Due in at Novele	D0000750 0054		
Logger:	Anthony Mack Grant Wilford	(Water Level Start: Development End Date	9.6 ft bgs	Project Numbe	er: RC000753.0051		
Editor: Total Depth:	127 ft bgs		Well Completion:	∷ <u>N/A</u>				
Тотаг Бертіт.			Well Completion.					
Groundwat Sample ID		SOSU Code USCS	Well (Construction	Calculated Material Volumes	Material Volumes Installed		
808182838485868788909191929394959595		NR	(84.5 - 85.5') Centralizer (48.5 - 96.4') Bentonite seal chips	— (0.1 - 99.8') 2" PVC Sch 40 Casing (17.0 - 127.0') 10.0" Borehole	(48.5 - 96.4') 34.8 bags	(48.5 - 96.4') 37 bags (6%) Note: Puregold Medium Chips		
96 97 98 99	Topock - Fluvial Deposits	SW Soil Closed	(96.4 - 124.0') Cemex #3 MESH — (8x10)		(96.4 - 124.0') 29 bags	(96.4 - 124.0') 35 bags (21%) Note: Lapis Lustre Sand, used >20% of the calculated volume due to potential voids forming during flushing of the casing sea level. GW = groundwater.		

ARCADIS Design & Consultancy for natural and built assets					Well Const	ruction Log	Sheet: 6 of 7		
Date S		08/13/2019			_Surface Elevation:	N/A	Well ID: I	MW-X-45, MW-X-120	
	•	09/24/2019			_Shallow Well Elevation:				
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&I		
		Sonic Drilling			_Northing (NAD83):	N/A	•	GW Remedy Phase 1	
Driller N		Steve Vasque	ez		_Easting (NAD83):	N/A	Location: <u>PG&I</u>	E Topock, Needles, California	
Drilling	Asst:	O. Flores / L.	Amaya	1	_Borehole Diameter:	<u>10-12 inches</u>			
Logger	r:	Anthony Mac	:k		Water Level Start: 9.6 ft bgs		Project Numbe	er: RC000753.0051	
Editor:		Grant Wilford			_Development End Date	: <u>N/A</u>	<u> </u>		
Total D	tal Depth: <u>127 ft bgs</u>			_Well Completion:					
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well C	Construction	Calculated Material Volumes	Material Volumes Installed	
100						(99.8 - 119.8') 2" PVC Sch 40 Screen			
				******		PVC Sch 40 Screen			
101									
102									
102									
103		Topock - Fluvial	SW						
\vdash \dashv		Deposits	0,,	******					
104									
105				******			. 0		
106									
107									
10/		Topock -							
		Fluvial Deposits	GW						
108									
109	MW-X-VAS- 107-112	•						(96.4 - 124.0') 35 bags (21%)	
	(<0.033 U				(96.4 - 124.0')	(17.0 - 127.0') 10.0" Borehole	(96.4 - 124.0') 29	Note: Lapis Lustre Sand, used >20% of the calculated volume due to	
110	ppb) 6/27/2019	Topock - Fluvial	SM		Cemex #3 MESH (8x10)		bags	potential voids forming during flushing of the casing	
	15:04	Deposits						liusting of the casing	
111			1						
112									
112									
113						·: 日 :1			
\vdash \dashv		Topock -		. 6.					
114	MW-X-VAS- 112-117	Fluvial	GW						
L -	(<0.033 U	Deposits							
115	` ppb) 6/28/2019								
L	09:56					∴H.i			
116									
		Topock -	0)4/ 0:						
L 1		Alluvium Deposits	GW-GN						
117			+						
⊢ ⊢									
118		Topock -	SM						
⊢ ⊣		Alluvium Deposits	SIVI						
119									
			<u> </u>						



ARC ⁴	DIS for natura built asset	Consultancy I and ts		well Consti	ruction Log		Sheet: 1 of 21
ate Started:	07/31/2019			_Surface Elevation:	N/A	Well ID: N	//W-X-170, MW-X-320
ate Completed				_Shallow Well Elevation:			
rilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
rilling Method: riller Name:	Sonic Drilling E. Ramos / S.	Vasaue	حد	_Northing (NAD83): _Easting (NAD83):	N/A N/A		GW Remedy Phase 1 Topock, Needles, Californi
illing Asst:	O. Flores / L.	-	<u></u>	_ Borehole Diameter:	6-12 inches	Location. <u>r G&L</u>	- Topock, Needles, Calliotti
ogger:	GJ/SM/CS	-	AM.	_Water Level Start:	9.6 ft bgs	Project Number: RC000753.0051	
ditor:	Grant Willford			_Development End Date:			
otal Depth:	417 ft bgs			_Well Completion:	⊠ Flush Stick-up		
Groundwa Sample I		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
0				(+0.5 - 3.0') Concrete Pad (0.5 - 150.8') 2" PVC Sch 80 Casing	(0.6 - 300.8') 2" PVC Sch 80 Casing		(-0.5 - 3.0') 22 bags Note: 30-inch Diameter Concre Pad with 18-inch Diameter Locka Vault, Quickcrete Concrete Mix v Buff dye
				(2.2 - 5.0') Bentonite_ seal chips		(2.2 - 5.0') 2.92	(2.2 - 5.0') 7 (140%) Note: Puregold Medium Chips installed due to void and heat of hydration concerns, installed >20 of claculated volume to fill void
- 6	Topock - Fill	SP		(5.0 - 16.9') Portland Cement 6% Bentonite	(0.0 - 42.0°) 12.0" Borehole	(5.0 - 16.9') 66 gallons	(5.0 - 16.9') 100 gallons (52% Note: Type I, II and V and Bense used >20% of the calculated volu due to potential voids forming du flushing of the 10-inch casing
14		NR					
18		•		(16.9 - 118.2') — Bentonite seal chips		(16.9 - 118.2') 78.93 bags	(16.9 - 118.2') 77 bags (-2%) Note: Puregold Medium Chips
	Topock - Fill	SW •		ion System # = fact has	= below ground surface as	mel = above mass	sea level GW = arcunduct
	= I INITIAN	SOILCIA	ıssırıcat	ion System, it = teet, bgs	= below ground surface, ar	nsi – above mean :	sea ievei, GVV = groundwat

9/	ARCA	DIS Design & for natura built asset	Consultancy al and ets		Well Const	ruction Log		Sheet: 2 of 21		
Date S	tarted:	07/31/2019			_Surface Elevation:	N/A	Well ID:	MW-X-170, MW-X-320		
	-	09/23/2019			_Shallow Well Elevation:	N/A				
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG8			
		Sonic Drilling			_Northing (NAD83):	N/A	-	I GW Remedy Phase 1		
Driller I		E. Ramos / S			_Easting (NAD83):	N/A	Location: <u>PG8</u>	E Topock, Needles, California		
Drilling		O. Flores / L.			_Borehole Diameter:	6-12 inches				
Logger		GJ/SM/CS		AM	_Water Level Start:	9.6 ft bgs	Project Numb	er: RC000753.0051		
Editor:		Grant Willford	1		Development End Date: N/A			_		
Total D	peptn:	417 ft bgs			_Well Completion:		T	<u> </u>		
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed		
202121212223242526272827303131323333333435363738373839	MW-X-VAS- 32-37 (<0.033 U ppb) 6/26/2019 11:45	Topock - Fill	SW		(19.5 - 20.5')	(0.0 - 42.0') 12.0" — (0.0 - 42.0') 12.0" Borehole	(16.9 - 118.2') 78.93 bags	(16.9 - 118.2') 77 bags (-2%) Note: Puregold Medium Chips		
 		000		10 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 -		· · ·	·	1 1 0 1 1		

9/	ARCA	DIS Design & C for natural built asset	Consultancy l and s		Well Const	ruction Log	5	Sheet: 3 of 21		
Date C Drilling Drilling	Completed: Co.: Method:	07/31/2019 09/23/2019 Cascade Sonic Drilling			_Surface Elevation: _Shallow Well Elevation: _Deep Well Elevation: _Northing (NAD83):	N/A N/A	Client: <u>PG&E</u> Project: <u>Final</u>	GW Remedy Phase 1		
Loggei Editor:	rilling Asst: O. Flores / L. Amaya ogger: GJ / SM / CS / DC / AM			_Easting (NAD83): _Borehole Diameter: _Water Level Start: _Development End Date: _Well Completion:	N/A 6-12 inches 9.6 ft bgs N/A Flush Stick-up	Location: PG&E Topock, Needles, California Project Number: RC000753.0051				
Depth (ft)	Groundwat Sample ID	er logic ation	USCS	USCS	·	onstruction	Calculated Material Volumes	Material Volumes Installed		
404142434445464748495051		Topock - Fluvial Deposits Topock - Fluvial Deposits	SW SW		(16.9 - 118.2')	— (0.6 - 300.8') 2" PVC Sch 80 Casing — (0.0 - 42.0') 12.0" Borehole — (42.0 - 324.0') 10.0" Borehole	(16.9 - 118.2') 78.93 bags	(16.9 - 118.2¹) 77 bags (-2%) Note: Puregold Medium Chips		
5253545556575858		Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits	SW							
59										

9/	ARCA	DIS Design & for nature built ass	Consultancy ral and ets		Well Const	ruction Log	Sheet: 4 of 21		
Drilling	completed: Co.:	07/31/2019 09/23/2019 Cascade			_Surface Elevation: _Shallow Well Elevation: _Deep Well Elevation:	N/A N/A N/A	Client: <u>PG&</u>		
Drilling Driller N Drilling	Name:	Sonic Drilling E. Ramos / S O. Flores / L.	. Vasqı		_Northing (NAD83): _Easting (NAD83): _Borehole Diameter:	N/A N/A 6-12 inches	-	GW Remedy Phase 1 E Topock, Needles, California	
Logger Editor: Total D		GJ / SM / CS Grant Willford 417 ft bgs		AM	_Water Level Start: _Development End Date: _Well Completion:	9.6 ft bgs N/A	Project Numbe 	r: <u>RC000753.0051</u>	
Depth (ft)	Groundwat Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed	
60 61 62		Topock - Fluvial Deposits	SW		(0.5 - 150.8') 2" — PVC Sch 80 Casing	— (0.6 - 300.8') 2" PVC Sch 80 Casing			
63 _ 63		Topock - Fluvial Deposits	SP	© \$\(\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			0.	0	
646566676869707172737475	MW-X-VAS- 71-76 (<0.033 U ppb) 6/27/2019 08:52	Topock - Fluvial Deposits	SW		(16.9 - 118.2') — Bentonite seal chips (69.5 - 70.5') — Centralizer	(42.0 - 324.0') 10.0" Borehole	(16.9 - 118.2') 78.93 bags	(16.9 - 118.2') 77 bags (-2%) Note: Puregold Medium Chips	
76 77		Topock - Fluvial Deposits	SP						
 78 _ 79 _		Topock - Fluvial Deposits	SW						

9/-	ARCA	DIS Design & for natura built asset	Consultancy al and ets		Well Const	ruction Log	;	Sheet: 5 of 21		
Date C Drilling	Co.:	07/31/2019 09/23/2019 Cascade Sonic Drilling			_Surface Elevation: _Shallow Well Elevation: _Deep Well Elevation: _Northing (NAD83):	N/A N/A N/A	Client: <u>PG&</u>	MW-X-170, MW-X-320 GW Remedy Phase 1		
Drilling Logge Editor:	ditor: Grant Willford		_ Easting (NAD83): _ Borehole Diameter: _ Water Level Start: _ Development End Date:			r: RC000753.0051				
Total D		<u>417 ft bgs</u>		(0, 12	_Well Completion:					
Depth (ft)	Groundwat Sample II		Code	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed		
80 81 82 83		Topock - Fluvial Deposits	sw		(0.5 - 150.8') 2" — PVC Sch 80 Casing	— (0.6 - 300.8') 2" PVC Sch 80 Casing		0		
84 85 86 87		Topock - Fluvial Deposits	sw				(3)			
88 89 90 91 92		Topock - Fluvial Deposits	SW-SM		(16.9 - 118.2') — Bentonite seal chips	(42.0 - 324.0') 10.0" Borehole	(16.9 - 118.2') 78.93 bags	(16.9 - 118.2') 77 bags (-2%) Note: Puregold Medium Chips		
93 94 95 96 97		Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits	GW-GM SP SW NR							
98 _ 98 _ 99		Topock - Fluvial Deposits	SW							

ARC	AC	Design & C for natural built assets	onsultancy and s		Well Const	ruction Log	Sheet: 6 of 21		
Date Started:	07	7/31/2019			_Surface Elevation:	N/A	Well ID: I	MW-X-170, MW-X-320	
Date Complete	ed: <u>09</u>	9/23/2019			_Shallow Well Elevation:	N/A			
Drilling Co.:		ascade			_Deep Well Elevation:	N/A	Client: PG&E		
Drilling Method		-			_Northing (NAD83):	N/A		GW Remedy Phase 1	
Driller Name:		Ramos / S.			_Easting (NAD83):	N/A	Location: <u>PG&</u>	E Topock, Needles, California	
Drilling Asst:		. Flores / L. <i>I</i>			_Borehole Diameter:				
Logger:		J/SM/CS		<u>AM</u>	_Water Level Start:	9.6 ft bgs	Project Numbe	r: <u>RC000753.0051</u>	
Editor:		rant Willford		Development End Date:					
Total Depth:	41	17 ft bgs			_Well Completion:		1	T	
Ground Sampl		Geologic Formation	USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed	
1001011021031041051061071081091106/27/2015:04111112113114112-1:1121156/28/20116116	2 U 19 AS- 7 U 19	Topock - Fluvial Deposits Topock - Fluvial Deposits	sw sw gw		(16.9 - 118.2') — Bentonite seal chips	— (0.6 - 300.8') 2" PVC Sch 80 Casing	(16.9 - 118.2') 78.93 bags	(16.9 - 118.2') 77 bags (-2%) Note: Puregold Medium Chips	
		Topock - Alluvium Deposits	SM		(118.2 - 146.8') Bentonite seal pellets		(118.2 - 146.8') 22.9 buckets	(118.2 - 146.8') 25 buckets (9%) Note: Pel-Plug (TR30) 3/8"	

Date Started: 07/31/2019 Surface Elevation: N/A Date Completed: 09/23/2019 Shallow Well Elevation: N/A Drilling Co.: Cascade Deep Well Elevation: N/A Drilling Method: Sonic Drilling Northing (NAD83): N/A Driller Name: E. Ramos / S. Vasquez Easting (NAD83): N/A Drilling Asst: O. Flores / L. Amaya Borehole Diameter: 6-12 inches Logger: GJ / SM / CS / DC / AM Water Level Start: 9.6 ft bgs Project Number: RC000753.0051 Editor: Grant Willford Development End Date: N/A Total Depth: 417 ft bgs Well Completion: X/A Well ID: MW-X-170, MW-X-32 Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, Caliform 6-12 inches Project Number: RC000753.0051	
Date Completed: 09/23/2019 Shallow Well Elevation: N/A Drilling Co.: Cascade Deep Well Elevation: N/A Drilling Method: Sonic Drilling Northing (NAD83): N/A Project: Final GW Remedy Phase 1 Driller Name: E. Ramos / S. Vasquez Easting (NAD83): N/A Location: PG&E Topock, Needles, Californ Drilling Asst: O. Flores / L. Amaya Borehole Diameter: 6-12 inches Logger: GJ / SM / CS / DC / AM Water Level Start: 9.6 ft bgs Project Number: RC000753.0051 Editor: Grant Willford Development End Date: N/A Total Depth: 417 ft bgs Well Completion: X/A	20
Drilling Method: Sonic Drilling Northing (NAD83): N/A Project: Final GW Remedy Phase 1 Driller Name: E. Ramos / S. Vasquez Easting (NAD83): N/A Location: PG&E Topock, Needles, Califorr Drilling Asst: O. Flores / L. Amaya Borehole Diameter: 6-12 inches Logger: GJ / SM / CS / DC / AM Water Level Start: 9.6 ft bgs Project Number: RC000753.0051 Editor: Grant Willford Development End Date: N/A Total Depth: 417 ft bgs Well Completion: X Flush Stick-up	
Driller Name: E. Ramos / S. Vasquez Easting (NAD83): N/A Location: PG&E Topock, Needles, Californ Drilling Asst: O. Flores / L. Amaya Borehole Diameter: 6-12 inches Logger: GJ / SM / CS / DC / AM Water Level Start: 9.6 ft bgs Project Number: RC000753.0051 Editor: Grant Willford Development End Date: N/A Total Depth: 417 ft bgs Well Completion: X Flush Stick-up	
Drilling Asst: O. Flores / L. Amaya Borehole Diameter: 6-12 inches Logger: GJ / SM / CS / DC / AM Water Level Start: 9.6 ft bgs Project Number: RC000753.0051 Editor: Grant Willford Development End Date: N/A Total Depth: 417 ft bgs Well Completion: X Flush Stick-up	
Logger: GJ / SM / CS / DC / AM Water Level Start: 9.6 ft bgs Project Number: RC000753.0051 Editor: Grant Willford Development End Date: N/A Total Depth: 417 ft bgs Well Completion: X Flush Stick-up	nia
Editor: Grant Willford Development End Date: N/A Total Depth: 417 ft bgs Well Completion: Stick-up	
Total Depth: 417 ft bgs Well Completion: ⊠ Flush Stick-up	
Groundwater Sample ID Groundwater Sample ID	

1444 1445 1466 14	ARCADIS Grand for nat built a	& Consultancy ural and sets		Well Construction L	.og si	heet: 8 of 21
140	rilling Co.: rilling Method: rilling Asst: ogger: ditor: Gascade Sonic Drilling E. Ramos / 3 O. Flores / L GJ / SM / C Grant Willfor 417 ft bgs	S. Vasqı . Amaya S / DC /	1	Shallow Well Elevation: N/A Deep Well Elevation: N/A Northing (NAD83): N/A Easting (NAD83): N/A Borehole Diameter: 6-12 inches Water Level Start: 9.6 ft bgs Development End Date: N/A	Client: PG&E Project: Final G Location: PG&E Project Number:	W Remedy Phase 1 Topock, Needles, Californ
	Opput Geologic	USCS	USCS Class	Well Construction		
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundw	140			(118.2 - 146.8') Bentonite seal pellets (150.8 - 170.8') 2" Sch 80 PVC (20-slot) Screen (146.8 - 174.0') Cemex #3 MESH	(118.2 - 146.8') 22.9 buckets 324.0') 10.0" orehole (146.8 - 174.0') 26.6	(118.2 - 146.8') 25 buckets (99 Note: Pel-Plug (TR30) 3/8" (146.8 - 174.0') 34 bags (28% Note: Lapis Lustre Sand

Date State	9/-	ARCA	DIS Design & for natura built asse	Consultancy all and ts		Well Const	ruction Log	5	Sheet: 9 of 21
Date Completed: 1987-92-019 Shallow Well Elevision: NA	Date S	Started:	07/31/2019			_Surface Elevation:		Well ID: N	MW-X-170. MW-X-320
Dalling Methods Sonic Dilling		-							· · · · · · · · · · · · · · · · · · ·
Differ Name: E. Ramos / S. Vissquez Easting (NADS): NA Location: PG&E Topock, Needles, California Differ Name: Colores / Longer: Colores / Longer: Colores / Longer: Colores / California Differ Name: California Di	_					•			
Delign Asst: Q_Fices L_Amaya Borehole Diameter: 6-12 inches Q_Fices L_Amaya Q_Fices	_		-			- ', '		•	_
Companies Com						- ', '		Location: <u>PG&E</u>	<u> Topock, Needles, California</u>
Editor: Grant Willford Devotine ### Composition ### Co	_			-					
Topock					<u>AM</u>			Project Numbe	r: RC000753.0051
Second to Second	I .								
100	Total L	лерин.				vveii Completion.		1	T
161	Depth (ft)		Geologic Formation	USCS	USCS Class		onstruction		
162	160			NR	X	(150.8 - 170.8') 2" — :	(0.6 - 300.8') 2" PVC Sch 80 Casing		
168.	161				(/////				
Topock	 162								
166	163								O
166	-		Topock -						
	164		Alluvium	CL					
168_ 167_ 168_ 169_ 170_ 171_ 172_ 173_ 175_ 176_ 176_ 177_ 177_ 177_ 177_ 178_ 178_ 178_ 178			Deposits						
170_	165							100	
170_							11 17		
Cerriew #3 McSH Cerriew #3	166								
167						(146.8 - 174.0')		(146.8 - 174.0') 26.6	(146.8 - 174.0') 34 bags (28%)
	167							bags	Note: Lapis Lustre Sand
	168								
	169								
Topock - Alluvium Deposits	-						(42.0 - 324.0) 10.0 Borehole		
	170								
	<u> </u>			CI					
	171								
	-					(170.5 - 172.0')			
	172								
	173					(170.8 - 173.2')			
						Sump and End Cap			
Topock - Alluvium Deposits SM	174					• 🔆			
Topock - Alluvium Deposits SM									
	175								
Deposits (174.0 - 297.4') 103.3 Topock - Alluvium Deposits NR NR Deposits (174.0 - 297.4') 119 buckets (15%) Note: Pel-Plug (TR30) 3/8"			Topock -	SM.					
Topock - Alluvium Deposits NR Bentonite seal pellets Note: Pel-Plug (TR30) 3/8" Note: Pel-Plug (TR30) 3/8"	176			SIVI					
Topock - Alluvium Deposits Note: Pel-Plug (TR30) 3/8" Note: Pel-Plug (TR30) 3/8"	- -							(174.0 - 297.4') 103.3	(174.0 - 297.4') 119 buckets (15%)
Alluvium Deposits NR	_177_		Topock -						Note: Pel-Plug (TR30) 3/8"
	-		Alluvium	GP GP	(No.	·			
_179	178		Deposits /		$ \setminus / $				
	<u> </u>			NR					
Abbreviation of USCS - Unified Sail Classification System # - fact has - below ground system and a below ground system and a share ground system and system with the fact has - below ground system and system an	179				/				
	Λ h h	dotions: 11	CCC - U-:=	0-2.0	 	tion Cyptons # = ft !	= bolow graves	mal = ab = v= == =	and level CM = =================================

9/	ARC4	D	Design & C for natural built asset	Consultancy Land S		Well Const	ruction Log	;	Sheet: 10 of 21
Date S	Started:	07/	31/2019			_Surface Elevation:	N/A	Well ID: I	MW-X-170, MW-X-320
Date 0	Completed:	09/	23/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade				_Deep Well Elevation:	N/A	Client: PG&I	
_	Method:		_			_Northing (NAD83):	N/A	•	GW Remedy Phase 1
	Name:		Ramos / S.	-		_Easting (NAD83):	N/A	Location: <u>PG&I</u>	E Topock, Needles, California
Drilling			Flores / L. /			_Borehole Diameter:	6-12 inches		
Logge			I/SM/CS		<u>AM</u>	_Water Level Start:	9.6 ft bgs	Project Numbe	er: RC000753.0051
Editor:			ant Willford			_Development End Date:			
lotaiL	Depth:	417	7 ft bgs			_Well Completion:	✓ Flush ✓ Stick-up	T	T
Depth (ft)	Groundwat Sample II		Geologic Formation	USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
180				NR			— (0.6 - 300.8') 2" PVC Sch 80 Casing		
181									
182									
_103									
184	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		Topock - Alluvium	SM					
104_	MW-X-VAS 182-187		Deposits						
185	(<0.17 U ppt 6/29/2019	0)						0-1	·
	15:28								
186									
100									
187									
-107			Topock -	22					
188			Alluvium Deposits	SC					
			Topode						
189			Topock - Alluvium	ML					
			Deposits	•		(174.0 - 297.4')	(42.0 - 324.0') 10.0"	(174.0 - 297.4') 103.3	(174.0 - 297.4') 119 buckets (15%)
190			Topock - Alluvium	SM		Bentonite seal — pellets	Borehole	buckets	Note: Pel-Plug (TR30) 3/8"
			Deposits Topock -						
191			Alluvium	CL					
			Deposits						
192			Topock - Alluvium	МН	Ш				
			Deposits	IVII					
193									
194									
			Topock -						
195			Alluvium	ML					
			Deposits						
196									
197									
198			Topock - Alluvium	ML					
L			Deposits	IVIL					
199									
L				CL					

9/	ARCA	DIS Design & for natura built asse	Consultancy all and ts		Well Const	ruction Log		Sheet: 11 of 21
Date S Date C Drilling Drilling Driller	e Started: 07/31/2019 e Completed: 09/23/2019 ing Co.: Cascade ing Method: Sonic Drilling er Name: E. Ramos / S. Vasquez ing Asst: O. Flores / L. Amaya ger: GJ / SM / CS / DC / AM or: Grant Willford		_ Surface Elevation: _ Shallow Well Elevation: _ Deep Well Elevation: _ Northing (NAD83): _ Easting (NAD83): _ Borehole Diameter: _ Water Level Start: _ Development End Date: _ Well Completion:	N/A N/A N/A N/A N/A 6-12 inches 9.6 ft bgs	Client: PG& Project: Fina Location: PG&	MW-X-170, MW-X-320		
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
200	MW-X-VAS- 207-212 (<0.17 U ppt 6/30/2019 13:28	Topock - Alluvium Deposits	CL		(174.0 - 297.4') Bentonite seal pellets	(42.0 - 324.0') 10.0" Borehole	(174.0 - 297.4') 103. buckets	3 (174.0 - 297.4') 119 buckets (15%) Note: Pel-Plug (TR30) 3/8"
	L						1	

9/-	ARCA	DIS Design & for natura built asse	consultancy al and ets		Well Const	ruction Log	\$	Sheet: 12 of 21
Date S		07/31/2019			_Surface Elevation:	N/A	Well ID: N	MW-X-170, MW-X-320
	-	09/23/2019			_Shallow Well Elevation:	N/A		
Drilling Co.: Cascade					_Deep Well Elevation:	N/A	Client: PG&E	
Drilling Method: Sonic Drilling Driller Name: E. Ramos / S. Vasquez			107	_Northing (NAD83):	N/A	•	GW Remedy Phase 1	
Drilling		O. Flores / L.	-		_Easting (NAD83): _Borehole Diameter:	N/A 6-12 inches	Location: PG&E	Topock, Needles, California
Logge		GJ / SM / CS	-		_ Borenole Diameter. _Water Level Start:	9.6 ft bgs	— Project Number	r: <u>RC000753.0051</u>
Editor:		Grant Willford		7 (IVI	_ Development End Date:		1 10,0001140111501	1. 11.0000100.0001
Total D		417 ft bgs	-		_Well Completion:			
		.º 5						
Depth (ft)	Groundwat Sample II		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
_220						— (0.6 - 300.8') 2" PVC Sch 80 Casing		
_221								
222								
<u> </u>								
_223		Topock - Alluvium	SM					
-		Deposits	Sivi					
_224								
_225							1000	
					♦			
					(174.0 - 297.4') Bentonite seal		Y	
_228					pellets			
_229								
-						(42.0 - 324.0') 10.0" Borehole	(174.0 - 297.4') 103.3 buckets	(174.0 - 297.4') 119 buckets (15%) Note: Pel-Plug (TR30) 3/8"
_230					(229.5 - 230.5') — Centralizer		Buckets	Troto. For Flag (Trico) 6/6
-					Certifalizer			
_231								
232								
		Topock - Alluvium	SM					
		Deposits						
_235								
_236								
-								
_237						4		
-								
_238								
╟ ┤								
_239								
A I- I		CCC - Unificat	 C = i C	<u> </u>		_ -		and lovel CW = groundwater

Date Started: 07/31/2019	9/	ARCA	DIS Design & for natura built asse	Consultancy all and ts		Well Const	ruction Log		Sheet: 13 of 21	
Date Description Descrip	Date S	Started:	07/31/2019			_Surface Elevation:		Well ID:	MW-X-170. MW-X-320	
Delling Mathod: Delling Northing (NAD83): N/A		-							•	
Diller Asset E. Ramos S. Vasquez Easting NADA	_					•				
Deliling Assist O. Flores I L. Amaya Borehole Diameter: 6-12 inches O. Flores O. Flores I L. Amaya O. Flores I L. Amaya O. Flores O.			_					-	-	
Logger: Carl XMIROS DC /AM Water Level Start: 9, 6 ft bgs Project Number: RC000753.0051				•				Location: <u>PG8</u>	E Topock, Needles, California	
Editor	_									
Topods					AM		•	Project Numb	er: RC000753.0051	
## Concentration Fig. 2 Fig. 2 Fig. 3 Fig. 4 Fig. 5 Fi										
	I otal L	Jeptn:		ı	T 1	vveil Completion:	∑ Flusn Stick-up			
241	Depth (ft)		Geologic Formation	USCS	USCS Class	Well C	onstruction			
	240	MW-X-VAS- 245-255 (<0.033 U ppb) 7/1/2019	Topock - Alluvium Deposits Topock - Alluvium Deposits	SM		Bentonite seal —	(42.0 - 324.0') 10.0"			
	_259									

9/	ARCA	DIS Design & for natura built asset	Consultancy al and ets		Well Const	ruction Log		Sheet: 14 of 21
Date S	Started:	07/31/2019			_Surface Elevation:	N/A	Well ID:	MW-X-170, MW-X-320
		09/23/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&	
_		Sonic Drilling			_Northing (NAD83):	N/A	-	GW Remedy Phase 1
Driller I		E. Ramos / S	-		_Easting (NAD83):	N/A	Location: <u>PG&</u>	E Topock, Needles, California
Drilling		O. Flores / L.			_Borehole Diameter:	6-12 inches		
Logge		GJ/SM/CS		<u>AM</u>	_Water Level Start:	9.6 ft bgs	Project Numbe	er: RC000753.0051
Editor:		Grant Willford			_Development End Date:			
Total D	Depth:	417 ft bgs			_Well Completion:		T	
Depth (ft)	Groundwat Sample ID	Geologic Formation	Code	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
260		Topock - Alluvium Deposits Topock - Alluvium Deposits	SM		(174.0 - 297.4') Bentonite seal pellets (269.5 - 270.5') Centralizer	(42.0 - 324.0') 10.0" Borehole	(174.0 - 297.4') 103.3 buckets	(174.0 - 297.4') 119 buckets (15%) Note: Pel-Plug (TR30) 3/8"
_279						4 2		
<u> </u>	<u> </u>	1 1					1	

77-11 10-	DIS Design & for nature built asset	at and ets		Well Constr	uction Log		Sheet: 15 of 21
Date Started:	07/31/2019			_Surface Elevation:	N/A	Mell ID.	MW-X-170, MW-X-32
Date Completed	: 09/23/2019			_Shallow Well Elevation:	N/A		
Orilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG8	
Orilling Method:	-			_Northing (NAD83):	N/A	•	I GW Remedy Phase 1
Oriller Name:	E. Ramos / S	. Vasqu	ez	_Easting (NAD83):	N/A	Location: <u>PG8</u>	E Topock, Needles, Californ
Orilling Asst:	O. Flores / L.	Amaya		_Borehole Diameter:	6-12 inches		
.ogger:	<u>GJ / SM / CS</u>	S / DC / .	AM	_Water Level Start:	9.6 ft bgs	Project Numb	er: RC000753.0051
Editor:	Grant Willford	d		_Development End Date:			
otal Depth:	417 ft bgs	T		_Well Completion:			
Groundwa Sample I		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
	Topock - Alluvium Deposits	SM		(174.0 - 297.4') Bentonite seal pellets	— (0.6 - 300.8') 2" PVC Sch 80 Casing (42.0 - 324.0') 10.0' Borehole	(174.0 - 297.4') 103. buckets	3 (174.0 - 297.4') 119 buckets (1 Note: Pel-Plug (TR30) 3/8'
298				(297.4 - 324.0') Cemex #3 MESH — (8x10)	영 [년 영 [년	(297.4 - 324.0') 28 bags	(297.4 - 324.0') 33 bags (18 Note: Lapis Lustre Sand

9/	ARCA	DIS for natura built asse	l and ts		Well Const	ruction Log		Sheet: 16 of 21
Date S	tarted:	07/31/2019			_Surface Elevation:	N/A	Well ID:	MW-X-170, MW-X-320
Date C	ompleted:	09/23/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	_ Client: PG8	
		Sonic Drilling			_Northing (NAD83):	N/A	•	I GW Remedy Phase 1
Driller N		E. Ramos / S	•	iez	_Easting (NAD83):	N/A	_ Location: <u>PG8</u>	E Topock, Needles, California
Drilling		O. Flores / L.		A N 4	_Borehole Diameter:	6-12 inches		DC000752 0054
Logger Editor:		GJ / SM / CS Grant Willford		AIVI	_Water Level Start: _Development End Date:	9.6 ft bgs	_ Project Numb	er: RC000753.0051
Total D		417 ft bgs			_Development End Date. _Well Completion:	× Flush Stick-up	_	
T								
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well C	construction	Calculated Material Volumes	Material Volumes Installed
_300						·		
_301						(300.8 - 320.8') 2" ::		
						PVC Sch 80 Screen		
302								
						H		
_303								
304								
_305							1	
300								
307								
							•	
_308								
_309								
		Topock - Alluvium	SM		(297.4 - 324.0') Cemex #3 MESH	(42.0 - 324.0') 10.0" Borehole	(297.4 - 324.0') 28 bags	(297.4 - 324.0') 33 bags (18%) Note: Lapis Lustre Sand
_310		Deposits			(8x10)		J	'
_311								
312								
313								
_314								
_315								
_316								
-								
_317								
318								
 319								
218								
		000 11 %	0 10					a see level CW = groundwater

9/	ARCA	DIS Design for na built a	n & Consultancy cural and ssets		Well Consti	ruction Log	;	Sheet: 17 of 21
		07/31/2019			_Surface Elevation:	N/A	Well ID: I	WW-X-170, MW-X-320
		09/23/2019			_Shallow Well Elevation:			
Drilling		Cascade			Deep Well Elevation:	N/A	Client: PG&I	
-		Sonic Drillin	_		Northing (NAD83):	N/A	-	GW Remedy Phase 1
		E. Ramos /	-		Easting (NAD83):	N/A	Location: <u>PG&I</u>	E Topock, Needles, California
Drilling		O. Flores / L GJ / SM / C			Borehole Diameter: Water Level Start:	6-12 inches	— Project Number	r: DC000752 0051
Loggeı Editor:		Grant Willfo		AIVI	vvaler Level Start. Development End Date:	9.6 ft bgs	Project Numbe	r: RC000753.0051
⊑uitor. Total D		417 ft bgs	iu		Development End Date. Well Completion:			
Total E						Tidon Cuok up	Τ	
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
		Topock - Alluvium Deposits	SM		(320.5 - 321.5') — Centralizer (297.4 - 324.0') Cemex #3 MESH (8x10)	(42.0 - 324.0') 10.0" Borehole (320.8 - 323.2') Sump and End Cap	(297.4 - 324.0') 28 bags	(297.4 - 324.0') 33 bags (18%) Note: Lapis Lustre Sand
325 		Topock - Alluvium Deposits Topock - Alluvium	MH					
330 331 332 333 334		Topock - Alluvium Deposits	МН		(324.0 - 417.0') Bentonite seal chips	(324.0 - 414.0') 6.0" Borehole	(324.0 - 417.0') 24.9 bags	(324.0 - 417.0') 34 bags (37%) Note: Puregold Medium Chips, used >20% of the calculated volume due to potential voids that formed during drilling
	MW-X-VAS- 337-342	Alluvium	IVIL	0,0				
 _339	(<0.17 U ppb 7/11/2019 11:30	Topock - Alluvium Deposits	ML					
		Deposits		17.P			<u> L</u>	

9/	ARCA	DIS	Design & C for natural built asset	Consultancy l and s		Well Const	ruction Log	;	Sheet: 18 of 21
Date C Drilling Drilling	Completed:	O9/23 Casca Sonic E. Ra O. Flo	ade Drilling mos / S. pres / L. / SM / CS Willford	Amaya / DC /		Surface Elevation:Shallow Well Elevation:Deep Well Elevation:Northing (NAD83):Easting (NAD83):Borehole Diameter:Water Level Start:Development End Date:Well Completion:	N/A N/A N/A 6-12 inches 9.6 ft bgs	Client: PG&F Project: Final Location: PG&F	GW Remedy Phase 1 E Topock, Needles, California r: RC000753.0051
Depth (ft)	Groundwat Sample ID		Geologic Formation	epoo SOSN	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
340	MW-X-VAS- 337-342 (<0.17 U ppb 7/11/2019 11:30)	Fopock - Alluvium Deposits Fopock - Alluvium	ML					
342 343 344 345			Deposits Fopock - Alluvium Deposits	SM					9
346 347 348			Fopock - Alluvium Deposits	ML				(1,3)	
349 350 351 352		\ <u> </u>	Fopock - Alluvium Deposits Fopock - Alluvium Deposits	MH ML		(324.0 - 417.0') — Bentonite seal chips	(324.0 - 414.0') 6.0" Borehole	(324.0 - 417.0') 24.9 bags	(324.0 - 417.0') 34 bags (37%) Note: Puregold Medium Chips, used >20% of the calculated volume due to potential voids that formed during drilling
353 354 355		/	Fopock - Alluvium Deposits	SW-SM		5			
356 357		W	Fopock - /eathered Bedrock - nglomerate	МН					
358 		W	Fopock - Peathered Bedrock - nglomerate						
				ML	<u> [11.] [1</u>				

Drilling Method: Sonic Drilling Name: Driller Name: Ramos / S. Vasquez Easting (NAD83): Location: PG&E Topock, Needles, Californ Drillor Asst: O. Flores / L. Amaya Borehole Diameter: GJ / SM / CS / DC / AM Water Level Start: Development End Date: N/A Well Construction Well Construction Calculated Material Volumes Installed Material Volumes Installed Material Volumes Installed Alamos / S. Vasquez Easting (NAD83): N/A Development End Date: N/A Well Construction Calculated Material Volumes Installed Material Volumes Installed Alamos / S. Vasquez Easting (NAD83): N/A Development End Date: N/A Well Construction Calculated Material Volumes Installed Material Volumes Installed Alamos / S. Vasquez Calculated Material Volumes Alamos / S. Vasquez Calculated Volumes Alamos / S. Vasquez Calcu	ARC	ADIS Design & for natura built asset	Consultancy al and ets		Well Const	ruction Log		Sheet: 19 of 21
Shallow Veli Evaluation NA							Well ID:	MW-X-170. MW-X-320
Dalling Method: Sonic Diffing Northing (NAD83): NA	-							
Driller Name: De Comming Assist Comming Assisted Comming	_				-			
Drilling Assit: Q. Floras / L. Amaya Borchole Diameter: 6.12 inches C. Grand-Nation C. Grand Walford							-	-
Comparison Com			•	ez			Location: <u>PG8</u>	E Topock, Needles, California
Editor:							— 	
Topock				<u> АМ</u>			Project Numb	er: RC000753.0051
Section of the content of the cont			<u> </u>		-			
360	l otal Depth:				_ vv eli Completion:	× Flusn Stick-up	1	
	Groundy Sample	Geologic Formation	USCS	USCS Class	Well C	onstruction		
		Weathered Bedrock -	1 1		(324.0 - 417.0') — Bentonite seal chips			to potential voids that formed during
		Topock - Weathered Bedrock - conglomerate Topock - Weathered Bedrock - conglomerate Topock - Weathered Bedrock -	GW-GM					

9/	ARCA	DIS	Design & Con for natural ar puilt assets	nsultancy nd		Well Const	ruction Log		Sheet: 20 of 21
Date S	Started:	07/31/20	19			_Surface Elevation:	N/A	Well ID: 1	MW-X-170, MW-X-320
Date (Completed:	09/23/20	19			_Shallow Well Elevation:	N/A		•
Drilling	g Co.:	<u>Cascade</u>				_Deep Well Elevation:	N/A	Client: PG&	E
Drilling	g Method:	Sonic Dri	lling			_Northing (NAD83):	N/A	Project: <u>Final</u>	GW Remedy Phase 1
Driller	Name:	E. Ramos	s / S. \	<mark>√asqu</mark>	ez	_Easting (NAD83):	N/A	Location: <u>PG&</u>	E Topock, Needles, California
Drilling	g Asst:	O. Flores				_Borehole Diameter:	6-12 inches		
Logge	er:	GJ/SM		DC /	AM	_Water Level Start:	9.6 ft bgs	Project Numbe	er: RC000753.0051
Editor		Grant Wi				_Development End Date:			
Total I	Depth:	417 ft bg:				_Well Completion:			
Depth (ft)	Groundwat Sample II			USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
380									
		Topo Weath	ck -		6				
381		Bedro	ck -	GM					
		conglor	erate						
382					6 P. P				
	1								
-									
384	MW-X-VAS- 382-387	•							
- -	382-387 - (<0.17 U ppb 7/13/2019 14:43)							Y
385	14:43							1,251	
		Торо	ck -						
386		Weath Bedro		CL					
<u> </u>		conglor							
387									
L _									
388									
389									(224.0. 447.0!) 24 hogo (270/.)
						(004.0 447.0)	(324.0 - 414.0') 6.0"	(324.0 - 417.0') 24.9	(324.0 - 417.0') 34 bags (37%) Note: Puregold Medium Chips, used
						(324.0 - 417.0') — Bentonite seal chips	Borehole	bags	>20% of the calculated volume due to potential voids that formed during
390									drilling
- -	1								
391									
<u> </u>	_								
392									
L -									
393									
L _									
394									
		Торо							
205		Weath Bedro	ered	CL					
395	1	conglor							
- -									
396	†								
- -	+								
397	+								
- -	+								
398	4								
<u> </u>	1								
399	1								

9/	4RC4	DIS Design for natural built as	& Consultancy ral and sets		Well Const	ruction Log	:	Sheet: 21 of 21
	Started:	07/31/2019			_Surface Elevation:	N/A	Well ID: I	MW-X-170, MW-X-320
		09/23/2019			_Shallow Well Elevation:	N/A		
Drilling	-	Cascade			Deep Well Elevation:	N/A	Client: PG&I	
_	•	Sonic Drilling			_Northing (NAD83):	N/A	•	GW Remedy Phase 1
Driller	Name:	E. Ramos / S	-		_Easting (NAD83):	N/A	Location: <u>PG&I</u>	E Topock, Needles, California
Drilling	g Asst:	O. Flores / L	-		_Borehole Diameter:	6-12 inches		
Logge	er:	GJ/SM/C	S/DC/	AM	_Water Level Start:	9.6 ft bgs	Project Numbe	er: RC000753.0051
Editor	:	Grant Willfor	d		_Development End Date:		<u> </u>	
Total [Depth:	417 ft bgs			Well Completion:		1	
Depth (ft)	Groundwat Sample II		SOSO	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
400		Tanaak	CL					
		Topock - Weathered	CL					
401		Bedrock - conglomerat						
		Topock - Weathered						
402		Bedrock -	00					
	1	conglomerat	e					
	1	Topock - Weathered		[000]				
403	1	Bedrock -	IVIL	19/01				
-	-	conglomerat						
404	-	Weathered	GC				•	
L -	_	Bedrock -	é					
405	_	Topock - Weathered	ʻl				. 0	
_		Bedrock -						
406		conglomerat	e					
		Topock -		111111				
407	1	Weathered Bedrock -	CL			(324.0 - 414.0') 6.0" Borehole		
407	1	conglomerat	9			Borchole		
	1	Weathered	SM					(324.0 - 417.0') 34 bags (37%)
408	-	Bedrock - conglomerat			(324.0 - 417.0')		(324.0 - 417.0') 24.9	Note: Puregold Medium Chips, used >20% of the calculated volume due
	-	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			Bentonite seal chips		bags	to potential voids that formed during
409		Topock -						drilling
		Weathered	GC					
410		Bedrock - conglomerat						
411			1					
	1							
	1							
412								
	-	Topock - Weathered						
413	+	Bedrock -	SIVI					
		conglomerat	e					
414	MW-X-VAS							
	412-417 (<0.17 U ppt)						
415	7/15/2019		-					
	12:43	Tanaak		600		(414.0 - 417.0') 4.0"		
416	1	Topock - Weathered	GM	19,97		Borehole '		
416	1	Bedrock - conglomerat						
-	1	congiomerat		299				
417	-	_		TWP	End of Boring at		1	1
<u> </u>	-				417.0 'bgs.			
418	1							
<u> </u>	1							
419	1							
Abbre	viations: U	SCS = Unifie	d Soil C	lassifica	tion System ft = feet has	= below ground surface, ar	nsl = above mean	sea level. GW = groundwater.

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 1 of	21
Date S	started:	06/20/	2019	;	Surface	Elevat	on: N/A	Borin	u No .	MW-Xd	
Date C	Comple	ted: <u>07/30/</u>	2019	I	Northing	g (NAD	83): <u>N/A</u>		ig 110	IIII Xu	
Drilling	Co.:	<u>Casca</u>	de		Easting	(NAD8	3): <u>N/A</u>	Client:	PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	417 ft bgs	Project:	Final G\	N Remedy Ph	ase 1
Drill Ri	д Туре	: <u>Prosor</u>	nic Truck Mou	unt l	Borehol	e Diam	eter: <u>6-12 inches</u>	Location:	PG&E	Topock, Needle	es, California
Driller I	Name:		nos / S. Vasq		Depth to	First \	Vater: <u>9.6 ft bgs</u>	-			
Drilling	Asst:	O. Flor	<u>res / L. Amay</u>	a	Samplin	g Meth	od: 4 Inch X 10 ft Core Barrel	Project N	umber:]	RC000753.00	51
Logge			SM / CS / DC		Samplin	-		<u>-</u>			
Editor:		Grant '	Willford	(Convert	ed to V	/ell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
	96			Topock - Fill	SP		(0.0 - 12.0') Topock - Fill; Poorly graded sand 5/3); fine grained to medium grained, angular mica; trace wood; dry; no odor			(0.0 - 7.0") Formation was collapsing at the surface during the installation of the 12-inch conductor casing. Used bentonite to stop the colloapse at the surface. Bentonite was mixed into the core during installation of the 12-inch casing to 7 ft bgs.	(0.0 - 177.0') 5100 gallons of water used; 1600 gallons of water recovered; 3500 gallons of water lost
8 8 9 10 11		No Sieve Samples Collected					(8'); trace clay; trace organics; no wood partic clay @ 8.0' bgs (5Y 4/1) (10'); moist; no clay	eles. 3.0" lens	se of fat	(8.0 - 17.0') Soft drilling, low recovery due to soft dregde sands compacting or falling out of core barrel.	
	48		MW-X-VAS- 12-17 (<0.033 U ppb)		Ç		(12.0 - 19.0') No recovery (NR)			Approximate Depth to Water.	
15 15 16 16 17 17 18 19 19 19 19 19 19 19	24		6/25/2019 15:10		NR					(17.0 - 19.0') No recovery, due to casing and core barrel dropping 2 ft. during clean out to 17 ft. bgs.	
20	96		Initiad Cail C	Topock - Fill			(19.0 - 36.5') Topock - Fill; Well graded sand brown / moderate yellowish brown(10YR 5/4); coarse grained, subangular to subround; little	; fine grained mica; trace	to	Heaving sands formation collapse observed on	

9/	4RC	ADIS	Design & Consultancy for natural and built assets		Bo	ring Lo	g			Sh	eet: 2 of	21
Date S	Started	06/20/2	2019		Surface	Elevation:	N/A		Borir	na No.:	: MW-Xd	
		ted: <u>07/30/</u> 2				g (NAD83):	N/A		_			
Drilling		Cascad			_	(NAD83):	<u>N/A</u>		_ Client:	PG&E		
Drilling			-		Total D	-	417 ft bgs		_ Project:		W Remedy Ph	
Drill Ri	• • •		nic Truck Mou			le Diameter:	6-12 inches	3	_ Location:	PG&E	Topock, Needl	es, California
Driller Drilling			nos / S. Vasq es / L. Amaya		-	o First Water ng Method:	_	ft Core Barrel	– Project N	lumber:	RC000753.00	 51
Logge			M / CS / DC /		•	ng Interval:	Continuous		_ 1 10,6001	iumber.	10000733.00	J I
Editor:		Grant \		7 (17)	-	ed to Well:		No	_			
					1							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	SOSO	USCS		Soil Description			Drilling Notes	Drilling Fluid
21	96					organi	cs; wet; no odor	; increase organics at	36.2-36.5' bg:		6/26/19. (19.0 - 27.0') Soft drilling.	(0.0 - 177.0') 5100 gallons of water used; 1600 gallons of water recovered; 3500 gallons of water lost
28	120	No Sieve Samples Collected	MW-X-VAS-	Topock - Fi	II SW						(32.0 - 37.0') Heaving sands.	
35	36		32-37 (<0.033 U ppb) 6/26/2019 11:45	Topock - Fluvial Deposits	SW	grayis suban trace wet; o (37');	h brown (10YR 5 gular to round; li ound; little mica rganic odor no granules and	Fluvial Deposits; Well 5/2); fine grained to ver ttle granules to very lar ; coarser clast consists pebbles to very large pebbles,	y coarse grai rge pebbles, r s of quartz an	ned, round; d basalt;	(38.0') Druring reaming with the 10-inch casing, the 12-inch conductor	
40 Abbro	viations	: 118CS - I	Inified Soil C	assification	Syston	hivivivi	ıc = bolow ar	ound surface am	cl = abovo	moon so	casing began to	groundwater

9/	ARC	ADI	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 3 of	21
Date S	tarted:	06/2	20/2019		Surface	Elevation	on: <u>N/A</u>	Borin	a No .	MW-Xd	
Date C	omple	ted: <u>07/3</u>	80/2019		Northin	g (NAD	33): <u>N/A</u>		9 110	IIII X	
Drilling	Co.:	Cas	cade		Easting	(NAD8	B): <u>N/A</u>	_ Client:	PG&E		
Drilling	Metho	od: <u>Son</u>	ic Drilling		Total D	epth:	417 ft bgs	Project:	Final G\	N Remedy Ph	ase 1
Drill Ri	д Туре	: Pro	sonic Truck Mo	<u>unt</u>	Boreho	le Diame	eter: 6-12 inches	Location:	<u>PG&E 1</u>	Fopock, Needle	es, California
Driller I	Name:	<u>E. F</u>	<u>Ramos / S. Vasc</u>	quez	Depth to	o First V	/ater: 9.6 ft bgs	_			
Drilling	Asst:	<u>O. F</u>	lores / L. Amay	<u>ra</u>	Samplin	ng Meth	od: 4 Inch X 10 ft Core Barrel	Project N	umber: <u>l</u>	RC000753.00	51
Loggei	r:	<u>GJ</u>	/SM/CS/DC	/ AM	Samplin	ng Interv	al: <u>Continuous</u>	_			
Editor:		<u>Gra</u>	nt Willford		Conver	ted to W	ell: X Yes No				
Depth (ft)	Recovery (in)	Sieve Sample I	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
	36				NR		(40.0 - 47.0') No recovery (NR)			slip below ground surface. The 12-inch was advanced to 38 ft bgs to stablize the borehole. (42.0') Final depth of conductor casing after installing deeper to fix mud tub seal.	(0.0 - 177.0') 5100 gallons of water used; 1600 gallons of water recovered; 3500 gallons of water lost
48 49 50 51 52 53 54 55 55 56	120	No Sieve Samples Collected		Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits	SW GW SW		(47.0 - 48.2') Topock - Fluvial Deposits; Well grayish brown (10YR 5/2); fine grained to very subangular to round; trace granules to large mica; coarser clast composed of quartz; wet (48.2 - 50.5') Topock - Fluvial Deposits; Well sand (GW); grayish brown (10YR 5/2); granul subangular to round; some fine to coarse gra subangular to round; trace mica; coarser clast granite and basalt; wet (50.5 - 53.8') Topock - Fluvial Deposits; Well grayel (SW); grayish brown (10YR 5/2); fine grayel (SW); grayish brown (10YR 5/2); fine grained, subangular to subround; trace round clasts composed of granite and basalt; wet (53.8 - 57.0') Topock - Fluvial Deposits; Poort brown (10YR 5/3); very fine grained to fine graround; trace granules to very large pebbles, s wet	graded sand grained to very est to very large tyrace mica;	with coarse e coarser		
58 59 60	120			Topock - Fluvial Deposits	SW		brown (10YR 5/3); very fine grained to coarse trace mica; wet				

9/	ARC	AD	S Design & Consumor for natural and built assets	ltancy		Во	ring	Log		She	et: 4 of	21
Date S	started:	06	20/2019			Surface	Elevat	on: N/A	Borin	a No .	MW-Xd	
Date C	omple	ted: <u>07</u>	30/2019			Northing	g (NAD	83): <u>N/A</u>	Borni	9 110	iiii Xa	
Drilling	Co.:	<u>Ca</u>	scade			Easting	(NAD8	3): <u>N/A</u>	Client:	PG&E		
Drilling	Metho	od: <u>So</u>	nic Drilling			Total De	epth:	417 ft bgs	Project:	Final GV	V Remedy Ph	ase 1
Drill Ri	д Туре	: <u>Pr</u>	sonic Truck	Moun	ıt	Borehol	le Diam	eter: <u>6-12 inches</u>	Location:	PG&E T	opock, Needle	es, California
Driller I	Name:	<u>E.</u>	Ramos / S. \	/asque	ez	Depth to	o First \	Vater: 9.6 ft bgs				
Drilling	Asst:	<u>O.</u>	Flores / L. A	maya		Samplin	ng Meth	od: 4 Inch X 10 ft Core Barrel	Project N	umber: <u>F</u>	RC000753.005	51
Logge	r:	<u>_G</u> ,	J/SM/CS/	DC / A	AM	Samplin	ng Inter	val: <u>Continuous</u>				
Editor:		<u>G</u> r	ant Willford			Convert	ted to V	Vell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample			Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
61 _ 61 62					Topock - Fluvial Deposits	SW						(0.0 - 177.0') 5100 gallons of water used; 1600 gallons of water recovered; 3500 gallons of water lost
 63	120				Topock - Fluvial Deposits	SP		(62.2 - 63.5') Topock - Fluvial Deposits; Poorly brown (10YR 5/3); very fine grained to fine grainica; wet	ined, round;	trace		
64 65 66 67	120							(63.5 - 75.5') Topock - Fluvial Deposits; Well gravel (SW); brown (10YR 5/3); very fine graingrained, subangular to round; little granules to subangular to round; trace subangular to subrocoarser clast composed of basalt, granite, and	ed to very co very large po ound; trace n	ebbles, nica;		
68	120	No Siev Sample Collecte	3	U	Topock - Fluvial Deposits	sw					(71.0 - 77.0') A foot of heaving sands in the casing resulted in the groundwater sample interval to be adjusted from 72 to 77 ft. bgs to 71 to 76 ft. bgs.	
	120				Topock - Fluvial Deposits Topock - Fluvial Deposits	SP		(75.5 - 77.0') Topock - Fluvial Deposits; Poorly brown (7.5YR 5/3); very fine grained to fine graround; trace mica; wet (77.0 - 83.5') Topock - Fluvial Deposits; Well g brown (10YR 5/3); very fine grained to very coasubangular to subround; trace mica; wet	ained, subang	gular to (SW);		
80	<u> </u>	11000					1.0.0.0.0.					

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring L	og		Sheet: 5 of	21
Date S	Started:	06/20/	2019		Surface	Elevation	N/A	- Boring N	lo.: <u>MW-Xd</u>	
Date C	Comple	ted: <u>07/30/</u>	2019		Northing	g (NAD83)	: N/A		10 <u>14144-244</u>	
Drilling	Co.:	<u>Casca</u>	de		Easting	(NAD83):	N/A	Client: PG	&E	
Drilling		od: Sonic	Drilling		-	. ,	417 ft bgs	Project: Fina	al GW Remedy Ph	nase 1
Drill Ri			nic Truck Mou			le Diamete		•	&E Topock, Need	
	Name:		nos / S. Vasq				er: 9.6 ft bgs		• ′	,
Drilling			res / L. Amaya		-	ng Method	_	Proiect Numb	er: RC000753.00)51
Logge			SM / CS / DC		•	ig Interval:	Continuous			
Editor:			Willford		-	ed to Wel		_		
			1		1	1 10 11 01			1	T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
81 82 83				Topock - Fluvial Deposits	SW					(0.0 - 177.0') 5100 gallons of water used; 1600 gallons of water recovered; 3500 gallons of water lost
84	120					gra	.5 - 87.0') Topock - Fluvial Deposits; W vel (SW); brown (10YR 5/3); very fine gr ined; little granules to very large pebbles	rained to very coarse s, subangular to roun		
85				Topock - Fluvial	SW	gra	e subround to round; trace mica; coars nite, basalt, and quartz; wet; granules a n depth			
86				Deposits				135		
 87							.0 - 93.0') Topock - Fluvial Deposits; W	all graded sand with s	.il+	
88 88 89						gra	.0 - 93.0') Topock - Fluvial Deposits; Wi V-SM); brown (10YR 5/3); very fine grailie ined, subangular to round; little granules round to round; little silt; trace mica; co netadiorite; wet	ned to very coarse s to large pebbles,		
90		No Sieve Samples Collected		Topock - Fluvial Deposits	SW-SM		(0)			
91			•	0	O		7			
92	108									
93				Topock - Fluvial	GW-GM	silt	.0 - 94.0') Topock - Fluvial Deposits; Wo and sand (GW-GM); brown (10YR 5/3);	granules to small		
94				Deposits			bles, subangular to round; and very fine d, subangular to subround; little silt; tra			
				Topock -	SP	∖co	nposed of metadiorite; wet	,	_/	
 95				Fluvial Deposits	35	(94 etr	.0 - 95.0') Topock - Fluvial Deposits; Po ong brown (7.5YR 4/6); very fine grained	orly graded sand (SP);	
93				Topock -		<u>လိုႏွို့ sn</u>	round to round; trace silt; trace mica; w	ret	_/	
 96				Fluvial Deposits	SW	gra [orange and seed of the s	.0 - 96.0') Topock - Fluvial Deposits; Wovel (SW); brown (10YR 5/3); very fine grand authorization of the same grand to round some grand to the same grand t	rained to medium		
 97					NR	pe	ined, subangular to round; some granul- bles, subround to round; trace subroun- ee mica; coarser clasts composed of me ble/boulder fragments within formation	d to round; trace silt;	ed	
31					·		.0 - 97.0') No recovery (NR)			
						(97	.0 - 104.0') Topock - Fluvial Deposits; W	Vell graded sand (SW	ī); -	
98				Topock -		••••••••• su	wn (10YR 5/3); very fine grained to very angular to subround; trace granules to			
	96			Fluvial	SW	sul	round to round; trace mica; wet			
99				Deposits						
L -										
100										
	viations	· 11909 - 1	Inified Soil CI	accification	Sycton	ft - foot	has = helow around surface ar	nel – ahove meai	sea level GW -	aroundwater

9/	ARC	ADI	Design & Consultancy for natural and built assets		Во	ring	Log	;	Sheet: 6 of	21
Date S	Started:	06/2	0/2019		Surface	Elevat	on: <u>N/A</u>	- Boring No	o.: <u>MW-Xd</u>	
Date C	Comple	ted: <u>07/3</u>	0/2019		Northing	g (NAD	83): <u>N/A</u>	_ Borning N) <u>IVIVV-XU</u>	
Drilling	Co.:	<u>Cas</u>	cade		Easting	(NAD8	3): <u>N/A</u>	Client: PG&	E	
Drilling	Metho	od: <u>Son</u>	ic Drilling		Total De	epth:	417 ft bgs	Project: Final	GW Remedy Ph	ase 1
Drill Ri	д Туре	: <u>Pros</u>	sonic Truck Mou	unt	Borehol	e Diam	eter: <u>6-12 inches</u>	Location: PG&	E Topock, Needle	es, California
Driller	Name:	<u>E. F</u>	amos / S. Vasq	uez	Depth to	First \	Vater: <u>9.6 ft bgs</u>			
Drilling	Asst:	<u>O. F</u>	lores / L. Amay	a	Samplin	ig Meth	od: 4 Inch X 10 ft Core Barrel	Project Numbe	r: RC000753.00	51
Logge	r:	<u>GJ</u>	/SM/CS/DC		Samplin			_		
Editor:		<u>Gra</u>	nt Willford		Convert	ed to V	Vell: ⊠ Yes ☐ No			
	>			υ <u>Ε</u>						
Depth (ft)	Recovery (in)	Sieve Sample I	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
	96			Topock - Fluvial Deposits	SW		(104.0 - 105.0') Topock - Fluvial Deposits; W		(102.0 - 105.0') Tight formation.	(0.0 - 177.0') 5100 gallons of water used; 1600 gallons of water recovered; 3500 gallons of water lost
				Fluvial	SW	8.00	gravel (SW); dark grayish brown / dark yellow 4/2); very fine grained to very coarse grained,			
105 106 107				Topock - Fluvial Deposits	SW		and granules to very large pebbles, subangul subround to round; trace silt; trace mica; coa of metadiorite; wet; fractured cobbles/ boulde formation (105.0 - 107.0') Topock - Fluvial Deposits; W (SW); brown (10YR 5/3); very fine grained to subangular to subround; little granules to sm; to round; trace silt; trace mica; wet	ar to round; trace rser clasts composed er fragments within ell graded sand very coarse grained,		
108				Topock - Fluvial Deposits	GW		(107.0 - 108.0') Topock - Fluvial Deposits; W sand (GW); brown (10YR 4/3); granules to ve subround to round; some very fine to very coa	ery large pebbles, arse grained sand,		
	84	No Sieve Samples Collected	MW-X-VAS- 107-112 (<0.033 U ppb) 6/27/2019 15:04	Topock - Fluvial Deposits	SM		subangular to round; trace silt; trace mica; co composed of metadiorite, granite, basalt, que (108.0 - 112.0') Topock - Fluvial Deposits; Si (SM); dark grayish brown / dark yellowish bro fine grained to coarse grained, subangular to granules to very large pebbles, subround to r subround to round; trace mica; trace organic coarser clasts composed of metadiorite and cobble/boulder fragments observed (109') brown (10YR 5/3); little silt; no organic fine to very coarse grained sand	artz; wet Ity sand with gravel wn(10YR 4/2); very round; some ound; some silt; little s; wet; organic odor; granite, pulverized s; increase in very	4440.0.447.00	
113 114			MW-X-VAS-	Topock - Fluvial Deposits	GW		(112.0 - 114.0') Topock - Fluvial Deposits; W sand (GW); dark gray (10YR 4/1); very fine g cobbles, subangular to round; little very fine t sand, subangular to round; trace silt; trace cl coarser clasts composed of metadiorite; wet;	rained to small o very coarse grained ay; trace organics;	Rough drilling,	
115 1 = _	60		112-117 (<0.033 U ppb) 6/28/2019 09:56	Topock - Fluvial Deposits	SM		(114.0 - 116.0') Topock - Fluvial Deposits; Sil (SM); brown (10YR 4/3); very fine grained to subangular to round; some granules to very is subangular to round; little silt; trace subround mica; trace organics; wet; organic odor; coar of metadiorite	very coarse grained, arge pebbles, I to round; trace		
116 117 118 119 120	120			Topock - Alluvium Deposits	SM		(116.0 - 157.0') Topock - Alluvium Deposits; (SM); brown (7.5YR 4/4) trace red / moderate 4/6); very fine grained to very coarse grained, some granules to very large pebbles, angular silt; trace subangular; trace mica; coarser clametadiorite; wet; mottled (117') reddish brown / moderate brown(5YR moderate reddish brown(10R 4/6); some silt; to very large pebbles, no cobbles (118'); little silt; increase in very fine to very c weathered granules to very large pebbles	e reddish brown (10R, angular to subround to subround to subangular; little asts composed of 4/4) little red / decrease in granules	;	

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	eet: 7 of	21
Date S						Elevation:	N/A	Borii	na No.:	MW-Xd	
		ted: <u>07/30/2</u>				g (NAD83):	N/A		_		
Drilling		<u>Cascad</u>			_	(NAD83):	N/A	_ Client:	PG&E	A/ Damadı / Dh	1
Drilling Drill Ri			ic Truck Mou		Total De	թլո։ e Diameter:	417 ft bgs 6-12 inches	_ Project:		N Remedy Ph Fopock, Needl	
Driller			nos / S. Vasqı			o First Water:		_ Location	. <u>1 Ga</u> L	гороск, песаг	es, California
Drilling			es / L. Amaya		-	g Method:	4 Inch X 10 ft Core Barrel	_ _ Project N	Number:	RC000753.00	51
Logge	r:	<u>GJ / SI</u>	M/CS/DC/	AM	Samplin	g Interval:	Continuous	_			
Editor:		Grant V	Villford		Convert	ed to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
121122123124125126127	120									9	(0.0 - 177.0') 5100 gallons of water used; 1600 gallons of water recovered; 3500 gallons of water lost
128 129 130 131 132 133 133 134	120	No Sieve Samples Collected		Topock - Alluvium Deposits	SM	Suban	some silt; little granules to very large gular; decrease in very fine to very coa	irse sand			
135						(134'); granul	little silt; increase in very fine to very ones to very large pebbles	coarse, increa	ise in		
137 138 139 140_ Abbre	120	s: USCS = I	Inified Soil C	assificatio	n Svsten	suban	some granules to very large pebbles, gular; slight decrease in silt s = below ground surface, am		mean se	(137.0') During reaming with the 10-inch casing, drilling became difficult due to increased friction. Reinstalled 6-casing and started flushing a level. GW = 6	groundwater

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sh	eet: 8 of	21
Date S						Elevation:	N/A	Borii	na No.:	: MW-Xd	
		ted: <u>07/30/2</u>			-	g (NAD83):	N/A	_			
Drilling		Cascad			_	(NAD83):	N/A	_ Client:	PG&E		
Drilling			-		Total De	•	417 ft bgs	_ Project:		W Remedy Ph	
Drill Ri Driller	• • •		<u>iic Truck Mou</u> nos / S. Vasqu			le Diameter: o First Water:	6-12 inches	_ Location	: PG&E	Topock, Needle	es, Calliornia
Drilling			es / L. Amaya		-	ng Method:	4 Inch X 10 ft Core Barrel	 Project N 	Jumber	RC000753.005	 51
Logge			M / CS / DC /		-	ng Interval:	Continuous				
Editor:		Grant V			-	ted to Well:					
_	ح			is E	T.,	10					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	Class	Soil Description			Drilling Notes	Drilling Fluid
141142143144145146147	120								5	10-inch over the 6-inch.	(0.0 - 177.0') 5100 gallons of water used; 1600 gallons of water recovered; 3500 gallons of water lost
		No Sieve Samples Collected		Topock - Alluvium Deposits	SM	(148'); ; sand	and silt; moist to wet; decrease in ver	y fine to very	coarse		
152	120			X						(151.0 - 157.0') Heaving sands came into casing during clean out to set	
153 154			MW-X-VAS-		G					the sample screen from 152 to 157 ft. bgs. Sampler screen was clogged with	
155			152-157 (<0.17 U ppb) 6/29/2019 09:19			(155')	some granules to very large pebbles,	angular to		sand and had to be reinstalled.	
156 157			55.15			suban	gular; little silt; wet; increase in very fin	ne to very coa	rse sand		
158 159 160	72				NR		- 161.0') No recovery (NR)			(157.0 - 167.0') Loose sands fell out of core barrel into hopper when bagging core, 165 to 167 drlling got hard.	
Abbre	viations	s: USCS = U	Inified Soil Cla	assification	n Systen	n, ft = feet, bg	s = below ground surface, am	sl = above	mean se	ea level, GW = g	groundwater,

/-	ARCA	DIO	for natural and built assets		DU	ring	_0g		Sile	eet: 9 of	21
Date S	tarted:	06/20/2	2019		Surface	Elevati	n: <u>N/A</u>	Borin	a No.:	MW-Xd	
	completed:	07/30/2	2019		Northin		•				
Drilling		Cascac			Easting	•		_ Client:	PG&E		
-	Method:	Sonic [-		Total D	•	417 ft bgs	_ Project:		W Remedy Ph	
	g Type:		ic Truck Mou		Boreho			_ Location:	PG&E	Topock, Needl	<u>es, Californi</u>
	Name:		nos / S. Vasqı		•		ater: 9.6 ft bgs				
•	Asst:		es / L. Amaya		Samplir	-		_ Project N	umber:	RC000753.00	51
oggei			M / CS / DC /		Samplir Conver	•		_			
Editor:		Grant V	V IIIIOI a		Conver	tea to v	eii. 🛆 res 🔝 No				T
Depth (ft)		Sieve mple ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
161					NR		1010 107 (N) Town 41 All Live School 1	- Sandy Japan al		(157.0 - 167.0') Loose sands fell out of core barrel into	(0.0 - 177.0' 5100 gallons water used; 1600 gallons
							161.0 - 167.0') Topo <mark>ck -</mark> Alluvium Deposits ravel (CL); brown (7.5 <mark>YR 4</mark> /4); medium pla	sticity; some ve	ery fine	hopper when bagging core,	water recovered;
162_							o very coarse grained sa <mark>nd, a</mark> ngular to sub o very large pebbl <mark>es, angular to</mark> subangula	angular; little gi r; little silt; coar	ranules ser	165 to 167 drlling got hard.	3500 gallons water lost
							lasts composed <mark>of metadiorite;</mark> moist; hard neta-diorite clasts are weathered	d; blocky; some		drilling got riaid.	water lost
163_							icta-dionic diasis are weathered				
	72										
_164				Topock - Alluvium	CL						
				Deposits							
165											
166									7		
167											
							167.0 - 174.5') Topock - Alluvium Deposits ravel (CL); reddish brown / moderate brow	n(5YR 4/4); me	edium	(167.0 - 177.0') Smooth drilling.	
168							lasticity; some very fine to very coarse gra ubangular; little granules to very large peb	ned sand, angu bles, angular to	ular to		
							ubangular; little silt; coarser clasts compo noist; some meta-diorite clasts are weathe	sed of metadior			
169_							iost, some meta-dionte clasts are weather	ieu			
170_		Sieve nples									
		lected		Topock -							
171_				Alluvium Deposits	CL						
				Берозітз							
172_	120										
	120										
173_											
174_							173.5'); moist to wet				
175_							174.5 - 177.0') Topock - Alluvium Deposits eddish brown / moderate brown(5YR 4/4);	; Silty sand (SN verv fine graine	1); ed to		
				Topock -			ery coarse grained, angular to subround; so o medium pebbles, angular to subangular;	ome silt; little g	ranules		
_176				Alluvium	SM		o very large pebbles, angular to subangular		large		
				Deposits							
_177					_						
				Topock - Alluvium	GP		177.0 - 177.5') Topock - Alluvium Deposits GP); boulders; wet	; Poorly graded	gravel	(177.0 - 187.0') Normal drilling.	(177.0 - 327.0 5395 gallons
_178				_Deposits _	Ţ	7 7	177.5 - 180.5') No recovery (NR)		1	rvormai utilling.	water used;
_,,	0.4					$ \setminus / $					4465 gallons water
 _179	84				NR						recovered; 93 gallons of wat
_1,3						$ / \setminus $					lost
180						/ \					
	<i>i</i> ations: U	SCS = L	Inified Soil Cl	assification	Systen	n, ft = fe	t, bgs = below ground surface, an	nsl = above	mean se	a level, GW =	groundwate
							rting limit, NR = no recovery, blue				
)- uqu							-			·	

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 10 of	21
Date S	tarted:	06/20)/2019		Surface	Elevat	on: <u>N/A</u>	Borin	a No.:	MW-Xd	
	•	ted: <u>07/30</u>)/2019		Northing	g (NAD	83): <u>N/A</u>		9	11111 744	
Drilling		<u>Casc</u>	ade		Easting	(NAD8	3): <u>N/A</u>	Client:	PG&E		
Drilling			-			-	417 ft bgs	•		N Remedy Ph	
Drill Ri			onic Truck Mou		Borehol			Location:	PG&E 1	opock, Needle	es, California
Driller I			<u>amos / S. Vasq</u>				Vater: 9.6 ft bgs				
Drilling			ores / L. Amaya		Samplin	-		Project N	umber: <u>I</u>	RC000753.005	51
Logge			SM / CS / DC	/ AM	Samplin	•					
Editor:		Gran	t Willford		Convert	ea io v	Vell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
				L	NR					(177.0 - 187.0') Normal drilling.	(177.0 - 327.0') 5395 gallons of
181 182 183 	84			Topock - Alluvium	SM		(180.5 - 187.0") Topock - Alluvium Deposits; S (SM); reddish brown / moderate brown(5YR 4, to very coarse grained, angular to subround; lit medium pebbles, subangular to subround; littl subangular; trace clay, trace large to very larg subangular; wet (183.5'); little granules to very large pebbles, a	/4); very fine of ttle granules e silt; trace e pebbles	grained		water used; 4465 gallons of water recovered; 930 gallons of water lost
184 185 186 187			MW-X-VAS- 182-187 (<0.17 U ppb) 6/29/2019 15:28	Deposits	Civi		subangular; little clay (184.5'); little granules to large pebbles, angul trace clay	ar to subangi		(407.0.407.0)	
188				Topock - Alluvium Deposits	sc		(187.0 - 188.0") Topock - Alluvium Deposits; C gravel (SC); reddish brown (2.5YR 4/4), very fi coarse grained, angular to subround; some cla large pebbles, angular to subangular; little silt composed of metadiorite; iron oxide staining of	ine grained to ay; little grant ; coarser clas	very ules to sts	(187.0 - 197.0') Normal drilling.	
_189		No Sieve		Alluvium Deposits	ML		pebbles; wet (188.0 - 189.5') Topock - Alluvium Deposits; S (ML); red (2.5YR 4/6); medium plasticity, som: coarse grained sand, angular to subround; littl pebbles, angular to subangular; little clay; coa	e very fine to le granules to	very		
190		Samples		Alluvium Deposits	SM	//////	composed of metadiorite; moist to wet; very st	tiff			
191 1 = _		Collected	•	Topock - Alluvium Deposits	CL		(189,5 - 190,0") Topock - Alluvium Deposits; S (SM); reddish brown (2.5YR 4/4) to dark reddi: 3/4); very fine grained to very coarse grained, some silt; little granules to very large pebbles, subround; little clay; coarser clasts composed	sh brown (2.5 angular to su angular to	bround;		
192	120			Topock - Alluvium Deposits	MH		moist to wet (190.0 - 191.5') Topock - Alluvium Deposits; S gravel (CL); reddish brown (2.5YR 4/4); mediu very fine to very coarse grained sand, angular	ım plasticity; to subround;	some little		
				Topock - Alluvium Deposits	ML		granules to small pebbles, angular to subroun very stiff (191.5 - 192.5') Topock - Alluvium Deposits; S gravel (MH); reddish brown (2.5'R 4/4); high I fine to very coarse grained sand, angular to subrocoarser clasts composed of metadiorite; mois (192.5 - 197.0') Topock - Alluvium Deposits; S (ML); light red(2.5YR 7/6); medium plasticity; very coarse grained sand, angular to subroun medium pebbles, angular to subround subro	Sandy elastic plasticity; son ubround; little clast; very stiff Sandy silt with some very find; little granul clay; coarser	silt with ne very y; gravel e to es to		
198	120			Topock - Alluvium Deposits	ML	77777	(197.0 - 199.0') Topock - Alluvium Deposits; S (ML); reddish brown (2.5YR 4/4); low plasticity medium grained sand, angular to subround; lif medium pebbles, angular to subangular; little very coarse grained sand angular to subangular (199.0 - 202.0') Topock - Alluvium Deposits; S	y; some very f ttle granules t clay; trace co ar; moist; ver	ine to to parse to y stiff		
200		. 11000	11:: 5: 10: 10:	Topock - Alluvium Deposits	CL		gravel (CL); reddish brown (2.5YR 4/4); mediu very fine to very coarse grained sand, angular	um plasticity; to subround;	some little	- II OW	

Date Started: 0.60/20/20/19 Surface Elevation. NA	9/	ARC	ADI:	Design & Consultancy for natural and built assets		Во	ring	Log	\$	Sheet: 11 of	21
Northing (NADS) NA									Boring No	o.: MW-Xd	
Drilling Method: Drilling Asstrict Drilling Ass	l l							,		<u> </u>	
Direct Property Prospect Truck Mount Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California. Direct Section: 9.6.1 bgs Sec	_					_	•	,			
Deller Name: E. Ramos / S. Vasquez Optiming Asset: O. Flores LL. Amanga G.J / S.M / C.S / D.C / Alm Grand Willford Converted to Welt: Sampling Interval: Converted to Welt: Set	_			•			-			•	
Dolling Assist C. O. Flores / L. Amaya Sampling Interval Conditionus (Continuous Samplar of the Well: Samplar of t									Location: PG&	<u>E Topock, Needl</u>	es, California
Logger SUN ICS (DC IAM Sample in Converted to Well: Ves No South Wilford Converted to Well: Ves No South Converted to Well: Ves No South Converted to Well: Ves No South Converted to Well: Ves No Drilling Notes Drilling Notes Drilling Fluid Interest Converted to Well: Ves No Topods - All Very 1971 (1990) - All Very				•		-					
Editor: Grant Willford Converted to Well: Yes No Size Sample D Sa				•		-	-		Project Numbe	r: <u>RC000753.00</u>	<u>51</u>
Since Sample D Screen Indiana Service Sample D Screen Indiana Service D					/ AIVI	-	-				
Typoch allowing Deposits CIL 2012 - 2013 - 2010 Typoch Allowing Deposits Sity and with graph 2024 - 203 - 2010 Typoch Allowing Deposits Sity and with graph 203 - 203 - 2010 Typoch Allowing Deposits Sity and with graph 203 - 204 - 205 - 207 Typoch Allowing Deposits Sity and with graph 204 - 205 - 206 - 207 Typoch Allowing Deposits Sity and with graph 205 - 206 - 207 Typoch Allowing Deposits Sity and with graph 206 - 207 - 208 - 207 Typoch Allowing Deposits Sity and with graph 207 - 208 - 207 Typoch Allowing Deposits Sity and with graph 208 - 207 Typoch Allowing Deposits Sity and with graph 208 - 207 Typoch Allowing Deposits Sity and with graph 209 Typoch Allowing Deposits Sity and with graph 208 Typoch Allowing Deposits Sity and with graph 209 Typoch Allowing Deposits Sity and with graph 209 Typoch Allowing Deposits Sity and with graph 209 Typoch Allowing Deposits Sity and with graph 200 Typoch Allowing Deposits Sity and with graph 200 Typoch Allowing Deposits Sity and with graph 201 Typoch Allowing Deposits Sity and with graph 202 Typoch Allowing Deposits Sity and with graph 203 Typoch Allowing Deposits Sity and with graph 204 Typoch Allowing Deposits Sity and with graph 205 Typoch Allowing Deposits Sity and with graph 206 Typoch Allowing Deposits Sity and with graph 207 Typoch Allowing Deposits Sity and with graph 208 Typoch Allowing Deposits Sity and with graph 208 Typoch Allowing Deposits Sity and with graph 208 Typoch Allowing Deposits Sity and with graph 209 Typoch Allowing Deposits Sity and with graph 209 Typoch Allowing Deposits Sity and with graph 200 Typoch Allowing Deposits Sity	Editor.		Giai	TE VVIIIIOI G		Conven	teu io v	Vell. A res I NO			T
201	Depth (ft)	Recovery (in)			Geologic Formation	USCS Code	USCS			Drilling Notes	
201					Alluvium	CL		clasts composed of metadiorite; moist; very st	iff Silty sand with gravel		5395 gallons of water used; 4465 gallons of water recovered; 930 gallons of water
206		120						angular to subround; some silt; little granules angular to subround; little clay; coarser clasts metadiorite; moist (204'); little silt; trace clay; moist to wet	to large pebbles, composed of	9	
208 MMV.XVAS. 207-212 (-0.17 U ppt) G30/2019 (-0.18 Minuturn Deposits SM 205'); some silt; moist to wet; no clay, weathered granules to very large pebbles Samples fell out of core. Groundwater sample interval 207 to 212 ft. bgs screened according to the core. Groundwater sample interval 207 to 212 ft. bgs screened according to the core. Groundwater sample interval 207 to 212 ft. bgs screened according to the core. Groundwater sample interval 207 to 212 ft. bgs screened according to the core. Groundwater sample interval 207 to 212 ft. bgs screened according to the core. Groundwater sample interval 207 to 212 ft. bgs screened according to the core. Groundwater sample interval 207 to 212 ft. bgs screened according to the core. Groundwater sample interval 207 to 212 ft. bgs screened according to the core. Groundwater sample interval 207 to 212 ft. bgs screened according to the core. Groundwater sample interval 207 to 212 ft. bgs screened according to the core. Groundwater sample interval 207 to 212 ft. bgs screened according to the core. Groundwater sample interval 207 to 212 ft. bgs screened according to the core. Groundwater sample interval 207 to 212 ft. bgs screened according to the core. Groundwater sample interval 207 to 212 ft. bgs screened according to the core. Groundwater sample interval 207 to 212 ft. bgs screened according to the core. Groundwater sample interval 207 to 212 ft. bgs screened according to the core. Groundwater sample interval 207 to 212 ft. bgs screened according to the core. Groundwater sample interval 207 to 212 ft. bgs screened according to the core. Groundwater sample interval 207 to 212 ft. bgs screened according to the core. Groundwater sample interval 207 to 212 ft. bgs screened according to the core. Groundwater sample interval 207 to 212 ft. bgs screened according to the core. Groundwater sample interval 207 to 212 ft. bgs screened according to 207 to 2								subangular; moist to wet (206.3'); little silt; no cobbles, increase in sand	3		
	209 210 211 212	108	Samples	207-212 (<0.17 U ppb) 6/30/2019	Alluvium	SM		(209'); some silt; moist to wet; no clay, weather large pebbles		Normal drilling, approximately 6 inchs of sample fell out of core barrel at ~208.5 during bagging, material was the same as in the core. Groundwater sample interval 207 to 212 ft. bgs screened across sandy zone 207 to 209	
	216										
	217										
114 - 219	''-										1
114 - 219	218										
		, ,									
	210	114									
	220										

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet: 12 of	21
Date S	Started	06/20/	2019		Surface	Elevatio	n: <u>N/A</u>	Boring No	o.: <u>MW-Xd</u>	
		ted: <u>07/30/</u>				g (NAD8	•			
Drilling	-	<u>Casca</u>			_	(NAD83		_ Client: <u>PG&</u>		
_	g Metho		Drilling		Total De	-	417 ft bgs	•	GW Remedy Ph	
	ig Type		nic Truck Mou			le Diame		_ Location: <u>PG&</u>	E Topock, Needl	es, California
	Name:		nos / S. Vasqı		-		ater: <u>9.6 ft bgs</u>			
Drilling			res / L. Amaya		-	ng Metho		_ Project Numbe	er: RC000753.00	51
Logge			SM / CS / DC /	<u>/ AM</u>	-	ng Interva		_		
Editor:	:	Grant	Willford		Convert	ted to W	ell: X Yes No			T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
	114			Topock - Alluvium Deposits	SM					(177.0 - 327.0') 5395 gallons of water used; 4465 gallons of water recovered; 930 gallons of water lost
228	- 111.6	No Sieve Samples Collected		Topock - Alluvium Deposits	SM		227.0 - 240.0') Topock - Alluvium Deposits; eddish brown (2.5YR 4/4); very fine grained, angular to subround; some silt; little lebbles, angular to subangular; trace clay; composed of metadiorite; moist; iron oxide stranules to very large pebbles 230'); increase in silt, decrease in very fine 235'); moist to wet	to very coarse e granules to large coarser clasts staining; weathered to very coarse sand	(237.0 - 245.0') (237.0 - 245.0')	
238 239 240	114								Normal drilling, poor	
A		11000	1 :6 10 :101		<u> </u>	c. c			1 1 0144	

SA	RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	3			Sh	eet: 13 of	21
Date St	arted:	06/20/	2019		Surface	Elevati	ion:	N/A		Borir	na No.:	: MW-Xd	
	•	ted: <u>07/30/</u>	2019		Northing			N/A		_			
Drilling (<u>Casca</u>			Easting	•	3):	N/A		_ Client:	PG&E		
Drilling I					Total De			417 ft bgs		_ ,		W Remedy Ph	
Drill Rig			nic Truck Mou		Borehol					_ Location	: PG&E	Topock, Needle	es, California
Driller N			mos / S. Vasq					9.6 ft bgs	ft Cana Damel	_ Designed N		DC0007E2 00	F1
Drilling A			res / L. Amaya SM / CS / DC		Samplin Samplin	-		Continuous	ft Core Barrel	_ Project r	number:	RC000753.00	01
Logger: Editor:			Willford	/ AIVI	Convert				No	_			
	_	Oldit	VIIIIOIG				V CII.						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class			Soil Description			Drilling Notes	Drilling Fluid
241	114		MW-X-VAS-	Topock - Alluvium Deposits	SM		(SM); r grained large p compo pebble:	eddish brown (2. I, angular to subr I) angular to subr I) seed of metadiorit s, dry 243.5'-244'	on oxide staining; inc	rained to very e granules to volay; coarser of granules to ve	coarse very clasts ery large	(237.0 - 245.0') Normal drilling, poor (245.0 - 247.0') Hard drilling.	(177.0 - 327.0') 5395 gallons of water used; 4465 gallons of water recovered; 930 gallons of water lost
248	120	No Sieve Samples Collected	MW-X-VAS- 245-255 (<0.033 U ppb) 7/1/2019 13:35	Topock - Altuvium Deposits	SM		reddish grained large p coarse granule	a brown (2.5YR 4), angular to subrebbles, angular to relasts composes to very large programmer.		to very coars granules to v lay, trace mica ist; weathered	e ery	(247.0 - 257.0') Normal drilling.	
	120			Topock - Alluvium Deposits	SM		(SM); r to very granule moist; granule	eddish brown (2. coarse grained, se to very large promottled; iron oxides to very large profess to very large	- Alluvium Deposits; 5YR 4/4) little (7.5R angular to subround; ebbles, angular to su e staining; wet at 25 ebbles	4/6), very fine some silt; litt ibangular; trac 6' bgs, weath	grained le ce clay; ered		
260		11000				<u> </u>						1 1 014	1 ,

9/	ARC	ADI	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 14 of	21
Date S	Started:	06/	20/2019		Surface	Elevati	ion: <u>N/A</u>	Borino	ı No ·	MW-Xd	
Date C	Comple	ted: <u>07/</u>	30/2019		Northing	g (NAD	83): <u>N/A</u>		,	<u> </u>	
Drilling	Co.:	<u>Cas</u>			Easting	(NAD8	33): <u>N/A</u>	_ Client: <u> </u>	PG&E		
Drilling	Metho	od: <u>Sor</u>	nic Drilling		Total De	epth:	417 ft bgs	_ Project: <u> </u>	Final GV	N Remedy Ph	ase 1
Drill Ri	д Туре	: <u>Pro</u>	sonic Truck Mo	<u>unt</u>	Borehol	e Diam	eter: <u>6-12 inches</u>	_ Location: [PG&E T	opock, Needle	es, California
Driller	Name:	<u>E. l</u>	Ramos / S. Vasc	uez	Depth to	First \	Nater: 9.6 ft bgs	_			
Drilling	Asst:	<u>O</u> .	Flores / L. Amay	a	Samplin	g Meth	nod: 4 Inch X 10 ft Core Barrel	_ Project Nu	mber: <u>F</u>	RC000753.005	51
Logge	r:	_GJ	/SM/CS/DC	/ AM	Samplin	g Inter	val: <u>Continuous</u>	_			
Editor:		<u>Gra</u>	nt Willford		Convert	ed to V	Vell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample	Groundwater D Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
	120			Topock - Alluvium Deposits	SM		reddish brown (2.5YR 4/4) little (7.5R 4/6); very coarse grained, angular to subround; midiatency; some silt; little granules to very larg to subangular; little clay; coarser clasts comproist; mottled; weathered gravel granules to	edium plasticity, ge pebbles, ang oosed of metadi	, no ular orite;	(257.0 - 267.0') Normal drilling, water was observed to contain more bubbles during drilling. Possibly due to increased specfic conductivity or salinity.	(177.0 - 327.0°) 5395 gallons of water used; 4465 gallons of water recovered; 930 gallons of water lost
	120	No Sieve Samples Collected		Tanask			(269.0 - 327.0') Topock - Alluvium Deposits; (SM); reddish brown (2.5YR 4/4) some (7.5R grained to very coarse grained, angular to sul granules to very large pebbles, angular to sul little clay; trace angular; coarser clasts comp moist; mottled; weathered granules to small of	4/6); very fine obround; some bangular; some osed of metadic	silt;	(267.0 - 277.0') Normal drilling, during reaming with 10-inch removed 6-inch casing and attempted to dry drill due to reduce water use.	
	120			Topock - Alluvium Deposits	SM		(275'); little granules to very large pebbles, ar trace angular to subangular; increase in silt, to very coarse sand, dry from 283-285' bgs	ngular to subrou increase in ver	und; y fine		
280				<u> </u>							

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	S	neet: 15 of	21
Date S			0/2019		Surface	Elevation	n: <u>N/A</u>	Boring No	: MW-Xd	
Date C	Comple	ted: <u>07/3</u>	0/2019		Northing		•	_		
Drilling		Caso			Easting	•	,	_ Client: PG&E		
Drilling			c Drilling		Total De	•	417 ft bgs	•	SW Remedy Ph	
Drill Ri			onic Truck Mou		Borehol			_ Location: <u>PG&E</u>	Topock, Needl	es, California
Driller I			amos / S. Vasq		-		/ater: 9.6 ft bgs	- Due ie et Niveele en	DC000752.00	E 4
Drilling			ores / L. Amaya SM / CS / DC		Samplin Samplin			_ Project Number	RC000753.00	51
Logge Editor:			t Willford	AIVI	Convert	-		_		
Luitor.		<u>Oran</u>	- Villiora		1				<u> </u>	
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
281 282 283 284 285 286 287	120						(287') red / moderate reddish brown(10R 4/6) and reddish brown	(281.0 - 287.0') Rough drilling.	(177.0 - 327.0') 5395 gallons of water used; 4465 gallons of water recovered; 930 gallons of water lost
	120	No Sieve Samples Collected	MW-X-VAS- 292-297 (<0.17 U ppb) 7/2/2019 14:45	Topock - Alluvium Deposits	SM		(291'); decrease in silt, increase in very fine to (293'); moist to wet	e in <mark>silt</mark> , increase in	(297.0 - 307.0') Rough drilling.	
	120						(299.5') reddish brown (2.5YR 4/4) some red			

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Lo	g		She	eet: 16 of	21
	Started:		2019		Surface			N/A	Borir	ıa No.:	MW-Xd	
	-	ted: <u>07/30/</u>			Northing			N/A		_		
Drilling		<u>Casca</u>			Easting	•	33):	N/A	Client:	PG&E		
Drilling			Drilling		Total De	-	-4		Project:		W Remedy Ph	
Drill Ri Driller			nic Truck Mou nos / S. Vasq		Borehol			6-12 inches 9.6 ft bgs	Location	PG&E	Topock, Needle	es, California
Drilling			res / L. Amaya		Samplin			4 Inch X 10 ft Core Barrel	Project N	lumber	RC000753 00:	 51
Logge	•		SM / CS / DC /		Samplin	-		Continuous		idinibon.	110000700.00	<i>y</i>
Editor:			Willford		Convert	-						
	2			.2 F	T							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
301 _302 _303 _304 _305 _306 _307	120						(303'); little si	(10R 4/6); some granules to very large pgular; decrease in very fine to very coars little granules to very large pebbles, and it; increase in very fine to very coarse sa	gular to suba		(297.0 - 307.0') Rough drilling.	(177.0 - 327.0') 5395 gallons of water used; 4465 gallons of water recovered; 930 gallons of water lost
308 309 310 311 312 313 314 315	- 120	No Sieve Samples Collected		Topock - Alluvium Deposits	SM		subanç very fir	dark reddish brown (2.5YR 3/4) trace reh brown(10R 4/6); some silt; moist to we very coarse sand	o <mark>mo</mark> ist; dec	Э	(307.0 - 317.0*) Rough drilling.	
315 316 317 318 319	- 120										(317.0 - 323.0') Normal drilling.	
320	<u></u>	11000	II :5 10 :10	<u> </u>		<u> </u>	L	n = holow ground ourfood amo			1 1 0 0 0 0	

	9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	S	neet: 17 of	21
Sample Depth Continue Continu	Date S	Started:	06/20/	2019		Surface	Elevat	on: N/A	- Boring No	· MM-X4	
Total Cepture Total Cepture	Date C	Comple	ted: <u>07/30/</u>	2019		Northin	g (NAC	83): <u>N/A</u>	Borning No	<u>IIII 744</u>	
Price Pric	Drilling	Co.:	Casca	ide		Easting	(NAD8	3): <u>N/A</u>	_ Client: PG&E		
Definition De	Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	417 ft bgs	_ Project: <u>Final (</u>	GW Remedy Ph	ase 1
Special Continues Continue	Drill Ri	д Туре	: Proso	<u>nic Truck Μοι</u>	<u>unt</u>	Borehol	le Diam	eter: 6-12 inches	_ Location: PG&E	Topock, Needle	es, California
Selection: Grant Willford Converted to Well: Ves No Grant Willford Conv				-		-		_			
Grant Willrord Converted to Well: Yes No Soil Description Drilling Notes Drilling Fluid Silver Soil Description Drilling Notes Drilling Fluid 170 - 9270 Normal drilling 170 - 9270 170 - 9270 Normal drilling 170 - 9270 170 - 9270 170 - 9270 170 - 9270 170 - 9270 170 - 9270 170 - 9270 170 - 9270 170 - 9270 170 - 9270 170 - 9270 170 - 9270 170 - 9270 170 - 9270 170 -	Drilling	Asst:		-			-		_ Project Number:	RC000753.005	51
Simple D Groundwater Sample D Sa						-	-		_		
321 322 323 324 325 326 327	Editor:		<u>Grant</u>	Willford	'	Convert	ted to V	Vell: ⊠ Yes ☐ No			
321 - 120	Depth (ft)	Recovery (in)			Geologic Formation	Code	USCS	Soil Description		Drilling Notes	Drilling Fluid
Allowium Deposits SM Deposits	 _322_ 				Tanack				ng; increase in very	Normal drilling.	4465 gallons of water recovered; 930 gallons of water
326 327 328 329 330 330 331 332 332 333 334 335 336 337 338 338 339 330 331 332 333 334 335 336 337 337 338 339 330 331 332 333 334 335 336 337 337 337 338 339 330 331 332 333 334 335 336 337 337 337 338 339 339 339 339 330 330 331 332 333 334 335 336 337 337 337 338 339 339 339 330 330 330 331 331 332 333 334 335 336 337 337 337 338 339 339 339 330 330 331 331 332 333 334 335 336 337 337 337 338 339 339 339 339 330 330 330 330 331 332 333 334 335 336 337 337 337 338 339 339 339 339 330	 _324	120			Alluvium	SM			,,,	Rough drilling.	
Topock-Alluvium Deposits (327.0 - 328.2') Topock-Alluvium Deposits, Gravelly elastic stit with sand (MH; reddish brown (2.5YR 4/4); medium plasticity, some and practice of the samples of									10		
with sarid (H+1); reddish brown (2.5YR 4/4); medium plasticity; some fine to very coarse grained so very large pebbles, angular to subround; little day, most cause of such as the coarse of the coars								(327.0 - 328.2') Topock - Alluvium Deposits:	Gravelly elastic silt	Normal drilling.	(327.0 - 412.0')
330 No Sieve Samples Collected 331 No Sieve Samples Collected 332 1200 333 No Sieve Samples Collected 334 No Sieve Samples Collected 335 No Sieve Samples Collected 336 No Sieve Samples Collected 337 No Sieve Samples Collected 338 No Sieve Samples Collected 339 No Sieve Samples Collected 330 No Sieve Samples Collected 331 No Sieve Samples Collected 331 No Sieve Samples Collected 332 No Sieve Samples Collected 333 No Sieve Samples Collected 334 No Sieve Samples Collected 335 No Sieve Samples Collected 336 No Sieve Samples Collected 337 No Sieve Samples Collected 338 No Sieve Samples Collected 339 No Sieve Samples Collected 330 No Sieve Samples Collected 331 No Sieve Samples Collected 332 No Sieve Samples Collected 339 No Sieve Samples Collected 330 No Sieve Samples Collected 331 No Sieve Samples Collected 330 No Sieve Samples Collected 331 No Sieve Samples Collected 332 No Sieve Samples Collected 333 No Sieve Samples Collected 334 No Sieve Samples Collected 335 No Sieve Samples Collected 336 No Sieve Samples Collected Sieve Sieve Samples Collected Sieve Samples C	 _328_				Alluvium	МН		with sand (MH); reddish brown (2.5YR 4/4); r some granules to very large pebbles, angular very fine to very coarse grained sand, subang little clay, some coarser clasts composed of	medium plasticity; r to subround; little gular to subround:	Normal Drilling.	
Samples Collected Topock-Alluvium Deposits (25 YR 4/4); medium plasticity, some granules to large pebbles, angular to subround; little clay, moist; medium stiff, weak cementation (331); trace clay; increase in granules and pebbles, decrease in sit and clay Samples Collected Topock-Alluvium Deposits (334), - 337.5°) Topock - Alluvium Deposits; Sandy elastic silt with gravel (MH); reddish brown (2.5YR 4/4); medium plasticity; some granules to very large pebbles, angular to subround; little granules to very large pebbles, angular to subround; little granules to very large pebbles, angular to subangular; trace clay; moist; medium stiff; weak cementation ML Samples Collected Topock-Alluvium Deposits (334), 0 - 337.5°) Topock - Alluvium Deposits; Sandy elastic silt with gravel (MIL); reddish brown (2.5YR 4/4); medium plasticity; some granules to very large pebbles, angular to subangular; little very fine to very coarse grained sand, subangular to subround; trace clay; moist; medium stiff; weak cementation (334), 1 - 337.5°) Topock - Alluvium Deposits; Gravelly silt with sand (MIL); reddish brown (2.5YR 4/4); medium plasticity; some granules to very large pebbles, angular to subangular; little very fine to very coarse grained sand, subangular to subangular; little very fine to very coarse grained sand, subangular to subangular; little very fine to very coarse grained sand, subangular to subangular; little very fine to very carse grained sand, subangular to subangular; little very fine to very carse grained sand, subangular to subangular; little very fine to very carse grained sand, subangular to subangular; little very fine to very carse grained sand, subangular to subangular; little very fine to very carse grained sand, subangular to subangular; little very fine to very carse grained sand, subangular to subangular; little very fine to very carse grained sand, su					Alluvium	SM		(328.2 - 329.9') Topock - Alluvium Deposits; (SM); reddish brown (2.5YR 4/4); very fine gr cobbles, subangular to subround; low plastic granules to large pebbles, angular to subrour	ained to small ity; some silt; little		
Topock-Alluvium Deposits 333			Samples Collected		0	3		(329.9 - 334.0') Topock - Alluvium Deposits; with sand (MH); reddish brown (2.5YR 4/4); r some granules to large pebbles, angular to s	medium plasticity; ubangular; little very		
334. 335. 336. 337. 338. 339. 340. 340. 340. 340. 340. 340. 340. 340	 _332_	1200			Alluvium	МН		clay; moist; medium stiff; weak cementation (331'); trace clay; increase in granules and po			
(334.0 - 337.5) Topock - Alluvium Deposits; Sandy elastic silt with gravel (MH); reddish brown (2.5YR 4/4); medium plasticity; some fine to very coarse grained sand, subangular to subround; little granules to very large pebbles, angular to subround; little granules to very large pebbles, angular to subround; little granules to very large pebbles, angular to subround; little with sand (ML); reddish brown (2.5YR 4/4); low plasticity; some granules to very large pebbles, angular to subround; trace clay; moist; medium stiff; weak cementation (337.0 - 345.0') Normal drilling, drilled 8 ft due to slough. (337.0 - 345.0') Normal drilling, drilled 8 ft due to slough. (337.0 - 345.0') Normal drilling, drilled 8 ft due to slough. (337.0 - 345.0') Normal drilling, drilled 8 ft due to slough. (337.0 - 345.0') Normal drilling, drilled 8 ft due to slough. (337.0 - 345.0') Normal drilling, drilled 8 ft due to slough. (337.0 - 345.0') Normal drilling, drilled 8 ft due to slough. (337.0 - 345.0') Normal drilling, drilled 8 ft due to slough. (337.0 - 345.0') Normal drilling, drilled 8 ft due to slough. (337.0 - 345.0') Normal drilling, drilled 8 ft due to slough.	 _333 _ 					C					
(334.0 - 337.5) Topock - Alluvium Deposits; Sandy elastic silt with gravel (MH); reddish brown (2.5YR 4/4); medium plasticity; some fine to very coarse grained sand, subangular to subround; little granules to very large pebbles, angular to subround; little granules to very large pebbles, angular to subround; little granules to very large pebbles, angular to subround; little with sand (ML); reddish brown (2.5YR 4/4); low plasticity; some granules to very large pebbles, angular to subround; trace clay; moist; medium stiff; weak cementation (337.0 - 345.0') Normal drilling, drilled 8 ft due to slough. (337.0 - 345.0') Normal drilling, drilled 8 ft due to slough. (337.0 - 345.0') Normal drilling, drilled 8 ft due to slough. (337.0 - 345.0') Normal drilling, drilled 8 ft due to slough. (337.0 - 345.0') Normal drilling, drilled 8 ft due to slough. (337.0 - 345.0') Normal drilling, drilled 8 ft due to slough. (337.0 - 345.0') Normal drilling, drilled 8 ft due to slough. (337.0 - 345.0') Normal drilling, drilled 8 ft due to slough. (337.0 - 345.0') Normal drilling, drilled 8 ft due to slough. (337.0 - 345.0') Normal drilling, drilled 8 ft due to slough.	334										
Topock - Alluvium Deposits MW-X-VAS- 337-342 (<0.17 U ppb) 7/11/2019 11:30 ML Topock - Alluvium Deposits (ML); reddish brown (2.5YR 4/4); low plasticity; some granules to very large pebbles, angular to subangular; little very distinction (ML); reddish brown (2.5YR 4/4); medium plasticity; some granules to very large pebbles, angular to subangular; little very distinction (ML); reddish brown (2.5YR 4/4); medium plasticity; some granules to very large pebbles, angular to subangular; little very distinction (ML); reddish brown (2.5YR 4/4); medium plasticity; some granules to very large pebbles, angular to subangular; little very distinction (ML); reddish brown (2.5YR 4/4); medium plasticity; some granules to very large pebbles, angular to subangular; little very	 _335_							gravel (MH); reddish brown (2.5YR 4/4); med fine to very coarse grained sand, subangular granules to very large pebbles, angular to sul	lium plasticity; some to subround: little		
MW-X-VAS-337-342 (<0.17 U ppb) 7/11/2019 11:30 MW L S-VAS-339 11:30 MIL O	 _336 				Alluvium	MH		moist; medium stiff; weak cementation			
MW-X-VAS-337-342 (<0.17 U ppb) 7/11/2019 11:30 ML Topock - Alluvium Deposits; Gravelly silt with sand (ML); reddish brown (2.5YR 4/4); low plasticity; some granules to very large pebbles, angular to subround; trace clay; moist; medium stiff; weak cementation (ML); reddish brown (2.5YR 4/4); medium plasticity; some granules to very large pebbles, angular to subround; trace clay; moist; medium stiff; weak cementation (338.0 - 341.0') Topock - Alluvium Deposits; Gravelly silt with sand (ML); reddish brown (2.5YR 4/4); medium plasticity; some granules to very large pebbles, angular to subround; trace clay; moist; medium stiff; weak cementation (ML); reddish brown (2.5YR 4/4); medium plasticity; some granules to very large pebbles, angular to subangular; little very	_337									(337.0 - 345.0')	
ppb) 7/11/2019 11:30 Topock - Alluvium Deposits ML ML 340 O Coalse grained sairt, subarigular to subround, frace day, moist, medium stiff; weak cementation (338.0 - 341.0') Topock - Alluvium Deposits; Gravelly silt with sand (ML); reddish brown (2.5YR 4/4); medium plasticity; some granules to very large pebbles, angular to subround, trace day, moist, medium stiff; weak cementation (38.0 - 341.0') Topock - Alluvium Deposits; Gravelly silt with sand (ML); reddish brown (2.5YR 4/4); medium plasticity; some granules to very large pebbles, angular to subround, trace day, moist, medium stiff; weak cementation	 _338_			337-342	Alluvium	ML		(ML); reddish brown (2.5YR 4/4); low plastici very large pebbles, angular to subangular; litt	ty; some granules to tle very fine to very	Normal drilling, drilled 8 ft due	
340	 _339_ 	96		` ppb) 7/11/2019	Alluvium	ML		medium stiff; weak cementation (338.0 - 341.0') Topock - Alluvium Deposits; (ML); reddish brown (2.5YR 4/4); medium pla	Gravelly silt with sand asticity; some		
		<u></u>	11000		16		<u>ra lol'</u>				<u> </u>

9/	۱RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sho	eet: 18 of	21
Date S	started:	06/20/2	2019		Surface	Elevat	on: <u>N/A</u>	Boring No.:	· MW-X4	
Date C	omple	ted: <u>07/30/</u>	2019		Northing	g (NAD	83): <u>N/A</u>	Dorning 140	<u> </u>	
Drilling	Co.:	<u>Casca</u>	de		Easting	(NAD8	3): <u>N/A</u>	Client: PG&E		
Drilling	Metho	od: Sonic	Drilling		Total De	epth:	417 ft bgs	Project: Final G	W Remedy Pha	ase 1
Drill Ri			nic Truck Mou		Borehol	•	-	Location: PG&E		
Driller I			nos / S. Vasqu	uez	Depth to	First \	Vater: 9.6 ft bgs		•	,
Drilling			res / L. Amaya		Samplin		•	Project Number:	RC000753.005	51
Logge			M/CS/DC/		Samplin	•		,		
Editor:			Willford		Convert	•				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
 _341			MW-X-VAS- 337-342 (<0.17 U ppb)	Topock - Alluvium Deposits	ML		fine to very coarse grained sand, subangular to clay; moist; stiff; moderate cementation (339'); wet to moist; weak cementation; decrea pebbles, increase in silt	ase in granules and	(337.0 - 345.0') Normal drilling, drilled 8 ft due to slough.	(327.0 - 412.0') No used
_ 342_	96		7/11/2019 11:30	Topock - Alluvium Deposits	GM		(341.0 - 342.5') Topock - Alluvium Deposits; S (GM); reddish brown (2.5YR 4/4); granules to angular to subround; some fine to very coarse subangular to subround; little silt; trace clay; n	very large pebbles, grained sand,		
_343	90			Topock - Alluvium	SM		(342.5 - 345.0') Topock - Alluvium Deposits; S (SM); reddish brown (2.5YR 4/4); medium gragrained, angular to subround; some granules pebbles, angular to subround; little silt; trace of the subround; some statements of the subround; little silt; trace of the subround; silt; silt; trace of the subround; silt; silt; trace of the subround; silt; sil	ined to very coarse to very large	0	
_344 _345				Deposits	Sivi		cementation			
346 347				Topock - Alluvium Deposits	ML		(345.0 - 348.0') Topock - Alluvium Deposits; G (ML); reddish brown (2.5YR 4/4); low plasticity large pebbles, angular to subround; little fine t sand, subangular to subround; moist to dry; so cementation	r, some small to o coarse grained oft; weak	(345.0 - 352.0') Normal drilling.	
				Topock -	MH		(347'); moist to dry; soft; weak cementation; in and pebbles, increase in sand, decrease in sil (348.0 - 348.3') Topock - Alluvium Deposits; G	Gravelly elastic silt		
349 		No Sieve		Alluvium Deposits Topock -			with sand (MH); light brown (7.5YR 6/4); mediclay, little granules to medium pebbles, angula very fine to fine grained sand, subangular to recementation (348.3 - 352.0') Topock - Alluvium Deposits; G(ML); reddish brown (2.5YR 4/4); low plasticity	ar to subround; trace bund; dry; soft; weak		
350 351	144	Samples Collected		Alluvium Deposits	ML		large pebbles, angular to subround; little fine t sand, subangular to subround; moist to dry; so cementation	o coarse grained		
352 							(352.0 - 355.0') Topock - Alluvium Deposits; With silt and gravel (SW-SM); reddish brown (2 grained to medium grained, subangular to subgranules to very large pebbles, angular to sub	2.5YR 4/4); very fine pround; little	(352.0 - 357.0') Rough drilling.	
354 				Topock - Alluvium Deposits	SW-SM		člay; trace smáll cobbles, subángúlar; moist; v			
356 				Topock - Weathered Bedrock - conglomerat	MH		(355.0 - 357.0') Topock - Weathered Bedrock Gravelly elastic silt with sand (MH); reddish br medium plasticity; some granules to very large subround; little very fine to fine grained sand, s subround; little clay; little coarser clasts comp dry to moist; stiff; moderate cementation	own (2.5YR 4/4); e pebbles, angular to subangular to		
358	60			Topock - Weathered Bedrock - conglomerat	IVIL		(357.0 - 359.0') Topock - Weathered Bedrock Sandy silt with gravel (ML); reddish brown (2.5 plasticity; some very fine to medium grained subround; little granules to very large pebbles, subround; little clay; moist; medium stiff; weak	SYR 4/4); low and, subangular to angular to	(357.0 - 362.0') Rough drilling, slough in 4-inch rathole advance 6-inch for clean out.	
 360				Topock - Weathered Bedrock -	IVIL		(359.0 - 374.0') Topock - Weathered Bedrock Sandy silt with gravel (ML); reddish brown (2.5 plasticity; some very fine to very coarse graine	SYR 4/4); low d sand, subangular		

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Date S	Started:	06/20/	2019		Surface	Eleva	ion: N/A	Borin	u No .	MW-Xd	
Date C	Comple	ted: <u>07/30/</u>	2019	1	Northing) (NAE	983): <u>N/A</u>	Borini	9 110	IVIVV-XU	
Drilling	Co.:	<u>Casca</u>	de	E	Easting	(NAD	33): <u>N/A</u>	Client:	PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	417 ft bgs	Project:	Final GV	V Remedy Pha	ase 1
Drill Ri			nic Truck Moi	unt [Borehol	e Dian	neter: <u>6-12 inches</u>	Location:	PG&E T	opock, Needle	es, California
Driller			nos / S. Vasq		-		Water: 9.6 ft bgs				
Drilling			res / L. Amay		Samplin	-		Project N	umber: <u>F</u>	RC000753.005	51
Logge			SM / CS / DC		Samplin	-		-			
Editor:		Grant	Willford		Convert	ea to v	Vell:				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
				conglomerate			to subround; little granules to very large pebb subround; little clay; trace coarser clasts com metadiorite; dry to moist; soft)	(357.0 - 362.0') Rough drilling, slough in 4-inch	(327.0 - 412.0') No used
361	60						(361'); moist to wet			rathole advance 6-inch for clean	
							(361.5'); moist to wet; soft; weak cementation	; increase in	and	out.	
362							and decrease in silt			(362.0 - 367.0')	
-										Soft drilling, slough in 4-inch	
363							(363'); dry to moist			rathole advance 6-inch for clean	
										out.	
_364											
_365											
					28						
_366				1							
				Topock - Weathered							
_367	120			Bedrock -	ML					(367.0 - 372.0')	
				conglomerate						Soft Drilling.	
368											
 369											
309							(369'); dry to moist; soft; weak cementation; in	ncrease in sa	nd and		
370		No Sieve					decrease in silt				
3/U		Samples Collected									
 _371											
_3/			•								
270											
372										(372.0 - 377.0')	
272										Normal drilling.	
373											
274					,						
374							(374.0 - 377.0') Topock - Weathered Bedrock	c - conglomera	ite;		
275	60						Silty sand with gravel (SM); reddish brown (2. grained to very coarse grained, subangular to	subround; so	me		
375				Topock - Weathered			granules to very large pebbles, angular to sub moist; medium dense; moderate cementation		clay;		
270				Bedrock -	SM		, ,				
376				conglomerate	1						
_377				Topock -	GW-GM		(377.0 - 377.5') Topock - Weathered Bedrock	c - conglomera	ite;	(377.0 - 382.0')	
- -				Weathered Bedrock -		PT	Well graded gravel with silt and sand (GW-G (2.5YR 4/4); granules to boulders, subangula	r to subround;	little	Normal drilling.	
378				conglomerate			very fine to very coarse grained sand, subang little silt; dry to moist; weak cementation				
	60			Topock - Weathered	GM		(377.5 - 382.0') Topock - Weathered Bedrock	c - conglomera	ite;		
_379				Bedrock - conglomerate		; P. <	Silty gravel with sand (GM); reddish brown (2 to very large pebbles, angular to subround; lit	tle very fine to	very		
						[6]	coarse grained sand, subangular to subround trace coarser clasts composed of metadiorite	d; little silt; trace; dry to moist	ce clay;		
380 Abbres	viations	: 118CS - 1	Inified Soil C	 accification	System	<u> </u>	eet has = helow around surface ams			level GW = c	roundwater

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Date S						Elevati	•	Boring No	.: MW-Xd	
		ted: <u>07/30</u> /				g (NAD	•			
Drilling		Casca				(NAD8	•	Client: PG&I		
Drilling					Total D		417 ft bgs	•	GW Remedy Ph	
Drill Ri			nic Truck Mou			le Diam	•	_ Location: PG&I	Topock, Needle	es, Calitornia
Driller Drilling			mos / S. Vasq res / L. Amaya		•	o riist v ng Meth	Vater: <u>9.6 ft bgs</u> od: <u>4 Inch X 10 ft Core Barrel</u>	Project Number	· RC000753 004	 51
Logge			SM / CS / DC		-	ng Inter		_ 1 Tojeot Namber	. 110000700.000	J1
Editor:			Willford		-	ted to W		_		
	>			υ 5						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
381	60			Topock - Weathered Bedrock - conglomerate	GM e		moderate cementation		(377.0 - 382.0') Normal drilling.	(327.0 - 412.0') No used
382							(382.0 - 390.0') Topock - Weathered Bedrock Gravelly lean clay with sand (CL); reddish bro medium plasticity; some granules to very large	own (2.5YR 4/4);	(382.0 - 390.0') Normal drilling.	
383							subround; little fine to coarse grained sand, s subround; little silt; moist to wet; soft; weak co	ubangular to ementation	0	
_384			MW-X-VAS- 382-387 (<0.17 U ppb)							
385			ppb) 7/13/2019 14:43							
				Topock -				400	,	
_386				Weathered Bedrock -	CL		(386'); moist to wet; soft; weak cementation; of			
 _387	132			conglomerat	e		and pebbles and sand, increase in silt and cla	ay		
30/										
389										
_										
390		No Sieve Samples					(200 0 400 0) Tayari Washing d Badasal		(300.0303.0!)	
		Collected					(390.0 - 400.0') Topock - Weathered Bedrock Gravelly lean clay with sand (CL); reddish bro	own (2.5YR 4/4);	(390.0 - 393.0') Rough drilling.	
_391							medium plasticity; some silt; little granules to angular to subround; little fine to very coarse	grained sand,		
-							subangular to subround; moist; soft; weak cel	mentation		
392							(392'); moist; soft; weak cementation; increas pebbles, and decrease in clay	se in granules and		
393							(392.7'); moist; soft; weak cementation (393'); moist; soft; weak cementation; increas	ee in granules and	(393.0 - 403.0')	
							pebbles, decrease in sand and clay	se in grandles and	Normal drilling.	
_394										
395				Topock - Weathered	CL					
				Bedrock - conglomerate						
396										
<u> </u>	162						(396.5'); moist; soft; weak cementation; decre	ease in granules and		
_397							pebbles, increase in silt and clay	sase in granules and		
-										
398										
							(398.5'); moist; soft to medium stiff; weak cen	mentation; increase in		
399							granules and pebbles, decrease in silt			
400										
		. 11000		: :: : : :	0 1	- EL E-	ot has - holow ground surface amo		1 1 0 1 0 1 1	

9/	4R (ADIS	Design & Consultancy for natural and built assets		Во	ring L	og		She	eet: 2	21 of	21
	Started			,		Elevation:	N/A	Boring	a No.:	MV	V-Xd	
	•	ted: <u>07/30/2</u>				g (NAD83):				_		
Drilling	-	Cascac			_	(NAD83):	N/A		PG&E			
	Metho		•		Total De	•	417 ft bgs	•			nedy Ph	
	ig Type		ic Truck Mou			e Diameter		Location:	PG&E	<u>l opocl</u>	<, Need	<u>les, California</u>
	Name:		nos / S. Vasq		•		er: 9.6 ft bgs	Droiget Nu		DC000	752.00)E1
Drilling			es / L. Amay M / CS / DC			ng Method: ng Interval:	4 Inch X 10 ft Core Barrel Continuous	Projective	imber.	RCUUL	<u> </u>	101
Logge Editor:		Grant V			-	ed to Well:		-				
Laitor	1	<u>Olant v</u>	V IIII O I G		1	1						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic	USCS	USCS	Soil Description			·	g Notes	Drilling Fluid
401	-			Topock - Weathered Bedrock - conglomerat	CL	Gra me	0.0 - 401.0') Topock - Weathered Bedrock velly lean clay with sand (CL); reddish bro lium plasticity; some silt; little granules to ular to subround; little fine to very coarse	own (2.5YR 4/4 large pebbles,);) - 403.0') al drilling.	(327.0 - 412.0') No used
402	_			Topock - Weathered Bedrock - conglomerat	l GC	soft (40	angular to subrou <mark>nd; trace small cobbles, to medium stiff; weak cementation I.0 - 402.2') Topock - Weathered Bedrock yey gravel with sand (GC); reddish brown</mark>	c - conglomerat				
403	460			Topock - Weathered Bedrock - conglomerat	IVIL	very clay	nules to very large pebbles, angular to sub coarse grained sand, subangular to subr ; little coarser clasts composed of metadi lentation	ound; little silt;	little) - 407.0') drilling.	
404	162			Topock - Weathered Bedrock -	GC	Gra	2.2 - 403.6') Topock - Weathered Bedrock velly silt with sand (ML); reddish brown (2 ticity; some granules to very large pebble	.5YR 4/4); low s. angular to		John		
405				donglomerat Topock - Weathered	´l	to s	round; little medium to very coarse graine ubround; little clay; moist; soft; weak ceme 8.6 - 404.0') Topock - Weathered Bedrock yey gravel with sand (GC); reddish brown	entation c - conglomerat				
406				Bedrock - conglomerat	e	gra ∵ven	relations with sails (SC), redustribles in lowing the words of the sails (SC), redustribles, angular to subrour coarse grained sand, subangular to subrictitite coarser clasts composed of metadi	nd; little mediur ound; little silt;	little			
407				Weathered Bedrock - conglomerat		(40	entation 1.0 - 406.1') Topock - Weathered Bedrock r sand with gravel (SM); reddish brown (2.	- conglomerat		(407.0) - 417.0')	
408_				Topock - Weathered Bedrock -	SM	gra gra gra clay	ned to very coarse grained, subangular to nules to very large pebbles, angular to sub ; little coarser clasts composed of metadi	subround; sor bround; little sil	t; little		drilling.	
409		No Sieve Samples Collected		conglomerat Topock -	9	(40 Sar	entation 6.1 - 407.0') Topock - Weathered Bedrock dy lean clay with gravel (CL); reddish brov dium plasticity; some silt; little granules to	vn (2.5YR 4/4)	: 1			
				Weathered Bedrock - conglomerat	GC	sub	angular to subround; little fine to very coal angular to subround; little fine to very coal angular to subround; moist; soft; weak cel 7.0 - 408.0') Topock - Weathered Bedrock	rse grained sar mentation	nd,			
411					Z	Silt gra plas	v sand with gravel (SM); reddish brown (2. ned to very coarse grained, subangular to ticity; some granules to very large pebble	5YR 4/4); fine subround; low s, angular to				
412	400			X		(40 Cla	round; liftle silt; little clay; moist; weak cer 9.0 - 411.0) Topock - Weathered Bedrock yey gravel with sand (GC); reddish brown nules to small cobbles, angular to subrour	c - conglomerat (2.5YR 4/4);				
-	120			Topock - Weathered	SM	coa	ings to small cobbles, angular to subround see grained sand, subangular to subround st; weak cementation 1.0 - 414.8') Topock - Weathered Bedrock	l; little silt; little	clay;	`Grou sampl) - 417.0') indwater e turbidity	375 gallons of water used; 0
413			MW-X-VAS-	Bedrock - conglomerat		Silt gra	sand with gravel (SM); reddish brown (2. ned to very coarse grained, subangular to ticity; some granules to very large pebble	5YR 4/4); fine subround; low s, angular to		below with the	d not get 10 NTU he use of e filters.	gallons of wate recovered; 375 gallons of wate lost
414	1		412-417 (<0.17 U ppb)			(41	round; some silt; little clay; moist; weak co 3.3'); moist; weak cementation; increase in bles and sand, decrease in silt and clay			Well s	screen fell 113.9' - 9' prior to	
415	-		7/15/2019 12:43	Topock -		Silt to v	I.8 - 417.0') Topock - Weathered Bedrock gravel with sand (GM); reddish brown (2) ery large pebbles, angular to subround; so	.5YR 4/4); grar ome fine to ver	nules /	samp water	lecting ble. Used r to flush	
416				Weathered Bedrock - conglomerat	GIVI	son cen	rse grained sand, subangular to subround le coarser clasts composed of metadiorite lentation			fines the in	casing of prior to stallation bentonite	
417_							End of Boring at 417.0 'bg	IS.			seal.	
-	-						End of boiling at 417.0 bg					
418	-											
-	-											
419	-											
-	-											
420 Abbro	viotion	. Hece - !	Inified Sail O	loccification	Suntan	n ft = foot	ogs = below ground surface, ams	d = abaya =	2000 00	a loval	G\\\/ -	aroundwate-
hannie	viauOH	s. 0303 - 0	minea son C	เฉออแบสแปโ	ı oystefi	ı, ıı – 1 00 1,	ogo – p e low ground sunace, ams	n – above 11	ı c alı Se	a ievel	, G V V -	groundwater,

Date Started: B80982019	9/	ARC	ADIS	for natural and built assets		Во	ring L	og		Sh	eet: 1 of	7
Northing (No.D3) No.D Northing (No.D3) No.D									Borir	na No.	: MW-Xs	
Drilling Method: Sonic Drilling Committee (1997) Phase 1 127 ft bas		•										
Diff Right Type: Prosonic Truck Mount	_										NA/ Dana ada Dia	4
Delier Namer Discrete Manager Delier Namer Stew Masquez Delier Namer Months of the Core Barrel Project Number: RC000753.0051				-				_				
Dilling Assit: O_Flores / I_Amaya					ını				_ Location	: PG&E	тороск, мееак	es, Calliornia
Logger Anthony Mack Sampling Intervals Screen Intervals				•		-		_	- Proiect N	Jumber:	RC000753 009	 51
Editor: Grant Willord Converted to Well: Yes No Signature Sig				-								
0.0 - 17 07 No recovery (NR); did not collect or log core, see (0.0 - 17 07 Settl (0.0 - 40 07) No drilling. (0.0 - 1						-	-					
0.0 - 17.0 No recovery (NR); did not collect or log core, see 0.0 - 17.0 No recovery (NR); did not collect or log core, see 0.0 - 17.0 No recovery (NR); did not collect or log core, see 0.0 - 17.0 No recovery (NR); did not collect or log core, see 0.0 - 17.0 No recovery (NR); did not collect or log core, see 0.0 - 17.0 No recovery (NR); did not collect or log core, see 0.0 - 17.0 No recovery (NR); did not collect or log core, see 0.0 - 17.0 No recovery (NR); did not collect or log core, see 0.0 - 17.0 No recovery (NR); did not collect or log core, see 0.0 - 17.0 No recovery (NR); did not collect or log core, see 0.0 - 17.0 No recovery (NR); did not collect or log core, see 0.0 - 17.0 No recovery (NR); did not collect or log core, see 0.0 - 17.0 No recovery (NR); did not collect or log core, see 0.0 - 17.0 No recovery (NR); did not collect or log core, see	_	ح			.º 5	10						
1	Depth (ft)	Recove (in)		Groundwater Sample ID	Geolog Formati	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
.t 20	2	0	Samples	12-17 (<0.033 U ppb) 6/25/2019			MW	/-Xd for lithology	or log core, s	See	(17.0 - 27.0') Loose fine grain out stay in	

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Log	9		Sheet: 2 of	7
Date S	Started:	08/09/2	2019		Surface	Elevation:	N/A	Boring	No.: MW-Xs	
Date C	Comple	ted: <u>08/12/2</u>	2019		Northing	g (NAD83):	N/A	Doming	110.1 <u>11117 7.0</u>	
Drilling	Co.:	Cascac	de		Easting	(NAD83):	N/A		G&E	
Drilling			-		Total De	-	127 ft bgs	•	<u>inal GW Remedy Ph</u>	
Drill Ri			ic Truck Mou			e Diameter:	<u>10-12 inches</u>	_ Location: <u>P</u>	G&E Topock, Need	es, California
Driller			/asquez		-	First Water:	_			
Drilling			es / L. Amaya		-	g Method:	4 inch x 10 ft. Core Barrel	_ Project Nun	nber: <u>RC000753.00</u>	51
Logge			y Mack		-	g Interval:	Screen Intervals	-		
Editor:		Grant V	<u>V litora</u>	1	Convert	ed to Well:				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
21	0				NR				(17.0 - 27.0') Loose fine grained sands did not stay in core barrel.	(0.0 - 40.0') No used
27						yellowi	36.0') Topock - Fill; Poorly graded sar sh brown (10YR 4/4); very fine grained	nd (SP); dark I to medium grair	(27.0 - 40.0') Soft drilling.	
28 						subano	jular to round; trace silt; wet			
30		No Sieve Samples Collected					100			
31			•		0.00					
32	120			Topock - Fil	I SP					
33					C					
34			MW-X-VAS- 32-37							
			(<0.033 U							
35			6/26/2019 11:45							
			-							
36					+	(36.0 -	46.5') Topock - Fluvial Deposits; Well	graded sand wit	<u>.h</u> ·	
						aravel	(SW); grayish brown (10YR 5/2); fine of subangular to subround; little granul	grained to very co	parse I I	
37				9		subanç	gular to subround; trace silt; wet	so to omail peob	.55,	
38	120			Topock - Fluvial Deposits	SW					
539 40										

9/	4RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 3 of	7
Date S	Started	08/09/	/2019		Surface	Elevation	on: <u>N/A</u>	Borir	na No.:	MW-Xs	
	-	ted: <u>08/12</u> /			Northing		•				
Drilling	•	<u>Casca</u>			Easting	•	•	Client:	PG&E		
_	g Metho				Total De	•	127 ft bgs	_ Project:		N Remedy Ph	
	ig Type		<u>nic Truck Μοι</u>	<u>ınt</u>	Borehol			Location	: <u>PG&E 1</u>	opock, Needle	es, California
	Name:		Vasquez		-		Vater: <u>9.6 ft bgs</u>	_			
_	g Asst:		res / L. Amaya	<u>a</u>	Samplin			Project N	lumber: <u>l</u>	RC000753.00	51
Logge			ny Mack		Samplin	-					
Editor		Grant	Wilford		Convert	ed to VV	/ell:				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	nscs Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
41	120	No Sieve Samples Collected		Topock - Fluvial Deposits Topock - Fluvial Deposits			(44.5'); little granules to large pebbles; increased (GW); dark grayish brown / dark yello angular to subangular; some fine to coarse subangular to subround; trace silt (47.0 - 97.0') No recovery (NR); did not coll MW-Xd for lithology	ell graded grav wish brown(10 grained sand,	el with YR 4/2);	(40.0') Retracked 10-inch casing and started flushing casing to get past due to rough drilling at 119 to 124 ft. bgs. and too much torque on the drill head.	(40.0 - 127.0') 4960.4 gallons of water used; 2031.68 gallons of water recovered; 2928.72 gallons of water lost
_60						1 1					

9/	4R (ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	eet: 4 of	7
Date S	Started	08/09/2	2019		Surface	Elevation:	N/A	Borin	a No .	MW-Xs	
		ted: <u>08/12/2</u>				g (NAD83):	N/A			11111 710	
Drilling		Cascac				(NAD83):	N/A	_ Client:	PG&E		
Drilling			-		Total De		127 ft bgs	_ Project:		N Remedy Ph	
Drill R			ic Truck Mou	<u>ınt</u>		le Diameter:	10-12 inches	_ Location:	PG&E	Fopock, Needl	es, California
Driller Drilling			/asquez es / L. Amaya		-	o First Water: ng Method:	9.6 π bgs 4 inch x 10 ft. Core Barrel	- Project N	umbor: l	RC000753.00	 51
Logge			<u>es / L. Amaya ıy Mack</u>	a	-	ng Interval:	Screen Intervals	_ =10]ect 11	umber. <u>i</u>	KC000733.00	J1
Editor		Grant V				ted to Well:	× Yes □ No	_			
	1			٠, ٥							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
61	0	No Sieve Samples Collected	MW-X-VAS- 71-76 (<0.033 U ppb) 6/27/2019 08:52		NR						(40.0 - 127.0') 4960.4 gallons of water used; 2031.68 gallons of water recovered; 2928.72 gallons of water lost
80_			1 :5 10 30								

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	et: 5 of	7
	Started					Elevation:	N/A	Borin	a No.:	MW-Xs	
	-	ted: <u>08/12/2</u>				g (NAD83):	N/A				
Drilling		<u>Cascac</u>	<u>le</u>		Easting	(NAD83):	N/A	_ Client:	PG&E		
Drilling	g Metho	od: <u>Sonic [</u>	Drilling		Total De	epth:	127 ft bgs	_ Project:	Final G\	N Remedy Ph	ase 1
Drill Ri	ig Type	: <u>Proson</u>	ic Truck Mou	ınt	Borehol	e Diameter:	10-12 inches	_ Location:	PG&E 1	opock, Needl	es, California
Driller	Name:	Steve \	/asquez		-	First Water	~	_			
Drilling	g Asst:	O. Flore	<u>es / L. Amaya</u>	<u> </u>	Samplin	g Method:	4 inch x 10 ft. Core Barrel	_ Project N	lumber: <u>I</u>	RC000753.00	51
Logge			y Mack			g Interval:	Screen Intervals	_			
Editor:	:	Grant V	Vilford		Convert	ed to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
81	0	No Sieve Samples Collected			NR						(40.0 - 127.0') 4960.4 gallons of water used; 2031.68 gallons of water recovered; 2928.72 gallons of water lost
92					Ç					(95.0') Rough drilling starts.	
9798 98	120			Topock - Fluvial Deposits	SW	(97.0 brown to sub	- 107.0') Topock - Fluvial Deposits; We (10YR 4/3); fine grained to very coarse round; trace granules, subangular to su	Il graded san e grained, sub ubround; wet	d (SW); angular		

Deller Marter. Deller Marter. Steve Vasquez Depth to First Water. 9.6 ft blog.	9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 6 of	7
Date Completed: B8112/2019 Northing (No.D83): NVA Clent: PG&E Cascada Gascada	Date S	started:	08/09/	2019		Surface	Elevati	n: <u>N/A</u>	Borin	a No .	MW-Xs	
Total Depth: Sonic Drilling Method: Sonic Drilling Method: Sonic Drilling Method: Store Vasquez Drilling Asstr. Converted to Well: Store Vasquez Sonic Drilling Asstr. Converted to Well: Sampling International Converted Converted to Well: Sampling International Converted Convert	Date C	Comple	ted: <u>08/12/</u>	2019		Northing	g (NAD	3): <u>N/A</u>	_	9 110	1017773	
Differ Name Property Prosente Truck Mount Borehole Dismeter 10-12 inches Location: PG&E Topock, Needles, California Ordinary Sizew Vasquez California Ordinary California Or	Drilling	Co.:	<u>Casca</u>	de		Easting	(NAD8): <u>N/A</u>	_ Client:	PG&E		
Driller Name: Slave Vacquez One Project LAmaya Anthony Mack Grant Willord Converted to Well: Sampling Interval: Screen Intervals	Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	127 ft bgs	_ Project:	Final G\	N Remedy Ph	nase 1
Sample S	Drill Ri	д Туре	e: <u>Prosor</u>	nic Truck Mou	unt	Borehol	le Diam	ter: <u>10-12 inches</u>	_ Location:	PG&E T	opock, Need	les, California
Anthony Mack Grant Wilford Converted to Well: Set on Intervals	Driller I	Name:	Steve '	Vasquez		Depth to	o First \	ater: 9.6 ft bgs				
Editor: Grant Willord Converted to Well: Yes No Single Sieve Sample ID Groundater Sign Sieve	Drilling	Asst:	O. Flor	res / L. Amaya	a	Samplin	ng Meth	d: 4 inch x 10 ft. Core Barrel	_ Project N	umber: <u>F</u>	RC000753.00)51
Simple D Groundstater Sample ID Groundstater	Logge	r:	<u>Anthor</u>	ny Mack		Samplin	ng Inter	al: <u>Screen Intervals</u>	_			
101 102 103 103 104 105	Editor:		Grant '	Wilford		Convert	ed to V	ell: 🗵 Yes 🗌 No				
1901 100	Depth (ft)	Recovery (in)			Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
Topock-Fluvial Deposits SW 105	 _102_ 											4960.4 gallons of water used; 2031.68 gallons of water recovered; 2928.72 gallons
105 Fluvial Deposits SW Government G	_103				Topook				AU			
Topock Fluvial Deposits; Well graded gravel with sand (GW), brown (10°K 4/3), granules to very large publies, subangular to subround; trace sill: 108_	 _104_	120			Fluvial	SW					9	
Topock Fluvial Deposits; Well graded gravel with sand (GW) brown (10°R 4/3), granutes to very large pebbles, subangular to subround; trace all? No Sieve Samples Collected No Sieve Samples Collected Topock Fluvial Deposits; Sity and with gravel (SM); dark grayish brown (10°R 4/3), granutes to very large pebbles, subangular to subround; trace all? (100, 1-12) (1												
108. No Sieve Samples Collected MW.X.VAS. 107-112 (-0.033 U ppps) 15.04 Pc 110. 111. 112. 112. 113. 114. 115. 115. 115. 115. 115. 115. 115	_105_											
108. No Sieve Samples Collected 109. No Sieve Samples Collected 109. 101. 102. 103. 103. 103. 103. 103. 103. 103. 103	106								1 1			
Topock- Fliuvial Deposits No Sieve Samples Collected No Sieve Samples Collected Collecte	_100_											
Topock- Fluvial Deposits No Sieve Samples Collected No Sieve Samples Collected	407						******					
No Sieve Samples Collected Www.X-VAS-17-12 (<0.033 U ppb) 0277:2019 15:04 Topock-Fluvial Deposits (SM); gark graysh brown / dark pelbowish brown (107R 4/2); very fine grained to medium grained, subangular to subround; some granules to large pebbles, angular to subround; some silt; trace angular to subround; well graded gravel with sand (GW); dark graysh brown / dark yellowish brown (10R 4/2); organules to large cobbles, subangular to round; some fine to very coarse grained sand, subangular to subround; trace small cobbles; well graded gravel with silt and sand (GW)-GM); brown (7.7 Fax 4/4) trace weak red / pale reddish brown (10R 5/4); prown (7.5 red 4/4) trace weak red / pale reddish brown (10R 5/4); prown (7.5 red 4/4) trace weak red / pale reddish brown (10R 5/4) trace red (10R 5/6); very fine grained to medium grained, subangular to round; some grained sand, subangular to round; some grained sand, subangular to round; some wery fine to medium grained sand, subangular to round; some grained some very fine to medium grained, subangular to round; some grained to medium grained, subangular to subround; some grained to subround; some grained to subround; some grained to subround; some silt; trace angular to subround; wet (1118); increase in granules and pebbles					Fluvial	GW		sand (GW); brown (10YR 4/3); granules to vangular to subround; some very fine to medi	ery large pebb	les,		
	 109		Samples	107-112				108.0 - 112.0') Topock - Fluvial Deposits; S SM); dark grayish brown / dark yellowish br ine grained to medium grained, subangular granules to large pebbles, angular to subrou	own(10YR 4/2) to subround;	; very some		
112 120 112	 110			ppb) 6/27/2019	Fluvial	SM		angular to subround; wet				
MW-X-VAS- 112-117 115 116 117 117 117 118 118 119 118 119 119	 111				0	U		No				
Sand (GW); dark grayish brown / dark yellowish brown fine to very coarse grained sand, subangular to round; some fine to very coarse grained sand, subangular to subround; trace small cobbles; wet 114	_112_	120						112 0 - 116 0') Tonock - Fluvial Denosits: M	Vell graded gra	avel with		
MW-X-VAS- 112-117 (<0.033 U ppb) 6/28/2019 09:56 Topock - Alluvium Deposits (Well graded gravel with silt and sand (GW-GM); brown (7.5YR 4/4) trace weak red / pale reddish brown(108 5/4); granules to small cobbles, angular to round; little silt; wet Topock - Alluvium Deposits (SM); reddish brown(108 5/4); granules to small cobbles, angular to round; little silt; wet Topock - Alluvium Deposits (SM); reddish brown (5YR 4/3) trace red (10R 5/6); very fine granules to mall cobbles, angular to round; little silt; wet (117.0 - 124.0) Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (5YR 4/3) trace red (10R 5/6); very fine granules to large pebbles, angular to subround; some silt; trace angular to subround; wet (118); increase in granules and pebbles								sand (GW); dark grayish brown / dark yellow granules to large cobbles, subangular to rou	vish brown(10\ ınd; some fine	/R 4/2);		
116. 116. 117. 117. 118. 119. 119. 110. 111	113						20		nd; trace small			
115_ (c0.033 U ppb) (c28/2019 ppb) (6/28/2019 09:56) Topock - Alluvium Deposits (country of the country of the	114					GW						
						GW						
Topock - Alluvium Deposits GW-GM Deposits GW	 115			` ppb)								
Topock - Alluvium Deposits GW-GM GW-GM): brown (7.5YR 4/4) trace weak red / pale reddish brown(10R 5/4); granules to small cobbles, angular to round; little silt; wet Topock - Alluvium Deposits SM granules to small cobbles, angular to round; little silt; wet Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (5YR 4/3) trace red (10R 5/6); very fine grained to medium grained, subangular to subround; some granules to large pebbles, angular to subround; some silt; trace angular to subround; wet (118'); increase in granules and pebbles												
Topock - Alluvium Deposits GW-GM GW-GM GW-GM Deposits Topock - Alluvium Deposits; Well graded gravel with silt and sand (GW-GM); brown (7.5YR 4/4) trace weak red / pale reddish brown(10R 5/4); granules to small cobbles, angular to round; little silt; wet Topock - Alluvium Deposits; Silty sand with gravel (117.0 - 124.0) Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (5YR 4/3) trace red (10R 5/6); very fine grained to medium grained, subangular to subround; some granules to large pebbles, angular to subround; some silt; trace angular to subround; wet (118'); increase in granules and pebbles	116											
pale reddish brown(10R 5/4); granules to small cobbles, angular to round; some very fine to medium grained sand, subangular to round; little silt; wet (117.0 - 124.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (5YR 4/3) trace red (10R 5/6); very fine grained to medium grained, subangular to subround; some granules to large pebbles, angular to subround; some silt; trace angular to subround; wet (118'); increase in granules and pebbles	110					<u> </u>						
to round; some very fine to medium grained sand, subangular to round; little silt; wet (117.0 - 124.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (5YR 4/3) trace red (10R 5/6); very fine grained to medium grained, subangular to subround; some granules to large pebbles, angular to subround; some silt; trace angular to subround; wet (118'); increase in granules and pebbles	- , ,					GW-GM		pale reddish brown(10R 5/4); granules to sn	nall cobbles, a	ngular		
Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (5YR 4/3) trace red (10R 5/6); very fine grained to medium grained, subangular to subround; some granules to large pebbles, angular to subround; some silt; trace angular to subround; wet (118'); increase in granules and pebbles	11/				,				sand, subangu	ılar to		
Topock - Alluvium Deposits SM Deposits SM Control SIM Deposits SIM De								117.0 - 124.0') Topock - Alluvium Deposits;	Silty sand with	n gravel		
Alluvium Deposits SM SM granules to large pebbles, angular to subround; some silt; trace angular to subround; wet (118'); increase in granules and pebbles	118				Topock -			grained to medium grained, subangular to s	ubround; some	,		
		84			Alluvium	SM		granules to large pebbles, angular to subrou	ınd; some silt;	trace		
	119				Deposits							-
	-											
												<u> </u>

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	et: 7 of	7
Date S						Elevation:	N/A	Borin	g No.:	MW-Xs	
	-	ted: <u>08/12/2</u>				g (NAD83):	N/A				
Drilling		Cascac				(NAD83):	N/A		PG&E		
Drilling			-		Total De	-	127 ft bgs	-		V Remedy Ph	
Drill Ri Driller			<u>ic Truck Mou</u> /asquez			e Diameter: o First Water:	10-12 inches	_ Location:	PG&E I	opock, Needle	es, California
Drilling			es / L. Amaya		-	g Method:	4 inch x 10 ft. Core Barrel	- Project N	ımher: F	RC000753.00	<u></u>
Logge			y Mack			g Interval:	Screen Intervals	_ 1 10,00011	umber. <u>r</u>	10000700.000	<i>)</i>
Editor:		Grant V	-			ed to Well:		_			
				υ 5							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	Class	Soil Description			Drilling Notes	Drilling Fluid (40.0 - 127.0')
121 	84			Topock - Alluvium Deposits	SM					Rough drilling due to large cobbles and boulders in the formation, increased torque caused spindle bolts to shear. Start	4960.4 gallons of water used; 2031.68 gallons of water recovered; 2928.72 gallons of water lost
123						(404.0				flusing casing with water	
						MW-X	- 127.0') No recovery (NR); Did not co d for lithology	llect or log cor	e, see	(124.0 - 127.0') Drilled an extra 3 ft to get through	
123_										boulders and	
126	0				NR			1		cobbles.	
127_						V V	End of Boring at 127.0 'bg	gs.			
128_						X					
129_											
130	-										
_131			4		U						
				V							
132											
133					C		•				
134					4						
-											
135_											
136											
137											
138											
139											
-											
140_	viotions	11000 1	I:E:I O-:I OI	: :: :::-	- 0 1		us = bolow ground surface, am			- 1 0\\	

9/	ARC4	DIS Design & for natura built asset	Consultancy al and ets		Well Const	ruction Log	S	Sheet: 1 of 7
	Started:	08/20/2019			_Surface Elevation:	N/A	Well ID:	MW-Y'-102/122
	-	09/25/2019			_Shallow Well Elevation:	N/A		_
Drilling	•	Cascade			_ Deep Well Elevation:	N/A	Client: PG&E	
1	-	Sonic Drilling			_Northing (NAD83):	N/A		GW Remedy Phase 1
	Name:	J. Khem / S.	-		_Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, California
Logge	g Asst:	L. Amaya / O Grant Willford		<u>Z</u>	_Borehole Diameter: _Water Level Start:	6-12 inches 4.6 ft bgs	— Project Number	r: <u>RC000753.0051</u>
Editor		Sean McGrar			_ vv ater Lever Start. _Development End Date:	•	Froject Number	1. <u>NC000733.0031</u>
	Depth:	137 ft bgs	10		Well Completion:	☐ Flush⊠ Stick-up		
_		.i. P	10			<u></u>		
Depth (ft)	Groundwat Sample II		USCS	USCS	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
					(+2.5 - 82.0') 2" — PVC Sch 80 Casing (+3.0 - 2.0') 12-inch lockable monument	— (+2.4 - 112.0') 2" PVC Sch 80 Casing		Note: Painted Desert Sand
0					(+0.5 - 3.4') 24-inch diameter concrete well pad			(-0.5 - 3.4') 15 bags (%) Note: King Kon-Crete 4000 PSI
2 3 4 5 6 7 8 9 10 11 12 13		Topock - Fill	SP		(2.0 - 13.0') Grout	(0.0 - 48.0') 12.0" Borehole	(2.0 - 13.0') 72.1 gallons	(2.0 - 13.0') 90 gallons (25%) Note: Type I, II and V and Benseal
14	MW-Y'-VAS 12-17 (<0.033 U ppb) 8/20/2019 13:58				(13.0 - 79.9') — Bentonite seal chips		(13.0 - 79.9') 58.3 bags	(13.0 - 79.9') 60 bags (3%) Note: Puregold Medium Chips
17	viations: II	SCS - Unifico	1 Soil C	assifica	tion System ft - foot has	= bolow ground surface as	mel = above mean	 sea level_GW = aroundwater

Date Started: 08/20/2019 Surface Elevation: N/A Date Completed: 02/2020 02/2020 02/2020 03/20200 03/2020	9/	ARCA	DIS Design & C for natura built asset	Consultancy Il and ts		Well Const	ruction Log	\$	Sheet: 2 of 7
Shallow Well Elevation: NIA						_Surface Elevation:	N/A	Well ID:	MW-Y'-102/122
Delilipri Method: Sonic Drilling Asset Delilipri Memory Likhem (5 Vasquez Lamaya / O. Fiburez Borehole Diameter: Location: PG&E Topock, Needles, California Borehole Diameter: Location: Proper Number: Location: Proper Numb	Date C	completed:	09/25/2019			_Shallow Well Elevation:	N/A		
Driller Name: J. Khem / S. Vasquez Easting (NAD83): N/A Location: PG&E Topock, Needles, California Corporation Corporation Corporation Corporation Corporation Corporation Calculated Calculated Corporation Calculated Ca	_								
Drilling Asst:	_		_					•	
Logger Grant Wilford Water Level Start 4.6 ft bgs Project Number: RC000753.0051				-				Location: <u>PG&</u> E	<u> E Topock, Needles, California</u>
Editor: Sean McGrane	_				Z				
Total Depth: 137 ft bgs							-	Project Numbe	r: <u>RC000753.0051</u>
Catoutstand				ne					
Topock - Fill SP	I otal L	Depth:				Well Completion:	☐ Flush区 Stick-up	Т	T
	Depth (ft)		Geologic Formation	Code	USCS				
			Topock - Fill	SP		(+2.5 - 82.0') 2" — PVC Sch 80 Casing	— (+2.4 - 112.0') 2" PVC Sch 80 Casing		
Centralizer	18								
Centralizer	L _								
	19								
	20					(19.5 - 20.5')			
	L _					Centralizer			
	21								
22									
	22		Topock -	CD CM					
				3P-3IVI					
	23								
	24								
	 - -								
	25_								
	 								
Bentonite seal chips Bentonite seal chips Borehole Note: Puregold Medium Chips	26								
Bentonite seal chips Bentonite seal chips Borehole Note: Puregold Medium Chips	H						(0,0,49,0'),12,0"	(42.0. 70.01) 50.2	(42.0. 70.01) 00 h (20/)
	27				N /	(13.0 - 79.9') Bentonite seal chips	Borehole	(13.0 - 79.9) 58.3 bags	Note: Puregold Medium Chips
	- -								
	28			•					
	├								
	29								
	 								
NR	_30_				$ \setminus \cdot $				
NR	- -				$ \ \ $				
32 33 	31								
	-			NR					
	32								
	-				\				
	_33				\				
34	L J				$ \ \ \ $				
	34				$ \ \ \ $				
	L								
_35	35								
	36								
					\				
	37								

9/	ARCA	DIS Design & for natur built asso	Consultancy al and ets		Well Const	ruction Log	\$	Sheet: 3 of 7
Date S	Started:	08/20/2019			_Surface Elevation:	N/A	Well ID:	MW-Y'-102/122
Date 0	Completed:	09/25/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			Deep Well Elevation:	N/A	Client: PG&E	
1	-	Sonic Drilling			Northing (NAD83):	N/A	•	GW Remedy Phase 1
	Name:	J. Khem / S.	-		Easting (NAD83):	N/A	Location: <u>PG&</u> E	E Topock, Needles, California
_		L. Amaya / O		Z	_Borehole Diameter:	6-12 inches		
Logge		Grant Willford			_Water Level Start:	4.6 ft bgs	Project Numbe	r: RC000753.0051
Editor		Sean McGran	ne		Development End Date:			
Total I	Depth:	137 ft bgs			Well Completion:	☐ Flush区 Stick-up		T
Depth (ft)	Groundwat Sample II		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
	MW-Y'-VAS 52-57 (<0.033 U ppb) 8/21/2019 11:41	Topock - Fluvial Deposits	NR SP		(+2.5 - 82.0') 2" — PVC Sch 80 Casing (13.0 - 79.9') — Bentonite seal chips	— (48.0 - 126.0') 10.0" — (48.0 - 126.0') 10.0" Borehole	(13.0 - 79.9') 58.3 bags	(13.0 - 79.9') 60 bags (3%) Note: Puregold Medium Chips
56 57	-							

9/-	ARCA	DIS Design & for natura built asset	Consultancy al and ts		Well Const	ruction Log	:	Sheet: 4 of 7
		08/20/2019			_Surface Elevation:	N/A	Well ID:	MW-Y'-102/122
Date C	Completed:	09/25/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			Deep Well Elevation:	N/A	Client: PG&E	
_		Sonic Drilling			_Northing (NAD83):	N/A	•	GW Remedy Phase 1
Driller		J. Khem / S. \	-		_Easting (NAD83):	N/A	Location: <u>PG&</u> I	E Topock, Needles, California
Drilling		L. Amaya / O.		Z	_Borehole Diameter:	6-12 inches		
Logge		Grant Willford			_Water Level Start:	4.6 ft bgs	Project Numbe	r: RC000753.0051
Editor:		Sean McGrar	ne		Development End Date:			
Total D	Depth:	137 ft bgs			_Well Completion:	☐ Flush⊠ Stick-up	T	T
Depth (ft)	Groundwate Sample ID		epoo Code	USCS		onstruction	Calculated Material Volumes	Material Volumes Installed
585960		Topock - Fluvial Deposits	SP		(+2.5 - 82.0') 2" — PVC Sch 80 Casing (59.5 - 60.5') — Centralizer	— (+2.4 - 112.0') 2" PVC Sch 80 Casing		
61626364656667		Topock - Fluvial Deposits	SP-SM		(13.0 - 79.9') Bentonite seal chips	(48.0 - 126.0') 10.0" Borehole	(13.0 - 79.9') 58.3 bags	(13.0 - 79.9') 60 bags (3%) Note: Puregold Medium Chips
686970717273		Topock - Fluvial Deposits	SW-SM		51			
74757677			NR					

				Well Const	uctic	ni Log		Sheet: 5 of 7
	08/20/2019			_Surface Elevation:	N/A		Well ID:	MW-Y'-102/122
				•			_	
	•			- '			•	GW Remedy Phase 1
		-		- ', ,			Location: <u>PG&l</u>	E Topock, Needles, California
			<u> </u>					
					_	<u>js</u>	Project Numbe	r: <u>RC000753.0051</u>
		<u>1e</u>		•		sh√ Stick up		
Јерин.				_ weil Completion.		Stick-up		
	Geologic Formatio	USCS	USCS		onstruction		Calculated Material Volumes	Material Volumes Installed
	Topock - Fluvial Deposits	SP-SM		(+2.5 - 82.0') 2" — PVC Sch 80 Casing (13.0 - 79.9') — Bentonite seal chips		- (+2.4 - 112.0') 2" PVC Sch 80 Casing	(13.0 - 79.9') 58.3 bags	(13.0 - 79.9') 60 bags (3%) Note: Puregold Medium Chips
	Topock - Fluvial Deposits	SW-SM		(82.0 - 102.0') 2" ———————————————————————————————————		(48.0 - 126.0') 10.0" Borehole		
MW-Y-VAS- 92-97 (0.31 ppb) 8/22/2019 11:43	Topock - Fluvial Deposits	SM		(79.9 - 105.0') Cemex #3 MESH (8x10)			(79.9 - 105.0') 25.5 bags	(79.9 - 105.0') 30 bags (18%) Note: Lapis Lustre Sand
	MW-Y-VAS- 92-97 (0.31-pg) 8/22/2019	Method: Sonic Drilling Name: J. Khem / S. Asst: L. Amaya / O r: Grant Willford Sean McGrant Depth: 137 ft bgs Groundwater Sample ID Topock Fluvial Deposits Topock Fluvial Deposits MW-Y-VAS- 92-97 (0.31 ppb) 8/22/2019	Method: Sonic Drilling Name: J. Khem / S. Vasquez Asst: L. Amaya / O. Flourez T: Grant Willford Sean McGrane Depth: 137 ft bgs Groundwater Sample ID Topock - Fluvial Deposits Topock - Fluvial Deposits MW-Y-VAS- 92-97 (0.31 ppb) 8/22/2019	CO.: Cascade Method: Sonic Drilling Name: J. Khem / S. Vasquez Asst: L. Amaya / O. Flourez r: Grant Willford Sean McGrane Depth: 137 ft bgs Groundwater Sample ID Topock - Fluvial Deposits Topock - Fluvial Deposits SW-SM SM-SM MW-Y-VAS- 92-97 (0.31 ppb) 8/22/2019	Co.: Cascade Deep Well Elevation: Method: Sonic Drilling Northing (NAD83): Name: J. Khem / S. Vasquez Easting (NAD83): Asst: L. Amaya / O. Flourez Borehole Diameter: Grant Willford Water Level Start: Sean McGrane Development End Date: Development End Date: Well Completion: Groundwater Sample ID Song Song Song Song Song Song Song Song	Co.: Cascade Deep Well Elevation: N/A	Co. Cascade	Shallow Well Elevation: N/A Client: PG&I

9/	ARCA	DIS Design & for natura built asse	Consultancy al and its		Well Const	ruction Log	:	Sheet: 6 of 7
Date S	Started:	08/20/2019			_Surface Elevation:	N/A	Well ID: N	//W-Y'-102/122
Date C	Completed:	09/25/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
	•	Sonic Drilling			_Northing (NAD83):	N/A		GW Remedy Phase 1
		J. Khem / S. \	√asque	Z	_Easting (NAD83):	N/A	Location: <u>PG&</u> I	E Topock, Needles, California
Drilling	Asst:	L. Amaya / O.		Z	_Borehole Diameter:	6-12 inches		
Logge		Grant Willford			_Water Level Start:	4.6 ft bgs	Project Numbe	r: RC000753.0051
Editor:		Sean McGran	ne		_Development End Date:			
Total [Depth:	137 ft bgs			_Well Completion:	☐ Flush⊠ Stick-up	1	
Depth (ft)	Groundwate Sample ID		Code	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
98	MW-Y`-VAS 98-103 (<0.033 U ppb) 8/23/2019 21:24	Topock - Fluvial Deposits	SM		(82.0 - 102.0') 2" Sch 80 PVC (20-slot) Screen (79.9 - 105.0') Cemex #3 MESH (8x10) (102.5 - 103.5') Centralizer (102.0 - 104.3') Sump and End Cap	(+2.4 - 112.0') 2" PVC Sch 80 Casing	(79.9 - 105.0') 25.5 bags	(79.9 - 105.0') 30 bags (18%) Note: Lapis Lustre Sand
105		Topock - Competent Bedrock - conglomerate			(105.0 - 110.0') Bentonite seal pellets	(48.0 - 126.0') 10.0" Borehole	(105.0 - 110.0') 4.8 buckets	(105.0 - 110.0') 4 buckets (-17%) Note: Pel-Plug (TR30) 3/8"
111 112 113 114 115 116 116	MW-Y'-VAS 112-117 (<0.033 U ppb) 8/23/2019 15:11				(110.0 - 127.0') — Filter Pack	— (112.0 - 122.0') 2" PVC Sch 80 Screen	(110.0 - 127.0') 16.8 bags	(110.0 - 127.0') 20 bags (19%) Note: Lapis Lustre Sand

9/	ARCA	DIS Design & for natura built asset	Consultancy al and its		Well Const	ructio	on Log		S	Sheet: 7 of 7
		08/20/2019			_Surface Elevation:	N/A		Well	ID: N	/W-Y'-102/122
	-	09/25/2019			_Shallow Well Elevation:	N/A				
Drilling		Cascade			_Deep Well Elevation:	<u>N/A</u>		Client:	PG&E	
_		Sonic Drilling			_Northing (NAD83):	N/A		-		GW Remedy Phase 1
Driller I		J. Khem / S. \	-		_Easting (NAD83):	N/A	de	Location	1: <u>PG&E</u>	Topock, Needles, California
Drilling		L. Amaya / O. Grant Willford		<u>Z</u>	_Borehole Diameter: Water Level Start:	6-12 inc		— Droiget I		: RC000753.0051
Logge Editor:		Sean McGrar			_vvaler Level Start. _Development End Date:	•	<u> 15 </u>	Project i	vuilibei	. <u>KC000733.0031</u>
Total D		137 ft bgs	<u>ic</u>		_Development End Date. _Well Completion:		sh⊠ Stick-up			
Total E	, , , , , , , , , , , , , , , , , , ,				_ 11011 00111p10110111.					
Depth (ft)	Groundwate Sample ID		USCS	USCS	Well C	onstruction		Calculate Material Vol		Material Volumes Installed
118119120121121122123124125126127		Topock - Competent			(110.0 - 127.0') Filter Pack (122.5 - 123.5') Centralizer		- (112.0 - 122.0') 2" PVC Sch 80 Screen (48.0 - 126.0') 10.0" Borehole	(110.0 - 127 bags		(110.0 - 127.0') 20 bags (19%) Note: Lapis Lustre Sand
128129130131132133134135136	no sample (interval did not produce) 8/24/2019 12:55	Bedrock - conglomerate	4		(127.0 - 137.0') Bentonite seal pellets		(126.0 - 137.0') 6.0" Borehole	(127.0 - 137 bucke		(127.0 - 137.0') 3.75 buckets (9%) Note: Pel-Plug (TR30) 3/8"
137				X //X						

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sh	eet: 1 of	7
Date S						Elevatio		Borir	na No.	.: <u>MW-Y'</u> d	
		ted: <u>09/25/2</u>			_	(NAD8	•				
Drilling Drilling		Cascad od: Sonic [Easting Total De	(NAD83	3): N/A 137 ft bgs	Client: Project:	PG&E	W Remedy Ph	200 1
Drill Ri			nic Truck Mo			շբու. e Diame	•	-		Topock, Needle	
Driller I			m / S. Vasque				/ater: 4.6 ft bgs	Location	· I OUL	Topock, Necuk	55, California
Drilling			ıya / O. Floure		-	g Metho	-	Project N	Jumber:	RC000753.005	51
Logge	r:	Grant V	<u>Villford</u>		Samplin	g Interva	al: <u>Continuous</u>				
Editor:		Sean M	<u>//cGrane</u>		Convert	ed to We	ell: 🗵 Yes 🗌 No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
1	60					((0.0 - 18.0') Topock - Fill; Poorly graded sand (2.5Y 7/3); very fine grained to fine grained, su subround; trace silt; some organics; dry; homo	ibangular to	ellow	(0.0 - 3.0') Area around borehole subsided overnight after advancing the 10-inch casing.	(0.0 - 97.0') 4437 gallons of water used; 0 gallons of water recovered; 4437 gallons of water lost
7 8 9 10 11 12				Topock - Fil	I SP		(7'); moist; no organics (10'); wet	3,		(7.0 - 17.0') Heaving sands.	
13	120		MW-Y'-VAS- 12-17 (<0.033 U ppb) 8/20/2019 13:58		Ç					(12.0 - 17.0') Sample interval was choosen based on moisture content of soils. Static water during sampling was higher possible from drill water used for heaving sands or possible confining unit.	
17 18 19 20_ Abbrev	102	s: USCS = L	Inified Soil CI	Topock - Alluvium Deposits	SP-SM	s :	(18.0 - 26.0°) Topock - Alluvium Deposits; Poosit (SP-SM); grayish brown (10YR 5/2) with payory fine grained to fine grained, subangular to trace clay; some organics; moist to wet; some bgs and 20-20.5 ft. bgs (19°); no organics	ale yellow (2 o round; little organics at	.5Y 7/3); e silt; 18-19 ft	(17.0 - 37.0') Soft drilling. Very loose material being pushed out by core barrel causing poor recovery. Heaving sands encountered.	groundwater

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring L	_og		Sh	eet: 2 of	7
Date S						Elevation		Bori	na No	.: <u>MW-Y'</u> d	
	-	ted: <u>09/25/2</u>) (NAD83		_			
Drilling		<u>Cascad</u>			_	(NAD83)		_ Client:	PG&E	NA/ Damady Dh	1
Drilling Drill Ri			nic Truck Mo		Total De	epin: e Diamete	<u>137 ft bgs</u> er: <u>6-12 inches</u>	_ Project:		W Remedy Ph Topock, Needl	
Driller			n / S. Vasque				ater: 4.6 ft bgs	_ Location	. I GaL	тороск, песан	es, California
Drilling			ya / O. Floure		-	g Method		_ _ Project I	Number:	RC000753.00	51
Logge		Grant V			-	ig Interval		_			
Editor:		Sean M	<u>lcGrane</u>		Convert	ed to We	ll: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Sode	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
	102			Topock - Alluvium Deposits	SP-SM NR	(2	20.5'); no organics 26.0 - 37.0') No recovery (NR)			(30.0') Due to borehole conditions 10" casing was retreated from 75 ft bgs and re-advanced to 70 ft bgs on 8.26.19.	(0.0 - 97.0') 4437 gallons of water used; of gallons of water recovered; 4437 gallons of water lost
38	6				NR						
Abbre	viations	: USCS = U	Inified Soil Cl	assification	n System	r tt = feet	t, bgs = below ground surface, am	nsl = above	mean se	ea level GW = 0	ı aroundwater

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Log	g		Sh	eet: 3 of	7
	Started:					Elevation:	N/A	Bori	na No.	.: <u>MW-Y'</u> d	
		ted: <u>09/25/2</u>				g (NAD83):	N/A	_			
Drilling	g Co.: g Metho	Cascac od: Sonic [Easting Total De	(NAD83):	N/A 137 ft bgs	_ Client: _ Project:	PG&E	W Remedy Ph	
_	ig Type		onic Truck Mo			e Diameter:	6-12 inches	-		Topock, Needle	
	Name:		m / S. Vasque			o First Water:		_ Location	. I CaL	Topook, Necuk	55, Odillottila
Drilling			aya / O. Floure		-	g Method:	4 inch x 10 ft. Core Barrel	_ _ Project N	Number:	RC000753.005	51
Logge	r:	Grant V	Nillford			ig Interval:	Continuous	_			
Editor:		Sean M	<u> McGrane</u>		Convert	ed to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
41	6				NR					(37.0 - 47.0') Soft drilling. Very loose material being pushed out by core barrel causing poor recovery. Core barrel pushed down 10 ft bgs with very little to no resistance, aproximatly 0.5 ft of soil in core barrel. Heaving sands encountered.	(0.0 - 97.0') 4437 gallons of water used; 0 gallons of water recovered; 4437 gallons of water lost
4748495051525354555657	120		MW-Y'-VAS- 52-57 (<0.033 U ppb) 8/21/2019 11:41	Topock - Fluvial Deposits	SP	very pa subant	60.0') Topock - Fluvial Deposits; Poor ale brown (10YR 7/3); very fine grained gular to round; trace silt; moist to wet	rly graded sa I to fine grain	nd (SP);	(47.0 - 57.0') Soft drilling. Heaving sands encountered.	
58 59 60	120									Soft drilling. Heaving sands encountered.	
Abbre	viations	s: USCS = L	Initied Soil Cl	assificatio	n System	i, ft = feet, bg	s = below ground surface, am:	si = above	mean se	ea level, GW = ત	groundwater,

Date S	Started:	2010				•	Log				
- 410 0	iai toa.	08/20	0/2019		Surface	Elevat	on: <u>N/A</u>	Borii	na No.:	MW-Y'd	
	•	ted: <u>09/2</u>			Northing		•	_			
Drilling		Caso			Easting	•	*	_ Client:	PG&E		
Drilling			c Drilling		Total De	-	137 ft bgs	_ Project:		V Remedy Ph	
Drill Ri			Sonic Truck Mo		Borehol			_ Location	: PG&E T	opock, Needle	es, California
Driller I			<u>iem / S. Vasque</u>		-		Vater: 4.6 ft bgs				
Drilling			naya / O. Flour	ez	Samplin	-		_ Project N	lumber: <u>F</u>	RC000753.00	51
Logge			t Willford		Samplin	-		_			
Editor:		<u>Sear</u>	McGrane		Convert	ea lo v	Vell: ⊠ Yes □ No				Ι
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
61 62 63 64 65 666 67	120			Topock - Fluvial Deposits	SP-SM		(60.0 - 68.0') Topock - Fluvial Deposits; Poositt (SP-SM); very pale brown (10YR 7/3); very fine grained, subangular to round; little medisand, subangular to round; little sift; wet	rv fine grained	to verv	(57.0 - 67.0') Soft drilling. Heaving sands encountered.	(0.0 - 97.0') 4437 gallons of water used; 0 gallons of water recovered; 4437 gallons of water lost
686970717273747576	54			Topock - Fluvial Deposits	SW-SM NR		(68.0 - 71.5') Topock - Fluvial Deposits; We and gravel (SW-SM); very pale brown (10YF grained to very coarse grained, subangular to large pebbles, subround to round; little sil	R 7/3); very fine to round; little	e	(67.0 - 77.0') Soft drilling. Very loose material being pushed out by core barrel causing poor recovery. Heaving sands encountered.	
77 78 79 80	120			Topock - Fluvial Deposits	SP-SM		(77.0 - 80.0') Topock - Fluvial Deposits; Poosit (SP-SM); very pale brown (10YR 7/3), very medium grained, subangular to round; little pebbles, subangular to round; little silt; wet	ry fine grainec granules to m	I to edium		

ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	J			Sh	eet: 5 of	7
Date Started				Surface			N/A		Borii	na No.	.: <u>MW-Y'</u> d	
	eted: <u>09/25/</u> 2			Northing		,	N/A					
Drilling Co.: Drilling Meth	Cascadod: Sonic I			Easting Total De	•	3):	N/A 137 ft bgs		Client: Project:	PG&E	W Remedy Ph	200 1
Drill Rig Type		onic Truck Mo	unted	Borehol	-	eter.	6-12 inches		-		Topock, Needle	
Driller Name		m / S. Vasque					4.6 ft bgs		Location		Topoon, Troods	oo, Gamorria
Drilling Asst:		aya / O. Floure		Samplin			4 inch x 10 ft. Core Bar	rrel	Project N	lumber:	RC000753.00	51
Logger:		Willford		Samplin	•		Continuous					
Editor:	Sean N	<u> McGrane</u>		Convert	ed to W	'ell:						
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS		Soil Descrip	otion			Drilling Notes	Drilling Fluid
81			Topock - Fluvial Deposits	SW-SM		and gra	37.5') Topock - Fluvial Depositivel (SW-SM); very fine grained ular to round; some granules to do round; little silt; trace smith to round; little silt; trace smith trace smith trace smith to round; little silt; trace smith trace smi	to very lar	coarse grainge pebbles	ned,	(77.0 - 87.0') Soft drilling. Very loose material being pushed out by core barrel causing poor recovery. Heaving sands encountered. Spindle bolts broke while advancing 6-inch casing.	(0.0 - 97.0') 4437 gallons of water used; 0 gallons of water recovered; 4437 gallons of water lost
88		MW-Y-VAS- 92-97 (0.31 ppb) 8/22/2019 11:43	Topock - Fluvial Deposits	SM		(SM); pa subang subang	97.0') Topock - Fluvial Depositale brown (10YR 6/3); very fine ular to round; little granules to ular to round; little silt; trace silt; fat clay lense at 88.0-88.2 ft	e grained medium mall cobb	to coarse of pebbles,	grained,	(87.0 - 97.0') Soft drilling. Heaving sands encountered.	
96 97 98 99 100		MW-Y'- VAS-98-103 (<0.033 U ppb) 8/23/2019 21:24	Topock - Fluvial Deposits	SM		(SM); pagrained large pagrained large pagrained	101.6') Topock - Fluvial Depos ale brown (10YR 6/3) some gr to coarse grained, subangula abbles, subangular to round; li	ray (10ÝR ar to rounc ittle silt; tr	(6/1); very f d; little grand ace clay; w	ine ules to et to		

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sh	eet: 6 of	7
	Started				Surface	Elevation:	N/A	Borir	ng No.	.: <u>MW-Y'</u> d	
		ted: <u>09/25/</u> 2				g (NAD83):	N/A			-	
Drilling		Casca				(NAD83):	N/A	Client:	PG&E		
_	Metho		•		Total De	-	137 ft bgs	Project:		W Remedy Ph	
	ig Type Name:		nic Truck Mo m / S. Vasque			e Diameter:	6-12 inches r: 4.6 ft bgs	_ Location:	PG&E	Topock, Needle	es, California
Drilling			nya / O. Floure		-	g Method:	4 inch x 10 ft. Core Barrel	- Proiect N	 lumber:	RC000753.00	 51
Logge			Nillford		-	g Interval:	Continuous	-			
Editor		Sean N	/IcGrane		-	ed to Well:					
_	چ			: <u>2</u>	1,0						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
-				Topock -						(100.0 - 103.0') Rough drilling.	
101			MW-Y`- VAS-98-103	Fluvial Deposits	SM						
	72		(<0.033 U ppb) 8/23/2019			(101	6 - 137.0') Topock - Competent Bedrock	- conglomer	ate: red		
102	1		8/23/2019 21:24			(2.5Y	R 4/8); dry; strong cementation; heavily friable				
103											
103										(103.0 - 107.0') Very rough	
104										drilling.	
105	48										
106								1. 1			
107										(107.0 - 117.0')	(107.0 - 117.0')
				4	U					Very rough drilling.	`100 gallons of water used; 0
108	1										gallons of water recovered; 100
											gallons of water lost
110											
				Topock -	174						
111				Competen Bedrock -							
				conglomera	te						
112	120										
-											
113											
			MW-Y'-VAS-								
114	1		112-117 (<0.033 U								
115			ppb) 8/23/2019								
			15:11								
116											
117										(117.0 407.0)	(117.0 107.0)
<u> </u>										(117.0 - 127.0') Very rough	(117.0 - 127.0') 60 gallons of
118										drilling.	water used; 0 gallons of water
	120										recovered; 60 gallons of water
119	-										lost
-											
120 Abbre	viations	s: USCS = L	Jnified Soil Cl	ı assificatioı	n System	n, ft = feet, b	gs = below ground surface, ams	sl = above	mean se	ea level, GW =	groundwater,

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Log	9		Sh	eet: 7 of	7
Date S					Surface	Elevation:	N/A	Borir	na No.	: <u>MW-Y'</u> d	
		ted: <u>09/25/2</u>			-	g (NAD83):	N/A				
Drilling		Cascac				(NAD83):	N/A	_ Client:	PG&E	W D D	
Drilling			•		Total De	-	137 ft bgs	_ Project:		W Remedy Ph	
Drill Ri Driller	• • •		<u>nic Truck Mo</u> n / S. Vasque			e Diameter: o First Water:	6-12 inches	_ Location:	PG&E	Topock, Needle	es, Calliornia
Drilling			ya / O. Floure		-	g Method:	4 inch x 10 ft. Core Barrel	Project N	lumber:	RC000753.00	 51
Logge		Grant V	-		-	g Interval:	Continuous	_ · · · , - · · ·			-
Editor:			1cGrane		-	ed to Well:					
	, ir			: <u>2</u>	1						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
-										(117.0 - 127.0') Very rough	(117.0 - 127.0') 60 gallons of
121										drilling.	water used; 0 gallons of water recovered; 60
122											gallons of water lost
-											
123								10			
124	120										
)				
125											
126											
127									•		
										(127.0 - 132.0') Very rough	(127.0 - 137.0') 60 gallons of
128				Topock -						drilling.	water used; 0 gallons of water
				Competen Bedrock -	t						recovered; 60 gallons of water
_129				conglomera	te						lost (127.1') 675
	60										gallons of water used; 675
_130							\ (7 ₁)				gallons of water recovered; 0
131					V						gallons of water lost
132										(132.0 - 137.0')	
-										Very rough drilling.	
133											
134											
5	60		no sample (interval did not produce)								
_135	00		8/24/2019 12:55								
			12.00								
136											
127											
137_						V/W//	End of Boring at 137.0 'bo	gs.		_	
138											
_139											
-											
140 Abbrev	viations	s: USCS = I	Inified Soil Cl	assification	n Svstem	n, ft = feet, bas	s = below ground surface, am	sl = above	mean se	ea level. GW = 0	groundwater
							limit ND = no recovery blue				

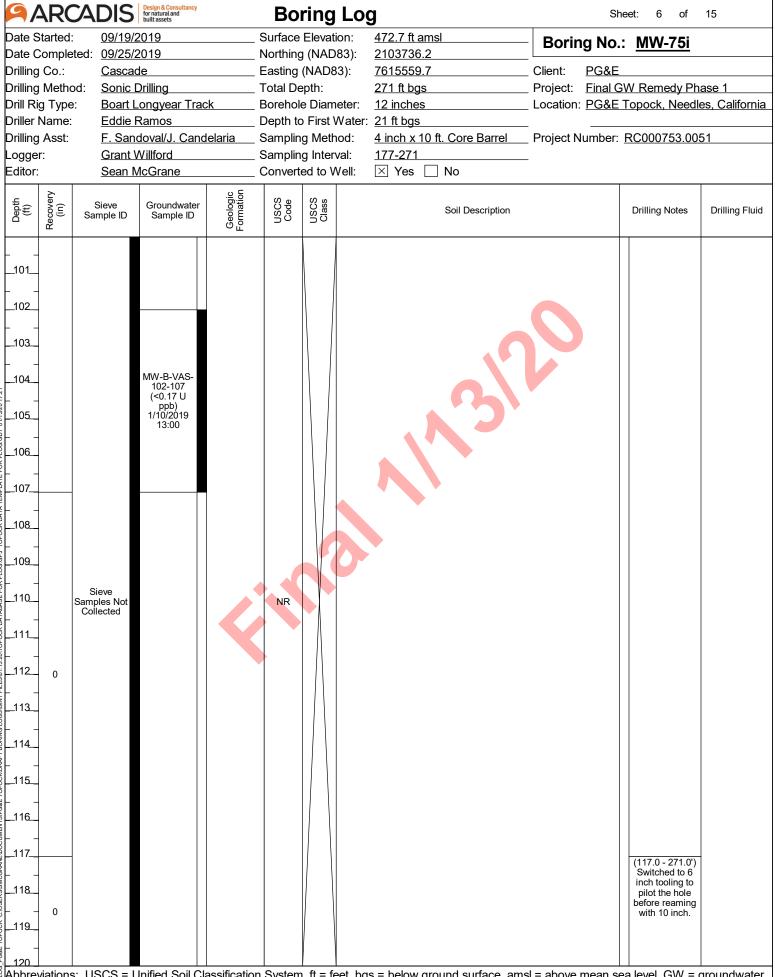
9/	ARC	CADIS	for natural and built assets		Во	ring Lo	g			Sh	eet: 1 of	15
Date S	Started	: 09/19/2	2019		Surface	Elevation:	472.7 ft amsl		Borin	na No	: <u>MW-75i</u>	
Date 0	Comple	eted: 09/25/2	2019		Northing	g (NAD83):	2103736.2		Born	19 110.	. <u>14144-7-01</u>	
Drilling		Cascac				(NAD83):	7615559.7		Client:	PG&E		
Drilling	-		-		Total De	-	271 ft bgs		Project:		SW Remedy Ph	
Drill R			ongyear Trac	ck		e Diameter:	12 inches		Location	PG&E	Topock, Needl	es, California
Driller					-	First Water	_		5	. —	D0000750 00	
Drilling			doval/J. Cand			g Method:	4 inch x 10 ft. C	Core Barrel	Project N	lumber:	RC000753.00	51
Logge		Grant V				g Interval: ed to Well:	177-271					
Editor		<u>Sean iv</u>	/IcGrane		Conven	ed to vveii.	△ res 🗀 N	0				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS		oil Description			Drilling Notes	Drilling Fluid
	_					(0.0 - to 177	177.0') No recovery (North ft bgs. See MW-75-d	NR); No logging wa I log for lithology.	as performed	d from 0		(0.0 - 266.0') No water used
- ' -												
_ 2 _	-								0			
_ 3 _	-											
_ 4	0											
_ 5 _	_											
_ 6 _	-											
- 7 <u>-</u>												
- - - 8 _												
											(8.0 - 117.0') Drilled with 8 inch core barrel	
9	-	0:									and 10 inch casing.	
10		Sieve Samples Not Collected			NR							
11	_			X								
12												
13	0											
14	-											
15												
	_											
16	-											
17												
18												
19	1											
20												

	AKC	JADIS	for natural and built assets		Bol	ring Lo	9		She	et: 2 of	15
Date O Drilling Drilling Drill Ri	g Co.: g Metholig Type Name: g Asst: er:	eted: 09/25/2 Cascac od: Sonic I Eddie F F. Sanc Grant V	2019 de Drilling .ongyear Trad Ramos doval/J. Cand	N	Northing Easting Fotal De Borehole Depth to Sampling	Elevation: (NAD83): (NAD83): pth: e Diameter: First Water: g Method: g Interval: ed to Well:	472.7 ft amsl 2103736.2 7615559.7 271 ft bgs 12 inches 21 ft bgs 4 inch x 10 ft. Core Barrel 177-271 X Yes No	Client: Project: Location	PG&E Final GV : PG&E T	MW-75i V Remedy Phropock, Needle	es, California
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
21	0	Sieve Samples Not Collected	MW-B-VAS- 27-32 (7.7 J ppb) 1/6/2019 12:50		NR						
40	·	11000	1 :6 10 :10!	·c ··	0 4	f	a - holow ground surface am				

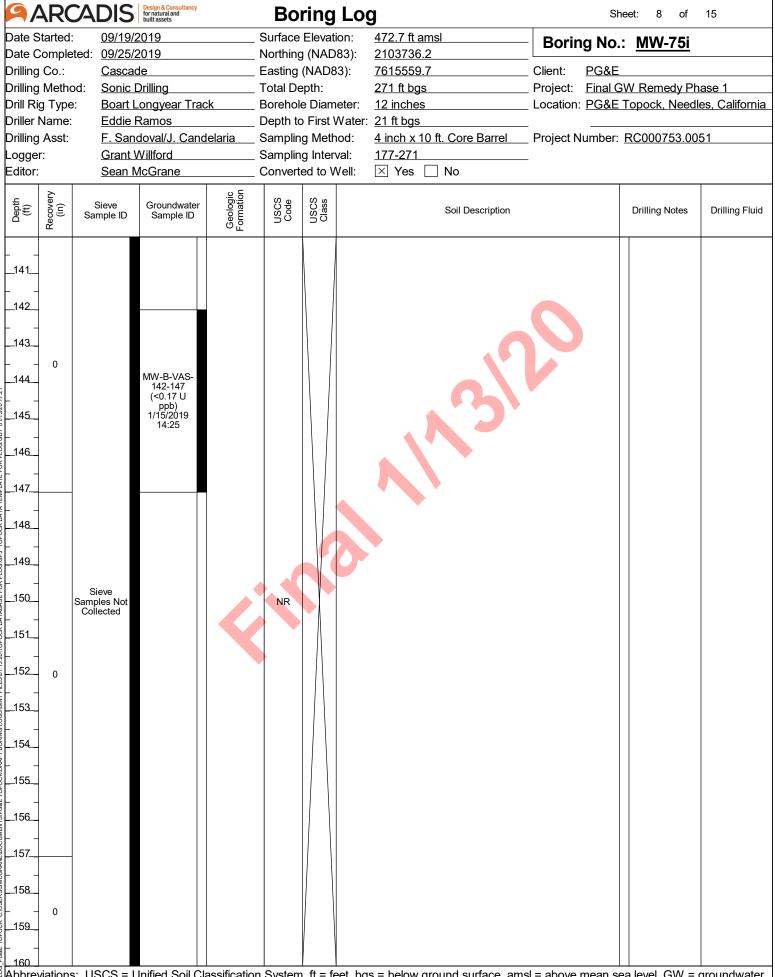
	4K(ADI5	for natural and built assets		Bo	ring Lo	g		She	et: 3 of	15
Date S Date C Drilling Drilling Drill Ri Driller Drilling Logge Editor:	Comple g Co.: g Metholig Type Name: g Asst:	ted: 09/25/2 Cascac od: Sonic I : Boart L Eddie F F. Sanc Grant V	2019 de Drilling .ongyear Trac Ramos doval/J. Cand	ck Jelaria	Northing Easting Total De Borehold Depth to Samplin Samplin	Elevation: g (NAD83): (NAD83): epth: e Diameter: o First Water g Method: g Interval: ed to Well:	472.7 ft amsl 2103736.2 7615559.7 271 ft bgs 12 inches 21 ft bgs 4 inch x 10 ft. Core Barrel 177-271 Yes No	_	PG&E Final G\ : PG&E T	MW-75i W Remedy Phropock, Needle	es, California
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
41 42 43 44 45 46	0										
	0	Sieve Samples Not Collected	MW-B-VAS- 47-52 (<0.17 U ppb) 1/9/2019 10:15		NR						
5555 55											
5858	0			10.00			no = holow ground ourfoco om				

	AKC	JADIS	for natural and built assets		Bori	ng Log			She	et: 4 of	15
Date (Drilling Drilling Drill R Driller	g Co.: g Metholig Type Name: g Asst:	deted: 09/25/2 Cascac od: Sonic I Boart L Eddie F F. Sand Grant \	2019 de Drilling .ongyear Trad Ramos doval/J. Cand	N E Ck B D Ck S C C C C C C C C C	orthing (asting (N otal Depi orehole I epth to F ampling ampling		472.7 ft amsl 2103736.2 7615559.7 271 ft bgs 12 inches 21 ft bgs 4 inch x 10 ft. Core Barrel 177-271 X Yes No	Client: Project: Location:	PG&E Final GV PG&E T	MW-75i V Remedy Phropock, Needle	es, California
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	Class	Soil Description			Drilling Notes	Drilling Fluid
6162636465666666666666	0	Sieve	MW-B-VAS- 67-72 (<0.17 U ppb) 1/9/2019								
70 71 72 73	0	Samples Not Collected	1/9/2019 14:55		NR						
74	-										
75 76											
77	-										
	-						a = below ground gurfage, among				

	4K(JADIS	for natural and built assets		Bo	ring Lo	9		She	et: 5 of	15
	Started					Elevation:	472.7 ft amsl	Borir	ng No.:	MW-75i	
		eted: <u>09/25/2</u>			-	g (NAD83):	2103736.2	_			
Drilling		Casca				(NAD83):	7615559.7	Client:	PG&E		
Drilling			-	.1.	Total De	-	271 ft bgs	Project:		V Remedy Ph	
Drill Ri Driller			ongyear Trad	CK		e Diameter: o First Water:	12 inches	_ Location	: PG&E I	opock, Needl	es, California
Drilling			doval/J. Cand	lelaria		g Method:	4 inch x 10 ft. Core Barrel	- Project N	lumber: F	RC000753.00	 51
Logge		Grant \		iciai ia		g Interval:	177-271	_ i iojecti	iumber. <u>I</u>	<u> </u>	<u> </u>
Editor			// ///////////////////////////////////			ed to Well:		_			
	1			0 5	1						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
81 _ 81 								<u> </u>			
83							40				
84											
85							\ \frac{1}{2}				
00	1										
87											
88											
89											
		Sieve			o. 4						
90	1	Samples Not Collected			NR						
	-	001100104									
91_	-										
92	0										
93	_										
94	-										
95	1										
96											
- 91 -											
98											
99											
-	-										
100	<u> </u>	11000	1 :5 10 :10!	.c		<u> </u>	a - bolow ground ourfood ame				<u> </u>



9/	AKC	ADIS	for natural and built assets		Во	ring Lo	g		She	et: 7 of	15
Date S	Started	09/19/2	2019		Surface	Elevation:	472.7 ft amsl	Borin	ua No .	MW-75i	
Date C	Comple	ted: <u>09/25/2</u>	2019		Northing	g (NAD83):	2103736.2			10100	
Drilling		Cascad				(NAD83):	7615559.7	_ Client:	PG&E		
Drilling			•		Total De		271 ft bgs	_ Project:		V Remedy Ph	
Drill Ri			ongyear Trac	<u>k</u>		e Diameter:	12 inches	_ Location	: <u>PG&E T</u>	opock, Needl	es, California
Driller				lalawia		First Water:		- D==:==+ N		2000752.00	Γ1
Drilling		<u>F. Sand</u> <u>Grant V</u>	doval/J. Cand	ieiaria		g Method: g Interval:	4 inch x 10 ft. Core Barrel 177-271	_ Project N	iumber: <u>i</u>	RC000753.00	01
Logge Editor:			1cGrane		-	ed to Well:	× Yes □ No	_			
		Coarriv	lo Grano				100				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
121											
122											
123											
124	0										
125							,'5'				
126											
127											
128											
129_											
129											
130		Sieve Samples Not			NR						
5 5131		Collected			INK						
132	0										
133											
_134											
-											
_135											
100											
136											
137											
138											
	0										
139											
140_											



9/	ARC	CADIS	for natural and built assets		Во	ring Lo	g		Sh	eet: 9 of	15
Date S						Elevation:	472.7 ft amsl	Borii	ng No.:	: <u>MW-75i</u>	
	-	eted: <u>09/25/2</u>				g (NAD83):	<u>2103736.2</u>	_			
Drilling	-	Cascac				(NAD83):	<u>7615559.7</u>	_ Client:	PG&E		
Drilling	-		•		Total De	eptn: le Diameter:	271 ft bgs 12 inches	_ Project:		W Remedy Pha Topock, Needle	
Drill Ri Driller			<u>.ongyear Trac</u> Ramos			o First Water		_ Location	. FGaE	TOPOCK, INEEGIE	25, Calliottila
Drilling			doval/J. Cand		-	ng Method:	4 inch x 10 ft. Core Barrel	- Proiect N	Jumber:	RC000753.005	 51
Logge		Grant V				ng Interval:	177-271	,			
Editor:			/IcGrane		-	ted to Well:					
_	چ			. <u>5</u> E							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
 161											
 162	-										
163							.0				
164	0										
165							, V, D,				
166											
167											
168					ND						
169					NR	O					
170		Sieve Samples Not Collected									
171				X							
172	0										
173											
174	-										
175											
176											
_177					-	(177.	0 - 187.0') Topock - Alluvium Deposits; reddish brown / moderate brown (5YR	Silty sand wi	th gravel	(177.0 - 187.0') Normal drilling.	
178				Topock -		(2.5Ý	Re 6/8); very fine grained to very coarse (nund; little granules to medium pebbles, ngular; little silt; little clay; wet to moist; i	grained, ang angular to	ular to	rionna uning.	
179	120			Alluvium Deposits	SM	ceme	ntation; iron oxide staining	,			
180											

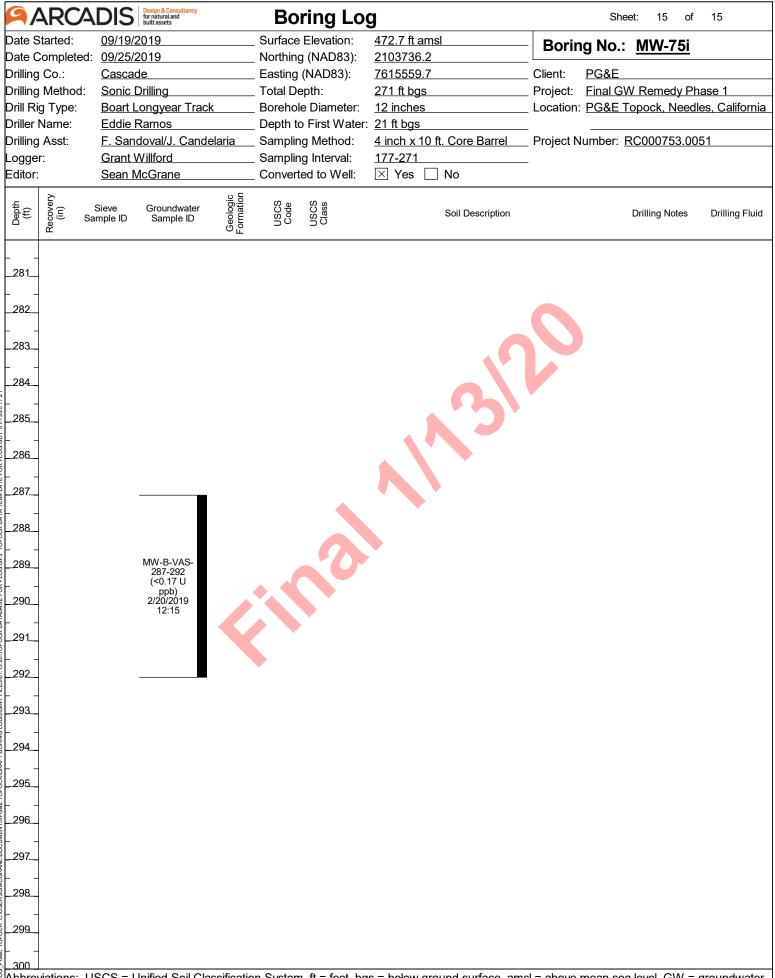
9/	ARC	CADIS	for natural and built assets		Во	ring Lo	g		She	et: 10 of	15
Date S						Elevation:	472.7 ft amsl	Borin	na No.:	MW-75i	
	•	eted: <u>09/25</u>			-	g (NAD83):	2103736.2	_			
Drilling		Casca			-	(NAD83):	7615559.7	_ Client:	PG&E		
Drilling			<u>Drilling</u>		Total De	-	271 ft bgs	_ Project:		V Remedy Ph	
Drill Ri Driller			Longyear Trac Ramos	CK		e Diameter:	12 inches	_ Location:	PG&E I	opock, Needl	es, California
Drilling			ndoval/J. Cand		-	o First Water ig Method:	4 inch x 10 ft. Core Barrel	- Project N	Lumber: F	RC000753.00	 51
Logge			Willford		-	ig Interval:	177-271	_ 1 10,00011	idilibei. <u>I</u>	10000733.00	<i>3</i> I
Editor:			McGrane		-	ed to Well:		_			
	>			o 5							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
181 182 183 184 185 186	120		MW-B-VAS- 182-187 (<0.17 U ppb) 2/13/2019 10:30	Topock - Alluvium Deposits	SM						
187 188				Topock - Alluvium Deposits	ML	grayis	1 - 188.0') Topock - Alluvium Deposits; h brown (10YR 5/2); low plasticity; and d sand, angular to subround; little gran as, angular to subangular; little clay; mo	very fine to mules to small	nedium	(187.0 - 197.0') Slightly rough drilling.	
_ 189 _ 190 _ 190 191 _ 191		Sieve Samples Not Collected				(188.0 (SM); graine angula	ate cementation 1-197.0') Topock - Alluvium Deposits; reddish brown (5YR 5/4); very fine graind, angular to subround; little granules tar to subangular; little silt; little clay; we nation	ned to coarse to large pebbl	es,		
192 193 194	120			Topock - Alluvium Deposits	SM						
195 196 						(194')	Weak cementation/looser material				
197 198 199 200_	120	11000		Topock - Alluvium Deposits	SM	(SM); very fi granu little c oxide	o - 205.0') Topock - Alluvium Deposits; brown (7.5YR 5/4) some light greenish ne grained to very coarse grained, angu- les to very large pebbles, angular to sul lay; trace small cobbles, angular; moist staining	gråy (GLEY1 ular to subrou bangular; little t to dry; mottle	7/1); nd; little e silt; ed; iron	(197.0 - 207.0') Very rough drilling.	

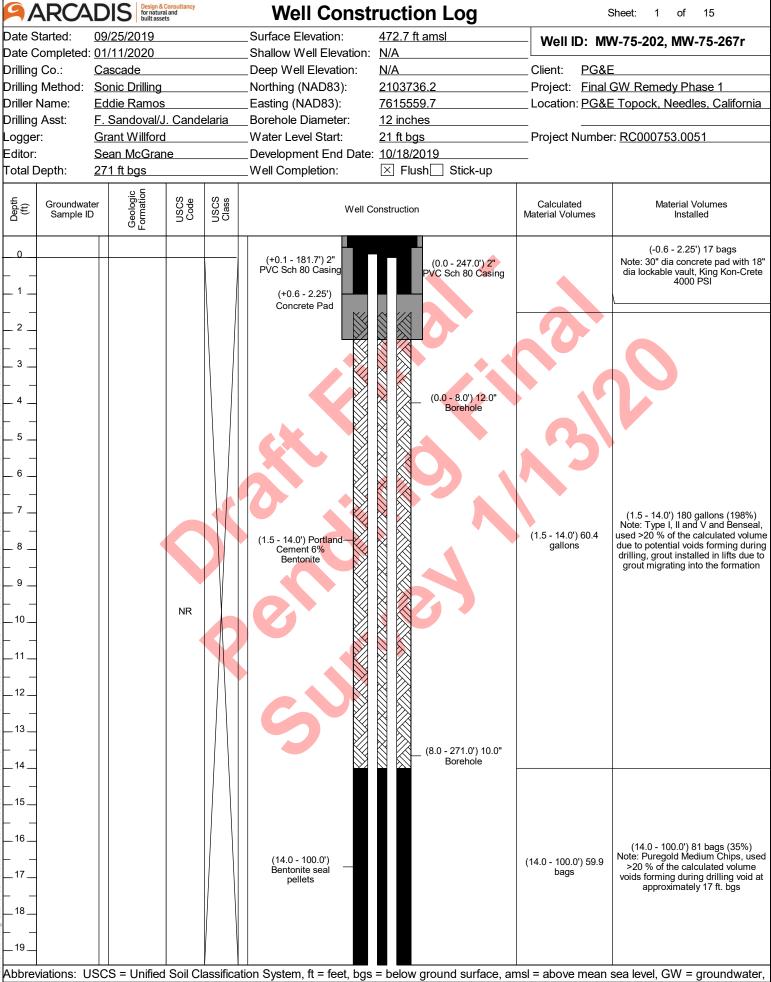
9/	ARC	CADIS	for natural and built assets		Во	ring	Log		She	et: 11 of	15
Date S					Surface	Elevati		Borin	a No.:	MW-75i	
		eted: <u>09/25/</u>			Northing	- '	•				
Drilling		<u>Casca</u>			Easting		,	Client:	PG&E		
Drilling			<u>Drilling</u>		Total De	-		Project:		V Remedy Ph	
Drill Ri Driller			<u>Longyear Trac</u> Ramos		Borehol			Location:	PG&E I	opock, Needle	es, California
Drilling			idoval/J. Cand		Samplin		Vater: <u>21 ft bgs</u> od: <u>4 inch x 10 ft. Core Barrel</u> I	Project N	Lumber: F	RC000753.005	 51
Logge			Willford		Samplin	-		i iojeci iv	iuilibei. <u>I</u>	<u>\C000733.00\</u>	<i>)</i>
Editor:			McGrane		Convert	-					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
201	120			Topock - Alluvium Deposits	SM			0			
206 206 207				Topock - Alluvium Deposits	ML		(205.0 - 207.0') Topock - Alluvium Deposits; Sa pale brown / grayish orange (10YR 7/4); no plas to medium grained sand, angular to subround; granules to medium pebbles, angular to subang	sticity; and little clay; tr gular; dry; s	very fine race roft	(207.0 - 217.0')	
	120	Sieve Samples Not Collected	MW-B-VAS- 207-212 (<0.17 U ppb) 2/14/2019 10:55	Topock - Alluvium Deposits	SM		(207.0 - 219.0') Topock - Alluvium Deposits; Sil (SM); brown (7.5YR 5/4) little light greenish gravery fine grained to very coarse grained, angular granules to large pebbles, angular to subround; moist to wet; weak cementation; some mottling	ay (GLEY1 7 ar to subrou ; little silt; li	7/1); nd; little	Normal drilling.	
214 215 216 217 218 219	120									(217.0 - 227.0') Soft drilling.	
				Topock - Alluvium Deposits	SM		(219.0 - 225.0') Topock - Alluvium Deposits; Sil (SM); brown (7.5YR 5/4); very fine grained to ve angular to subround; some granules to very large	ery coarse o	rained,		

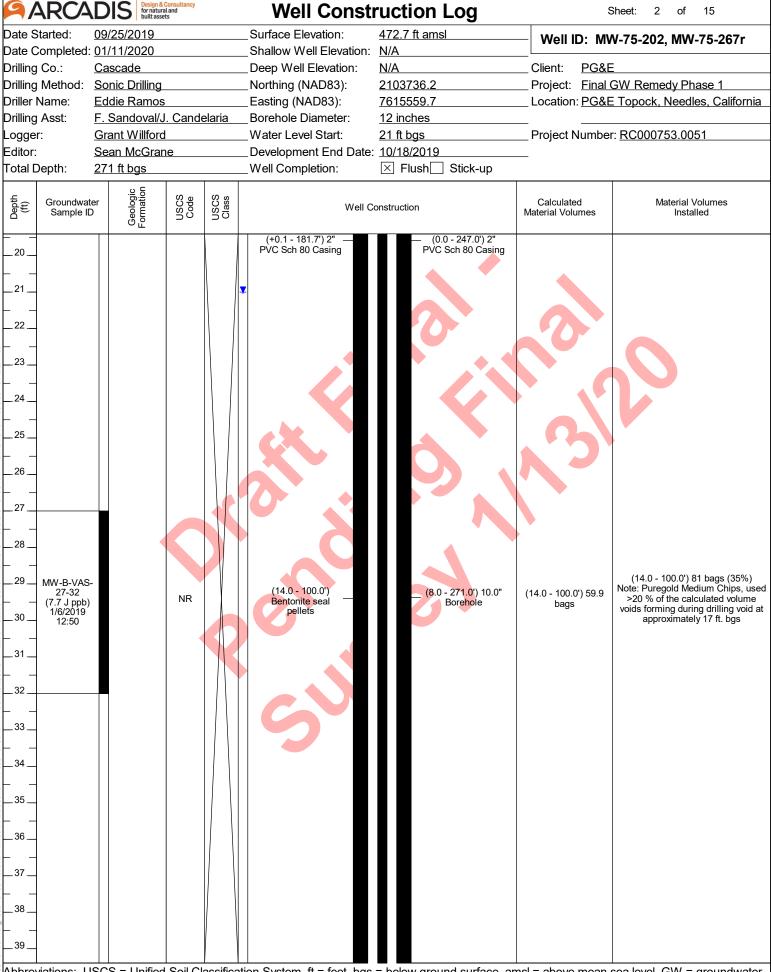
9/-	4K(ADIS	for natural and built assets		Во	ring L	og		She	et: 12 of	15
Date S				_		Elevation		Borir	na No.:	MW-75i	
	•	ted: <u>09/25/2</u>			-	(NAD83		_	_		
Drilling		<u>Cascad</u>			_	(NAD83):		_ Client:	PG&E		
Drilling			•		Total De	•	271 ft bgs	_ Project:		V Remedy Ph	
Drill Ri			ongyear Trac	<u>:k</u>		e Diamete	•	_ Location	: PG&E T	opock, Needl	es, California
Driller I							ter: 21 ft bgs	-	. —	20000750 00	F.4
Drilling			doval/J. Cand	<u>ieiaria</u>	-	g Method		_ Project N	iumber: <u>F</u>	RC000753.00	51
Logge Editor:		Grant V	lcGrane		-	g Interval: ed to Wel		_			
Luitoi.		<u>Sean w</u>	ICGIAIIE		T		. N Tes INO				1
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
	120			Topock - Alluvium Deposits	SM	su gri	subangular; little silt; trace small cobbles, bangular; trace clay; wet; weak cementation anules and pebbles mostly composed of numbers of numbers and pebbles mostly composed of numbers o	iron oxide netadiorite Silty sand (SI oarse graine)	VI);		
	120	Sieve Samples Not Collected		Topock - Alluvium Deposits	SM					(227.0 - 237.0') Soft drilling.	
234 235 236 237 238 239 240	120			Topock - Alluvium Deposits	SM	(S	34.0 - 240.0') Topock - Alluvium Deposits; VI); reddish brown (5YR 5/4); very fine grai ained, angular to subround; little granules t gular to subangular; little silt; trace clay; w	ned to very co o large pebbl	parse	(237.0 - 247.0') Soft drilling.	-

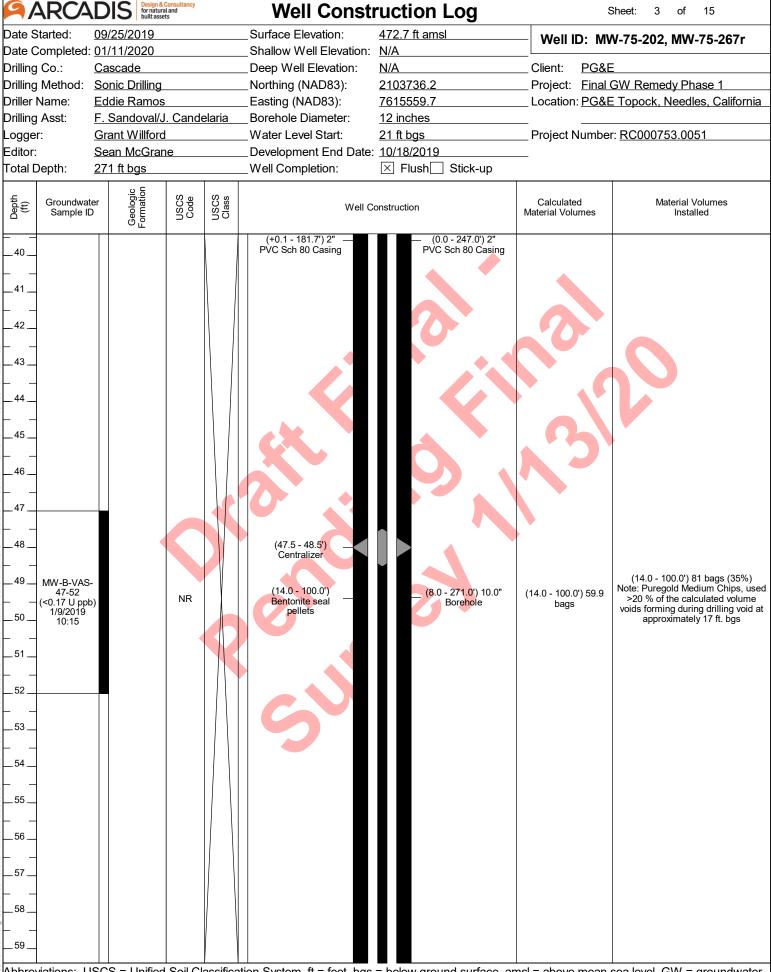
9/-	ARC	ADIS	for natural and built assets		Во	ring	Log]		She	et: 13 of	15
Date S	tarted:	09/1	9/2019		Surface	Elevati	ion:	472.7 ft amsl	Borin	a No.:	MW-75i	
Date C	omple	ted: <u>09/2</u>	5/2019		Northing	g (NAD	83):	2103736.2			<u> </u>	
Drilling		Caso			Easting	•	3):	7615559.7	Client:	PG&E		
Drilling					Total De	•		271 ft bgs	Project:		V Remedy Ph	
Drill Ri			t Longyear Tra		Borehol			12 inches	Location:	PG&E T	opock, Needle	es, California
Driller I			e Ramos		=			21 ft bgs				
Drilling			andoval/J. Cand		Samplin	•		4 inch x 10 ft. Core Barrel	Project N	umber: <u>F</u>	RC000753.00	01
Logger	r:		t Willford		Samplin	-		177-271				
Editor:		Sear	McGrane		Convert	ed to v	veii:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
241	120			Topock - Alluvium Deposits Topock - Alluvium Deposits	ML		(ML); recoarse pebbles cement	- 244.0') Topock - Alluvium Deposits; Seddish brown (5YR 5/4); low plasticity; grained sand, angular to subround; little, angular to subangular; trace clay; mosation - 247.0') Topock - Alluvium Deposits; Seddish brown (5YR 5/4); very fine grain, angular to subround; little granules to to subangular; little silt; trace clay; we	and very fine le granules to constitute the constitute of the cons	to very blarge derate		
247 248 249 250		Sieve Samples No	MW-B-VAS- 247-252 (<0.83 U ppb) 2/17/2019	Topock Alluvium	ML		(ML); re	- 253.0') Topock - Alluvium Deposits; S addish brown (5YR 5/4); low plasticity; nd; little granules to large pebbles, and ay; moist; very stiff; strong cementation	some angula Jular to subar	r to	(247.0 - 257.0') Normal drilling.	
	120	Collected	11:25	Deposits			(253.0	- 257.0') Topock - Alluvium Deposits; S	Silty sand with	n gravel	(252.0 - 257.0') Installed sampler screen to pump and	
254 255 256 257				Topock - Alluvium Deposits	SM		(SM); re 7/1); ve little gra little cla cement clasts	eddish brown (5YR 5/4) little light greer ry fine grained to very coarse grained, anules to very large pebbles, angular to ry; trace small cobbles, angular; moist; ation; iron oxide staining; some red sta	nish gray (GL angular to su angular to su oround; ii moderate aining on gra	.EY1 ibround; ttle silt;	test water quality for potential impacts from grout installed for the decommissioning of MW-75-267d.	
	168	11000		Topock - Alluvium Deposits	ML		(ML); re coarse pebbles cement	- 267.0') Topock - Alluvium Deposits; S seddish brown (5YR 5/4); low plasticity; grained sand, angular to subround; little, s, angular to subround; little clay; moist ation	some fine to le granules to t; stiff; moder	very o large ate	(257.0 - 267.0') Rough drilling.	

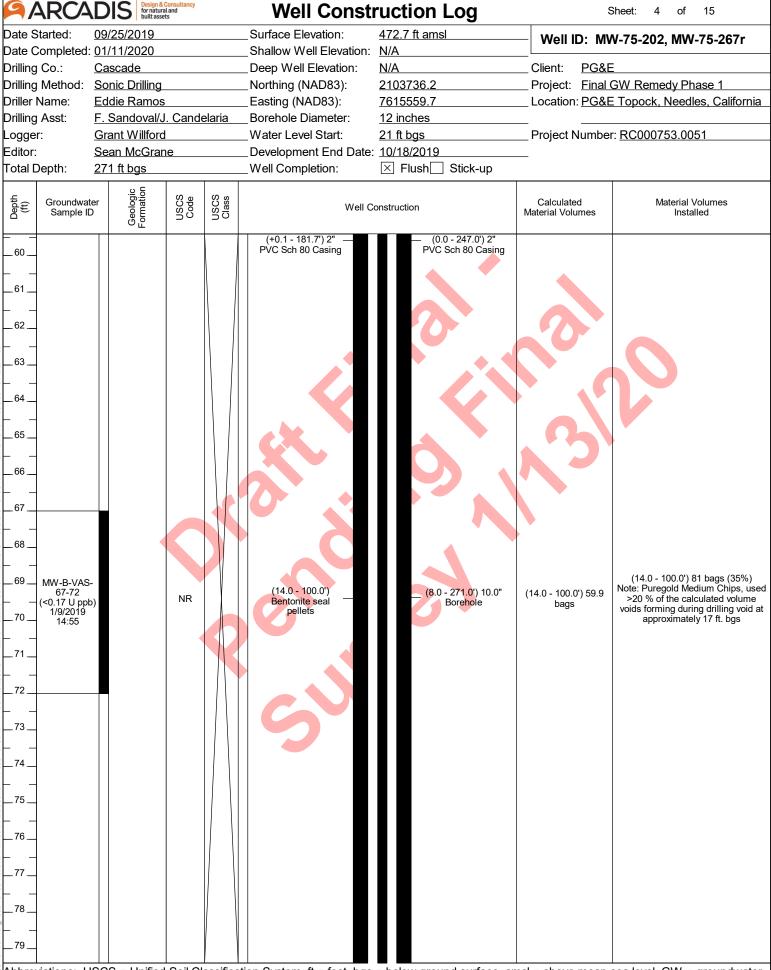
9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	eet: 14 of	15
Date S	Started	09/19/2	2019		Surface	Elevation:	472.7 ft amsl	Borin	a No .	MW-75i	
Date C	Comple	ted: <u>09/25/2</u>	2019		Northing	g (NAD83):	2103736.2	_	.g .10	11111 101	
Drilling		Cascac			_	(NAD83):	7615559.7	_ Client:	PG&E		
Drilling			•		Total De	•	271 ft bgs	_ Project:		W Remedy Ph	
Drill Ri			<u>ongyear Trac</u>	<u>k</u>		e Diameter:	12 inches	_ Location:	PG&E	<u> Fopock, Needl</u>	es, California
Driller		Eddie F		1-1:		o First Wate	_			D0000750 00	F.4
Drilling			doval/J. Cand	<u>ieiaria</u>	=	ig Method:	4 inch x 10 ft. Core Barrel	_ Project N	iumber: į	RC000753.00	51
Logge Editor:		Grant V	/viiilord /IcGrane		-	ig Interval: ed to Well:	<u>177-271</u> ⊠ Yes ☐ No	_			
Luitoi.		<u>ocan n</u>	logiano		T	T T					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
								0			
263				Topock -							
				Alluvium Deposits	ML						
264											
	400	Sieve				(265'); slightly moist				
	168	Samples Not Collected	MW-B-VAS-								
5			264-269 (<0.33 U			(266'); dry				(266.0 - 271.0') Casing
_267			ppb) 2/18/2019								was flushed
			14:00	Topock - Alluvium	ML	(267. brow	0 - 268.0') Topock - Alluvium Deposits; n (7.5YR 4/4) little reddish brown (5YR	Sandy silt (MI 5/4): no plasti	L); citv: and	(267.0 - 271.0') Extremely	with water volumes not
268				Deposits		very f	ine to coarse grained sand, angular to s l <mark>les</mark> to medium pebbles, angular to sub	subround; little	9	rough/hard drilling	documented
						∷ soft;	weak cementation 0 - 271.0') Topock - Alluvium Deposits;			conditions.	
_269						∷ l∵ l (SM):	yellowish red / light brown (5YR 5/6) s sh brown (10R 4/6); angular to subroun	omé red / mod	derate		
				Topock - Alluvium	SM	· ∶ ∶ pebb	es, angular to subangular; little silt; little	e clay; dry; str	ong		
270				Deposits		clasts	entation; iron oxide staining; some red s s	staining on gra	vei		
271_							End of Boring at 271.0 'b	gs.			
							·				
272											
273	-										
276											
_277											
278											
_279											
<u></u>											
280 Abbre	viation	. IISCS - I	Inified Sail Cl	accificatio	n Syston	n ft – foot h	gs = below ground surface, am	sel = abovo	mean co		aroundwater
LUNDIG	vialiUi li	, uuuu – L	// IIIICU JUII UI	นออแบสแป	ii oyaldii	1, 11 – 1551, D	go – polow ground Sunace, alli	131 - abuve	mean Se	a 15 vcl. 5 vv - (arouriuwaler.

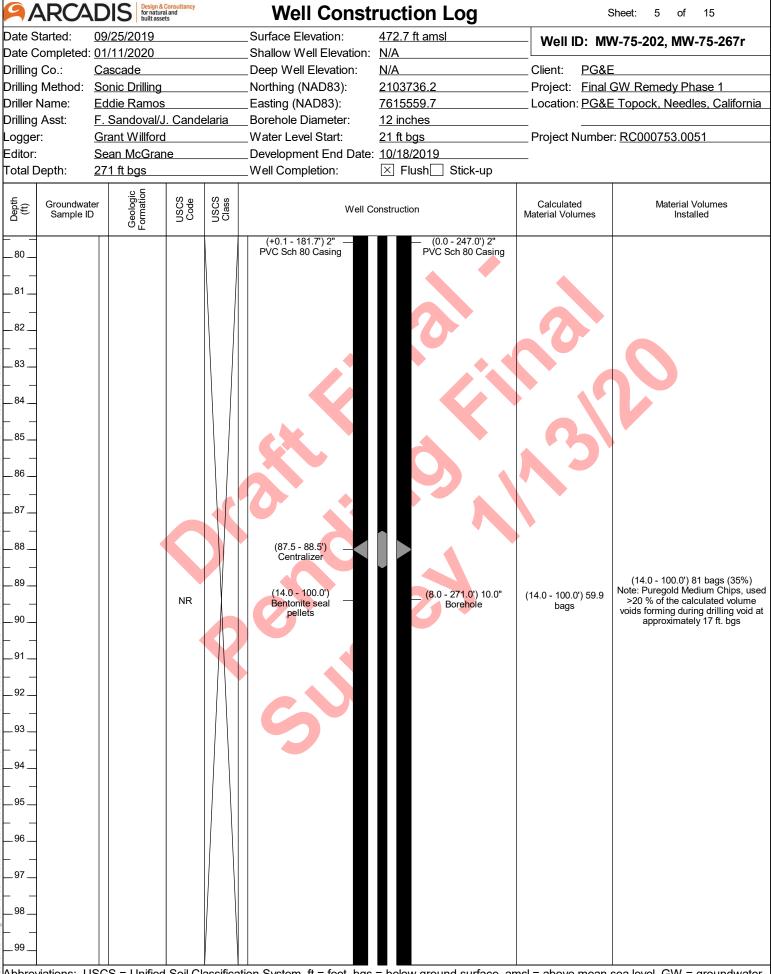


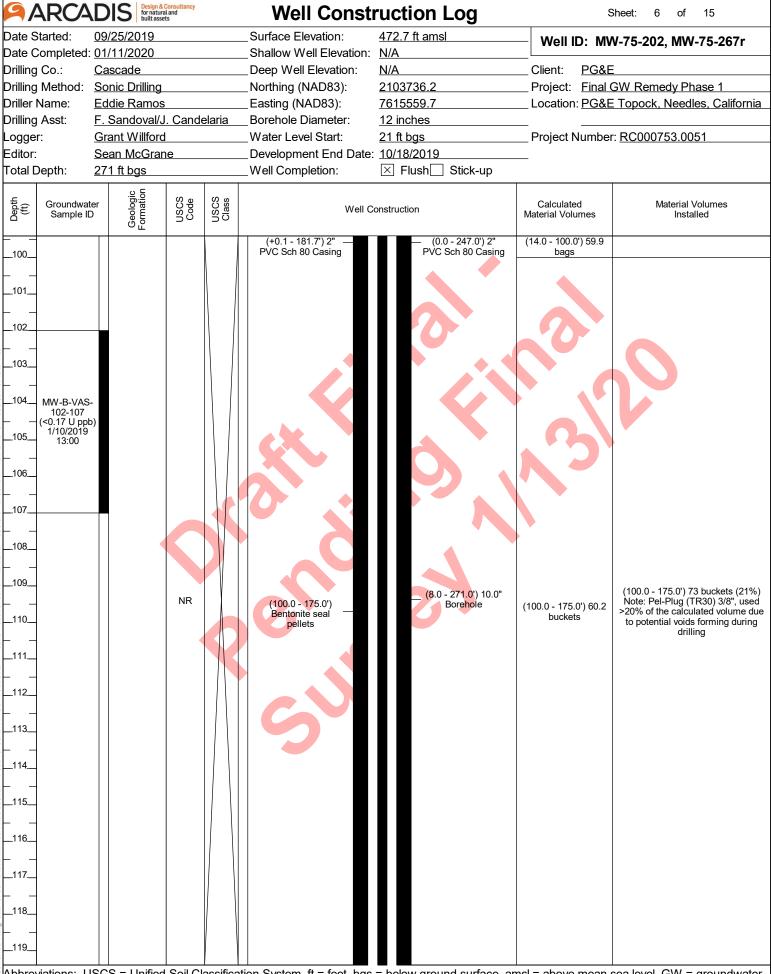




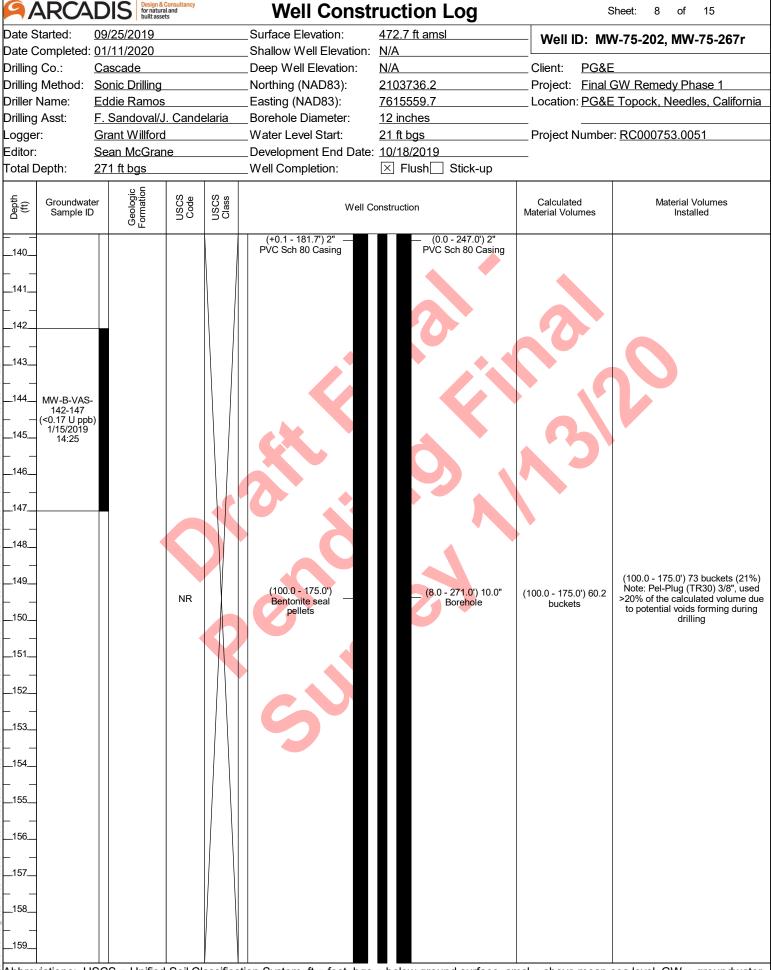








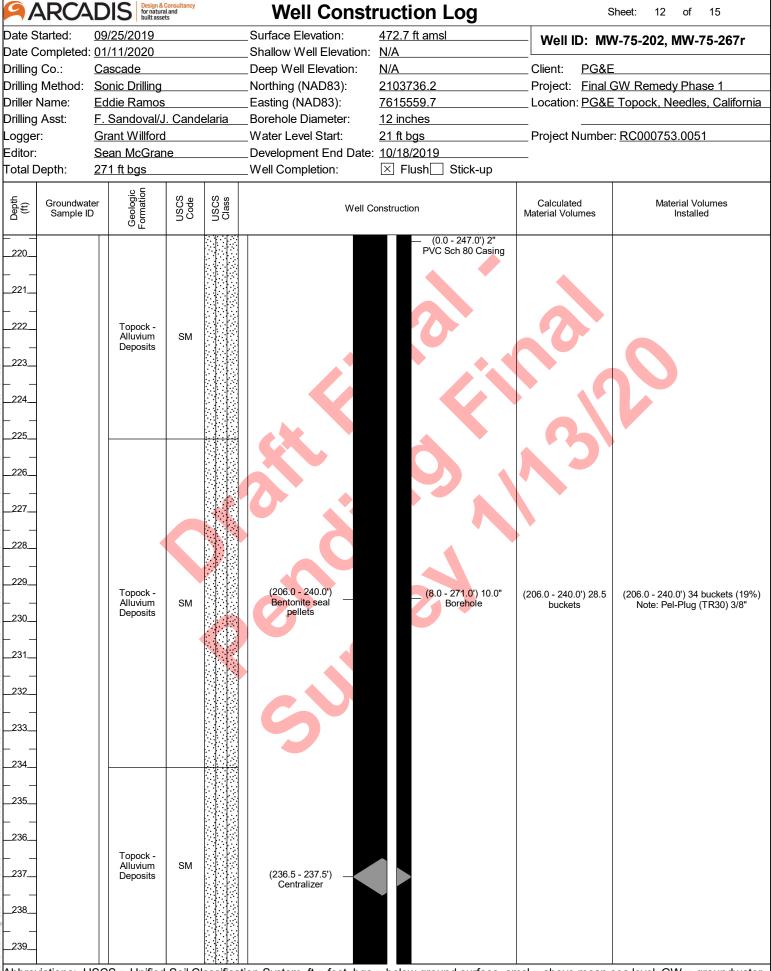
(100.0 - 175.0') NR (100.0 - 175.0') Bentonite seal (8.0 - 271.0') 10.0" (100.0 - 175.0') 60.2 Note: Pel-Plug (TR30) 3/8", use burkets Note: Pel-Plug (TR30) 3/8", use burkets	9/	ARCA	DIS Design for natural built as	& Consultancy ural and sets		Well Const	ruction Log		Sheet: 7 of 15
Date Completed: 01/11/2020								Well ID:	MW-75-202, MW-75-267r
Drilling Method: Sonic Drilling Northing (NAD83) 210/3786 2 Project: Final GW Remedy Phase 1 Drilling Asst: Eddie Ramos		-							·
Diller Name: Eddie Ramos Easting (NAD83): Easting (NAD83): Borehole Diameter 12 inches 12 inches 12 inches 12 inches 13 inches 13 inches 14 inches 15 inches									
Dilliflorg Asst: F. Sandovall J. Candelaria Borehole Diameter: 21 inches 21 inc	_		-	-					
Logger: Grant Willford Development End Date: 10/18/2019 Development End Date: 10/18/2019 Well Completion: X Flush Stück-up Total Depth: Total Depth:								Location: <u>P</u>	G&E Topock, Needles, California
Editor: Sean McGrane	_				<u>əlaria</u>				
Total Depth: 271 ft bgs							_	Project Nur	nber: RC000753.0051
Section Sect				ne		•			
(+0.1-181/7)2" PVC Sch 80 Casing PVC Sch 80 Casing	Total L	л е рит.		$\overline{}$		vveii Completion.			
122	Depth (ft)		Geologic Formation	USCS	USCS Class				
				NR		(127.5 - 128.5') Centralizer (100.0 - 175.0') Bentonite seal	PVC Sch 80 Casing		to potential voids forming during



, , , , , , , , , , , , , , , , , , , ,	CAD	for natural built asset	'S		well Consti	ruction Log		Sheet: 9 of 15
Date Started)/25/2019			_Surface Elevation:	472.7 ft amsl	Well ID: M	W-75-202, MW-75-267r
Date Comple					_Shallow Well Elevation:	N/A		<u> </u>
Drilling Co.:		ascade			_Deep Well Elevation:	N/A	Client: PG&	
Drilling Metho		onic Drilling			_Northing (NAD83):	2103736.2	•	GW Remedy Phase 1
Driller Name:		ddie Ramos			_Easting (NAD83):	7615559.7	Location: <u>PG&</u>	E Topock, Needles, California
Drilling Asst:		Sandoval/J		elaria	_Borehole Diameter:	12 inches	Due in at Namela	D0000750 0054
Logger:		rant Willford			_Water Level Start:	21 ft bgs	Project Numbe	er: RC000753.0051
Editor: Total Depth:		ean McGran '1 ft bgs	<u>e</u>		_Development End Date: _Well Completion:			
Total Deptil.	<u> </u>				_ vveii Completion.	△ Flush Stick-up		
	ndwater iple ID	Geologic Formation	epoo Sosn	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
			NR		(100.0 - 175.0') PVC Sch 80 Casing (107.5 - 168.5') Centralizer	— (0.0 - 247.0') 2" PVC Sch 80 Casing [8.0 - 271.0') 10.0" Borehole	(100.0 - 175.0') 60.2 buckets	(100.0 - 175.0') 73 buckets (21%) Note: Pel-Plug (TR30) 3/8", used >20% of the calculated volume due to potential voids forming during drilling
	o. 1190	Topock - Alluvium Deposits	SM		(175.0 - 180.0') Transition Sand (#00)		(175.0 - 180.0') 5 bags	(175.0 - 180.0') 7 bags (40%) Note: Lapis Lustre Sand, used >20% of the calculated volume due to potential voids forming during drilling sea level, GW = groundwater,

1 /-	ARCA	DIS for built	ign & Consultancy natural and t assets		Well Const	ruction Log	S	Sheet: 10 of 15	
Date S		09/25/2019			_Surface Elevation:	472.7 ft amsl	Well ID: MV	V-75-202, MW-75-267r	
Date Completed:					_Shallow Well Elevation:			·	
Drilling Co.:		Cascade			_Deep Well Elevation:	N/A	Client: <u>PG&E</u>		
•		Sonic Drilling			_Northing (NAD83):	2103736.2	Project: Final GW Remedy Phase 1		
Driller Name:		Eddie Ramos F. Sandoval/J. Candelaria			_Easting (NAD83):	7615559.7	Location: PG&E	Topock, Needles, California	
_		Grant Willford			_Borehole Diameter: _Water Level Start:	12 inches 21 ft bgs	— Project Number	: RC000753.0051	
		Sean McGrane			Development End Date: 10/18/2019		FTOJECT NUMBE	. <u>NC000733.0031</u>	
Total Depth: 271 ft bgs			idilo		_Well Completion: Stick-up Stick-up				
Depth (ft)	Groundwate Sample ID		USCS	USCS Class		Construction	Calculated Material Volumes	Material Volumes Installed	
	MW-B-VAS- 182-187 (<0.17 U ppb 2/13/2019 10:30	Topock Alluviun Deposit	n SM SM		(181.7 - 201.7') 2" — Sch 80 PVC (20-slot) Screen (180.0 - 206.0') Cemex #3 MESH (8x10)	(8.0 - 271.0') 10.0" Borehole	(175.0 - 180.0') 5 bags (180.0 - 206.0') 30.5 bags	(180.0 - 206.0') 30 bags (-2%) Note: Lapis Lustre Sand	
199		Deposit							

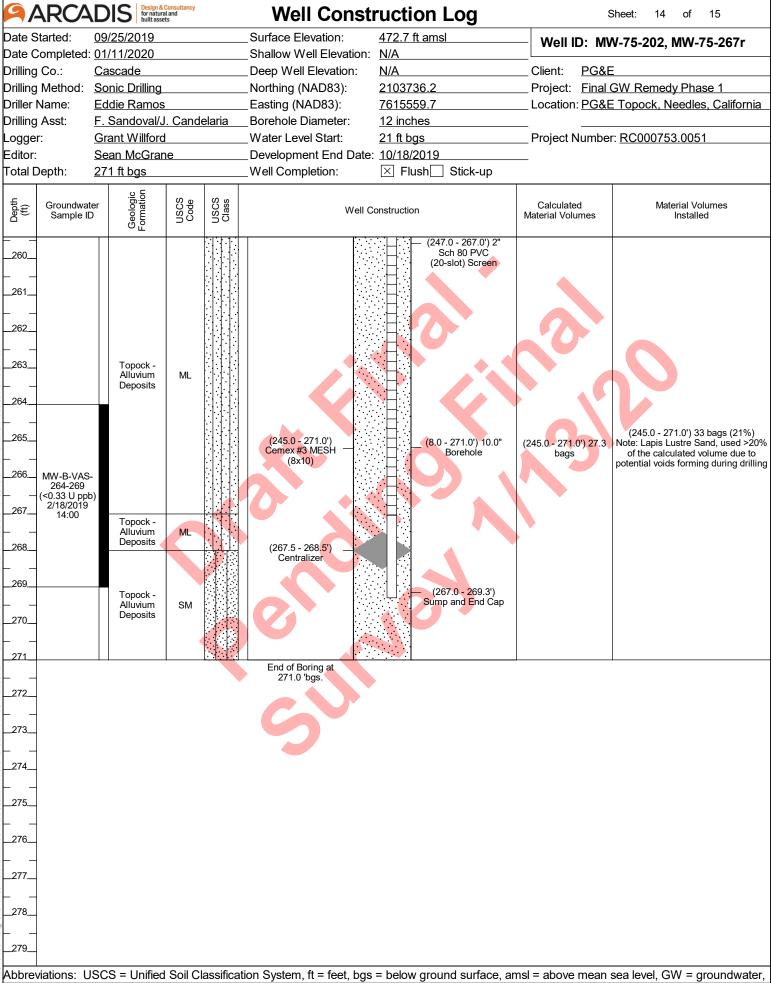
ARC	DIS Design & C for natura built asset	Consultancy Land Es		Well Consti	ruction Log	S	Sheet: 11 of 15
Date Started:	09/25/2019			_Surface Elevation:	472.7 ft amsl	Well ID: MV	V-75-202, MW-75-267r
Date Completed				_Shallow Well Elevation:	N/A		
Drilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
Drilling Method:	Sonic Drilling			_Northing (NAD83):	2103736.2	•	GW Remedy Phase 1
Driller Name: Drilling Asst:	Eddie Ramos F. Sandoval/J. Candelaria			_Easting (NAD83): Borehole Diameter:	7615559.7 12 inches	Location: PG&E	Topock, Needles, California
Logger:	Grant Willford			_Boreriole Blameter. _Water Level Start:	21 ft bgs	— Project Number	: RC000753.0051
Editor:	Sean McGrane			Development End Date: 10/18/2019			
Total Depth:	271 ft bgs			_Well Completion: ⊠ Flush ☐ Stick-up			
	. <u>.</u>						
Groundwa Sample II		epoo Sosn	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
	Topock - Alluvium Deposits Topock - Alluvium Deposits	SM		(181.7 - 201.7') 2" Sch 80 PVC (20-slot) Screen (180.0 - 206.0') Cemex #3 MESH (8x10) (203.0 - 204.0') Centralizer (201.7 - 204.0') Sump and End Cap (206.0 - 240.0') Bentonite seal pellets	— (0.0 - 247.0') 2" PVC Sch 80 Casing — (8.0 - 271.0') 10.0" Borehole	(180.0 - 206.0') 30.5 bags (206.0 - 240.0') 28.5 buckets	(180.0 - 206.0') 30 bags (-2%) Note: Lapis Lustre Sand (206.0 - 240.0') 34 buckets (19%) Note: Pel-Plug (TR30) 3/8"
 _218 _219							
		SM :					



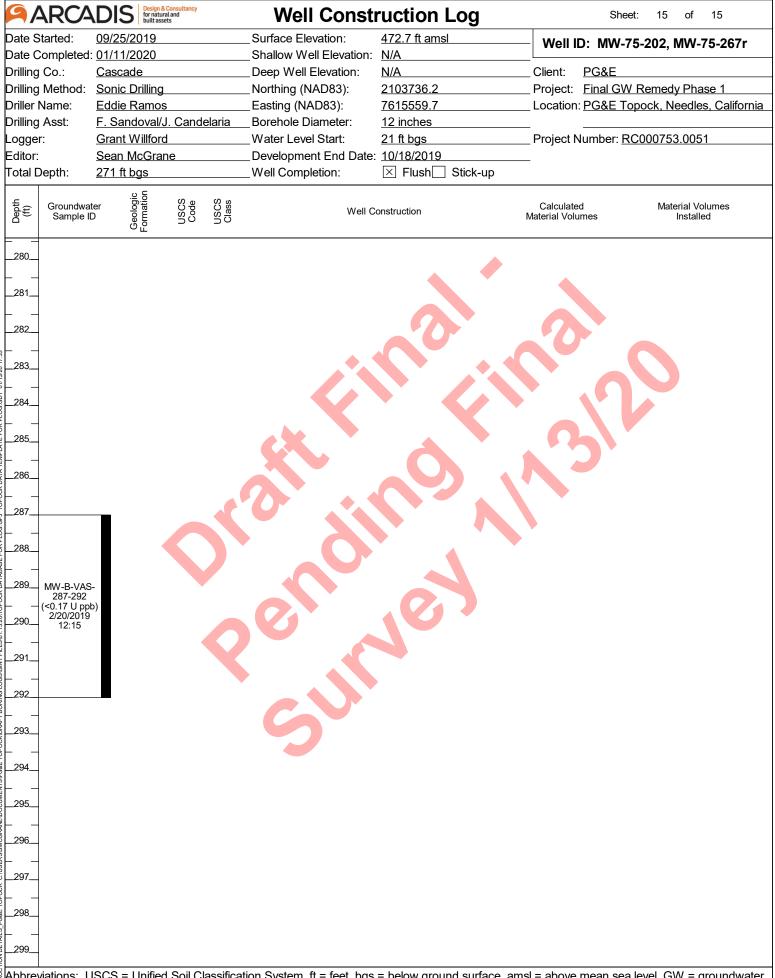
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery. groundwater samples collected during drilling of MW-75d

9/	ARCA	DIS Design & for natura built asse	Consultancy al and its		Well Consti	ruction Log	;	Sheet: 13 of 15
Date S	started:	09/25/2019			_Surface Elevation:	472.7 ft amsl	Well ID: MV	N-75-202, MW-75-267r
Date C	completed:	01/11/2020			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&E	Ξ
		Sonic Drilling			_Northing (NAD83):	2103736.2	•	GW Remedy Phase 1
Driller I		Eddie Ramos			_Easting (NAD83):	7615559.7	Location: <u>PG&E</u>	Topock, Needles, California
Drilling		F. Sandoval/J		elaria	_Borehole Diameter:	12 inches		
Loggei		Grant Willford			_Water Level Start:	21 ft bgs	Project Numbe	r: RC000753.0051
Editor:		Sean McGrar	ne		_Development End Date:			
Total D	Depth:	271 ft bgs	1		_Well Completion:		1	T
Depth (ft)	Groundwate Sample ID		USCS	USCS	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
			SM			— (0.0 - 247.0') 2" PVC Sch 80 Casing	(206.0 - 240.0') 28.5 buckets	(206.0 - 240.0') 34 buckets (19%) Note: Pel-Plug (TR30) 3/8"
240 241 242 243 244 		Topock - Alluvium Deposits	ML		(240.0 - 245.0') Transition Sand (#00)		(240.0 - 245.0') 5.2 bags	(240.0 - 245.0') 5 bags (-4%) Note: Lapis Lustre Sand
246 247 		Topock - Alluvium Deposits	SM			(247.0 - 267.0') 2" Sch 80 PVC (20-slot) Screen		
249	MW-B-VAS- 247-252 (<0.83 U ppb 2/17/2019 11:25		ML		(245.0 - 271.0') Cemex #3 MESH	(8.0 - 271.0') 10.0" Borehole	(245.0 - 271.0') 27.3 hars	(245.0 - 271.0') 33 bags (21%) Note: Lapis Lustre Sand, used >20% of the calculated volume due to
		Topock - Alluvium Deposits	SM		(8x10)		bags	of the calculated volume due to potential voids forming during drilling
259		Alluvium Deposits	ML			######################################		and level CW = groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery. groundwater samples collected during drilling of MW-75d



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwate ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery. groundwater samples collected during drilling of MW-75d



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery. groundwater samples collected during drilling of MW-75d

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log]		She	eet: 1 of	6
Date S	Started:	10/19/2	2019		Surface	Elevati	ion:	546.4 ft amsl	Borin	na No :	MW-88	
	-	ted: <u>10/29/2</u>	2019		Northing			2100541.3			<u> </u>	
Drilling		Cascad			Easting		3):	7614692.8	_ Client:	PG&E		
Drilling			-		Total De	-		116 ft bgs	_ Project:		W Remedy Ph	
Drill Ri	• • •		ic Truck Mou	<u>ınt </u>	Borehol			4-10 inches	_ Location	: PG&E	Topock, Needle	es, California
Driller					-			89.56 ft bgs	- Duniant N		DC000752 001	-1
Drilling		LA / OF	am / C. Bone		Samplin Samplin	-		4 inch x 10 ft Core Barrel	_ Project r	number:	RC000753.00	01
Logge Editor:			IcGrane	551	Convert	-		Screen Interval	_			
Luitor.		<u>Ocan iv</u>	logiane				V CII.					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
_							(0.0 - 8 see MV	7.0') No recovery (NR); Core was not V-88d geotech log for lithologic descri	collected or l ptions	ogged,		
_ 1 _												
_ 2 _												
											(0.51) \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	
_ 3 _											(2.5') When 6" casing was at	
-	0										27" it was determined that	
_ 4											the 10" conductor	
											casing was only driven to 2.5'.	
_ 5 _											All 6" casing was pulled to	
											allow the 10"	
6											casing to be reset to 8' bgs.	
											reset to 6 bgs.	
_ 7 _												
_ 8 _											(8.0 - 27.0')	
											Rough drilling.	
9 _												
							•					
10					NR							
11												
12												
12	0					$ \ \ $						
13						$ \ \ \ $						
5						$ \ \ \ $						
14						$ \ \ \ $						
						$ \ \ \ $						
15												
5						$ \ $						
16						$ \ $						
						$\parallel \parallel \parallel$						
17						$\parallel \parallel$						
18												
	0											
19												
<u> </u>												
20	<u></u>	11000									1 1 2000	
Abbre	viations	: USCS = U	initied Soil Cl	assiticatioi	n System	1	et bas	s = below ground surface, ams	si = ahove	mean se	alevel (iW = o	rroundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwappb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during purging to confirm water quality parameters were not affected by grout for the decommisioning of MW-88d, ground water quality data collected from MW-88d

	4KC	ADIS	for natural and built assets		Bo	ring Lo	og		She	et: 2 of	6
Date S	Started:	10/19/2	2019		Surface	Elevation:	546.4 ft amsl	Borin	na No .	MW-88	
Date C	Comple	ted: <u>10/29/2</u>	2019		Northing	g (NAD83):	2100541.3		19 110	11111-00	
Drilling	Co.:	Cascad	le		Easting	(NAD83):	7614692.8	_ Client:	PG&E		
Drilling	Metho	od: <u>Sonic E</u>	Drilling		Total De		116 ft bgs	_ Project:		V Remedy Ph	
Drill Ri			<u>ic Truck Mou</u>	ınt		e Diameter		_ Location	: <u>PG&E T</u>	opock, Needl	es, California
Driller		JC / EF					er: 89.56 ft bgs	_			
Drilling		LA / OF				g Method:	4 inch x 10 ft Core Barrel	_ Project N	Number: <u>F</u>	RC000753.00	51
Logge			am / C. Bone	ssi		g Interval:	Screen Interval	_			
Editor:		Sean M	1cGrane		Convert	ed to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
21 											
23											
	0										
24											
25											
20										(26.0') Lost	
27										core barrel down hole	
27											
28											
29											
					4						
30					NR					(30.0 - 37.0')	(30.0 - 37.0') 4
31_										Rough drilling and borehole keeps collapsing	gallons of water used; 0 gallons of water recovered; 4
32	0									requiring multiple clean	gallons of water lost
	"									out runs.	
33											
34											
35											
36											
37											
38											
]										
5 539	0										
40											
Ahhre	viations	· 118C8 = 11	Inified Soil Cl	accificatio	n Svetem	ft - feet k	ogs = below ground surface, am	cl = abovo	moon coo	lovol GW =	groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwa ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during purging to confirm water quality parameters were not affected by grout for the decommisioning of MW-88d, ground water quality data collected from MW-88d

/-	4K(ADIS	for natural and built assets		RO	ring Lo	og		She	eet: 3 of	6
Date S Date C Drilling Drilling Drill Ri	Comple Co.: Methon	ted: 10/29/2 Cascac od: Sonic E : Proson	2019 de Drilling ic Truck Mou	ınt	Surface Northing Easting Total De Borehole	Elevation: g (NAD83): (NAD83): epth: e Diameter	546.4 ft amsl 2100541.3 7614692.8 116 ft bgs		PG&E Final G\	MW-88 W Remedy Phropock, Needl	nase 1 les, California
Drilling Logge Editor:	y Asst: r:	<u>LA / OF</u> <u>J. Latha</u>			Samplin Samplin	ng Method: ng Interval: ned to Well:	4 inch x 10 ft Core Barrel Screen Interval Yes No	 _ Project N _	Number: J	RC000753.00	51
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	nscs Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
41 42 43 44 45 46 47	0										
48 49 50 51 52 53 54 55	0				NR					(50.0 - 57.0') Rough drilling.	-
56 57 58 59 60	0						ogo – bolow ground ourfood an				

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during purging to confirm water quality parameters were not affected by grout for the decommisioning of MW-88d, ground water quality data collected from MW-88d

9/	AKC	ADIS	for natural and built assets		Во	ring Lo	g		She	et: 4 of	6
Date S	Started	10/19/2	2019		Surface	Elevation:	546.4 ft amsl	Borir	ia No:	MW-88	
l l	-	ted: <u>10/29/2</u>				g (NAD83):	2100541.3			11111 00	
Drilling		Cascac				(NAD83):	7614692.8	_ Client:	PG&E		
Drilling			-		Total De		116 ft bgs	_ Project:		V Remedy Ph	
Drill Ri			ic Truck Mou	<u>nt</u>		e Diameter:	4-10 inches	_ Location	: <u>PG&E T</u>	opock, Needl	es, California
Driller Drilling		<u>JC / EF</u> <u>LA / OF</u>					r: 89.56 ft bgs 4 inch x 10 ft Core Barrel	- Droiget N	Lumbor: E	RC000753.00	 5.1
Logge			am / C. Bone:	eci		g Method: g Interval:	Screen Interval	_ Project N	iumber. <u>r</u>	<u> </u>	O I
Editor			IcGrane	551		ed to Well:		_			
		<u> </u>	io Orano		1						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
61											
62											
63										(63.0 - 67.0')	
	0						40			Rough drilling.	
64											
65							.0-1				
66											
5											
67											
- -											
68											
69											
70					NR						
71_											
70											
72	0									(72.0') Lost	
73										core barrel down hole, first	
										attempt to retrieve failed,	
74										retrieve on second attempt.	
3											
75											
<u>-</u>											
76											
-											
77											
78											
-	0										
79											
80 Abbro	viations	· 11909 - 11	Inified Soil Cl	assificatio	n Svetom	ft = foot h	as = helow around surface am	cl = abovo	moon soo	Novel CW =	graundwatar

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during purging to confirm water quality parameters were not affected by grout for the decommisioning of MW-88d, ground water quality data collected from MW-88d

Date Started: 101/19/2019	1	AK(ADIS	for natural and built assets		Во	ring Lo	og		She	et: 5 of	6
Northing (NADS): 20144592.8 Client: PG&E Gascade Gascade Gascade Form (NADS): 20144592.8 Client: PG&E 10 Rg Type: 1									Borii	ng No.:	MW-88	
Dalling Method: Dalling M							- '		_			
Dail Rig Type: Prosent Tuck Mount Borehole Dismeter: 4-10 Inches Location: PG&E Topock, Needles, California Drilling Asst: LA/CB / PM	_					_	,				N Dl Dk	1
Deller Name: J.C. IER/SV Depth to First Water: 88,56 ft bgs Depth to First Water: 88,56 ft bgs J.L. J.C. P.P.M. Sampling Method: Sam MxGrane Converted to Welk: Sam Nx	_			•	ınt		-		•		•	
Dalling Assts: LA / OF / PM C. Bonessi Sean McGrane Converted to Well:		• • •			וונ			•	Location	. FGal I	ороск, песа	ies, California
Description Seam McGrane						-			— Project N	Number: F	RC000753.00)51
Sean McGrane	_				essi	-	-		_ ,	_		
			Sean I	<u> McGrane</u>		Conver	ted to Well:					
B2	Depth (ft)	Recovery (in)			Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
[87.0 - 95.0 7] Topock - Alluvium Deposits; Sland and with gravel subround; SM Deposits Sland and some small to very large pebbles, angular to subround; some small to very large pebbles, angular to subround; some small to very large pebbles, angular to subround; some small to very large pebbles, angular to subround; some small to very large pebbles, angular to subround; some small to very large pebbles, angular to subround; some small to very large pebbles, angular to subround; some small to very large pebbles, angular to subround; some small to very large pebbles, angular to subround; some small to very large pebbles, angular to subround; some small to very large pebbles, angular to subround; some small to very large pebbles, angular to subrangular, some very fine to very large pebbles, angular to subrangular, some very fine to very large pebbles, angular to subrangular, some very fine to very large pebbles, angular to subrangular, coarser clasts composed of metadiorite; wet, medium stiff (97.0 - 105.0) Soft drilling.	82 83 84 85 86	0				NR						
10:14 10:14 10:14 10:14 10:14 10:14 10:14 10:14 10:14 10:14 10:14 10:14 10:10 (95.0 - 101.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML); brown (7.5YR 5/2); low plasticity; some granules to very large pebbles, angular to subangular; some very fine to very coarse grained sand, angular to subangular; coarse grained sand, angular to subangular; coarse clasts composed of metadiorite; wet; medium stiff 10:14 (95.0 - 101.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML); brown (7.5YR 5/2); low plasticity; some granules to very large pebbles, angular to subangular; some very fine to very coarse grained sand, angular to subangular; coarser clasts composed of metadiorite; wet; medium stiff (97.0 - 105.0') Soft drilling.	88 89 90 91 92 93	120		92-97 (26 ppb)	Alluvium	SM	(SM subr little coar); brown (7.5YR 5/3); very fine grained to ound; some small to very large pebbles silt; little clay; trace small cobbles, ang ser clasts composed of metadiorite; more clasts composed of metadiorit	o granules, ar s, angular to su jular to subrou	igular to ubround;		
	96 97 98 99 100			10:14	Alluvium Deposits		(ML) large coar cobb meta	i; brown (7.5YR 5/2); low plasticity; some pebbles, angular to subangular; some se grained sand, angular to subround; loles, angular to subangular; coarser claudiorite; wet; medium stiff	ne granules to every fine to velittle clay; trace sts composed	very ery e small of	Soft drilling.	_

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during purging to confirm water quality parameters were not affected by grout for the decommisioning of MW-88d, ground water quality data collected from MW-88d

9/	ARC	ADIS	for natural and built assets		Во	ring	Log	Sh	eet: 6 of	6
Date S					Surface	Elevat	ion: <u>546.4 ft amsl</u>	Boring No.	: MW-88	
	•	ted: <u>10/29/</u>			Northin	- '	·			
Drilling		<u>Casca</u>			Easting	•	•	_ Client: <u>PG&E</u>		
Drilling			•		Total De	•	116 ft bgs	•	W Remedy Ph	
Drill Ri			nic Truck Mou		Borehol			_ Location: <u>PG&E</u>	Topock, Needle	es, California
Driller					•		Water: 89.56 ft bgs	— — — — — — — — — — — — — — — — — — —	DC0007E3 00	<u> </u>
Drilling		<u>LA / O</u>	r / Plvi lam / C. Bone		Samplir Samplir	•		_ Project Number:	KC000753.00	01
Logge Editor:			McGrane		Convert	•		_		
Laitor		<u> </u>	VICCIANO		T	T	100 110			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
 101				Topock - Alluvium Deposits	ML					
102	120			Topock - Weathered Bedrock - conglomerate	ML e		(101.0 - 104.0') Topock - Weathered Bedroc Sandy silt with gravel (ML); reddish brown (5 plasticity; some very fine to very coarse grain subround; little granules to very large pebble subangular; little clay; coarser clasts compo moist; medium stiff; strong HCL reaction	SYR 5/4), low ned sand, angular to es, angular to		
104 105 106				Topock - Weathered Bedrock - conglomerate	ML e		(104.0 - 106.0') Topock - Weathered Bedroc Sandy silt with gravel (ML); brown (7.5YR 5/some very fine to very coarse grained sand, little granules to very large pebbles, angular small cobbles, angular to subround; trace cl medium stiff; material highly disturbed by ret	3); low plasticity; angular to subround; to subangular; trace ay; wet; very soft to working over material	(104.0 - 106.0') Recovery was highly disturbed, likely slough.	
107				Topock - Weathered Bedrock - conglomerate	ML		(106.0 - 107.0') Topock - Weathered Bedroc Sandy silt with gravel (ML), reddish brown (5 plasticity; some very fine to very coarse grain subround; little granules to very large pebble	SYR 5/4); low ned sand, angular to		
			MW-S-VAS- 107-112 (6.8 ppb) 9/24/2019 11:14				subangular; little clay; coarser clasts compoldry; stiff (107.0 - 116.0) Topock - Competent Bedroc (7.5R 5/1); dry; friable, pulverized (108') brown (7.5YR 5/3)	sed of metadiorite;	(107.0 - 116.0') Very hard drilling. (110.0') Core barrel locked up, run casing	
111	108			Topock - Competent Bedrock - conglomerate	e		(113') brown (7.5YR 5/3)		over core barrel to free up.	
114 115 116			no sample 9/23/2019 10:43							
							End of Boring at 116.0 'b	gs.		
117										
119										
120										
Abbre	viations	: USCS = l	Jnified Soil Cl	assification	System	n, ft = fe	eet, bgs = below ground surface, am	sl = above mean se	ea level, GW =	groundwater,

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwate ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during purging to confirm water quality parameters were not affected by grout for the decommisioning of MW-88d, ground water quality data collected from MW-88d

ARC	DIS for natural built ass	ral and ets		Well Consti	uction Log	,	Sheet: 1 of 6
ate Started:	10/29/2019			_Surface Elevation:	546.4 ft amsl	Well ID: M	N-88-107
ate Completed				_Shallow Well Elevation:			
rilling Co.:	Cascade			_Deep Well Elevation:	546.9 ft amsl	Client: PG&I	
rilling Method:	-			_Northing (NAD83):	2100541.3		GW Remedy Phase 1
riller Name:	JC / ER /SV			_Easting (NAD83):	7614692.8	Location: <u>PG&</u> I	E Topock, Needles, Californ
rilling Asst:	LA / OF / PM			_Borehole Diameter:	4-10 inches		
ogger:	J. Latham / C		ssi	_Water Level Start:	90.1 ft bgs	Project Numbe	r: <u>RC000753.0051</u>
ditor:	Sean McGra	ne		_Development End Date:			
otal Depth:	116 ft bgs			_Well Completion:			T
Groundwa Sample		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
				(0.0 - 87.0') 2" PVC — Sch 80 Casing (0.0 - 3.0') Backfill —			Note: Native material to be remo during installation of surface completion
- 4 — - 5 — - 6 — - 7 — - 8 — - 9 — - 10 — - 11 — - 12 —		NR		(3.0 - 75.0') Portland Cement 6% Bentonite	(0.0 - 12.0') 10.0" Borehole	(3.0 - 75.0') 129.2 bags	(3.0 - 75.0') 165 bags (28%) Note: Type I II and V with Hydro actual volume of grout installed >20% of the calculated volume to potential lateral migration of grout into the formation or voi spaces created during drilling
-13 -14 -15 -16 -17 -18 -19					(12.0 - 116.0') 6.0" Borehole		sea level, GW = groundwa

77-11 10	ADIS for natura	ets		Well Consti	action Log		Sheet: 2 of 6
Date Started:	10/29/2019			_Surface Elevation:	546.4 ft amsl	Well ID: M	N-88-107
ate Completed				_Shallow Well Elevation:			
rilling Co.:	Cascade			_ Deep Well Elevation:	546.9 ft amsl	Client: PG&	
Orilling Method: Oriller Name:	JC / ER /SV			_Northing (NAD83): _Easting (NAD83):	2100541.3 7614692.8	•	GW Remedy Phase 1 E Topock, Needles, Californi
rilling Asst:	LA / OF / PM			Borehole Diameter:	4-10 inches	Location. 1 Gai	_ Topock, Necules, Californi
ogger:	J. Latham / C		ssi	Water Level Start:	90.1 ft bgs	Project Numbe	r: RC000753.0051
ditor:	Sean McGrar			 _Development End Date:	-		
otal Depth:	116 ft bgs			_Well Completion:	区 Flush Stick-up		
Groundwa Sample I		USCS Code	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
	ISCS = Unified	NR Soil C	assifica	(28.0 - 29.0') Centralizer (3.0 - 75.0') Portland Cement 6% Bentonite	(12.0 - 116.0') 6.0' Borehole	bags	(3.0 - 75.0') 165 bags (28%) Note: Type I II and V with Hydrog actual volume of grout installed w >20% of the calculated volume of to potential lateral migration of th grout into the formation or void spaces created during drilling sea level, GW = groundwate

77-1110	DIS for natura	ets		Well Consti	uction Log	,	Sheet: 3 of 6
Date Started:	10/29/2019			_Surface Elevation:	546.4 ft amsl	Well ID: M	N-88-107
ate Completed				_Shallow Well Elevation:			
rilling Co.:	Cascade			_ Deep Well Elevation:	546.9 ft amsl	Client: PG&I	
rilling Method: riller Name:	JC / ER /SV			_Northing (NAD83): _Easting (NAD83):	2100541.3 7614692.8	•	GW Remedy Phase 1 Topock, Needles, California
rilling Asst:	LA / OF / PM			Borehole Diameter:	4-10 inches	Location. 1 Gai	_ Topock, Needles, Calliotti
ogger:	J. Latham / C		ssi	Water Level Start:	90.1 ft bgs	 Project Numbe	r: RC000753.0051
ditor:	Sean McGrar			 _Development End Date:			
otal Depth:	116 ft bgs			_Well Completion:			
Groundwa Sample I		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
	JSCS = Unified	NR d Soil C	assifica	(3.0 - 75.0') Portland Cement 6% Bentonite (3.0 - 75.0') Fortland Cement 6% Bentonite	= below ground surface,	bags	(3.0 - 75.0') 165 bags (28%) Note: Type I II and V with Hydrog actual volume of grout installed w >20% of the calculated volume of to potential lateral migration of the grout into the formation or void spaces created during drilling spaces created

	DIS Design 8 for nature built ass	ral and ets		Well Construct	ion Log	;	Sheet: 4 of 6
Date Started:	10/29/2019				l ft amsl	Well ID: M\	N-88-107
Date Completed				_Shallow Well Elevation: <u>N/A</u>			
Orilling Co.:	<u>Cascade</u>			•	ft amsl	Client: PG&I	
Orilling Method:	-			· ,	541.3		GW Remedy Phase 1
Oriller Name:	JC / ER /SV			- ,	692.8	Location: <u>PG&I</u>	E Topock, Needles, California
Orilling Asst:	LA / OF / PM				inches		
_ogger:	J. Latham / C		si		ft bgs	Project Numbe	r: RC000753.0051
Editor:	Sean McGrai	ne		_Development End Date: 11/13			
Γotal Depth:	116 ft bgs			_Well Completion:	lush Stick-up	ı	1
Groundwa Sample I		USCS Code	USCS Class	Well Construct	ion	Calculated Material Volumes	Material Volumes Installed
		NR		(3.0 - 75.0') Portland Cement 6% Bentonite (68.0 - 69.0') Centralizer	(12.0 - 116.0') 6.0" Borehole	(3.0 - 75.0') 129.2 bags	(3.0 - 75.0') 165 bags (28%) Note: Type I II and V with Hydrogel, actual volume of grout installed was >20% of the calculated volume due to potential lateral migration of the grout into the formation or void spaces created during drilling (75.0 - 85.0') 3.5 bags (0%)
76 				#60 Mesh	o o o o o o o o o	bags	Note: Lapis Lustre Sand
	JSCS = Unified	d Soil Cl	assifica	ା #60 Mesh	w ground surface, an	bags	Note: Lapis Lustre Sand

DIS for natura built asse	ts		Well Construction L	Sheet: 5 of 6	
10/29/2019			Surface Elevation: 546.4 ft amsl	Well ID: MW-88-107	_
			•		
-			- ', '		
			,	Ecodulon. <u>Fode Topock, Necducs, O</u>	<u>railloi</u>
	. Bones	ssi	 _Water Level Start: 90.1 ft bgs	Project Number: <u>RC000753.0051</u>	
			_Development End Date: 11/13/2019		
116 ft bgs			_Well Completion:	Stick-up	
Geologic Formation	USCS	USCS Class	Well Construction	Calculated Material Volume Installed	es
	NR		(75.0 - 85.0') Cemex #60 Mesh (40Ā—70)	(75.0 - 85.0') 3.5 bags (75.0 - 85.0') 3.5 bag Note: Lapis Lustre	յs (0%) Sand
			(87.0 - 107.0') 2" 20-Slot Sch 80 PVC (0.20 slot) Screen		
Topock - Alluvium Deposits	SM				
			(85.0 - 111.0') Cemex #3 MESH (8x10)	(85.0 - 111.0') 9.2 bags (85.0 - 111.0') 10 bag Note: Lapis Lustre	js (9% Sand
Topock - Alluvium Deposits	ML				
	Topock - Alluvium Deposits	Topock - Alluvium Deposits Topock - Alluvium ML	Topock - Alluvium Deposits Topock - Alluvium ML Topock - Alluvium ML	10/30/2019	Shallow Well Elevation: SIA

9/-	ARCA	DIS for natura built asset	l and ts		Well Consti	ruction Log		Sheet: 6 of 6
l l	Started:	10/29/2019			_Surface Elevation:	546.4 ft amsl	Well ID:	MW-88-107
		10/30/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	546.9 ft amsl		G&E
_		Sonic Drilling			_Northing (NAD83):	2100541.3	•	nal GW Remedy Phase 1
	Name:	JC / ER /SV			_Easting (NAD83):	7614692.8	Location: <u>P</u>	G&E Topock, Needles, California
Drilling		LA / OF / PM			_Borehole Diameter:	4-10 inches	— — —	-h DC000752 0054
Logger Editor:		J. Latham / C		SSI	_Water Level Start:	90.1 ft bgs	Project Nur	nber: <u>RC000753.0051</u>
Total D		Sean McGran	<u>le</u>		_Development End Date: _Well Completion:			
Total L	Териі.				_ well completion.	/ I lusti _ Stick-up		
Depth (ft)	Groundwat Sample ID		USCS Code	USCS Class		onstruction	Calculated Material Volume	Material Volumes s Installed
		Topock - Alluvium Deposits	ML		(87.0 - 107.0') 2" —			
101 102		Topock - Weathered	ML					
103 		Bedrock - conglomerate						
		Topock - Weathered						
105		Bedrock - conglomerate	ML		(85.0 - 111.0') Cemex #3 MESH		(85.0 - 111.0') 9	0.2 (85.0 - 111.0') 10 bags (9%)
106		Congiomerate			Cemex #3 MESH (8x10)		bags	Note: Lapis Lustre Sand
100		Topock - Weathered						
107		Bedrock - conglomerate	ML					
108	- MW-S-VAS- 107-112 - (6.8 ppb) 9/24/2019 11:14	Topock -			(107.5 - 108.5') Centralizer (107.0 - 109.3') Sump and End Cap	(12.0 - 116.0') 6.0" Borehole		
	-	Competent Bedrock -			· ·			
112 113 114 	no sample 9/23/2019 10:43	conglomerate			(111.0 - 116.0') Bentonite seal chips	(112.0 - 116.0') 4.0" Borehole	(111.0 - 116.0') bags	0.8 (111.0 - 116.0') 1 bags (25%) Note: Puregold Medium Chips
116								
					End of Boring at 116.0 'bgs.			
117					i io.u bys.			
118								
119								
120								
	viations: U	SCS = Unified	Soil C	lassificat	ion System, ft = feet, bgs	= below ground surface, a	msl = above me	ean sea level, GW = groundwater,
		m ND			1 1 12 14 11	1 15 1001		

ppb = parts per billion, NR = no recovery, ground water quality data collected from MW-88d

9/	ARC4	DIS Design for nat built a	& Consultancy cural and ssets		Decommis	sioni	ng Log		Sł	heet: 1 of 6
Date S	Started:	10/03/2019			_Surface Elevation:	545.6 ft	amsl	- Well ID	. мw	/-88-107d
Date 0	Completed:	10/04/2019			_Shallow Well Elevation:	N/A				
Drilling	Co.:	Cascade			_Deep Well Elevation:	N/A		Client: _	PG&E	
Drilling	Method:	Sonic Drilling	g		_Northing (NAD83):	210055	5.9	Project: _!	Final G	SW Remedy Phase 1
	Name:	John Colon			_Easting (NAD83):	<u>761469</u>		Location: l	PG&E	Topock, Needles, California
Drilling	Asst:	L. Amaya / 0		es	_Borehole Diameter:	4-12 inc				
Logge		Chris Bones			_Water Level Start:	89.14 ft	bgs	Project Nu	umber:	RC000753.0051
Editor:		Sean McGra			_Development End Date		. —	_		
Total [Depth:	117.1 ft bgs			_Well Completion:	Flus	sh Stick-up	I		
Depth (ft)	Groundwat Sample II		nscs Code	USCS	Well C	Construction	1	Calculated Material Volun		Material Volumes Installed
_ 1 _ _ 1 _ 2 _ 2 _		Topock - Fluvial Deposits	SM							Note: Backfilled with native material
_ 3 _ 		Topock - Fluvial Deposits	SW				(0.0 - 8.0') 12.0"	Co		
		Topock - Fluvial	SW				Borehole			
_ 5 _		Deposits Topock - Fluvial	SW							
- -		Fluvial Deposits								
6 <u> </u>			NR	$ \times $						
		Topock -	SW							
 		Fluvial Deposits								
-		Topock - Fluvial	SW	8						
_ 8 _		Deposits	NR							
- -			Turk Turk	و بوری						
_ 9 _										
10		Topock - Alluvium	SW							/
- -		Deposits	300							(2.0 - 82.0') 335 gallons (41%) Note: Type I, II and V and Benseal,
11					(2.0 - 82.0') Grout			(2.0 - 82.0') gallons	238	used >20% of the calculated volume due to grout mirgation potentially in
								ganono		to the damaged well and the formation
12										ioimation
<u> </u>		Topock - Alluvium	SW							
13		Deposits								
<u> </u>		Topock - Alluvium								
14		Deposits					_ (8.0 - 82.0') 8.0" Borehole			
<u> </u>		Tanaak					Borenoic			
15		Topock - Alluvium	SW-SN							
_		Deposits								
16										
L _		Topock -								
17		Alluvium Deposits								
L _		Topock -	SM							
18		Alluvium Deposits	NR	$ \times $						
		Topock - Alluvium								
19_		Deposits Topock -	_	\$						
		Alluvium	SW							
20		Deposits								
1					. <u> </u>				·	

9	ARCA	DIS Design for natural built as	& Consultancy iral and sets		Decommis	sioning Log	\$	Sheet: 2 of 6
Date	Started:	10/03/2019			_Surface Elevation:	545.6 ft amsl	Well ID: MV	V-88-107d
	-	10/04/2019			_Shallow Well Elevation:	N/A		
	ng Co.:	Cascade			Deep Well Elevation:	N/A	Client: PG&E	
Drillin	ng Method:	Sonic Drilling	1		_Northing (NAD83):	2100555.9		GW Remedy Phase 1
	r Name:	John Colon			_Easting (NAD83):	7614695.2	Location: <u>PG&E</u>	Topock, Needles, California
	ng Asst:	L. Amaya / C		s	_Borehole Diameter:	4-12 inches		
Logg		Chris Bones			_Water Level Start:	89.14 ft bgs	Project Number	r: RC000753.0051
Edito		Sean McGra	ne		Development End Date:			
Total	Depth:	117.1 ft bgs	1		_Well Completion:	☐ Flush☐ Stick-up	T	T
Depth (ft)	Groundwat Sample II		USCS	USCS	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
-	_	Topock - Alluvium Deposits	SW					
21_	_	Topock -						
-	+	Alluvium Deposits	SW-SM					
22_	+	Topock -	SM					
-	+	Alluvium Deposits	 					
23_			NR	X				
-	_			typ)				
24 _				5/1/2				
-	1	Topock -		90				
25_	+	Alluvium Deposits	GM	10 PJC				
<u> </u>	-							
26_	+							
-	\dashv	Topock - Alluvium	SM					
27_	-	Deposits Topock -	SM					
<u>:</u> -	\dashv	\ Alluvium	J	1.1.1			*	
28_	\dashv	Deposits	NR	X				
-	-							
29_	\dashv							(0.0.00.01).005 (440()
<u> </u> -	-							(2.0 - 82.0') 335 gallons (41%) Note: Type I, II and V and Benseal,
30_	+	Topock - Alluvium	CM		(2.0 - 82.0') Grout	(8.0 - 82.0') 8.0" Borehole	(2.0 - 82.0') 238 gallons	used >20% of the calculated volume due to grout mirgation potentially in
<u> </u> -	4	Deposits	SM	40			ganene	to the damaged well and the formation
31_	4							Iomaton
<u> </u>	4							
32_	4	Topock -	CM					
<u> </u>	4	Alluvium	SM					
33_	4	Deposits	/ NR	X				
<u>.</u>	_			· 1 · 1 · 1				
34_								
	_	Topock - Alluvium	SM					
35_		Deposits						
36_		Topock - Alluvium	SW					
L		Deposits	300	*****				
37_		Topock - Alluvium	SM					
		Deposits Topock -	SM					
38_	7	Alluvium	NR					
		Deposits Topock -	J 'N'					
39 _	7	Alluvium Deposits						
_ 39 -	7	Topock - Alluvium	ML					
40	7	Deposits						

9/	ARCA	DIS Design & for natura built asset	Consultancy al and ets		Decommissi	oning Log	Sheet: 3 of 6			
	Started:	10/03/2019				45.6 ft amsl	Well ID: M	W-88-107d		
	•	10/04/2019				/A				
Drilling		Cascade				/A	Client: PG&			
Drilling	g Method:	Sonic Drilling			O ()	100555.9	•	GW Remedy Phase 1		
Driller	Name:	John Colon			9 ,	614695.2	Location: <u>PG&</u>	E Topock, Needles, California		
Drilling	g Asst:	L. Amaya / O	. Floure	s	Borehole Diameter: 4-	-12 inches				
Logge	er:	Chris Boness	i		Water Level Start: 89	9.14 ft bgs	Project Numbe	er: RC000753.0051		
Editor:	:	Sean McGrar	ne		Development End Date: <u>N</u>	<u>/A</u>				
Total [Depth:	117.1 ft bgs			Well Completion:	☐ Flush☐ Stick-up				
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well Cons	struction	Calculated Material Volumes	Material Volumes Installed		
41		Topock - Alluvium Deposits Topock - Alluvium Deposits	MIL SM SM SM SM		(2.0 - 82.0') Grout	(8.0 - 82.0') 8.0" Borehole	(2.0 - 82.0') 238 gallons	(2.0 - 82.0') 335 gallons (41%) Note: Type I, II and V and Benseal, used >20% of the calculated volume due to grout mirgation potentially in to the damaged well and the formation		
	-									
59 60		Topock - Alluvium Deposits	SM							

9/	ARCA	DIS Design 8 for natur built ass	Consultancy ral and ets		Decommis	sioning Log	Sheet: 4 of 6			
Date S	Started:	10/03/2019			_Surface Elevation:	545.6 ft amsl	Well ID: N	IW-88-107d		
Date C	Completed:	10/04/2019			_Shallow Well Elevation:	N/A				
Drilling	Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG8	kE		
Drilling	Method:	Sonic Drilling			_Northing (NAD83):	2100555.9	Project: <u>Fina</u>	I GW Remedy Phase 1		
Driller	Name:	John Colon			_Easting (NAD83):	7614695.2	Location: <u>PG8</u>	E Topock, Needles, California		
Drilling	Asst:	L. Amaya / O	. Floure	s	_Borehole Diameter:	4-12 inches				
Logge	r:	Chris Boness	si		_Water Level Start:	89.14 ft bgs	Project Numb	er: RC000753.0051		
Editor:	:	Sean McGrai	ne		_Development End Date:	: <u>N/A</u>				
Total [Depth:	117.1 ft bgs			_Well Completion:	☐ Flush☐ Stick-up				
Depth (ft)	Groundwat Sample ID		Code	USCS Class	Well C	Construction	Calculated Material Volumes	Material Volumes Installed		
61 61 62		Topock - Alluvium Deposits	SM							
63 _ _ 63 _ 64 _		Topock - Alluvium Deposits	SW-SM							
65 66 66		Topock - Alluvium Deposits	SM				3			
67 68		Topock - Alluvium Deposits	SM							
 69 		Topock - Alluvium Deposits	GM					(2.0 - 82.0') 335 gallons (41%) Note: Type I, II and V and Benseal,		
70 71 		Topock - Alluvium Deposits	SM		(2.0 - 82.0') Grout	(8.0 - 82.0') 8.0" Borehole	(2.0 - 82.0') 238 gallons	used >20% of the calculated volume due to grout mirgation potentially in to the damaged well and the formation		
72 73 74		Topock - Alluvium Deposits	SM							
75		Topock - Alluvium Deposits	SM							
76 77			NR							
78		Topock - Alluvium Deposits	SM							
79 		Topock - Alluvium Deposits	SM							

AF	RCA	DIS Design & C for natura built asset	Consultancy l and ts		Decommis	sioning Log	:	Sheet: 5 of 6		
Date Star		10/03/2019			_Surface Elevation:	545.6 ft amsl	Well ID: M	<i>N</i> -88-107d		
	-	10/04/2019			_Shallow Well Elevation:	N/A				
Drilling Co	0.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&I	=		
Drilling Me	ethod:	Sonic Drilling			_Northing (NAD83):	2100555.9	Project: Final	GW Remedy Phase 1		
Driller Nar	me:	John Colon			_Easting (NAD83):	7614695.2	Location: <u>PG&</u> l	E Topock, Needles, California		
Drilling As	sst:	L. Amaya / O.	Floure	s	_Borehole Diameter:	4-12 inches				
Logger:		Chris Bonessi			_Water Level Start:	89.14 ft bgs	Project Numbe	r: RC000753.0051		
Editor:		Sean McGran	ie		_Development End Date:	N/A				
Total Dep	oth:	117.1 ft bgs	Ī		_Well Completion:	☐ Flush☐ Stick-up				
	Groundwate Sample ID	Geologic Formation	USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed		
81 82		Topock - Alluvium Deposits	SM		(2.0 - 82.0') Grout	(8.0 - 82.0') 8.0" Borehole	(2.0 - 82.0') 238 gallons	(2.0 - 82.0') 335 gallons (41%) Note: Type I, II and V and Benseal, used >20% of the calculated volume due to grout mirgation potentially in to the damaged well and the formation		
83 84					(00.0 07.0)	(82,0 - 87.0') 4.0"	(82.0 - 87.0') 0.6	(82.0 - 87.0') 1 bags (67%) Note: Puregold Medium Chips used		
85 86		Topock - Alluvium Deposits	ML		(82.0 - 87.0') Bentonite seal chips	Borehole	(02.0 - 07.0) 0.0 bags	Note: Puregold Medium Chips used to abandon 4 inch core barrel rathole		
87		Topock -	SM		(87.0 - 102.7') 2" Sch 80 PVC	HXX				
 88		Alluvium Deposits			(20-slot) Screen	H. I				
		Topock - Alluvium Deposits	SM					(87.0 - 111.0') 11.5 bags (22%)		
	W-S-VAS- 92-97 (26 ppb) 1/22/2019	Topock - Alluvium Deposits	ML		(87.0 - 111.0') Cemex #3 MESH — (8x10)		(87.0 - 111.0') 9.4 bags	Note: Lapis Lustre Sand, used >20% due to potenial voids forming during drilling. Grout was bailed out of the screen interval after the well casing had shifted resulting in the loss of the well.		
96 97	10:14	Topock - Alluvium Deposits	SM							
_ 98 _		Topock - Alluvium Deposits	ML NR							
99	÷	Topock - Alluvium Deposits	SM					sea level GW = groundwater		

9/	ARCA	DIS Design & C for natura built asset	Consultancy I and ts		Decommis	sioning Log		Sheet: 6 of 6
	Started:	10/03/2019			_Surface Elevation:	545.6 ft amsl	Well ID: N	IW-88-107d
	-	10/04/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG8	
_	•	Sonic Drilling			_Northing (NAD83):	2100555.9		I GW Remedy Phase 1
	Name:	John Colon			_Easting (NAD83):	7614695.2	Location: <u>PG8</u>	E Topock, Needles, California
_	g Asst:	L. Amaya / O.		es .	_Borehole Diameter:	4-12 inches		
Logge		Chris Bonessi			_Water Level Start:	89.14 ft bgs	Project Numb	er: RC000753.0051
Editor	: Depth:	Sean McGran	ie		_Development End Date: _Well Completion:	N/A Stick-up		
I Otal L	Бериі. Т		l			I lusii Otiok-up		
Depth (ft)	Groundwat Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
 101	-	Topock - Alluvium Deposits	SM		(87.0 - 102.7') 2" —			
102								
103	- - -				(102.7 - 102.7') —		10	
104								
105					(101.5 - 109.0')		(101.5 - 109.0') 0.78	(101.5 - 109.0') 0.78 gallons (0%) Note: Type I, II and V and Benseal,
L _		Topock -			Grout tagged on 9/26/19		gallons	that settled after the grout migrated
106	_	Weathered Bedrock -	ML		(87.0 - 111.0') / ::		(87.0 - 111.0') 9.4 bags	into the well screen. (87.0 - 111.0') 11.5 bags (22%)
		conglomerate			Cemex #3 MESH / (8x10)			Note: Lapis Lustre Sand, used >20% due to potenial voids forming during
107								drilling. Grout was bailed out of the screen interval after the well casing
	1							had shifted resulting in the loss of the well.
108	1							2.2
	-	•						
109	MW-S-VAS-	-						
<u> </u>	107-112 (6.8 ppb)							
110	9/24/2019 11:14							
-	-							
111	+					itiski		
<u> </u>	+							
112		Topock -						
-	1	Competent Bedrock -						
113	1	conglomerate						
	1							
114	no sample (interval did				(111.0 - 117.1') Bentonite seal chips		(111.0 - 117.1') 1.66 bags	(111.0 - 117.1') 2 bags (20%) Note: Puregold Medium Chips
<u> </u>	not produce 9/23/2019)						
115	10:43							
-	1			$ \setminus / $				
116	1		NR	$\mid X \mid$				
	†			/				
117	 	-		<i>V</i> \	End of Boring at			
110	1				117.1 'bgs.			
118	1							
119	1							
119	1							
120	1							
	viations: U	SCS = Unified	Soil C	lassifica	tion System, ft = feet, bgs	= below ground surface,	amsl = above mear	sea level, GW = groundwater,

		DIS Design for not built a	tural and assets	'	GEC		h Boring Log		neet: 1 of	6
ate Started		09/25/2019		Sui	face I	Elevat		Boring No.	: <u>MW-88d</u>	
ate Comple	eted:	09/25/2019	9	No	rthing	(NAD	3): <u>2100555.9</u>		<u></u>	
rilling Co.:		Cascade		Eas	sting (NAD8	3): <u>7614695.2</u>	Client: PG&E		
illing Metho	od:	Sonic Drillin	ng	Tot	al Dep	oth:	<u>117.1 ft bgs</u>	Project: Final 0	GW Remedy Ph	ase 1
ill Rig Type	e:	Prosonic T	ruck Mount	Boı	ehole	Diam	eter: 10-12 inches	Location: PG&E	Topock, Needle	es, California
iller Name:		Steve Vaso	uez	De _l	oth to	First \	/ater: 89.14 ft bgs	Project Number:	RC000753.00	51
lling Asst:		L. Amaya /	O. Floures	Sar	mpling	y Meth	od: Split spoon, Cal Mod	Hammer Type:	Auto Hammer	
gger:		Sean McG	rane	Sar	npling	Inter		Hammer Weight	: <u>140 lbs</u>	
litor:		Chris Bone	essi		nverte			Hammer Drop:	30 inches	
ठ	1.							·		
(ft) Blow Counts [N Value]	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
		MW-S-SG- 0.0-5.0 9/20/2019 10:40		Topock - Fluvial Deposits	SM		(0.0 - 3.0') Topock - Fluvial Deposits; Silty sar brown (7.5YR 4/3); very fine grained to very cangular to subround; some granules to very late to subangular; little silt; trace small cobbles, a subangular; trace clay; trace mica; well grade logged from hand auger cuttings, moisture from the department of the subrangular.	parse grained, arge pebbles, angular angular to d; dry; 25,55,20	(0.0 - 3.0') Hand augered for utility clearance, refusal at 3.0 ft.	
	24	10.10		Topock - Fluvial Deposits	SW		(3.0 - 4.3') Topock - Fluvial Deposits; Well gra gravel (SW); brown (7.5YR 5/3); very fine grai grained, angular to subround; some granules pebbles, angular to subround; trace large cob	ned to very coarse to very large bles, subangular;	(4.0 - 5.0') Hard	
-				Topock - Fluvial	SW		trace silt; trac <mark>e clay; t</mark> race mica; well graded; moisture due to water added for hand augerin		drilling	
5		MW-S-SP-		Deposits		8.0	(4. <mark>3 - 5.0') Topock - Flu</mark> vial Deposits; Well gra gravel (SW); reddish brown (2.5YR 5/3); very			(5.0') 2 galloi
25-25/3 -(null/0.25') 6	5.0-5.6 9/20/2019		Topock - Fluvial	SW		granules, angular to subangular; and small to	very large pebbles,		of water use
<u> </u>		11:10		Deposits	NR		angular to subangular; trace small cobbles, si trace clay; coarser clasts composed of metad			gallons of wa recovered;
]]				, , , , , , , , , , , , , , , , , , ,	dry; 45,50,5			gallons of wa
	6]	Topock - Fluvial	SW		(5.0 - 5.6') Topock - F <mark>luvial</mark> Deposits; Well gra gravel (SW); weak red (2.5YR 5/2); very fine <u>c</u>	grained to granules		
]		MW-S-CM- 7.0-7.5		Deposits Topock -	sw	1	angular to subround; little small to very large p subangular; trace silt; trace clay; well graded;	pebbles, angular to		(7.0') 2 gallor of water use
12-28-30 (58)	12	9/20/2019		Fluvial	SVV	[\$.; [\$]	15,80,5			gallons of wa
1 (33)		MW-S-CM-]	Deposits	NR		(5.6 - 6.5') No recovery (NR); very loose; split			recovered gallons of wa
		7.5-8.0 9/20/2019 11:34			7		(6.5 - 7.0') Topock - Fluvial Deposits; Well gra gravel (SW); (GLEY1 5/4); very fine grained to to subangular; and small to very large pebbles subangular; trace small cobbles, subangular;	o granules, angular s, angular to	(8.5 - 12.0') Rough drilling	lost
	42			Topock - Alluvium Deposits	SW		clasts composed of metadiorite; dry; 45,50,5 (7.0 - 8.0') Topock - Fluvial Deposits; Well gragravel (SW); weak red (2.5YR 5/2); very fine gangular to subround; little small to very large subangular; trace silt; trace clay; well graded; dense; 20,75,5 (8.0 - 8.5') No recovery (NR); missing from sa (8.5 - 12.0') Topock - Alluvium Deposits; Well	grained to granules, pebbles, angular to dry to moist; very manuler		
2 ———		MW C CD				<u> </u>	gravel (SW); brown (10YR 4/3) and reddish g	ray (2.5YR 5/1); very		(12.0') 2 gallo
34-35-30 (65)	14.4	MW-S-SP- 12.0-13.2 9/20/2019 13:59		Topock - Alluvium Deposits	sw		fine grained to granules, angular to subangula large pebbles, angular to subangular; little sm to subangular; trace boulders, subround; trace composed of metadiorite; dry; lensed; 45,50,5	nall cobbles, angular e silt, coarser clasts		of water used gallons of water recovered;
]	Topock - Alluvium	_NR_		(12.0 - 13.2') Topock - Alluvium Deposits; We	ell graded sand with	(40.5. 47.00)	gallons of wa
				Deposits			gravel (SW); grayish brown (10YR 5/2); very f granules, angular to subround; little small to la angular to subangular; trace silt; trace clay; tra graded; dor, very dense; 20, 75,5	arge pebbles,	(13.5 - 17.0') Rough drilling	1001
	42			Topock - Alluvium Deposits	SW- SM		graded; dry, very dense; 20,75,5 (13.2 - 13.5') Topock - Alluvium Deposits; No slough from casing advancement (13.5 - 16.3') Topock - Alluvium Deposits; We	I ell graded sand with		
_				Topock - Alluvium			silt and gravel (SW-SM); dark reddish gray (2 red (2.5YR 5/2); very fine grained to granules, and small to very large pebbles, angular to su trace small cobbles, subangular to subround;	.5YR 4/1) and weak angular to round; bround; little silt;		
50/4	4.8	MW-S-CM-		Deposits	SM		clasts composed of metadiorite; 40,50,10, col gabbro		(17.0 - 18.5')	(17.0') 2 gallo
_\(null/0.35'		17.0-17.4 9/20/2019 14:31		Topock - Alluvium Deposits Topock - Alluvium	NR		(16.3 - 17.0') Topock - Alluvium Deposits; Silt (SM); weak red (2.5YR 5/2); very fine grained to subround; some silt; little small to very larg subangular; trace small cobbles, angular; trac	to granules, angular e pebbles, angular to	Poor recovery sample maybe slough	of water use gallons of wa recovered; gallons of wa
) <u>-</u>	42			Deposits Topock - Alluvium Deposits	sw		clasts composed of metadiorite, well graded; silt content maybe rock flour from pulverized of (17.0 - 17.2') Topock - Alluvium Deposits; Silt (SM); dark gray / olive gray (5Y 4/1); very fine	dry; 20,55,25, some cobbles and boulders y sand with gravel grained to granules,	(18.5 - 22.0') Rough drilling	lost
_						0.000	angular to subround: little small to medium ne	eddies, andulai io	l I	
obreviations	S: 115	CS = Unifie	ed Soil Class	ification Sv	/stem		angular to subround; little small to medium pe et, bgs = below ground surface, ams			 groundwate

	ARC	/	DIS for na built a	tural and ssets		Ge	otec	h Boring Log		neet: 2 of	6
	Started:		09/25/2019				Elevat		Boring No.	: MW -88d	
	Complet	ed:	09/25/2019)		_	(NAD	•			
	g Co.:		Cascade			_	(NAD8	,	_ Client: PG&E		
	g Metho		Sonic Drillin	•		tal De	•	117.1 ft bgs	_ Project: Final G	•	
	Rig Type:			ruck Mount			Diam		Location: PG&E	•	· · · · · · · · · · · · · · · · · · ·
	Name:		Steve Vaso	O. Floures		•		Vater: 89.14 ft bgs od: Split spoon, Cal Mod	Project Number:		
	•		Sean McG				g Meth		_ Hammer Type: _ Hammer Weight:		
₋ogg∈ Editor			Chris Bone				g Inter ed to V		_ Hammer Drop:	30 inches	
Luitoi				5551		T		Tell. A les I NO	папппет Бюр.	<u>30 IIICIIES</u>	
(ft)	Blow Counts [N Value]	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
					Topock - Alluvium Deposits	sw	00000	subangular; little silt; trace clay; trace mica; dense; 20,65,15 (17.2 - 18.5') Topock - Alluvium Deposits; No			
.21 _		42			Topock - Alluvium	SW-		0.3 ft of spoon was slough. (18.5 - 21.0') Topock - Alluvium Deposits; W	ell graded sand with		
22					Deposits	SM		gravel (SW); weak red (2.5YR 5/2); very fine subangular to subround; some small to very			
1	50/6	6	MW-S-SP- 22.0-22.5		Topock - Alluvium	SM		angular to subangular; trace small cobbles, scoarser clasts composed of metadiorite; dry;		(22.0 - 23.5') Poor recovery	(22.0') 2 gallor of water used
.23_			9/20/2019 14:59		Deposits_	NR		(19.5'); and small to very large pebbles, angues 55, 5, decrease in sand			gallons of wat recovered;
4					L	L		(21.0 - 22.0') Topock - Alluvium Deposits; W		(23.5 - 27.0')	gallons of wat
24_								silt and gravel (SW-SM); olive gray (5Y 4/2); granules, angular to subround; some small to	o very large pebbles,	Rough drilling	
-					Topock -		19,0	angular to subangular; little silt; trace small of trace boulders, subangular; coarser clasts of			
25_					Alluvium	GM	000	metadiorite; dry; 35,65,10, some silt rock flou cobbles and boulders	ır from pulverized		
4		42			Deposits		Pap	(22.0 - 22.5') Topock - Alluvium Deposits; Sil			
26_							600	(SM); gray (2.5Y 5/1); very fine grained to grasubround; little small to large pebbles, angul	nules, angular to ar to subangular: little I		
					Topock -			silt; trace clay; trace mica; well graded; mois 15, 70,15, seams of silt	t to dry; very dense;		
27					Alluvium Deposits	SM		(22.5 - 23.5') No recovery (NR); split spoon r	 efusal		
	50/4 null/0.35')/	4.8	27.0-27.4		Topock -	SM		(23.5 - 26.3') Topock - Alluvium Deposits; Sil (GM); grayish brown (2.5Y 5/2); granules to	tv gravel with sand	(27.0 - 28.5') Poor recovery	(27.0') 2 gallo of water used
28 _			9/20/2019 15:35		Alluvium Deposits	NR		angular to subangular; some very fine to very	coarse grained	sample may	gallons of wat
20_			15.55			INIX		sand, angular to subround; some silt; trace s to subangular; coarser clasts composed of n		have slough in it	recovered; gallons of wat
20								coarser clast composed of conglomerate; we		(28.5 - 32.0')	lost
29_								35,25,30 (26.3 - 27.0') Topock - Alluvium Deposits; Sil	tv sand with gravel	Rough drilling	
								(SM); grayish brown (2.5Y 5/2); very fine grain angular to round; some small to very large per	ned to granules,		
30_		42			Topock - Alluvium	SM		subangular; little silt; coarser clasts compose			
-					Deposits			graded; dry; 30,55,15 (27.0 - 27.4') Topock - Alluvium Deposits; Sil	tv sand with gravel		
31_								(SM); grayish brown (2.5Y 5/2); very fine grain angular to subround; little small to large pebl	ned to granules,		
4								subangular; little silt; trace clay; dry to moist;	very dense; 20,60,20		
32	50/5	4.8	MW-S-SP-		Topock -	SM		(27.4 - 28.5') No recovery (NR); Cal Mod refu		(32.0 - 33.5')	(32.0') 2 gallo
-\(null/0.40')	4.0	32.0-32.4 9/20/2019		Alluvium	J-31VI		(28.5 - 32.0') Topock - Alluvium Deposits; Sil (SM); brown (10YR 5/3); very fine grained to	granules, angular to	Poor recovery	of water used
33 _			16:17		<u>Deposits</u>	NR	X	subround; some small to very large pebbles, subangular; some silt; coarser clasts compo		top 0.2 ft slough	gallons of wat recovered;
-			1		L	L		well graded; dry; 25,40,35 (31'); little silt; trace small cobbles, angular;	· 1	(33.5 - 37.0')	gallons of wat
.34 _								sand and pebbles		Normal Drilling	
1					Topock - Alluvium	SM		(32.0 - 32.4') Topock - Alluvium Deposits; Sil (SM); grayish brown (2.5Y 5/2); very fine grai	ty sand with gravel ned to granules.		
35_					Deposits			angular to subround; little small to large pebl subangular; little silt; trace clay; well graded;	oles, angular to		
		42						dense; 20,65,15			
36 _					Topock - Alluvium	SW		(32.4 - 33.5') No recovery (NR); split spoon r			
					Deposits	300	*****	(33.5 - 35.5') Topock - Alluvium Deposits; Sil (SM); brown (7.5YR 5/3); very fine grained to	granules, angular to		
37]					Topock - Alluvium	SM		subround; some small to very large pebbles, subangular; little silt; trace small cobbles, su			
	50/5 null/0.40')/	8.4	MW-S-CM- 37.0-37.5		Deposits	SM		coarser clast composed of conglomerate; co	arser clasts	(37.0 - 38.5') Cal Mod refusal	(37.0') 2 gallo of water used
.38 _	11411/0.40]/		9/21/2019	1	Topock - Alluvium	I ND		(35.5 - 36.5') Topock - Alluvium Deposits; W	ell graded sand with	after 5 inches,	gallons of wat
_ 00			09:12		Deposits Topock -	/ NR		gravel (SW); grayish brown (10YR 5/2); very granules, angular to subround; little small to	fine grained to very large pebbles	approximately 1 to 2 inches of	recovered; gallons of wat
1					Alluvium Deposits	<u> </u>	ħæ	angular to subangular; trace silt; coarser class	ets composed of	slough in sample	lost
.39 _		102			Topock -	J ML		metadiorite; dry; 20,75,5 (36.5 - 37.0') Topock - Alluvium Deposits; Sil	ty sand with gravel	(38.5 - 46.5')	1
+		102			Alluvium Deposits	IVIL		(SM); brown (7.5YR 5/3); very fine grained to	very coarse grained,	Rough drilling	
40	viotio = =		CC - U-:e:	d Sail Olse	·	/oto	<u> : - : </u>	angular to round; some small to very large po		na lovel CVV	aroundt-
								et, bgs = below ground surface, am Il represents depth to water measure			groundwate
	. บสบรี D6	-ı ()	111011. INTS — [io recovery,	nine Marei	ranie	Symb	n represents depth to water measure	za aunng me mst v	AS IIILEI VAI	

ARC	A	DIS for natibuilt a	tural and assets		Ged	otec	ch Boring Log	Sh	neet: 3 of	6	
Date Started:		09/25/2019	9		Surface	Elevat	ion: <u>545.6 ft amsl</u>	Boring No.	· MW-88d		
Date Complet	ed:	09/25/2019	9		Northing	(NAD	983): <u>2100555.9</u>	_ Borning itto.	<u>IVIV 000</u>		
Drilling Co.:		Cascade			Easting (NAD	33): <u>7614695.2</u>	_ Client: PG&E			
Drilling Metho	d:	Sonic Drilling	ng		Total De	pth:	117.1 ft bgs	_ Project: Final C	SW Remedy Ph	ase 1	
Drill Rig Type:		Prosonic T	ruck Mount		Borehole	Diam	neter: 10-12 inches	_ Location: <u>PG&E</u>	Location: PG&E Topock, Needles, Californ		
Driller Name:		Steve Vaso	quez		Depth to	First \	Water: 89.14 ft bgs	_ Project Number:	Project Number: RC000753.0051		
Drilling Asst:		L. Amaya /	O. Floures		Sampling	g Meth	nod: <u>Split spoon, Cal Mod</u>	_ Hammer Type:	Auto Hammer		
Logger:		Sean McG	rane	;	Sampling	g Inter	val: <u>Continuous</u>	_ Hammer Weight	: <u>140 lbs</u>		
Editor:		Chris Bone	essi		Converte	ed to V	Vell: ⊠ Yes □ No	Hammer Drop:	30 inches		
Depth (ft) Blow Counts [N Value]	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic	USCS	USCS Class	Soil Description	•	Drilling Notes	Drilling Fluid	
	102	MW-S-SP- 47.0-47.4 9/21/2019 09:57		Topock Alluviun Deposi Topock Alluviun Deposi Topock Alluviun Deposi Topock Alluviun Deposi Topock Alluviun Deposi	ML tts ML SM SM SM SM SM SM		subangular; some silt; trace small cobbles, trace coarser clast composed of conglomer; composed of metadiorite; well graded; dry; 3 (SM); brown (10YR 5/3); very fine grained to subangular; little silt; coarser clasts composity and refusal (37.4 - 38.5') Topock - Alluvium Deposits; N (ML); dark grayish brown / dark yellowish brown subround; some small to very large pebbles subangular; some very fine to very large pebbles subangular; some granules to very large pebble subangular; some very fine to very coarse git to subround; trace small cobbles, angular; composed of metadiorite; dry; 30,30,40 (44.5 - 47.0') Topock - Alluvium Deposits; Si (SM); gray (2.5Y 5/1); very fine grained to grayish brown (7.5YR 5/3) (44.5 - 47.0') Topock - Alluvium Deposits; Si (SM); grayish brown (10YR 5/2); very fine grained to grayish grayish brown (10YR 5/2); very fine grangular; little silt; coarser clasts compositrace coarser clast composed of conglomer; 30,55,15 (46.5') grayish brown (10YR 5/2); very fine grangular to subround; some small to large pesubangular, some silt; trace clay; well gradedense; 25,45,30, silt nodules (47.4 - 48.5') No recovery (NR); split spoon (48.5 - 49.5') Topock - Alluvium Deposits; Si (SM); grayish brown (10YR 5/2); very fine grangular to round; some small to very large pebbles subangular; ittle silt; trace clay; coarser clast metadiorite; well graded; dry; 30,50,20 (49.5 - 53.0') Topock - Alluvium Deposits; Si (SM); predish brown / moderate brown (5Y to granules, angular to round; some small to surplar to subangular; little silt; trace clay; coarser clast composed of conglomerate; coarser clasts of metadiorite; well graded; dry; 35,45,20 (53.0 - 57.0') Topock - Alluvium Deposits; Si (SM); brown (7.5YR 5/3); very fine grained to subround; some small to very large pebbles subangular; some silt; trace small cobbles, trace coarser clast composed of conglomerate; coarser clasts of metadiorite; well graded; dry; 35,45,20	ate; coarser clasts 10,45,25 lity sand with gravel granules, angular to ead of metadiorite; ate; well graded; dry; lity sand with gravel and to granules, angular to ead of metadiorite; ate; well graded; dry; lity sand with gravel ained to granules, angular to dry; very lefusal lity sand with gravel ained to granules, ebbles, angular to sts composed of lity sand with gravel (4/4); very fine grained very large pebbles, acce coarser clast composed of lity sand with gravel or granules, angular to angular to angular to angular to angular to angular to angular trace clay; ate; coarser clasts	(46.5 - 47.0') Very hard drilling (47.0 - 48.5') Split spoon refusal, 2 inches of slough in spoon not sampled. (48.5 - 57.0') Hard drilling, core moist to dry and hot	(47.0') 2 gallons of water used; gallons of water recovered; gallons of water lost	
_ 56 _ _ 57 _ (null/0.40'),	6	MW-S-CM- - 57.0-57.5 9/21/2019		Topock Alluviu Deposi	n ↓ Sivi _		(55.8') brown (7.5YR 4/3); little silt; 35,50,15 cobbles (57.0 - 57.5') Topock - Alluvium Deposits; Si (SM); brown (10YR 5/3); very fine grained to subangular; little small to large pebbles, and	Ity sand with gravel	(57.0 - 58.5') Poor recovery, top 2 to 3 inchs	(57.0') 2 gallons of water used; gallons of water	
_ 58 _		10:39			NR		little silt; well graded; dry; very dense; 15,65 (57.5 - 58.5') No recovery (NR); Cal Mod refi (58.5 - 62.0') Topock - Alluvium Deposits; Si	usal J Ity sand with gravel	of sample is slough (58.5 - 67.0')	recovered; gallons of water lost	
_59 _	102			Topock Alluviui Deposi	m SM		(SM); brown (7.5YR 5/3) with brown (10YR 5/3) to granules, angular to subround; some smapebbles, angular to subangular; little silt; trasubangular; trace clay, coarser clasts comp	5/3); very fine grained ill to very large ce small cobbles,	Hard drilling, hole stayed open running split spoon		
	: US	SCS = Unifie	ed Soil Clas	sification	System	ft = fe	eet, bgs = below ground surface, am		ea level, GW =	groundwater,	

ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval

ARC	ДI	JIS for nat built a	tural and ssets		Ged	nec	ch Boring Log	She	eet: 4 of	6
ate Started:		09/25/2019)	Sui	face l	Eleva	ion: <u>545.6 ft amsl</u>	Boring No.:	MW-88d	
ate Complete	ed:	09/25/2019)		rthing	•	•			
rilling Co.:		Cascade		Eas	sting (NAD	33): <u>7614695.2</u>	_ Client: <u>PG&E</u>		
rilling Method	d:	Sonic Drilling	ng	Tot	al De _l	pth:	117.1 ft bgs	_ Project: <u>Final G\</u>	N Remedy Ph	ase 1
rill Rig Type:		Prosonic T	ruck Mount	Воі	rehole	Dian	eter: 10-12 inches	_ Location: <u>PG&E 1</u>	<u> Fopock, Needl</u>	es, California
riller Name:		Steve Vasq	uez	De _l	oth to	First	Water: 89.14 ft bgs	_ Project Number: [RC000753.00	51
rilling Asst:		L. Amaya /	O. Floures	Sar	mpling	g Metl	nod: <u>Split spoon, Cal Mod</u>	_ Hammer Type: <u>/</u>	Auto Hammer	
ogger:		Sean McGı	rane	Sar	mpling	g Inter	val: <u>Continuous</u>	_ Hammer Weight: <u>′</u>	140 lbs	
ditor:		Chris Bone	ssi	Co	nverte	ed to \	Vell: ⊠ Yes ☐ No	Hammer Drop: 3	30 inches	
(ft) Blow Counts [N Value]	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
51 _				Topock - Alluvium Deposits	SM		well graded; dry; 35,45,20 (61') grayish brown (2.5Y 5/2); some silt; 30,4 pebbles, no cobbles	45,25, decrease	without casing to 67.	
2	102			Topock - Alluvium Deposits	SW- SM		(62.0 - 64.5') Topock - Alluvium Deposits; W silt and gravel (SW-SM); brown (7.5YR 5/4); granules, angular to subround; some small to angular to subangular; little silt; trace small of trace clay; trace coarser clast composed of clasts composed of metadiorite; well graded;	very fine grained to o very large pebbles, obbles, angular; conglomerate; coarser		
5_6_				Topock - Alluvium Deposits	SM		(64.5 - 67.0") Topock - Alluvium Deposits; Sil (SM); brown (7.5YR 5/3); very fine grained to subround; some small to very large pebbles, subangular; little silt; trace small cobbles, an coarser clasts composed of metadiorite; well 35,45,20	granules, angular to angular to gular; trace clay;		
7 50/6	6	MW-S-SP- 67.0-67.5		Topock - Alluvium	SM		(67.0 - 67.5') Topock - Alluvium Deposits; Sil		(67.0 - 68.5') Spilt spoon	(67.0') 2 gallor of water used
8 _		9/21/2019		Deposits Topock -	NR GM		(SM); dark yellowish brown (10YR 4/4); very figranules, angular to subround; some small to angular to subangular; some silt; well graded 125,45,30, potential slough	o very large pebbles, l; dry; very dense; efusal	refusal, most of sample most likely slough. (68.5 - 77.0')	gallons of water recovered; gallons of water lost
70 _				Topock - Alluvium Deposits	SM		(68.5 - 69.0") Topock - Alluvium Deposits; Sil (GM); grayish brown (2.5Y 5/2); granules to v angular to subangular; some very fine to very sand, angular to subround; some silt; trace si angular; trace clay; well graded; moist to dry; (69.0 - 72.0") Topock - Alluvium Deposits; Sil (SM); dark yellowish brown (10YR 4/4); very 1 granules, angular to subround; some small to angular to subangular; some silt; trace clay; composed of conglomerate; coarser clasts cometadiorite; well graded; dry to moist; 35,40,40.	rery large pebbles, coarse grained mall to large cobbles, 40,35,25 ty sand with gravel fine grained to overy large pebbles, trace coarser clast omposed of	Formation tight, lost bottom 1.5 ft of core	
73 _	84			Topock - Alluvium Deposits	SM		(70.5'); little silt; 35,45,20, increase in sand (72.0 - 74.0') Topock - Alluvium Deposits; Sil (SM); yellowish brown / moderate yellowish b very fine grained to granules, angular to subr very large pebbles, angular to subround; little coarser clasts composed of metadiorite; well 40,45,15, lithology has rock flour from pulveri	ty sand with gravel prown (10YR 5/4); ound; and small to e silt; trace clay; graded; moist to dry;		
75_				Topock - Alluvium Deposits	SM		(74.0 - 75.5') Topock - Alluvium Deposits; Sil (SM); brown (7.5YR 5/4); very fine grained to subround; some small to very large pebbles, subangular; little silt; trace small cobbles, and clast composed of conglomerate; well graded 35,45,20	granules, angular to angular to gular; trace coarser		
76 <u> </u>					NR	X	(75.5 - 77.0') No recovery (NR); see drilling n	otes		
50/3 _\(\(\nu\)\(\)/ 78 _	6			Topock - Alluvium Deposits	SM		(77.0 - 77.5') Topock - Alluvium Deposits; Sil (SM); dark yellowish brown (10YR 4/4); very t granules, angular to subround; some small to angular to subangular; some silt; coarser claimetadiorite; trace mica; well graded; moist; v	fine grained to be very large pebbles, sts composed of very dense; 25,45,30	(77.0 - 78.5') Cal Mod refusal, top 0.3 ft of sample most likely slough	(77.0') 2 gallor of water used gallons of wate recovered; gallons of wate lost
79 _	102			Topock - Alluvium Deposits	SM		(77.5 - 78.5') No recovery (NR); Cal Mod refu (78.5 - 83.5') Topock - Alluvium Deposits; Sil (SM); brown (7.5YR 5/4); very fine grained to subround; little silt; trace clay; well graded; m	ty sand with gravel granules, angular to	(78.5 - 87.0') Normal drilling	(78.0 - 112.0') No water used

ARCA	DIS for national built as	ural and ssets		Geote	ech B	oring Log	S	Sheet: 5 of	6
Date Started:	09/25/2019	1	Sur	face Elev	ation:	545.6 ft amsl	Boring No	o.: MW-88d	
Date Completed:	09/25/2019		Noi	rthing (NA	ND83):	2100555.9	Borning ive	<u>IIIIV 000</u>	
Drilling Co.:	Cascade			sting (NAI	D83):	7614695.2	Client: PG&E		
Drilling Method:	Sonic Drillin	•		al Depth:		117.1 ft bgs	•	GW Remedy Ph	
Drill Rig Type:	Prosonic Tr			ehole Dia		<u>10-12 inches</u>		E Topock, Needle	•
Driller Name:	Steve Vasq					89.14 ft bgs	-	: RC000753.00	
Drilling Asst:	L. Amaya /			mpling Me		Split spoon, Cal Mod	• •	Auto Hammer	
Logger:	Sean McGr			mpling Int		Continuous	Hammer Weigh		
Editor:	Chris Bone	SSI	Coi	nverted to	vveii:		Hammer Drop:	30 inches	I
Depth (ft) (ft) Blow Counts [N Value] Recovery	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code Code	O S S S S S S S S S S S S S S S S S S S	Soil Description		Drilling Notes	Drilling Fluid
	2		Topock - Alluvium Deposits	SM	(83.5 -	87.0') Topock - Alluvium Deposits; San	dy silt with gravel		
_ 84 _ _ 85 _			Topock -		(ML); b sand, a	prown (10YR 5/3); some very fine to very angular to subround; little granules to very ir to subangular; little clay; moist to dry;	y coarse grained ery large pebbles,		
_ 86 _			Alluvium Deposits	ML .		00			
87 50/5 4.8 (null/0.40')	MW-S-SP- 87.0-87.4 9/21/2019		Topock - Alluvium	SM :	¹∹i (SM): l	87.4') Topock - Alluvium Deposits; Silty prown (7.5YR 5/4); very fine grained to g	granules, angular to	(87.0 - 88.5') Spilt spoon	
_ 88 _	15:17		Deposits	NR X	little si graded	ind; some small to large pebbles, angul lt; trace clay; coarser clasts composed d; moist; very dense; 25,60,15 88.5') No recovery (NR)	ar to subangular; of metadiorite; well	refusal (88.5 - 97.0')	
89			0,		∴ (SM); l ∴ subrou	92.0") Topock - Alluvium Deposits; Silty orown (7.5YR 5/3); very fine grained to g and; some small to very large pebbles, a silt; little clay; trace small cobbles, angu	granules, angular to angular to subround;	Normal drilling (89.0') Approximate depth to water	
_90			Topock - Alluvium Deposits	SM SM		er clasts composed of metadiorite; well (35 ; dry		table	
_ 92 _					(92.0 -	94.5') Topock - Alluvium Deposits; San	dv silt with gravel		
_ 93 _ 102	2		Topock - Alluvium	ML .	large p coarse cobble	prown (7.5YR 5/2); low plasticity; some opebbles, angular to subangular; some very grained sand, angular to subround; littless, angular to subangular; coarser clasts	ery fine to very e clay; trace small		
94		MW-S- VAS-92-97 (26 ppb)	Deposits			iorite; moist to wet; 25,35,40 97.0') Topock - Alluvium Deposits; Silty	y sand with gravel		
_95 _ _ 96 _ 		9/22/2019 10:14	Topock - Alluvium Deposits	SM	∴ (SM); t ∴ subrou ∴ subano metadi	orown (7.5YR 5/3); very fine grained to guind; some small to very large pebbles, a gular; little silt; trace clay, coarser clasts iorite; well graded; wet; 25,50,25 tittle clay; 25,40,35, decrease in sand	granules, angular to angular to		
25-50/2 (null/0.17') 12	9/22/2019		Topock - Alluvium Deposits	ML	(ML); k pebble graine	98.0') Topock - Alluvium Deposits; San brown (10YR 4/3); low plasticity; some g is, angular to subround; some very fine d sand, angular to subround; moist to w	granules to very large to very coarse	inches of sample most	
	MW-S-CM- 97.5-98.0 9/22/2019 11:27		Topock - Alluvium	NR SM	(98.5 - (SM); t subrou	98.5') No recovery (NR) 101.8') Topock - Alluvium Deposits; Sil brown (10YR 5/3); very fine grained to g and; some small to very large pebbles, a	ranules, angular to angular to	likely slough (98.5 - 107.0') Tight formation	
			Deposits		∷ suban	gular; little silt; little clay; coarser clasts iorite; well graded; wet; 30,40,35			
_100_l Abbreviations: U	SCS = Unifie	d Soil Class	sification Sv	<u>ا المالة الم</u> المالة المالة	1	s = below ground surface, ams	I = above mean s	sea level. GW = 0	uroundwater.

9	ARC	Άl	DIS Design for nat built a	tural and ssets		Ged	otec	:h B	oring Log		She	eet: 6 of	6
Date	Started:		09/25/2019)	Sur	face	Elevat	ion:	545.6 ft amsl	- Boring N	л о .	MW-88d	
Date	Complet	ed:	09/25/2019)	Noı	rthing	(NAD	83):	2100555.9	Borning	10	<u> </u>	
Drillir	ng Co.:		Cascade				NAD8	33):	7614695.2	_ Client: PG	&E		
Drillir	ng Method	d:	Sonic Drilling	ng	Tot	al De	pth:		117.1 ft bgs	Project: Fin	ıal G\	N Remedy Ph	ase 1
	Rig Type:			ruck Mount			Diam		<u>10-12 inches</u>			Fopock, Needle	
Drille	r Name:		Steve Vaso		-				89.14 ft bgs	•		RC000753.00	51
	ng Asst:		L. Amaya /				g Meth		Split spoon, Cal Mod	* *		Auto Hammer	
Logg			Sean McGı				g Inter		Continuous	_ Hammer We	-		
Edito			Chris Bone	ssi	Coi	nverte	ed to V	Vell:		Hammer Dro	p: <u>(</u>	30 inches	
Depth (ft)	Blow Counts [N Value]	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
 101					Topock - Alluvium Deposits	SM				0			
102 103_ 104_ 105_ 106_ 107_		102			Topock - Weathered Bedrock - conglomerate	ML		Sandy plastici subang subang	- 110.0') Topock - Weathered Bedrock silt with gravel (ML); reddish brown (5' ty; some very fine to very coarse grain jular; little granules to very large pebbl jular; little clay; coarser clasts compos o wet; 20,35,45	YR 5/4); low ed sand, angular to es, angular to	0		
 108 _109_ _110_				MW-S- VAS-107- 112 (6.8 ppb) 9/24/2019 11:14					- 115.0') Topock - Competent Bedrock h brown / moderate brown (5YR 4/4); n		,	(107.0 - 115.0') Very hard drilling, could not advance past 115 ft. sediments compacted in bag.	
111		90						puiveii	250,				
112_					Topock - Competent								(112.0 - 117.1')
112					Bedrock -								50 gallons of water used;
113_					conglomerate								gallons of wate recovered;
114				no sample									gallons of water
114				(interval did				3					
445				produce)									
.115_			1	9/23/2019 10:43			X///		- 117.1') No recovery (NR); lost core d		;	(115.0 - 117.1')	
- _116_		6				NR		recove	red was highly disturbed and not log a	ble		Lost core down hole what was retrevived was highly	
- _117_							/ \					disturbed.	
			1		1		<u>v </u>	N .	End of Boring at 117.1 'bg	js.		I	I
118													
0_													
110													
119													
100													
120 Abbr	eviations	US	SCS = Unifie	ed Soil Class	sification Sv	/stem	. ft = f	eet. ha	s = below ground surface, ams	sl = above mea	n se	a level. GW = 0	groundwater
									ecents depth to water massure				g. 54114W4(01,

គ្នី ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval

9/	ARCA	DIS	esign & Consultar or natural and uilt assets	псу	Drilling Log		Sheet:	1 of 6			
Date S	Started:	10/01/20	19	S	urface Elevation:	545.6 ft amsl	Boring No.: M	W-88d			
Date C	Completed:	10/03/20	19	N	orthing (NAD83):	2100555.9	Borning Ito III	<u> </u>			
Drilling	Co.:	Cascade	!	E	asting (NAD83):	7614695.2	Client: PG&E				
Drilling	Method:	Sonic Dr	illing	To	otal Depth:	117.1 ft bgs	Project: Final GW Re	medy Phase 1			
	g Type:	<u>Prosonic</u>			onductor Casing Diameter:		ck, Needles, California				
Driller I		John Co			rill Casing Diameter:	6 inches	-				
Drilling		L. Amaya			rill Bit:	Cutting Shoe	Project Number: RC00	0753.0051			
Tool-P		Arnold L			epth to First Water:	89.14 ft bgs	-				
Rig Ge	eologist:	Chris Bonessi		C	onverted to Well:	Yes X No		1			
Depth (ft)	Drilling Rui and Averag Penetration R	e Codo		Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling	g Notes	Drilling Fluid			
 _ 1 _ _ 2 _ 		SM			(0.0 - 3.0') Topock - Fluvial Deposits; Silty sand with gravel (SM); brown (7.5YR 4/3)	(0.0 - 59.0') The 8-inch casin damaged well. As the casing construction materials were Grout and approximately 40 removed with the 7-inch core	was advanced, well cored/driven into the casing.	(0.0 - 57.0') 1650 gallons of water used; 1650 gallons of water recovered; 0 gallons of water lost			
_ 3 _ _ 4 _	(0.0 - 8.0) mins/ft	SW		(0.0 - 8.0') 12.0" Steel Casing	(3.0 - 4.3') Topock - Fluvial Deposits; Well graded sand with gravel (SW); brown (7.5YR 5/3)	(1)					
		sw		Casing	(4.3 - 5.0') Topock - Fluvial Deposits; Well graded sand with						
5		sw		\ \ \	gravel (SW); reddish brown (2.5Y 5/3)	R					
$\begin{bmatrix} & & 1 \\ & 6 \end{bmatrix}$)	(5.0 - 5.6') Topock - Fluvial Deposits; Well graded sand with						
	1	NR			gravel (SW); weak red (2.5YR 5/2 (5.6 - 6.5') No recovery (NR)	2)					
_ 7 _		SW			(6.5 - 7.0') Topock - Fluvial						
		SW			Deposits; Well graded sand with gravel (SW); (GLEY1 5/4)						
$\begin{bmatrix} & 8 \end{bmatrix}$		J SW		>	(7.0 - 8.0') Topock - Fluvial Deposits; Well graded sand with						
		NR			gravel (SW); weak red (2.5YR 5/2	<u>)</u>					
- 9 _ - 10 _ _11 _ 		sw			(8.0 - 8.5') No recovery (NR) (8.5 - 12.0') Topock - Alluvium Deposits; Well graded sand with gravel (SW); brown (10YR 4/3)						
12		SW			(12.0 - 13.2') Topock - Alluvium Deposits; Well graded sand with gravel (SW); grayish brown (10YI 5/2)	3					
14 15 16	(8.0 - 82.0) mins/ft	SW-SM		(8.0 - 82.0') 8.0" Steel Casing	(13.2 - 13.5') Topock - Alluvium Deposits; No recovery (NR) (13.5 - 16.3') Topock - Alluvium Deposits; Well graded sand with silt and gravel (SW-SM); dark reddish gray (2.5YR 4/1)	_					
17 17 18 19		SM SM NR NR			(16.3 - 17.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); weak red (2.5YR 5/2) (17.0 - 17.2') Topock - Alluvium Deposits; Silty sand with gravel (SM); dark gray / olive gray (5Y 4/1) (17.2 - 18.5') Topock - Alluvium Deposits; No recovery (NR) (18.5 - 21.0') Topock - Alluvium Deposits; Well graded sand with						
20			[*ø; • • • • • • • • • • • • • • • • • • •		gravel (SW); weak red (2.5YR 5/2	9					

ARC/	DIS	Des for i	sign & Consultan natural and It assets	су	Drilling Log				Sheet:	2 of 6	
Date Started:	10/0	1/201	19	Sı	urface Elevation:	54	15.6 ft amsl	Borin	ng No.: <u>M</u>	IW-884	
Date Completed	l: <u>10/0</u>	3/201	19	N	orthing (NAD83):	21	100555.9	Dom	19 110 <u>IV</u>	<u> </u>	
Drilling Co.:	Caso	ade		Ea	asting (NAD83):	76	314695.2	Client: PG&E			
Drilling Method:	<u>Soni</u>	c Dril	ling	Tc	otal Depth:	<u>11</u>	17.1 ft bgs	Project: Final GW Remedy Phase 1			
Drill Rig Type:	Pros	onic ⁻	Truck M	lount Co	onductor Casing Diameter:	12	ck, Needles, Californ	ia			
Driller Name:	<u>John</u>	Colc	on	Dr	rill Casing Diameter:	6	inches				
Drilling Asst:	<u>L. Ar</u>	naya	/ O. Flo	<u>ures</u> Dr	rill Bit:	<u>C</u> ı	utting Shoe	Project N	lumber: RC00	00753.0051	
Tool-Pusher:			mon		epth to First Water:	89	9.14 ft bgs				
Rig Geologist:	<u>Chris</u>	Chris Bonessi		C	onverted to Well:		Yes X No				
Donth Drilling F	Run .	1000		0 :	Description						
Depth and Aver	age 7	JSCS Code	USCS Class	Casing Diameter	(See Pilot boring log for		Drilling	Notes		Drilling Fluid	
Peneualion	Trate		0.0000		full geologic descriptions)		1				
	-	SW									
21	┈		**************************************		(21.0 - 22.0') Topock - Alluvium						
	S	N-SM			Deposits; Well graded sand with						
22					silt and gravel (SW-SM); olive gra	ay					
	-	SM			(22.0 - 22.5') Topock - Alluvium						
				,	Deposits; Silty sand with gravel (SM); gray (2.5Y 5/1)						
	-	NR			(22.5 - 23.5') No recovery (NR)						
			(Ψ_{x})		(23.5 - 26.3') Topock - Alluvium	7					
24	-		13 P.C		Deposits; Silty gravel with sand (GM); grayish brown (2.5Y 5/2)						
	-		3		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						
25	-	GM	600				456				
	-		190								
_26	-										
				,	(26.3 - 27.0') Topock - Alluvium	┫					
27	-	SM			Deposits; Silty sand with gravel (SM); grayish brown (2.5 7 5/2)						
		SM			(27.0 - 27.4') Topock - Alluvium						
	-	ND			Deposits; Silty sand with gravel (SM); grayish brown (2.5Y 5/2)						
	-	NR			(27.4 - 28.5') No recovery (NR)						
 					(28.5 - 32.0') Topock - Alluvium	-					
29	-				Deposits; Silty sand with gravel (SM); brown (10YR 5/3)						
	-			(8.0 - 82.0')							
30 (8.0 - 82. mins/ft				8.0" Steel							
	-	SM		Casing							
_31	-										
	-										
32											
		SM			(32.0 - 32.4') Topock - Alluvium Deposits; Silty sand with gravel						
	-	ND			(SM); grayish brown (2.5Y 5/2)						
	-	NR			(32.4 - 33.5') No recovery (NR)						
					(33.5 - 35.5') Topock - Alluvium	-					
34	-				Deposits; Silty sand with gravel (SM); brown (7.5YR 5/3)						
	-	SM			(Om), Brown (1.011 Cro)						
_35	-										
	- 1				(05.5. 00.5l) T						
36		SW			(35.5 - 36.5') Topock - Alluvium Deposits; Well graded sand with						
L J			******		gravel (SW); grayish brown (10YI 5/2)	₹					
37		SM			(36.5 - 37.0') Topock - Alluvium	\dashv					
[SM			Deposits; Silty sand with gravel (SM); brown (7.5YR 5/3)						
t †					(37.0 - 37.4') Topock - Alluvium	\dashv					
38		NR	X		Deposits; Silty sand with gravel (SM); brown (10YR 5/3)						
 			<u> </u>		(37.4 - 38.5') Topock - Alluvium	\dashv					
39		N 41			Deposits; No recovery (NR) (38.5 - 44.5') Topock - Alluvium						
<u> </u>		ML			Deposits; Sandy silt with gravel						
40	1000			01 15 11	(ML); dark grayish brown / dark					1 0 1 1	

9/	ARCA	DIS for buil	sign & Consultar natural and ilt assets	су	Drilling Log				Sheet:	3 of 6
Date S	tarted:	10/01/201	19	S	urface Elevation:	<u>54</u>	15.6 ft amsl	Rori	ng No.: <u>M</u>	W-88d
Date C	completed:	10/03/201	19	N	orthing (NAD83):	21	100555.9	Bon	iig ito <u>iii</u>	<u> </u>
Drilling	Co.:	Cascade		E	asting (NAD83):	<u>76</u>	314695.2	Client:	PG&E	
Drilling	Method:	Sonic Dril	ling	To	otal Depth:	<u>11</u>	17.1 ft bgs	Project:	Final GW Re	medy Phase 1
Drill Ri	g Type:	Prosonic '	Prosonic Truck Mou		onductor Casing Diameter:	12	2 inches	Location	: PG&E Topoc	k, Needles, California
Driller I	Name:	John Cold	on	D	rill Casing Diameter:	<u>6</u>	inches			
Drilling	Asst:	L. Amaya	/ O. Flo	uresD	rill Bit:	<u>Cı</u>	utting Shoe	Project I	Number: RC00	0753.0051
Tool-P	usher:	Arnold La	mon	D	epth to First Water:	89	9.14 ft bgs			
Rig Ge	eologist:	Chris Bon	nessi	C	onverted to Well:] Yes ⊠ No			
	Drilling Rur	1			Description					
Depth (ft)	and Averag Penetration R	e Codo	USCS Class	Casing Diameter	(See Pilot boring log for		Drilling	Notes		Drilling Fluid
	renetiation N	ale	*. * . *		full geologic descriptions)					
	(8.0 - 82.0) mins/ft	SM SM SM SM SM SM SM SM SM		(8.0 - 82.0') 8.0" Steel Casing	yellowish brown (10YR 4/2) (44.5 - 47.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); gray (2.5Y 5/1) (47.0 - 47.4') Topock - Alluvium Deposits; Silty sand with gravel (SM); grayish brown (10YR 5/2) (47.4 - 48.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); grayish brown (10YR 5/2) (49.5 - 53.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown / moderate brown (5YR 4/4) (53.0 - 57.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/3) (57.5 - 58.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/3)		(59.0 - 77.0') During advance			
60		SM			(SM); brown (7.5YR 5/3)		(59.0 - 77.0') During advance the core barrel kept hanging advance the core barrel there	up. During t	he last attempt to	

ARCA	DIS for buil	sign & Consultan natural and It assets	icy	Drilling Log				Sheet:	4 of 6
Date Started:	10/01/201	19	Sı	urface Elevation:	<u>54</u>	5.6 ft amsl	Borin	ng No.: <u>M</u>	W-884
Date Completed:	10/03/201	19	N	orthing (NAD83):	<u>21</u>	00555.9		.g .to <u>.w.</u>	<u> </u>
Drilling Co.:	Cascade		E	asting (NAD83):	<u>76</u>	14695.2	Client:	PG&E	
Drilling Method:	Sonic Dril	ling	To	otal Depth:	<u>11</u>	7.1 ft bgs	Project:	Final GW Rei	medy Phase 1
Drill Rig Type:	Prosonic '	Truck M	<u>lount</u> Co	onductor Casing Diameter:	<u>12</u>	inches	Location:	PG&E Topoc	k, Needles, California
Driller Name:	John Cold	on	Dı	rill Casing Diameter:	<u>6 i</u>	nches			
Drilling Asst:	L. Amaya	/ O. Flo	uresDı	rill Bit:	<u>Cu</u>	ıtting Shoe	Project N	umber: RC00	0753.0051
Tool-Pusher:	Arnold La	mon	De	epth to First Water:	<u>89</u>	.14 ft bgs			
Rig Geologist:	Chris Bon	essi	C	onverted to Well:		Yes X No			
Denth Drilling Ru	in Licos	LICCO	0	Description					
Depth and Average Penetration F	ge Code	USCS Class	Casing Diameter	(See Pilot boring log for		Drilling	Notes		Drilling Fluid
T ellettation i	vaic			full geologic descriptions)					
			}			chattering of the rig. During redetermined that approximate			
61			1			off down hole. Crew was able			
	SM								
			}						
62				(62.0 - 64.5') Topock - Alluvium					
				Deposits; Well graded sand with silt and gravel (SW-SM); brown					
63	SW-SM			(7.5YR 5/4)					
64			,						
				(04.5 07.01) T					
65				(64.5 - 67.0') Topock - Alluvium Deposits; Silty sand with gravel		1051°			
			}	(SM); brown (7.5YR 5/3)					
66	SM		}						
67					ľ				
	SM			(67.0 - 67.5') Topock - Alluvium Deposits; Silty sand with gravel					
			1	(SM); dark yellowish brown (10YF	R				
68	NR	X		(67.5 - 68.5') No recovery (NR)					
	GM	KYW)		(68.5 - 69.0') Topock - Alluvium	\dashv				
69	- OWI			Deposits; Silty gravel with sand (GM); grayish brown (2.5Y 5/2)					
			(0.0.00.01)	(60.0 72.0') Topock Alluvium					
70 (8.0 - 82.0) mins/ft			8.0" Steel	Deposits; Silty sand with gravel (SM); dark yellowish brown (10YF	R				
	SM		Casing	4/4)					
71			}						
			1						
72			;						
				(72.0 - 74.0') Topock - Alluvium Deposits; Silty sand with gravel					
				(SM); yellowish brown / moderate	e				
F'3-	SM		<u> </u>	yellowish brown (10YR 5/4)					
├ _			}						
74				(74.0 - 75.5') Topock - Alluvium	\dashv				
 	SM		1	Deposits; Silty sand with gravel (SM); brown (7.5YR 5/4)					
75	Sivi		1	(OM), Brown (7.011CO/4)					
		LLL,	<u>}</u>	(75.5 - 77.0') No recovery (NR)	\dashv				
76				(73.3 - 77.0) NO Tecovery (NIX)					
	NR	X							
_77		<u> </u>		L					
	SM			(77.0 - 77.5') Topock - Alluvium Deposits; Silty sand with gravel		(77.0 - 82.0') Advanced 8-inc from clean out run 77 to 82 fe			
		\mathbb{N}^{2}	1	(SM); dark yellowish brown (10YF	R	materials. Materials observed	d appeared to	be native	
[''-]	NR	X		(77.5 - 78.5') No recovery (NR)	\dashv	material, reddish brown fine t gravel, subangular to angular			
		TO IN		(78.5 - 83.5') Topock - Alluvium	-	had walked off the hole. Pulle to get back on borehole with	ed 8-inch cas	ing and attepted	
79	SM			Deposits; Silty sand with gravel (SM); brown (7.5YR 5/4)		casing. At approximately 82 f	ft. hit resistan	ice pulled core	
 	O.V.			,, (22)		barrel and observed some filt material. Clean out run from	82 to 87 ft bg	s appeared to be	
80	SCS - 11-2	: : : : :	Clocaificati	on Cyptom # - foot bas	ha!-	undisturbed native material, i	reddish brow	n, stiff fine to	C\M = around-uate:
rappievialions: U	303 – UNII	n c u ooll	Ciassilicati	on System, ft = feet, bgs =	neic	ow ground sunace, ams	n – above I	mean sea level	ı, ७०० – groundwater

Date State test: 10.01 12.01 Surface Elevation: 10.03 2019 Northing (ANDAS): 10.03 2019	ARC4		S Des	sign & Consultan natural and It assets	су	Drilling Log						Shee	et:	5 of 6
Conting Cont	Date Started:	10	/01/201	19	Sı	urface Elevation:	54	15.6 ft a	msl		Borir	a No.:	M۱	W-88d
Solid Sol		l: <u>10</u>	/03/201	19	N	orthing (NAD83):	<u>21</u>	<u>100555.</u>	9					
Did R Type Prosente Truck Mount Conductor Casing Diameter Conductor Casing														
Driller Amanya (A. Debures Drill Casing Diameter Cutting Shoe Project Number: RC000753.0051				_		•	•				-			•
Common									<u> </u>		Location:	PG&E To	opocl	k, Needles, California
The content of the						-					5			750 0054
Decision Diffine Run	_		-					_			Project N	umber: R	C000	0/53.0051
Dough (fin) Put (see Principles of Code Code Code Code Code Code Code Code						•	85		-					
Depth Depth Grant Gran	rtig Geologist.	<u>CI</u>	IIIS DOII	16991		I	느] res [∆ NO					
Section Percentation Rate Section Sect									Dri	illing	Notes			Drilling Fluid
SM (8.0 - 8.7.0) (8.0 -			Code	Class	Diameter	(See Pilot boring log for full geologic descriptions)			Dii	iiiiig	Notes			Drilling Fluid
80 - 82.7														
SA		٥,			(8.0 - 82.0')									
					`8.0" Steel									
		-	SM		Casing									
SAM	82		5											
SAM		-												
10	83	-												
(82.0 - 87.0)		-		6419										
		0)			(82 0 - 87 0')	Deposits; Sandy silt with gravel (ML); brown (10YR 5/3)								
Mil.	mins/ft	.0)		66	4.0" Core									
SM	_85_	-	MI		Barrel									
SM		-	''											
SM	86	-		600										
SM	<u> </u>	-					Y							
(SM); brown (7.5YR 5/4) (87.4 - 98.5) No recovery (NR) (86.5 - 92.0) Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (7.5YR 5/3) 99. ML 91. 92. 93. ML 94. 95. 96. SM ML 97. ML 98. ML 98. ML 98. ML 98. ML 99. SM ML 99. SM SM (SM); brown (7.5YR 5/3) (98.5 - 97.0) Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (7.5YR 5/3) (98.5 - 98.0) Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (7.5YR 5/3) (98.5 - 98.0) Topock - Alluvium Deposits, Silty sand with gravel (ML); brown (10YR 4/3) (98.5 - 98.0) Topock - Alluvium Deposits, Sandy silt with gravel (ML); brown (10YR 4/3) (98.5 - 98.0) Topock - Alluvium Deposits, Silty sand with gravel (ML); brown (10YR 4/3) (98.5 - 98.5) No recovery (NR) (98.5 - 10.18) Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3)	_8/		SM			(87.0 - 87.4') Topock - Alluvium	1							
SM (87.4 - 88.5) No recovery (NR) (88.5 - 92.0) Topock - Alluvium Peposits; Silty sand with gravel (SM); brown (7.5 YR 5/3) SM (94.5 - 97.0) Topock - Alluvium Deposits; Sandy silt with gravel (MA); brown (7.5 YR 5/2) SM (94.5 - 97.0) Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5 YR 5/3) SM (97.0 - 98.0) Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5 YR 5/3) SM (98.0 - 98.5) No recovery (NR) (98.0 - 98.5) No recovery (NR) (98.5 - 10.18) Topock - Alluvium Deposits; Silty sand with gravel (ML); brown (10 YR 4/3) (98.5 - 10.18) Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (10 YR 5/3) (98.5 - 10.18) Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (10 YR 5/3) (98.5 - 10.18) Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (10 YR 5/3) (98.5 - 10.18) Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (10 YR 5/3) (98.5 - 10.18) Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (10 YR 5/3) (98.5 - 10.18) Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (10 YR 5/3) (98.5 - 10.18) Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (10 YR 5/3) (98.5 - 10.18) Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (10 YR 5/3) (98.5 - 10.18) Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (10 YR 5/3) (98.5 - 10.18) Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (10 YR 5/3) (98.5 - 10.18) Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (10 YR 5/3) (98.5 - 10.18) Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (10 YR 5/3) (98.5 - 10.18) Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (10 YR 5/3) (98.5 - 10.18) Topock - Alluvium (98.5 - 10.18) Top						Deposits; Silty sand with gravel (SM); brown (7.5YR 5/4)								
Deposits; Silly Sand with gravel (SM); brown (7,5/R 5/3) 90	88		NR	X		(87.4 - 88.5') No recovery (NR)								
(SM), brown (7.5 VR 5/3) 90			<u></u> -			(88.5 - 92.0') Topock - Alluvium	7							
92 (92.0 - 94.5) Topock - Alluvium Deposits, Sandy silt with gravel (ML); brown (7.5YR 5/2) (94.5 - 97.0') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (7.5YR 5/3) (94.5 - 97.0') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (7.5YR 5/3) (97.0 - 98.0') Topock - Alluvium Deposits, Sandy silt with gravel (ML); brown (10YR 4/3) (98.0 - 98.5') No recovery (NR) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brow	-09-					(SM); brown (7.5YR 5/3)	3	<u>.</u>						
92 (92.0 - 94.5) Topock - Alluvium Deposits, Sandy silt with gravel (ML); brown (7.5YR 5/2) (94.5 - 97.0') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (7.5YR 5/3) (94.5 - 97.0') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (7.5YR 5/3) (97.0 - 98.0') Topock - Alluvium Deposits, Sandy silt with gravel (ML); brown (10YR 4/3) (98.0 - 98.5') No recovery (NR) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brown (10YR 5/3) (98.5 - 101.8') Topock - Alluvium Deposits, Silty sand with gravel (SM); brow	F 00 T													
92	90		SM											
92	F													
93	91													
93	 													
93														
95	03													
95			ML											
95														
Deposits; Sifty sand with gravel (SM); brown (7.5YR 5/3) 97														
	95													
98														
			SM											
98														
98														
98			N/I											
99	_98_]		IVIL			(ML); brown (10YR 4/3)								
Deposits; Silty sand with gravel (SM); brown (10YR 5/3)			NR											
SM (SM); brown (10YR 5/3)	99					Deposits; Silty sand with gravel								
	L]		SM											
							1							

ARCA	DIS or buil	ign & Consultanc natural and t assets	cy .	Drilling Log				Shee	t: 6 of 6
Date Started:	10/01/201			urface Elevation:		45.6 ft amsl	Borin	a No.:	MW-88d
Date Completed:		9		orthing (NAD83):		100555.9			<u></u>
Drilling Co.:	Cascade			asting (NAD83):			Client:	PG&E	
Drilling Method:	Sonic Drill	-		otal Depth:		•	-		Remedy Phase 1
Drill Rig Type: Driller Name:	Prosonic John Colo			onductor Casing Diameter: rill Casing Diameter:		<u>inches</u>	Location:	PG&E TO	pock, Needles, California
Drilling Asst:	L. Amaya			rill Bit:			Project N	umber R	C000753.0051
Tool-Pusher:	Arnold La			epth to First Water:		9.14 ft bgs			3000.00.000
Rig Geologist:	Chris Bon			onverted to Well:] Yes ⊠ No			
- Drilling Ru	ın			Description					
Depth (ft) Drilling Ru and Average Penetration I		USCS Class	Casing Diameter	(See Pilot boring log for full geologic descriptions)		Drilling l	Notes		Drilling Fluid
	SM			(101.8 - 110.0') Topock Weathered Bedrock -					
				conglomerate; Sandy silt with gravel (ML); reddish brown (5YR 5/4)					
104									
105						100/			
_106	ML								
_107									
108									
_109									
110				(110.0 - 115.0') Topock - Competent Bedrock -					
_111				conglomerate; reddish brown / moderate brown (5YR 4/4)					
112									
_113									
_114									
_115				(115.0 - 117.1') No recovery (NR)	-				
_116	NR	X							
_117		<u> </u>		End of Boring at 117.1 'bgs.	\perp				
118				End of Dorning at 117.1 bys.					
119									
120 Abbreviations: U	SCS = Unif	ied Soil	Classificati	on System, ft = feet, bgs =	bel	low ground surface, amsl	l = above r	mean sea	level, GW = groundwater

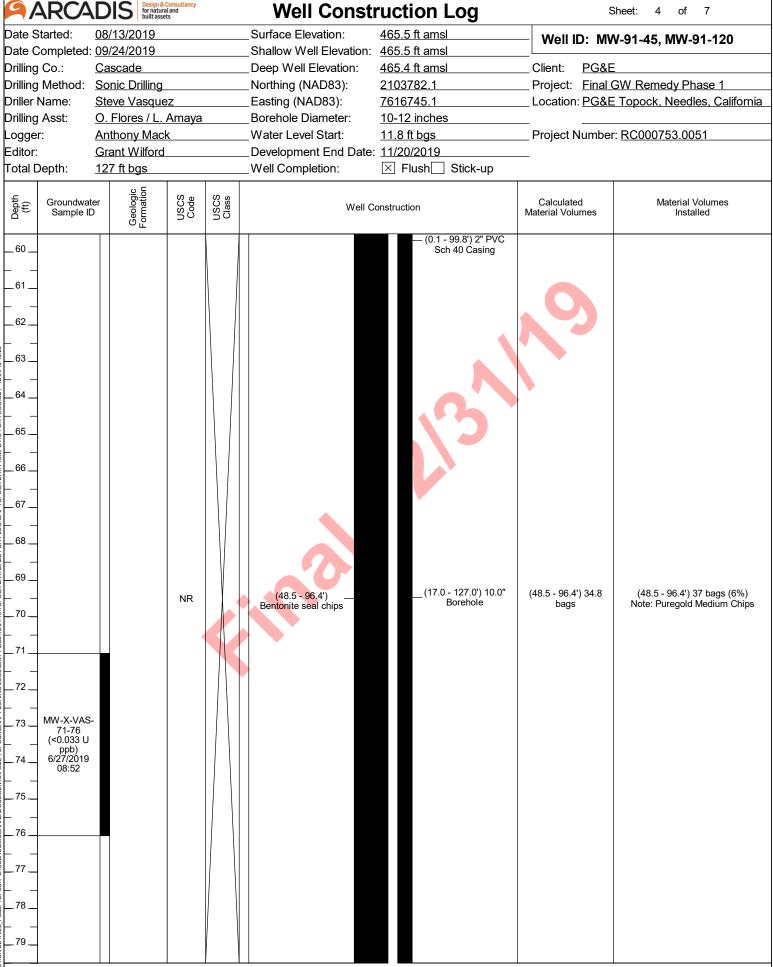
9/-	ARCA	DIS Design 8 for natur built ass	Consultancy ral and ets		Well Const	ruction Log		Sheet: 1 of 7
Date S		08/13/2019			_Surface Elevation:	465.5 ft amsl	Well ID: M	<i>N</i> -91-45, MW-91-120
	=	09/24/2019			_Shallow Well Elevation:			
Drilling		Cascade			Deep Well Elevation:	465.4 ft amsl	Client: PG&	
Drilling Driller I		Sonic Drilling Steve Vasque			_Northing (NAD83): _Easting (NAD83):	2103782.1 7616745.1		GW Remedy Phase 1 E Topock, Needles, California
Drilling		O. Flores / L.			Borehole Diameter:	10-12 inches	Lucation. <u>PG&</u>	E TOPOCK, Needles, Calliomia
Logge		Anthony Mac	-		Water Level Start:	11.8 ft bgs	Project Numbe	r: RC000753.0051
Editor:		Grant Wilford			Development End Date	_		
Total D	Depth:	127 ft bgs			Well Completion:			
_		<u> </u> 으	(0 =	(0.12				
Depth (ft)	Groundwat Sample II		Code	USCS Class	Well C	Construction	Calculated Material Volumes	Material Volumes Installed
0 1 2 3					(0.0 - 24.2') 2" PVC Sch 40 Casing (+0.5 - 1.0') Concrete Pad	(0.1 - 99.8') 2" PVC Sch 40 Casing	10	(+0.5 - 1.0') 24 bags Note: 30-inch Diameter Concrete Pad with 18-inch Diameter Lockable Vault, Quickcrete Concrete Mix with Buff dye
_ 4	MW-X-VAS 12-17 (<0.033 U ppb) 6/25/2019 15:10		NR		(3.0 - 17.1') Portland Cement 6% Bentonite (9.5 - 10.5') Centralizer	(0.0 - 17.0') 12.0" Borehole	(3.0 - 17.1') 60.7 gallons	(3.0 - 17.1') 100 gallons (65%) Note: Type I, II and V and Benseal, used >20% of the calculated volume due to potential voids forming during drilling
18 18 19			NR		(17.1 - 22.0') Bentonite seal chips	(17.0 - 127.0') 10.0" Borehole	(17.1 - 22.0') 3.41 bags	(17.1 - 22.0') 4 bags (17%) Note: Puregold Medium Chips
Abbrev	viations: U	SCS = Unified	d Soil Cl	assifica	ition System, ft = feet, bgs	= below ground surface, a	msl = above mean	sea level, GW = groundwater,

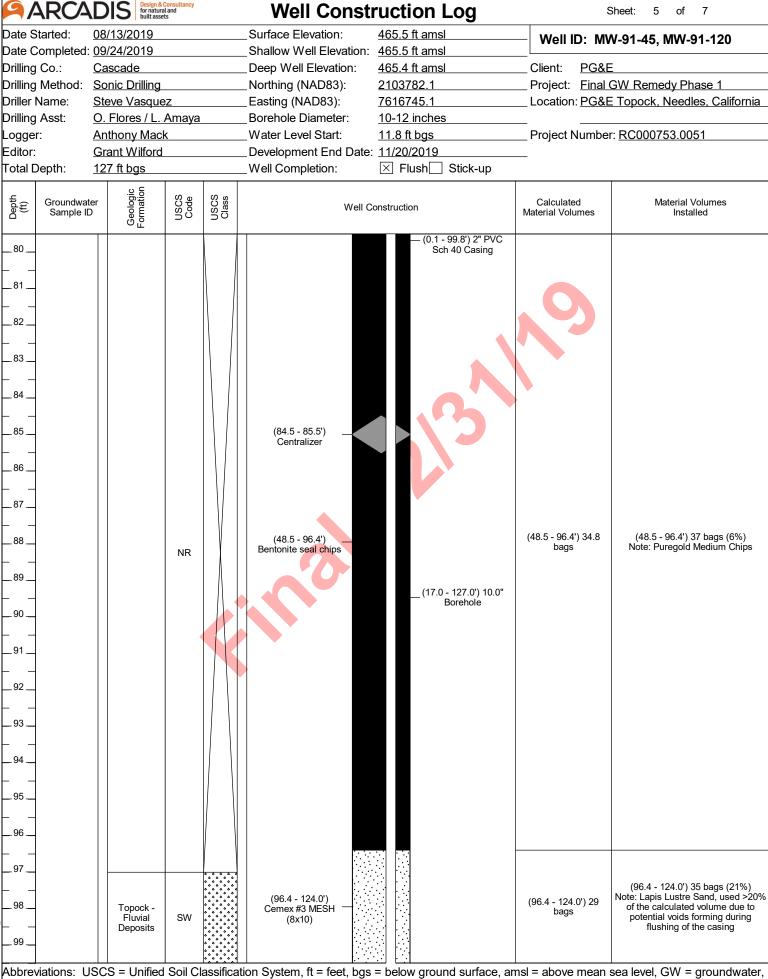
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundw ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, groundwater data was collected from MW-91d

9/	ARCA	DIS for natura built asse	al and ts		Well Const	ruction Log	8	Sheet: 2 of 7	
Date S	tarted:	08/13/2019			_Surface Elevation:	465.5 ft amsl	Well ID: MV	V-91-45, MW-91-120	
		09/24/2019			_Shallow Well Elevation:	465.5 ft amsl		·	
Drilling		Cascade			Deep Well Elevation:	465.4 ft amsl	Client: PG&E		
_		Sonic Drilling			_Northing (NAD83):	2103782.1	•	GW Remedy Phase 1	
Driller N		Steve Vasque			Easting (NAD83):	7616745.1	Location: <u>PG&E</u>	Topock, Needles, California	
Drilling		O. Flores / L.			_Borehole Diameter:	10-12 inches			
Logger:		Anthony Mac			Water Level Start:	11.8 ft bgs	Project Number: <u>RC000753.0051</u>		
Editor:		Grant Wilford			Development End Date:				
Total Depth:		127 ft bgs	1		_Well Completion:		T	T	
Depth (ft)	Groundwat Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed	
20					(0.0 - 24.2') 2" PVC — Sch 40 Casing	— (0.1 - 99.8') 2" PVC Sch 40 Casing			
				1\ /	_		(47.4 22.0)\ 2.44	(47.4 99.0!) 4 hage (470/)	
21				$ \rangle / $	(17.1 - 22.0') Bentonite seal chips		(17.1 - 22.0') 3.41 bags	(17.1 - 22.0') 4 bags (17%) Note: Puregold Medium Chips	
				$ \setminus $	·				
22				$ \setminus $					
				$ \setminus $					
23				$ \ \ $					
			NR						
24				$ \ \ \ \ $					
				$ / \rangle $	(24.2 - 44.2') 2" Sch —				
25				$ \ \ \ $	40 PVC (20-slot)				
26				$\parallel \parallel $					
20									
 27									
_21 _									
28						+11 11			
29						[]			
						Borehole			
30									
					(22.0 - 48.5') Cemex		(22.0 - 48.5') 26.5	(22.0 - 48.5') 31 bags (17%)	
31					*3 MESH (8x10)	 : ::	bags	Note: Lapis Lustre Sand	
		Topock - Fill	SP						
32									
						1 3			
33									
⊢ ⊢									
34	MW-X-VAS- 32-37	•							
<u> </u>	(<0.033 U ppb)					+11 11			
35	6/26/2019					7:1 1:3			
<u> </u>	11:45					1 :1 [::]			
36				8 8(8)8 8					
L				D					
37						<u> </u>			
		Topock -							
38		Fluvial	SW			74 [A]			
		Deposits							
39									
						 			

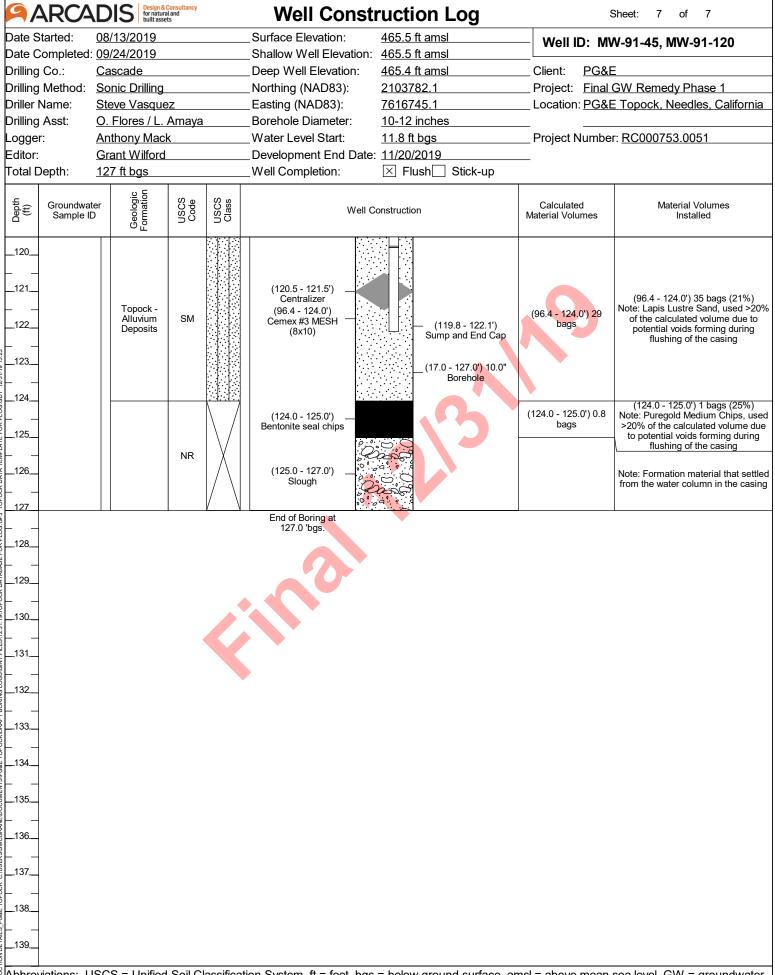
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, groundwater data was collected from MW-91d

9/-	4KCA	for natura built asse	and ts		Well Consti	ruction Log	5	Sheet: 3 of 7
Date S		08/13/2019			_Surface Elevation:	465.5 ft amsl	Well ID: MV	V-91-45, MW-91-120
	•	09/24/2019			_Shallow Well Elevation:			·
Drilling		Cascade			_Deep Well Elevation:	465.4 ft amsl	Client: PG&E	
_		Sonic Drilling			_Northing (NAD83):	2103782.1		GW Remedy Phase 1
Driller I Drilling		Steve Vasque O. Flores / L.			_Easting (NAD83): _Borehole Diameter:	7616745.1 10-12 inches	Location: PG&E	Topock, Needles, California
Logge		Anthony Macl			_ Borenole Blameter. _Water Level Start:	11.8 ft bgs	Project Number	:: RC000753.0051
Editor:		Grant Wilford			_ Development End Date:	-		. 110000100.0001
Total D	Depth:	127 ft bgs			_Well Completion:			
Depth (ft)	Groundwat Sample II		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
404142434445464748		Topock - Fluvial Deposits Topock - Fluvial Deposits	SW		(22.0 - 48.5') Cemex_ #3 MESH (8x10) (44.2 - 46.5') Sump_ and End Cap (45.5 - 46.5') Centralizer	— (0.1 - 99.8') 2" PVC Sch 40 Casing	(22.0 - 48.5') 26.5 bags	(22.0 - 48.5') 31 bags (17%) Note: Lapis Lustre Sand
495051525354555656575859			NR		(48.5 - 96.4') Bentonite seal chips	(17.0 - 127.0') 10.0" Borehole	(48.5 - 96.4') 34.8 bags	(48.5 - 96.4') 37 bags (6%) Note: Puregold Medium Chips
							<u> </u>	





9/	ARCA	DIS for natural built as	iral and sets		Well Const	ruction Log		Sheet: 6 of 7	
Date S		08/13/2019			_Surface Elevation:	465.5 ft amsl	Well ID: M	W-91-45, MW-91-120	
	-	09/24/2019			_Shallow Well Elevation:				
Drilling		Cascade			_Deep Well Elevation:	465.4 ft amsl	Client: PG&		
_		Sonic Drilling			_Northing (NAD83):	2103782.1	•	GW Remedy Phase 1	
Driller N		Steve Vasquez O. Flores / L. Amaya			_Easting (NAD83):	7616745.1	Location: PG&E Topock, Needles, Californi		
Drilling					_Borehole Diameter:	<u>10-12 inches</u>	Project Number: <u>RC000753.0051</u>		
Logger		Anthony Mack		_Water Level Start:	11.8 ft bgs				
Editor:			Grant Wilford		_Development End Date:		<u> </u>		
Total D	Depth:	127 ft bgs			_Well Completion:				
Depth (ft)	Groundwat Sample ID		OSCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed	
100				******		(99.8 - 119.8') 2"			
						Sch 40 PVC (20-slot) Screen			
101						(20-3101) 0016611			
102									
103		Tamash							
100		Topock - Fluvial	sw						
104		Deposits							
104									
405									
105				******					
106									
107		Topock -							
		Fluvial	GW						
108		Deposits							
109	MW-X-VAS- 107-112					:: - :		(96.4 - 124.0') 35 bags (21%)	
	(<0.033 U				(96.4 - 124.0') Cemex #3 MESH	(17.0 - 127.0') 10.0" Borehole	(96.4 - 124.0') 29	Note: Lapis Lustre Sand, used >20% of the calculated volume due to	
110	ppb) 6/27/2019	Topock - Fluvial	SM		(8x10)	·:	bags	potential voids forming during flushing of the casing	
	15:04	Deposits						l	
111						·:H::			
112						::			
113									
114	MW-X-VAS-	Topock - Fluvial	GW						
	112-117 (<0.033 U	Deposits	GW	. •		:: - :			
 115	ppb) 6/28/2019								
113	09:56								
140									
116		Topock -							
		Alluvium Deposits	GW-GN						
117		_ = 5,55.10							
⊢ <u>.</u> . ⊢						:' 			
118		Topock - Alluvium	SM						
⊢ ⊢		Deposits							
119									
				<u> 1-1-1-1</u>			1		



	DIS for natura built asset	S		Well Consti	uction Log	`	Sheet: 1 of 21
Date Started:	07/31/2019			_Surface Elevation:	465.4 ft amsl	Well ID: M\	N-91-170, MW-91-320
ate Completed	: 09/23/2019			_Shallow Well Elevation:	465.4 ft amsl		•
rilling Co.:	Cascade			_Deep Well Elevation:	465.3 ft amsl	Client: PG&I	<u> </u>
rilling Method:	Sonic Drilling			_Northing (NAD83):	2103798.1	Project: Final	GW Remedy Phase 1
riller Name:	E. Ramos / S.	Vasqu	ıez	_Easting (NAD83):	7616739.7	Location: PG&I	E Topock, Needles, Californ
rilling Asst:	O. Flores / L.	Amaya		_Borehole Diameter:	6-12 inches		
ogger:	GJ/SM/CS	/ DC /	AM	_Water Level Start:	10.5 ft bgs	Project Numbe	r: RC000753.0051
ditor:	Grant Willford			_Development End Date:	11/23/2019		
otal Depth:	417 ft bgs			_Well Completion:			
Groundwa Sample I		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
1				(0.0 - 150.8') 2" PVC Sch 80 Casing (+0.5 - 1.0') Concrete Pad	(0.1 - 300.8') 2" PVC Sch 80 Casing		(+0.5 - 1.0') 22 bags Note: 30-inch Diameter Concre Pad with 18-inch Diameter Locka Vault, Quickcrete Concrete Mix v Buff dye
. 3				(2.2 - 5.0') Bentonite seal chips		(2.2 - 5.0') 2.92	(2.2 - 5.0') 7 (140%) Note: Puregold Medium Chips installed due to void and heat or hydration concerns, installed >20 of calculated volume to fill voice.
6	Topock - Fill	SP		(5.0 - 16.9') Portland Cement 6% Bentonite	(0.0 - 42.0') 12.0" Borehole	(5.0 - 16.9') 66 gallons	(5.0 - 16.9') 100 gallons (52% Note: Type I, II and V and Bense used >20% of the calculated vol due to potential voids forming du flushing of the 10-inch casing
13		NR					
18	Topock - Fill	SW		(16.9 - 118.2') — Bentonite seal chips		(16.9 - 118.2') 78.93 bags	(16.9 - 118.2') 77 bags (-2%) Note: Puregold Medium Chip:

Total Depth: 417 ft bgs	ARC	ADIS for natural built asset	al and ets	Well Const	ruction Log	S	Sheet: 2 of 21	
Shallow Well Elevation: 465.4 ft.msl	Date Started:	07/31/2019		_Surface Elevation:	465.4 ft amsl	Well ID: MV	V-91-170. MW-91-320	
Drilling Method: Sonic Drilling Asset: Ramos / S. Vasquez Easting (NAD83): 761673.7 Location: PG&E Topock, Needles, Califoring Asset: O. Flores / L. Amaya Borehole Diameter: 6.12 inches Carlot Millor Depth: 417 ft bgs Well Completion: ▼ Flush Stick-up Self- Groundwater Sample 10	-	d: <u>09/23/2019</u>		_Shallow Well Elevation:	465.4 ft amsl			
Diller Name: E. Ramos / S. Vasquez Easting (NAD83): 75 febr 39.7 Location: PG&E Topock, Needles, California C								
Drilling Asst: Q. Ficres / L. Anaya Borehole Diameter: G.1/2 inches G.1						•	-	
Logger Carl Willford Development End Date 1/1/23/2019 Project Number: RC000753.0051			-			Location: <u>PG&E Topock, Needles, California</u>		<u>a</u>
Editor: Grant Wilfford Development End Date: 11/23/2019 A17 ft bgs	-							
Total Depth: 417 ft bgs						Project Number: <u>RC000753.0051</u>		
Croundwater Section Calculated Material Volumes Material Vol			<u>d</u>	•				
20	Total Depth:			vveii Completion:	ĭ Flusn Slick-up			
22 Controllizer PVC Sch 80 Casing PVC Sc	Groundy Sample	Geologic Formation	USCS Code USCS Class	Well C	onstruction			
	20	Topock - Fill S- J 9	SW	Centralizer (0.0 - 150.8') 2" PVC Sch 80 Casing	(0.0 - 42.0') 12.0"		(16.9 - 118.2') 77 bags (-2%) Note: Puregold Medium Chips	

ARC4	DIS Design & C for natural built asset	Consultancy I and ts		Well Const	ruction Log	S	Sheet: 3 of 21
Date Started:	07/31/2019			_Surface Elevation:	465.4 ft amsl	Well ID: MV	V-91-170, MW-91-320
Date Completed:				_Shallow Well Elevation:		_	·
Drilling Co.:	Cascade			_Deep Well Elevation:	465.3 ft amsl	_ Client: <u>PG&E</u>	
-	Sonic Drilling			_Northing (NAD83):	2103798.1	•	GW Remedy Phase 1
Driller Name:	E. Ramos / S.	-	Z	_Easting (NAD83):	7616739.7	_ Location: <u>PG&E</u>	Topock, Needles, California
Drilling Asst:	O. Flores / L.			_Borehole Diameter:	6-12 inches		
Logger: 	GJ/SM/CS		<u>M</u>	_Water Level Start:	10.5 ft bgs	_ Project Number	:: RC000753.0051
Editor:	Grant Willford			_Development End Date:		<u> </u>	
Total Depth:	417 ft bgs			_Well Completion:			
Groundwa Sample II		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
40		SW .	*****	(0.0 - 150.8') 2" — PVC Sch 80 Casing	— (0.1 - 300.8') 2" PVC Sch 80 Casing		
40414243444546474849505152535455555657	Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits	SW SW		(16.9 - 118.2') — Bentonite seal chips	PVC Sch 80 Casing(0.0 - 42.0') 12.0" Borehole	(16.9 - 118.2') 78.93 bags	(16.9 - 118.2') 77 bags (-2%) Note: Puregold Medium Chips
58	Topock - Fluvial Deposits	SW					
I		<u> </u>	161 41	. <u></u>			

	•	Surface Elevation:Shallow Well Elevation:Deep Well Elevation:Northing (NAD83):Easting (NAD83):	465.3 ft amsl 2103798.1	Client: <u>PG&E</u>	7-91-170, MW-91-320	
Sonic Drilling E. Ramos / S O. Flores / L.	•	Northing (NAD83):	2103798.1		SW Remedy Phase 1	
E. Ramos / S O. Flores / L.	•	- ' '		Project: <u>Final G</u>	W Remedy Phase 1	
O. Flores / L.	•	Facting (NIATION)	3 ()	Project: Final GW Remedy Phase 1		
	lling Asst: O. Flores / L. Amaya		7616739.7	Location: PG&E Topock, Needles, Californ		
gger: <u>GJ / SM / CS / DC / AM</u> tor: <u>Grant Willford</u>		Borehole Diameter:	6-12 inches			
		Water Level Start:	10.5 ft bgs	Project Number:	RC000753.0051	
Grant Willford	1	Development End Date:				
417 ft bgs		Well Completion:				
Geologic Formation	USCS Code USCS Class			Calculated Material Volumes	Material Volumes Installed	
Topock - Fluvial Deposits	SW	(0.0 - 150.8') 2" — PVC Sch 80 Casing	— (0.1 - 300.8') 2" PVC Sch 80 Casing	.0		
Topock - Fluvial Deposits	SP					
Topock - Fluvial Deposits Topock - Fluvial Deposits	SW 5	(16.9 - 118.2') Bentonite seal chips (69.5 - 70.5') Centralizer	(42.0 - 324.0') 10.0" Borehole	(16.9 - 118.2') 78.93 bags	(16.9 - 118.2') 77 bags (-2%) Note: Puregold Medium Chips	
	Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits	Topock - Fluvial Deposits Topock - Fluvial Deposits SP Topock - Fluvial Deposits SW Topock - Fluvial Deposits SW Topock - Fluvial Deposits Topock - Fluvial Deposits	Topock - Fluvial Deposits SW Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits	Topock - Fluvial Deposits Topock - Fluvial Deposits SP Topock - Fluvial Deposits Topock - Fluvial Deposits SP Topock - Fluvial Deposits SW Topock - Fluvial Deposits SP Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits	(0.0 - 150.8) 2"	

9/	ARCA	DIS Design & for natura built asset	Consultancy al and ts		Well Const	ruction Log	:	Sheet: 5 of 21	
Date S	tarted:	07/31/2019			_Surface Elevation:	465.4 ft amsl	Well ID: M\	<i>N</i> -91-170, MW-91-320	
	-	09/23/2019			_Shallow Well Elevation:	465.4 ft amsl			
Drilling		Cascade			_Deep Well Elevation:	465.3 ft amsl	Client: PG&E	Ē	
Drilling	Method:	Sonic Drilling			_Northing (NAD83):	2103798.1	Project: <u>Final</u>	GW Remedy Phase 1	
Driller N	Name:	E. Ramos / S	. Vasqu	ıez	_Easting (NAD83):	7616739.7	Location: <u>PG&</u>	E Topock, Needles, California	
Drilling	Asst:	O. Flores / L.	<u>Amaya</u>		_Borehole Diameter:	6-12 inches			
Logger	:	GJ/SM/CS	3 / DC /	AM	_Water Level Start:	10.5 ft bgs	Project Number: RC000753.0051		
Editor:		Grant Willford			Development End Date:	11/23/2019			
Total D	epth:	417 ft bgs			_Well Completion:				
Depth (ft)	Groundwat Sample ID		USCS Code	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed	
		Topock - Fluvial Deposits Topock - Fluvial Deposits	SW-SM SW-SM SP SW NR		(0.0 - 150.8') 2" — PVC Sch 80 Casing (16.9 - 118.2') — Bentonite seal chips	— (0.1 - 300.8') 2" PVC Sch 80 Casing _ (42.0 - 324.0') 10.0' Borehole		(16.9 - 118.2') 77 bags (-2%) Note: Puregold Medium Chips	
99									

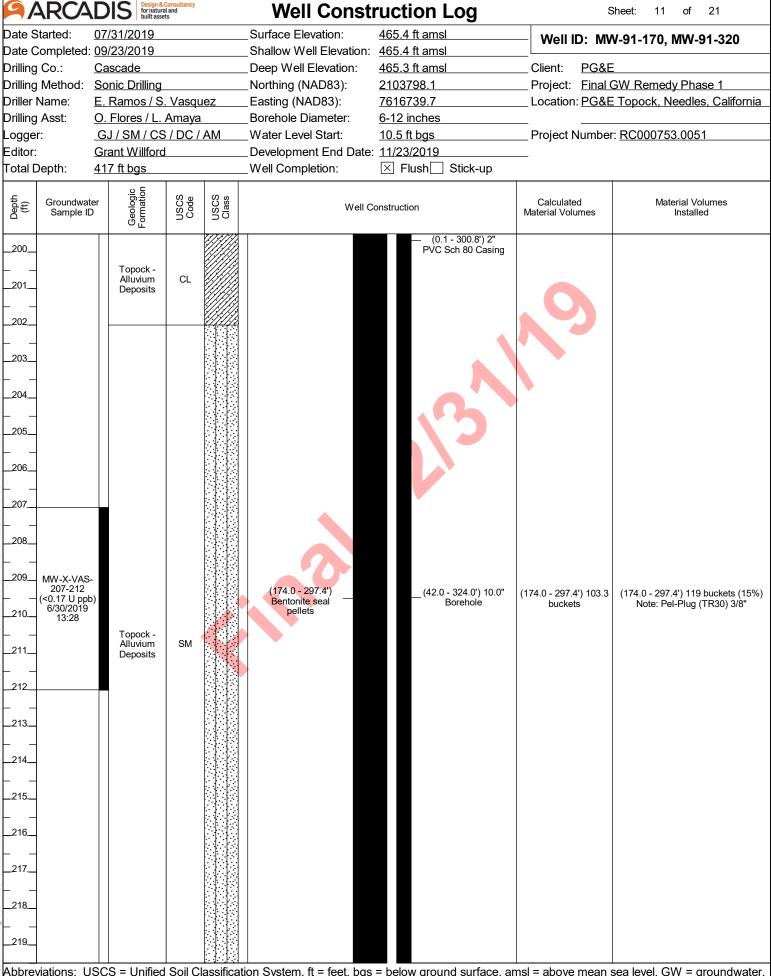
ARCA	DIS for natura built asse	Consultancy all and ts		Well Consti	ruction Log	S	Sheet: 6 of 21		
Date Started:	07/31/2019			_Surface Elevation:	465.4 ft amsl	Well ID: MV	V-91-170, MW-91-320		
Date Completed:				_Shallow Well Elevation:			·		
Orilling Co.:	Cascade			_Deep Well Elevation:	465.3 ft amsl	Client: PG&E			
Orilling Method:	Sonic Drilling			_Northing (NAD83):	2103798.1	•	GW Remedy Phase 1		
Oriller Name:	E. Ramos / S	. Vasqı	ıez	_Easting (NAD83):	7616739.7	Location: PG&E Topock, Needles, Californ			
rilling Asst:	O. Flores / L.	<u>Amaya</u>		_Borehole Diameter:	6-12 inches				
.ogger:	GJ/SM/CS	/ DC /	AM	_Water Level Start:	10.5 ft bgs	Project Number	Project Number: RC000753.0051		
ditor:	Grant Willford			_Development End Date:	11/23/2019				
otal Depth:	417 ft bgs			_Well Completion:					
Groundwat Sample II		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed		
	Topock - Fluvial Deposits	sw		(0.0 - 150.8') 2" — PVC Sch 80 Casing	— (0.1 - 300.8') 2" PVC Sch 80 Casing	1 9			
	Topock - Fluvial Deposits	SW			(3)				
106	Topock - Fluvial Deposits	SW							
.107	Topock - Fluvial Deposits	GW	X		Ш				
109 MW-X-VAS 107-112 (<0.033 U ppb) 6/27/2019 15:04	Topock - Fluvial Deposits	SM		(16.9 - 118.2') Bentonite seal chips	(42.0 - 324.0') 10.0" Borehole	(16.9 - 118.2') 78.93 bags	(16.9 - 118.2') 77 bags (-2' Note: Puregold Medium Ch		
.112 .113 .114 MW-X-VAS	Topock - Fluvial Deposits	GW							
112-117 (<0.033 U ppb) 1156/28/2019 09:56	Topock - Fluvial Deposits	SM							
	Topock - Alluvium Deposits	SM		(118.2 - 146.8') Bentonite seal — pellets		(118.2 - 146.8') 22.9 buckets	(118.2 - 146.8') 25 buckets (Note: Pel-Plug (TR30) 3/8		

Date Completed: 09 Drilling Co.: Ca Drilling Method: Sc Driller Name: E. Drilling Asst: O. Logger: G Editor: G	ascade onic Drilling . Ramos / S. \(\) . Flores / L. A GJ / SM / CS / rant Willford 17 ft bgs	maya	Deep Well Elevation: Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Date: Well Completion:	Stick-up onstruction (0.1 - 300.8') 2"	Client: PG&E Project: Final (W-91-170, MW-91-320 GW Remedy Phase 1 Topock, Needles, California : RC000753.0051 Material Volumes Installed
Drilling Co.: Ca Drilling Method: Sc Drilling Method: Sc Drilling Asst: O. Logger: G Editor: Gr Total Depth: 41 Groundwater Sample ID 120 121 121 121	ascade onic Drilling Ramos / S. V Flores / L. A GJ / SM / CS / rant Willford	maya / DC / AM	Deep Well Elevation: Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Date: Well Completion: Well C	465.3 ft amsl 2103798.1 7616739.7 6-12 inches 10.5 ft bgs 11/23/2019	Client: PG&E Project: Final (Location: PG&E Project Number Calculated	GW Remedy Phase 1 Topock, Needles, California RC000753.0051 Material Volumes
Drilling Method: Sconding Method: Sconding Method: E. Driller Name: E. Drilling Asst: O. Logger: G. Editor: G. Total Depth: 41 Groundwater Sample ID 120	onic Drilling Ramos / S. \ Flores / L. A GJ / SM / CS / rant Willford	maya / DC / AM	Northing (NAD83):Easting (NAD83):Borehole Diameter:Water Level Start:Development End Date:Well Completion: Well C	2103798.1 7616739.7 6-12 inches 10.5 ft bgs 11/23/2019 X Flush Stick-up onstruction	Project: Final (Location: PG&E Project Number Calculated	GW Remedy Phase 1 Topock, Needles, California RC000753.0051 Material Volumes
Driller Name: E. Drilling Asst: O. Logger: G Editor: Gr Total Depth: 41 Groundwater Sample ID 120 121 121	. Ramos / S. \ . Flores / L. A GJ / SM / CS / rant Willford 17 ft bgs	maya / DC / AM	Easting (NAD83): Borehole Diameter: Water Level Start: Development End Date: Well Completion: Well C	7616739.7 6-12 inches 10.5 ft bgs 11/23/2019 Flush Stick-up onstruction	Location: PG&E Project Number Calculated	Topock, Needles, California RC000753.0051 Material Volumes
Drilling Asst: O. Logger: G Editor: Gr Total Depth: 41 Groundwater Sample ID 120 121 121	. Flores / L. A GJ / SM / CS / rant Willford 17 ft bgs	maya / DC / AM	Borehole Diameter: Water Level Start: Development End Date: Well Completion: Well C	6-12 inches 10.5 ft bgs 11/23/2019	Project Number Calculated	: RC000753.0051 Material Volumes
Logger: G Editor: Gr Total Depth: 41 Groundwater Sample ID 120 121 121	GJ / SM / CS / rant Willford 17 ft bgs	/ DC / AM	Water Level Start: Development End Date:Well Completion: Well C	10.5 ft bgs 11/23/2019 × Flush Stick-up onstruction	Calculated	Material Volumes
Editor: Grandwater Sample ID 120	rant Willford 17 ft bgs		Development End Date:Well Completion: Well C	11/23/2019 Stick-up	Calculated	Material Volumes
Total Depth: 41	17 ft bgs	USCS Code USCS Class	Well Completion: Well C	Stick-up onstruction (0.1 - 300.8') 2"		
Groundwater Sample ID 120		USCS Code USCS Class	Well C	onstruction (0.1 - 300.8') 2"		
120 121	Geologic	USCS Code USCS Class	(119.5 - 120.5')	— (0.1 - 300.8') 2"		
				— (0.1 - 300.8') 2"		
123_ 123_ 124_ 125_ 126_ 127_ 128_ 128_ 128_ 128_ 130_ 131_ 131_ 131_ 131_ 132_ 133_ 134_ 134_ 134_ 134_ 135_ 136_ 137_ 136_ 137_ 136_ 137_	Topock - Alluvium Deposits	SM	(0.0 - 150.8') 2"PVC Sch 80 Casing (118.2 - 146.8')Bentonite seal pellets	PVC Sch 80 Casing (42.0 - 324.0') 10.0" Borehole	(118.2 - 146.8') 22.9 buckets	(118.2 - 146.8') 25 buckets (9%) Note: Pel-Plug (TR30) 3/8"
138						
139	29 - Unified	Soil Clossific	ation System, ft = feet, bgs			1.100

,,	ADIS for natural built ass	ets		well Consti	detion Log		Sheet: 8 of 21
Date Started:	07/31/2019			_Surface Elevation:	465.4 ft amsl	Well ID: MV	V-91-170, MW-91-320
Date Completed				_Shallow Well Elevation:			
rilling Co.:	Cascade			_Deep Well Elevation:	465.3 ft amsl	Client: PG&E	
rilling Method:	_			_Northing (NAD83):	2103798.1		GW Remedy Phase 1
riller Name:	E. Ramos / S	-		_Easting (NAD83):	7616739.7	Location: <u>PG&E</u>	Topock, Needles, Californ
rilling Asst:	O. Flores / L.	-		_Borehole Diameter:	6-12 inches		
ogger:	GJ/SM/C		AM	_Water Level Start:	10.5 ft bgs	Project Number	:: RC000753.0051
ditor:	Grant Willford	b		_Development End Date:			
otal Depth:	417 ft bgs	1		_Well Completion:			I
Groundwa Sample		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
				(0.0 - 150.8') 2" — PVC Sch 80 Casing (118.2 - 146.8') Bentonite seal pellets	— (0.1 - 300.8') 2" PVC Sch 80 Casing	(118.2 - 146.8') 22.9 buckets	(118.2 - 146.8') 25 buckets (9% Note: Pel-Plug (TR30) 3/8"
	Topock - Alluvium Deposits	SM		(150.8 - 170.8') 2" ———————————————————————————————————	(42.0 - 324.0') 10.0" Borehole	(146.8 - 174.0') 26.6 bags	(146.8 - 174.0') 34 bags (28% Note: Lapis Lustre Sand
				tion System, ft = feet, bgs		amsl = above mean	sea level, GW = groundwat

1	4KCA	DIS for natura built asse	al and ts		Well Const	ruction Log		Sheet: 9 of 21		
Date S		07/31/2019			_Surface Elevation:	465.4 ft amsl	Well ID: MV	V-91-170, MW-91-320		
l l	-	09/23/2019				_Shallow Well Elevation: 465.4 ft amsl _Deep Well Elevation: 465.3 ft amsl				
Drilling		Cascade					Client: PG&E			
_		Sonic Drilling			_Northing (NAD83):	2103798.1	Project: Final GW Remedy Phase 1			
Driller I		E. Ramos / S	-		_Easting (NAD83):	,		Location: PG&E Topock, Needles, California		
Drilling		O. Flores / L.			_Borehole Diameter:	6-12 inches	— 			
Logge		GJ/SM/CS/DC/AM			_Water Level Start:	10.5 ft bgs	Project Numbe	r: RC000753.0051		
Editor:		Grant Willford			_Development End Date:					
Total D	eptn:	417 ft bgs			_Well Completion:		1	T		
Depth (ft)	Groundwat Sample II		USCS	USCS	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed		
160			NR		(150.8 - 170.8') 2" — : : : : : : : : : : : : : : : : : :	(0.1 - 300.8') 2" PVC Sch 80 Casing				
161										
162 163 164 165 166 167		Topock - Alluvium Deposits	CL		(146.8 - 174.0') Cemex #3 MESH		(146.8 - 174.0') 26.6 bags	(146.8 - 174.0') 34 bags (28%) Note: Lapis Lustre Sand		
168 169 170 171 172 173 174		Topock - Alluvium Deposits	CL		(170.5 - 172.0') Centralizer (170.8 - 173.2') Sump and End Cap	(42.0 - 324.0') 10.0" Borehole				
175 176 177 178 179		Topock - Alluvium Deposits Topock - Alluvium Deposits	SM GP		(174.0 - 297.4') Bentonite seal pellets		(174.0 - 297.4') 103.3 buckets	(174.0 - 297.4') 119 buckets (15%) Note: Pel-Plug (TR30) 3/8"		
Abbre	<i>i</i> iations: U	ISCS = Unified	Soil C	lassificat	tion System, ft = feet, bgs	= below ground surface, a	msl = above mean	sea level, GW = groundwater,		

9/	ARCA	DIS Design & for nature built asset	Consultancy al and ets		Well Const	ruction Log	\$	Sheet: 10 of 21
	Started:	07/31/2019			_Surface Elevation:	465.4 ft amsl	Well ID: MV	V-91-170, MW-91-320
	-	09/23/2019				465.4 ft amsl		·
Drilling		Cascade			_ Deep Well Elevation:	465.3 ft amsl	Client: PG&E	
_		Sonic Drilling			_Northing (NAD83):	2103798.1		GW Remedy Phase 1
Drilling	Name:	E. Ramos / S O. Flores / L.	-		_Easting (NAD83): _Borehole Diameter:	7616739.7 6-12 inches	Location: PG&E	Topock, Needles, California
Logge		GJ/SM/CS	-		Borenole Blameter. Water Level Start:	10.5 ft bgs	Project Number	r: <u>RC000753.0051</u>
Editor:		Grant Willford		7 (17)	_ Development End Date:		110,000114011150	1.10000700.0001
Total [417 ft bgs			 _Well Completion:			
		.º E						
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
180			NR			— (0.1 - 300.8') 2" PVC Sch 80 Casing		
181								
182								
183								
<u> </u>		Topock -						
184	MW-X-VAS	Alluvium Deposits	SM					
<u> </u>	182-187 (<0.17 U ppb)						
185	6/29/2019 15:28							
<u> </u>								
186								
187		Topock -						
188		Alluvium Deposits	SC					
100_		Topock -						
189		Alluvium	ML					
		Deposits			(174.0 - 297.4')	(42.0 - 324.0') 10.0"	(174.0 - 297.4') 103.3	(174.0 - 297.4') 119 buckets (15%)
190		l opock - Alluvium	SM		Bentonite seal pellets	Borehole	buckets	Note: Pel-Plug (TR30) 3/8"
L _		Deposits Topock -						
191		Alluvium Deposits	CL					
192		Topock - Alluvium	МН	Ш				
		Deposits						
193								
194								
		Topock -	ML					
195		Deposits						
196								
197								
L _								
198		Topock - Alluvium	ML					
<u> </u>		Deposits						
199								
A la la re-		000 - Unific	CL	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	tion Contains the foot base		 	oog lovel CW – groundwater



ARCADIS Design & Consultancy for natural and built assets atte Started: 07/31/2019			Well Const	S	Sheet: 12 of 21		
oate Started:	09/23/2019		Surface Elevation: Shallow Well Elevation:			V-91-170, MW-91-320	
rilling Co.:	Cascade		Deep Well Elevation: 465.3 ft amsl		Client: <u>PG&E</u> Project: <u>Final GW Remedy Phase 1</u>		
rilling Method:	•	.,	Northing (NAD83):	2103798.1		<u>-</u>	
riller Name:	E. Ramos / S	-	- ',		Location: PG&E Topock, Needles, Californ		
orilling Asst:					— Project Number	: RC000753.0051	
ogger: ditor:	Grant Willford		Water Level Start:	10.5 ft bgs	Project Number	. KC000753.0051	
otal Depth:	417 ft bgs		Development End Date: Well Completion:				
Т				i idan Otick-up			
Groundwat Sample II		USCS Code USCS Class	Well C	onstruction — (0.1 - 300.8') 2"	Calculated Material Volumes	Material Volumes Installed	
220	Topock - Alluvium Deposits	SM		PVC Sch 80 Casing			
	Topock - Alluvium Deposits	SM	(174.0 - 297.4') Bentonite seal pellets (229.5 - 230.5') Centralizer	(42.0 - 324.0') 10.0" Borehole	(174.0 - 297.4') 103.3 buckets	(174.0 - 297.4') 119 buckets (15 Note: Pel-Plug (TR30) 3/8"	
238	SCS - Unified	Soil Classific	ation System ft = feet has	= helow ground surface a	amsl = ahove means	sea level, GW = groundwat	

/ -	4KO4	DIS for natur built ass	al and ets		vveii Const	ruction Log		S	Sheet: 13 of 21	
Date S	Started:	07/31/2019			_Surface Elevation:	465.4 ft amsl	Well I	D: MV	V-91-170, MW-91-320	
Date C	Completed:	09/23/2019			_Shallow Well Elevation:	465.4 ft amsl				
Drilling	Co.:	Cascade			_Deep Well Elevation:	465.3 ft amsl	Client:	PG&E		
Drilling	Method:	Sonic Drilling			_Northing (NAD83):	2103798.1	Project:	Final (GW Remedy Phase 1	
Driller I		E. Ramos / S	-		_Easting (NAD83):	7616739.7	Location	Location: PG&E Topock, Needles, C		
Drilling	Asst:	O. Flores / L.	-		_Borehole Diameter:	6-12 inches				
Logge		GJ/SM/CS		AM	_Water Level Start:	10.5 ft bgs	Project N	Project Number: RC000753.0051		
Editor:		Grant Willford	<u></u>		_Development End Date:					
Total D	Depth:	417 ft bgs			_Well Completion:					
Depth (ft)	Groundwat Sample IE		Code	USCS Class	Well C	onstruction	Calculate Material Volu		Material Volumes Installed	
_240			SM			— (0.1 - 300.8') 2" PVC Sch 80 Casing	1			
241 242 243 244 245 246 247	MW-X-VAS 245-255 (<0.033 U	Topock - Alluvium Deposits	SM			PVC Sch 80 Casing				
248	(<0.033 U ppb) 7/1/2019 13:35	Topock - Alluvium Deposits	SM		(174.0 - 297.4*) Bentonite seal pellets	(42.0 - 324.0') 10.0' Borehole	" (174.0 - 297.4 bucket		(174.0 - 297.4') 119 buckets (15%) Note: Pel-Plug (TR30) 3/8"	
255 256 257 258 259		Topock - Alluvium Deposits	SM						sea level. GW = groundwater.	

ARCA	built asse	Consultancy al and ets		Well Consti	uction Log	Sr	Sheet: 14 of 21			
Date Started: Date Completed:	07/31/2019			_Surface Elevation: _Shallow Well Elevation:	465.4 ft amsl	Well ID: MW	Well ID: MW-91-170, MW-91-320 Client: PG&E			
-	Cascade			_ Deep Well Elevation:	465.3 ft amsl	Client PG&F				
Orilling Method:				_ Northing (NAD83):	2103798.1		Client: <u>PG&E</u> Project: <u>Final GW Remedy Phase 1</u>			
Oriller Name:	-		107	,		-	-			
	E. Ramos / S	-		_Easting (NAD83):	7616739.7	Location: <u>PG&E</u>	Topock, Needles, Californ			
Orilling Asst:	O. Flores / L.			_Borehole Diameter:	6-12 inches		D0000750 0054			
Logger:	GJ/SM/CS		AIVI	_Water Level Start:	10.5 ft bgs	Project Number:	RC000753.0051			
	Grant Willford	1		_Development End Date:						
Total Depth:	417 ft bgs			_Well Completion:		1				
Groundwat Sample ID		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed			
	Topock - Alluvium Deposits	Alluvium SM Deposits SM (174.0 - 297.4		(174.0 - 297.4') Bentonite seal pellets	PVC Sch 80 Casir					
	Topock - Alluvium Deposits	SM		(269.5 - 270.5')	(42.0 - 324.0') 10.1 Borehole	0" (174.0 - 297.4') 103.3 buckets	(174.0 - 297.4') 119 buckets (1: Note: Pel-Plug (TR30) 3/8"			
 _278 _279										
Abbreviations: U	SCS = Unified	Soil Cl	assifica	ion System, ft = feet, bgs	= below ground surface	, amsl = above mean se	ea level, GW = groundwa			
_										
pb = parts per b	IIIIon. U = n∩t	. uetect	eg anov	e the laboratory renorting	l IIMIL. INK = no recover	V				

9/-	ARCA	DIS for natur built ass	ral and ets		Well Const	ruction Log	5	Sheet: 15 of 21	
Date S	started:	07/31/2019			_Surface Elevation:	465.4 ft amsl	Well ID: MV	V-91-170, MW-91-320	
Date C	completed:	09/23/2019			_Shallow Well Elevation:	465.4 ft amsl		7 77 77 6, 11117 77 720	
Drilling	Co.:	Cascade			_Deep Well Elevation:	465.3 ft amsl	Client: PG&E	<u> </u>	
Drilling	Method:	Sonic Drilling			_Northing (NAD83):	2103798.1	Project: Final (GW Remedy Phase 1	
Driller I	Name:	E. Ramos / S	. Vasqu	ıez	_Easting (NAD83):	7616739.7	Location: PG&E	Topock, Needles, California	
Drilling	Asst:	O. Flores / L.	Amaya		_Borehole Diameter:	6-12 inches	· · · · · <u></u> · · · · · · · · · · · · · · · · · ·		
Logge	r:	GJ/SM/CS			_Water Level Start:	10.5 ft bgs	Project Number: <u>RC000753.0051</u>		
Editor:	Editor: Grant Willford			_Development End Date:	11/23/2019				
Total D	Depth:	417 ft bgs			_Well Completion:				
_		: <u>5</u> P		(0					
Depth (ft)	Groundwat Sample II			Well C	onstruction	Calculated Material Volumes	Material Volumes Installed		
_280						— (0.1 - 300.8') 2" PVC Sch 80 Casing			
281									
 _282							. 0		
202									
_205									
 _284									
204									
285									
286									
287									
_288					(174.0 - 297.4')		(474.0007.41) 400.0	(474.0. 007.41) 440.1 (450()	
					Bentoni <mark>te seal</mark>		(174.0 - 297.4') 103.3 buckets	(174.0 - 297.4') 119 buckets (15%) Note: Pel-Plug (TR30) 3/8"	
_289		Topock -			pellets				
		Alluvium	SM			(42.0 - 324.0') 10.0" Borehole			
_290		Deposits							
291					•				
292									
_293									
L _									
_294	MW-X-VAS								
	292-297 (<0.17 U ppl								
_295	7/2/2019 14:45	- /							
	14.40								
296									
					(297.4 - 324.0')	이 [기	(297.4 - 324.0') 28	(297.4 - 324.0') 33 bags (18%)	
					Cemex #3 MESH (8x10)	네 [A]	bags	Note: Lapis Lustre Sand	
Abbrev	<i>r</i> iations: U	SCS = Unified	Soil C	lassificat	tion System, ft = feet, bgs	= below ground surface, a	amsl = above mean	sea level, GW = groundwater,	

AROADIS for natural and built assets				well Consti	-	Sheet: 16 of 21		
	07/31/2019			_Surface Elevation:	465.4 ft amsl	Well ID: MV	V-91-170, MW-91-320	
ate Completed:				_Shallow Well Elevation:	465.4 ft amsl			
•	<u>Cascade</u>			_Deep Well Elevation:	465.3 ft amsl	Client: PG&E		
-	Sonic Drilling	.,		_Northing (NAD83):	2103798.1		GW Remedy Phase 1	
	E. Ramos / S	-		_Easting (NAD83):	7616739.7	Location: <u>PG&E</u>	Topock, Needles, Californ	
-	O. Flores / L.	-		_Borehole Diameter:	6-12 inches		D0000750 0054	
	GJ/SM/CS		AM	_Water Level Start:	10.5 ft bgs	Project Number	: RC000753.0051	
	Grant Willford 417 ft bgs	1		_Development End Date: _Well Completion:	☐ 11/23/2019☐ Stick-up			
Тап Берин.				_ Well Completion.	△ Flusii Stick-up			
Groundwate Sample ID		Code Code		Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed	
_300301302303303303304305306307308309310311312311312313314315315316317318318319	Topock - Alluvium Deposits	SM		(297.4 - 324.0') Cemex #3 MESH (8x10)	(42.0 - 324.0') 10.0" — (42.0 - 324.0') 10.0" Borehole	(297.4 - 324.0') 28 bags	(297.4 - 324.0') 33 bags (18%) Note: Lapis Lustre Sand	

	1110-	DIS for natur built ass	ets		Well Constr	action Log		Sheet: 17 of 21		
Date St		07/31/2019			_Surface Elevation:	465.4 ft amsl	Well ID: MW-91-170, MW-91-320			
	•	09/23/2019			_Shallow Well Elevation:			•		
rilling		Cascade			_Deep Well Elevation:	465.3 ft amsl	Client: PG&E			
_	Method: Name:	Sonic Drilling E. Ramos / S		107	_Northing (NAD83): _Easting (NAD83):	<u>2103798.1</u> 7616739.7	Project: Final GW Remedy Phase			
Orilling		O. Flores / L.	-		Borehole Diameter:	6-12 inches	Location: PG&E Topock, Needles, Californ			
.ogger		GJ/SM/CS	-		_Water Level Start:	10.5 ft bgs	 Project Numbe	r: RC000753.0051		
Editor:	ditor: <u>Grant Willford</u>					<u> </u>				
Γotal D	epth:	417 ft bgs			_Well Completion:					
Depth (ft)	Groundwat Sample II			USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed		
_320		Topock - Alluvium Deposits	SM		(320.5 - 321.5') — Centralizer (297.4 - 324.0') Cemex #3 MESH — (8x10)	(300.8 - 320.8') 2" Sch 80 PVC (20-slot) Screen (42.0 - 324.0') 10.0" Borehole (320.8 - 323.2') Sump and End Cap	(297.4 - 324.0') 28 bags	(297.4 - 324.0') 33 bags (18% Note: Lapis Lustre Sand		
_324 _325 _326 _327						13				
		Topock - Alluvium Deposits	МН							
		Topock - Alluvium Deposits	SM		100					
		Topock - Alluvium Deposits	МН		(324.0 - 417.0') — Bentonite seal chips	(324.0 - 414.0') 6.0" Borehole	(324.0 - 417.0') 24.9 bags	(324.0 - 417.0') 34 bags (37% Note: Puregold Medium Chips, u >20% of the calculated volume to potential voids that formed du drilling		
335 336 337		Topock - Alluvium Deposits	МН							
	MW-X-VAS	Topock -	ML							
_338	337-342 (<0.17 U ppt 7/11/2019	Alluvium	-	100						
 _339	7/11/2019 11:30	Alluvium	ML							
		Deposits		600						

ARCA	DIS Design & C for natura built asset	Consultancy Il and ts		Well Consti	ruction Log	;	Sheet: 18 of 21			
oate Started: <u>(</u>)	07/31/2019 09/23/2019			_Surface Elevation: _Shallow Well Elevation:	465.4 ft amsl 465.4 ft amsl	Well ID: MV	N-91-170, MW-91-320			
rilling Co.:	Cascade			_Deep Well Elevation:	465.3 ft amsl	Client: PG&E				
rilling Method:	Sonic Drilling			_Northing (NAD83):	2103798.1	Project: Final GW Remedy Phase 1				
riller Name:	E. Ramos / S.	. Vasqu	ez	_Easting (NAD83):	7616739.7		E Topock, Needles, Californi			
	O. Flores / L.	-		_Borehole Diameter:	6-12 inches	<u></u>	•			
-	GJ/SM/CS	-	AM	_ _Water Level Start:	10.5 ft bgs	Project Numbe	r: RC000753.0051			
	Grant Willford			_ _Development End Date:	_					
	417 ft bgs			Well Completion:			_			
Groundwate Sample ID	Geologic Formation USCS Code USCS Class		USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed			
.340	Topock - Alluvium Deposits	ML								
342	Topock - Alluvium Deposits	GM				70				
343 	Topock - Alluvium SM Deposits			135						
	Topock - Alluvium Deposits	ML								
.348	Topock - Alluvium Deposits	MH								
349 350 351	Topock - Alluvium Deposits	ML		(324.0 - 417.0') — Bentonite seal chips	(324.0 - 414.0') 6.0" Borehole	(324.0 - 417.0') 24.9 bags	(324.0 - 417.0') 34 bags (37%) Note: Puregold Medium Chips, us >20% of the calculated volume of to potential voids that formed dur drilling			
.352	Topock - Alluvium Deposits	SW-SM								
	Topock - Weathered Bedrock - conglomerate	МН								
	Topock - Weathered Bedrock - conglomerate	ML								
	1.1	ML	1:1:1:1:1							

PARCADIS Design & Consultancy for natural and built assets		Well Consti	uction Log	Sheet: 19 of 21				
Date Started:	07/31/2019			_Surface Elevation:	465.4 ft amsl	Well ID: M	W-91-170, MW-91-320	
Date Completed	I: <u>09/23/2019</u>			_Shallow Well Elevation:		TAGILID. IVI		
Orilling Co.:	Cascade			_Deep Well Elevation:	465.3 ft amsl	Client: PG&	<u>E</u>	
Orilling Method:	Sonic Drilling			_Northing (NAD83):	2103798.1	Project: Final GW Remedy Phase 1		
Oriller Name:	E. Ramos / S	. Vasqı	ıez	_Easting (NAD83):	7616739.7	•	E Topock, Needles, Califorr	
Orilling Asst:	O. Flores / L.	Amaya	1	_Borehole Diameter:	6-12 inches		•	
ogger: <u>GJ / SM / CS / DC / AM</u>		AM	_Water Level Start:	10.5 ft bgs	Project Numbe	er: RC000753.0051		
Editor:	Grant Willford	d		_Development End Date:	11/23/2019			
Γotal Depth:	417 ft bgs			_Well Completion:	$oxed{ imes}$ Flush $oxed{ o}$ Stick-up			
Groundwa Sample	Oll rate	Geologic Formation USCS Code		Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed	
	Topock - Weathered Bedrock - conglomerate Topock - Weathered Bedrock - conglomerate Topock - Weathered Bedrock - donglomerate Topock - Weathered Bedrock - conglomerate Conglomerate Conglomerate Conglomerate	SM GW-GM		(324.0 - 417.0') — Bentonite seal chips	(324.0 - 414.0') 6. Borehole	bags	(324.0 - 417.0') 34 bags (379) Note: Puregold Medium Chips, > 20% of the calculated volume to potential voids that formed drilling	

PARCADIS Design & Consultancy for formal and built assets				Well Consti	uction Log		Sheet: 20 of 21			
Date Started:	07/31/2019			_Surface Elevation:	465.4 ft amsl	Well ID: M	W-91-170, MW-91-320			
Date Completed	: 09/23/2019			_Shallow Well Elevation:	465.4 ft amsl					
Orilling Co.:	Cascade			_Deep Well Elevation:	465.3 ft amsl	Client: PG&	<u>E</u>			
Orilling Method:	Sonic Drilling			_Northing (NAD83):	AD83): <u>2103798.1</u>	Project: Final GW Remedy Phase 1				
Oriller Name:	E. Ramos / S.	. Vasqı	ıez	_Easting (NAD83):	7616739.7	Location: PG&	E Topock, Needles, Californi			
Orilling Asst:	O. Flores / L.	Amaya	1	_Borehole Diameter:	6-12 inches					
_ogger:	GJ/SM/CS	/ DC /	AM	_Water Level Start:	10.5 ft bgs	Project Numbe	er: RC000753.0051			
Editor:	Grant Willford			_Development End Date:	11/23/2019					
Γotal Depth:	417 ft bgs			_Well Completion:	$oxed{ imes}$ Flush $oxed{ o}$ Stick-up					
Groundwa Sample II		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed			
	Topock - Weathered Bedrock - conglomerate	CL								
.389	Topock - Weathered Bedrock - conglomerate			(324.0 - 417.0') — Bentonite seal chips	(324.0 - 414.0') 6. Borehole	bags	(324.0 - 417.0') 34 bags (37% Note: Puregold Medium Chips, us >20% of the calculated volume of to potential voids that formed dur drilling sea level, GW = groundwat			

9/-	ARC4	DIS Design & for nature built asset	Consultancy al and ets		Well Consti	ruction Log	;	Sheet: 21 of 21		
	tarted:	07/31/2019			_Surface Elevation:	465.4 ft amsl	Well ID: MW-91-170, MW-91-320			
		: 09/23/2019			_Shallow Well Elevation:			·		
Drilling	Co.:	Cascade			_Deep Well Elevation:	465.3 ft amsl	Client: PG&E	<u> </u>		
)rilling	Method:	Sonic Drilling			_Northing (NAD83):	2103798.1	Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, Califor			
riller l	Name:	E. Ramos / S	. Vasqı	ıez	_Easting (NAD83):	7616739.7				
rilling	Asst:	O. Flores / L.	Amaya	l	_Borehole Diameter:	6-12 inches				
Logger: GJ/SM/CS/DC/AM			AM	_Water Level Start:	10.5 ft bgs	Project Numbe	r: RC000753.0051			
Editor: Grant Willford			_Development End Date:	_						
Total D		417 ft bgs			Well Completion:					
Depth (ft)	Groundwa Sample II		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed		
400			CL							
100		Topock - Weathered								
· –		Bedrock -	CL							
_401		conglomerate Topock -	-							
\dashv		Weathered	GC							
402		Bedrock - conglomerate								
\exists		Topock -		MM						
403		Weathered Bedrock -	ML							
		conglomerate	÷							
 404		Topock -	GC							
404		Weathered Bedrock -								
_		donglomerate	e							
405		Topock - Weathered	SM							
_		Bedrock -								
406		conglomerate	•							
		Topock -	01							
407		Weathered Bedrock -	CL			(324.0 - 414.0') 6.0" Borehole				
407		conglomerate	-			Borenole				
		Topock - Weathered	SM					(324 0 - 417 0') 34 hags (37%)		
408		Bedrock - conglomerate			(324.0 - 417.0')		(324.0 - 417.0') 24.9	(324.0 - 417.0') 34 bags (37%) Note: Puregold Medium Chips, us		
_		Quigiomeraty			Bentonite seal chips		bags	>20% of the calculated volume do to potential voids that formed dur		
409_		Tanaak						drilling		
		Topock - Weathered	GC							
_410		Bedrock - conglomerate								
		Johngromorate	1							
_				\$ C						
_411				10/XX						
412		_								
		Topock -								
413		Weathered	SM							
		Bedrock - conglomerate								
111										
_414	MW-X-VAS 412-417									
\dashv	(<0.17 U ppl 7/15/2019	b)								
415	12:43			HH						
. 4		Topock -		RHID		(414.0 - 417.0') 4.0" Borehole				
_416		Weathered Bedrock -	GM	174		<u> </u>				
l		conglomerate	•	6 D17						
417_				自						
		_	•		End of Boring at		•	•		
					417.0 'bgs.					
_418										
- 4										
_419										
					<u> </u>		amsl = above mean	sea level, GW = groundwat		
pb =	parts per l	billion, $U = not$	detect	ed abov	/e the laboratory reporting	g limit, NR = no recovery				

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sh	eet: 1 of	21
Date S	Started:	06/20/2	2019		Surface	Elevati	on: <u>465.4 ft amsl</u>	Borin	a No.	: <u>MW-91d</u>	
	-	ted: <u>07/31/</u>			Northing						
Drilling		<u>Casca</u>			Easting	•	•	Client:	PG&E		
Drilling					Total De	•	417 ft bgs	-		W Remedy Ph	
Drill Ri Driller			nic Truck Mou		Borehol			Location:	PG&E	Topock, Needle	es, California
Drilling			<u>nos / S. Vasq</u> res / L. Amaya		Samplin		Vater: <u>9.6 ft bgs</u> od: <u>4 Inch X 10 ft Core Barrel</u>	Project N	ımher	RC000753 004	 51
Logge			SM / CS / DC		Samplin	•		Tiojectiv	umber.	10000733.000	<i>)</i>
Editor:			Willford		Convert	-		-			
					T						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
1	96			Topock - Fil	I SP		(0.0 - 12.0') Topock - Fill; Poorly graded sand 5/3); fine grained to medium grained, angular mica; trace wood; dry; no odor			(0.0 - 7.0') Formation was collapsing at the surface during the installation of the 12-inch conductor casing. Used bentonite to stop the colloapse at the surface. Bentonite was mixed into the core during installation of the 12-inch casing to 7 ft bgs.	(0.0 - 177.0') 5100 gallons of water used; 1600 gallons of water recovered; 3500 gallons of water lost
8 -							(8'); trace clay; trace organics; no wood partic clay @ 8.0' bgs (5Y 4/1)	eles. 3.0" lens	e of fat	(8.0 - 17.0') Soft drilling, low recovery due to soft dregde sands	
 10 		No Sieve Samples Collected		•	5		(10'); moist; no clay		2	compacting or falling out of core barrel.	
11 12			•	X			(11'); wet			(11.0') Approximate Depth to Water.	
12	48						(12.0 - 19.0') No recovery (NR)				
13			1	i		$ \rangle / $					
14			MW-X-VAS-	i		$ \setminus $					
			12-17 (<0.033 U			$ \setminus / $					
15			ppb) 6/25/2019			$ \ \ $					
_			15:10	i	NR						
16			1	i		$ \wedge $					
<u> </u>				1		/					
17				4		/				(17.0 - 19.0')	
 18	24									No recovery, due to casing and core barrel dropping 2 ft. during clean out	
19	96			Topock - Fill	SW	*******	(19.0 - 36.5') Topock - Fill; Well graded sand brown / moderate yellowish brown (10YR 5/4) coarse grained, subangular to subround; little	; fine grained	ish to	to 17 ft. bgs. Heaving sands formation collapse observed on	
	viations	: USCS = I	Jnified Soil C	lassification	System	n, ft = fe	et, bgs = below ground surface, ams	sl = above r	nean se		groundwater,

AH	RC/	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		SI	neet: 2 of	21	
Date Star		06/20/2			Surface	Elevation:	465.4 ft ar	nsl	Boring No.	: MW-91d		
Date Com	-					g (NAD83):	<u>2103798.</u>		_			
Drilling Co		Cascac			-	(NAD83):	<u>7616739.</u>			3&E		
Drilling Me			•		Total De	-	417 ft bgs			GW Remedy Ph		
Drill Rig T Driller Nar			nic Truck Mou			e Diameter: o First Water	6-12 inche	es	_ Location: <u>PG&E</u>	Topock, Needle	es, California	
Drilling As			nos / S. Vasq es / L. Amaya		-	g Method:	_	0 ft Core Barrel	 _ Project Number:	RC000753 004	 51	
Logger:	331.		M / CS / DC			ig Interval:	Continuou			110000700.00	01	
Editor:		Grant V			•	ed to Well:		No	_			
	,			0 5								
Depth (ft) Recover	(ii) ;	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS		Soil Description		Drilling Notes	Drilling Fluid	
21	96					organ	cs; wet; no odd		9	(19.0 - 27.0') Soft drilling.		
3334353636	5	No Sieve Samples Jollected	MW-X-VAS- 32-37 (<0.033 U ppb) 6/26/2019 11:45	Topock - Fill	SW		j; increase orga	anics - Fluvial Deposits; Well	graded sand (SW):	(32.0 - 37.0') Heaving sands.		
39	36	11808 - 1	Inified Call C	Topock - Fluvial Deposits	SW	grayis suban trace wet; o (37');	h brown (10YR gular to round; round; little mic rganic odor no granules and r; trace granule	5/2); fine grained to ver little granules to very la a; coarser clast consists	y coarse grained, rge pebbles, round; s of quartz and basalt; subround to round	(38.0') Druring reaming with the 10-inch casing, the 12-inch conductor casing began to		

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	g		She	eet: 3 of	21
Date S	Started:	06/20	/2019		Surface	Elevation	on:	465.4 ft amsl	Borin	a No .	MW-91d	
Date C	Comple	ted: <u>07/31</u>	<u>/2019</u>		Northin	g (NAD	83):	2103798.1		.9	<u> </u>	
Drilling	Co.:	Casca	<u>ide</u>		Easting	(NAD8	3):	7616739.7	Client:	PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		_ Total Depth:			417 ft bgs	Project:	Final G\	N Remedy Ph	ase 1
Drill Ri	д Туре	: <u>Proso</u>	nic Truck Mou	<u>ınt</u>	_ Borehole Diameter:			6-12 inches	Location	PG&E 1	<u> Fopock, Needle</u>	es, California
Driller	Name:	E. Ra	<u>mos / S. Vasq</u>	uez	Depth to	o First V	Vater:	9.6 ft bgs				
Drilling	Asst:	<u>O. Flo</u>	<u>ores / L. Amaya</u>	a	Samplin	ng Meth	od:	4 Inch X 10 ft Core Barrel	Project N	lumber: <u>l</u>	RC000753.00	51
Logge	r:	<u>GJ / S</u>	SM / CS / DC	/ AM	Samplin	-		Continuous	-			
Editor:		<u>Grant</u>	Willford		Conver	ted to W	Vell:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
41 42 43 44 45 46 47	36				NR			47.0') No recovery (NR)	O		slip below ground surface. The 12-inch was advanced to 38 ft bgs to stablize the borehole. (42.0') Final depth of conductor casing after installing deeper to fix mud tub seal.	
48				Topock - Fluvial Deposits	SW		grayish subanç mica; d	48.2') Topock - Fluvial Deposits; Well brown (10YR 5/2); fine grained to very gular to round; trace granules to large processer clast composed of quartz; wet	/ coarse grai pebbles, rour	ned, id; trace		
49 50		No Sieve Samples Collected		Topock - Fluvial Deposits	GW		sand ((subang subang granite	50.5') Topock - Fluvial Deposits; Well GW); grayish brown (10YR 5/2); granul gular to round; some fine to coarse grai gular to round; trace mica; coarser clase and basalt; wet	les to small of ined sand, it composed	obbles,		
51 52 53	120		•	Topock - Fluvial Deposits	SW		gravel grained pebble	53.8') Topock - Fluvial Deposits; Well (SW); grayish brown (10YR 5/2); fine gd, subangular to subround; little granule, subangular to subround; trace round composed of granite and basalt; wet	rained to ver es to very lar	y coarse ge		
54 55 _ 56 57				Topock - Fluvial Deposits	SP		brown	57.0') Topock - Fluvial Deposits; Poorl (10YR 5/3); very fine grained to fine gra trace granules to very large pebbles, si	ained, subrou	and to		
58 58 59 60	120			Topock - Fluvial Deposits	SW		brown	62.2') Topock - Fluvial Deposits; Well (10YR 5/3); very fine grained to coarse nica; wet				

9/	ARC	ADI	IS	Design & Consultancy for natural and built assets		Во	ring	Log	9		She	eet: 4 of	21	
Date S	Started:	06/	/20/2	2019		Surface	Elevatio	n:	465.4 ft amsl	Bori	na No.:	MW-91d		
Date C	Comple	ted: <u>07/</u>	/31/2	2019		Northin	g (NAD8	3):	2103798.1			<u> </u>		
Drilling			scad	le		Easting	(NAD83	s):	7616739.7	Client:	PG&E			
Drilling				Drilling		•			·			W Remedy Ph		
Drill Ri				<u>ic Truck Mou</u>								Topock, Needles, California		
Driller				ios / S. Vasqu		Depth to First Water:			·					
Drilling				es / L. Amaya		. •			4 Inch X 10 ft Core Barrel	Project	Number: .	RC000753.005	51	
Logge				M/CS/DC/	AM	. •			Continuous					
Editor:		Gra	ant v	Villford		Conver	ed to We	ell:						
Depth (ft)	Recovery (in)	Sieve Sample		Groundwater Sample ID	Geologic Formation	SOSO	USCS Class		Soil Description			Drilling Notes	Drilling Fluid	
61 61 62					Topock - Fluvial Deposits	sw		(CO. O.	CO 51) Tanash Shuisi Danasita Dad					
63	120				Topock - Fluvial Deposits	SP	i r	orown mica; v		ined, round	d; tràce			
64656666686971717273	120	No Siew Samples Collecte	s	MW-X-VAS- 71-76 (<0.033 U	Topock - Fluvial Deposits	SW		gravel (grained subang	75.5') Topock - Fluvial Deposits; Well (SW); brown (10YR 5/3); very fine grain, subangular to round; little granules to ular to round; trace subangular to subrer clast composed of basalt, granite, and	ned to very very large ound; trace	coarse pebbles, mica;	(71.0 - 77.0') A foot of heaving sands in the casing resulted in the groundwater sample interval to be adjusted from 72 to 77 ft. bas to 71 to 76		
74757677777879	120			ppb) 6/27/2019 08:52	Topock - Fluvial Deposits Topock - Fluvial Deposits	SP	r ************************************	orown round; (77.0 -	77.0') Topock - Fluvial Deposits; Poorly (7.5YR 5/3); very fine grained to fine graterace mica; wet 83.5') Topock - Fluvial Deposits; Well (10YR 5/3); very fine grained to very colular to subround; trace mica; wet	ained, suba	d (SW);	bgs to 71 to 76 ft. bgs.		
80														

arted: omple Co.: Metho Type lame: Asst:	: <u>Proso</u>	/2019 ide Drilling		Surface Northing			Boring No.:	: MW-91d	
Co.: Metho Type Iame: Asst:	Casca d: Sonic : Proso	ide Drilling		-	~ (NIAD	1). 0400700.4		. IVIVV-JIG	
Metho Type lame: Asst:	d: <u>Sonic</u> : <u>Proso</u>	Drilling			J (INAD	3): <u>2103798.1</u>			
Type lame: Asst:	: <u>Proso</u>	•		Easting	(NAD8	: <u>7616739.7</u>	_ Client: PG&E		
lame: Asst:				Total De	epth:	417 ft bgs	_ Project: Final G	ase 1	
Asst:	E. Rai	<u>nic Truck Mou</u>	int	Borehol	e Diam	er: <u>6-12 inches</u>	_ Location: PG&E	Topock, Needl	es, California
		mos / S. Vasqı	uez	Depth to	First V	ater: 9.6 ft bgs			
	<u>O. Flo</u>	res / L. Amaya	1	Samplin	g Meth	d: 4 Inch X 10 ft Core Barrel	_ Project Number:	RC000753.00	51
	<u>GJ/</u> S	SM / CS / DC /	'AM	Samplin	g Interv	l: <u>Continuous</u>	_		
ditor: <u>Grant Willford</u>				Convert	ed to W	ell: 🗵 Yes 🗌 No			
Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
120			Topock - Fluvial Deposits	SW			1 9		
			Topock - Fluvial Deposits	sw		ravel (SW); brown (10YR 5/3); very fine gra rained; little granules to very large pebbles ace subround to round; trace mica; coarse ranite, basalt, and quartz; wet; granules an ith depth	ined to very coarse subangular to round; clasts composed of d pebbles increase		
108	No Sieve Samples Collected	•	Topock - Fluvial Deposits	SW-SM		SW-SM); brown (10YR 5/3); very fine graine rained, subangular to round; little granules ubround to round; little silt; trace mica; coa	ed to very coarse to large pebbles,		
			Topock - Fluvial Deposits Topock - Fluvial Deposits	GW-GM		ilt and sand (GW-GM); brown (10YR 5/3); obbles, subangular to round; and very fine and, subangular to subround; little silt; tracomposed of metadiorite; wet 34.0 - 95.0') Topock - Fluvial Deposits; Pootrong brown (7.5YR 4/6); very fine grained by the substance of the substance	granules to small to very coarse grained e mica; coarser clasts orly graded sand (SP); to fine grained,		
			Fluvial Deposits	sw		95.0 - 96.0') Topock - Fluvial Deposits; We ravel (SW); brown (10YR 5/3); very fine gra	Il graded sand with ained to medium		
				NR		ebbles, subround to round; trace subround ace mica; coarser clasts composed of met	to round; trace silt;		
96			Topock - Fluvial Deposits	SW		06.0 - 97.0') No recovery (NR) 07.0 - 104.0') Topock - Fluvial Deposits; Word (10YR 5/3); very fine grained to very dubangular to subround; trace granules to subround to round; trace mica; wet	coarse grained, `		
	120 (iu) 108	Sieve Sample ID 120 No Sieve Samples Collected	Sieve Sample ID Groundwater Sample ID 120 No Sieve Samples Collected 108	Sieve Sample ID Groundwater Sample ID Topock - Fluvial Deposits	Sieve Sample ID No Sieve Samples Collected No Sieve Samples Collected Topock - Fluvial Deposits SW	Sieve Sample ID Sieve Sample ID Sieve Sample ID Topock-Fluvial Deposits No Sieve Samples Collected Topock-Fluvial Deposits Topock-Fluvial SW-SM	Sieve Sample ID Groundwater Sample ID Soil Description Soi	Sieve Sample D Groundwater See S	Converted to Well:

9/-	ARC	ADI	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	neet: 6 of	21
Date S	tarted:	06/2	20/2019		Surface	Elevati	ion: <u>465.4 ft amsl</u>	Boring No.	· MW-91d	
Date C	omple	ted: <u>07/3</u>	31/2019		Northing	g (NAD	83): <u>2103798.1</u>	_ Dorning No.	. <u>IVIVV-514</u>	
Drilling	Co.:	<u>Cas</u>	cade		Easting	(NAD8	33): <u>7616739.7</u>	_ Client: PG&E		
Drilling	Metho	od: <u>Son</u>	ic Drilling		Total De	epth:	417 ft bgs	_ Project: Final G	W Remedy Ph	ase 1
Drill Ri	д Туре	: <u>Pros</u>	sonic Truck Mou	ınt	Borehol	e Diam	eter: 6-12 inches	_ Location: PG&E	Topock, Needle	es, California
Driller I	Name:	<u>E. F</u>	amos / S. Vasq	uez	Depth to	First V	Nater: 9.6 ft bgs	_		
Drilling	Asst:	<u>O. F</u>	lores / L. Amaya	<u>a</u>	Samplin	g Meth	od: 4 Inch X 10 ft Core Barrel	_ Project Number:	RC000753.005	51
Logge	r:	<u>GJ</u>	/SM/CS/DC	/ AM	Samplin	g Inter	val: <u>Continuous</u>	<u> </u>		
Editor:		<u>Gra</u>	nt Willford		Convert	ed to V	Vell: ⊠ Yes ☐ No			
Depth (ft)	Recovery (in)	Sieve Sample I	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
	96			Topock - Fluvial Deposits Topock - Fluvial Deposits	sw		(104.0 - 105.0') Topock - Fluvial Deposits; \ gravel (SW); dark grayish brown / dark yello 4/2); very fine grained to very coarse grained	wish brown (10YR d, subround to round;	(102.0 - 105.0') Tight formation.	
105 106 107 108 109	84		MW-X-VAS- 107-112 (<0.033 U	Topock - Fluvial Deposits Topock - Fluvial Deposits	SW		and granules to very large pebbles, subanguabround to round; trace silt; trace mica; co of metadiorite; wet; fractured cobbles/ bould formation (105.0 - 107.0') Topock - Fluvial Deposits; V (SW); brown (10YR 5/3); very fine grained to subangular to subround; little granules to sr to round; trace silt; trace mica; wet (107.0 - 108.0') Topock - Fluvial Deposits; V sand (GW); brown (10YR 4/3); granules to subround to round; some very fine to very coubangular to round; trace silt; trace mica; composed of metadiorite, granite, basalt, query (108.0 - 112.0') Topock - Fluvial Deposits; S (SM); dark grayish brown / dark yellowish brine grained to coarse grained, subangular to	arser clasts composed der fragments within Well graded sand o very coarse grained, mall pebbles, subround Well graded gravel with very large pebbles, parse grained sand, coarse clasts uartz; wet Silvy sand with gravel own (10YR 4/2); very to round; some		
110 _111_ _112_		No Sieve Samples Collected	ppb) 6/27/2019 15:04	Topock - Fluvial Deposits	SM		granules to very large pebbles, subround to subround to round; trace mica; trace organicoarser clasts composed of metadiorite and cobble/boulder fragments observed (109') brown (10YR 5/3); little silt; no organi	cs; wet; organic odor; d granite, pulverized cs; increase sand	(112.0 - 117.0')	
113 114			MW-X-VAS- 112-117	Topock - Fluvial Deposits	GW		(112.0 - 114.0') Topock - Fluvial Deposits; Nand (GW); dark gray (10YR 4/1); very fine cobbles, subangular to round; little very fine sand, subangular to round; trace silt; trace coarser clasts composed of metadiorite; we	grained to small to very coarse grained clay; trace organics; tr; organic odor	Rough drilling, collect gorundwater sample across fluvial / alluvium contact.	
115 116	60		(<0.033 U ppb) 6/28/2019 09:56	Topock - Fluvial Deposits	SM		(114.0 - 116.0') Topock - Fluvial Deposits; S (SM); brown (10YR 4/3); very fine grained to subangular to round; some granules to very subangular to round; little silt; trace subrour mica; trace organics; wet; organic odor; coa of metadiorite	very coarse grained, large pebbles, nd to round; trace		
110 117 118 119	120			Topock - Alluvium Deposits	SM		(116.0 - 157.0') Topock - Alluvium Deposits (SM); brown (7.5YR 4/4) trace red / modera 4/6); very fine grained to very coarse graine some granules to very large pebbles, anguls silt; trace subangular; trace mica; coarser cometadiorite; wet; mottled (117') reddish brown / moderate brown (5YI moderate reddish brown (10R 4/6); some si granules and pebbles, no cobbles (118'); little silt; increase in sand, weathered	te reddish brown (10R d, angular to subround; ar to subangular; little lasts composed of R 4/4) little red / lt; decrease in		
120			11-36-4-0-3-0	: :: :::	- 04		pot has = below ground surface on		11 (0)4/	

1	4KC	ADIS	for natural and built assets		Во	ring L	og		Shee	et: 7 of	21
Date S						Elevation:		Borir	na No.:	MW-91d	
	-	ted: <u>07/31/2</u>				g (NAD83)		_			
Drilling 		Cascad			_	(NAD83):		_ Client:	PG&E		
Drilling					Total De	-	417 ft bgs	_ Project:		V Remedy Ph	
Drill Ri			<u>iic Truck Mou</u> nos / S. Vasqı			e Diamete	r: <u>6-12 inches</u> ter: <u>9.6 ft bgs</u>	_ Location	: PG&E I	opock, Needle	es, Calitornia
Drilling			es / L. Amaya		-	g Method:	_	Project N	Jumber: F	RC000753.00	 51
Logge			<u>M / CS / DC /</u>		-	ig Interval:		_ 1 10,0011	• • • • • • • • • • • • • • • • • • •	10000700.00	<u>, , </u>
Editor:		Grant V				ed to Well					
	2			is E	Τ						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	Class	Soil Description			Drilling Notes	Drilling Fluid
121	120										
_128	120	No Sieve Samples Collected	•	Topock - Alluvium Deposits	SM		28'); some silt; little granules to very large bangular; decrease in sand	pebbles, angu	ular to		
133 134 135 136						(13	34'); little silt; increase sand, increase in g	ıranules and p	ebbles		
_137										(127 Ol) D	
-										(137.0') During reaming with the 10-inch	
138						(13	88'); some granules to very large pebbles,	angular to		casing, drilling	
-	120					sul	pangular; slight decrease in silt	J		became difficult due to	
139										increased friction.	
										Reinstalled 6-casing and	
140 Abbrey	viations	: USCS = L	Inified Soil CI	assification	n Sveten	<u> </u>	bgs = below ground surface, am	ısl = ahove	mean sea	started flushing	 rroundwater

9/	AKC	ADIS	for natural and built assets		Во	ring Lo	g		Sh	eet: 8 of	21
Date S	Started:	-			Surface	Elevation:	465.4 ft amsl	Borir	na No.:	: <u>MW-91d</u>	
Date C	•					g (NAD83):	2103798.1			<u></u>	
Drilling		<u>Casca</u>			_	(NAD83):	7616739.7	_ Client:	PG&E		
Drilling			•		Total D	-	417 ft bgs	_ Project:		al GW Remedy Phase 1	
Drill Ri			nic Truck Mou			le Diameter:	6-12 inches	_ Location: PG&E Topock, Needles, Ca			es, California
Driller Drilling			<u>nos / S. Vasq</u> res / L. Amaya			o First Water ng Method:	4 Inch X 10 ft Core Barrel	 Project Number: <u>RC000753.0051</u>			 .1
Logge			SM / CS / DC		-	ng Interval:	Continuous	_ i iojecti	vuilibei.	110000733.000	<i>)</i>
Editor:			Willford	7 (())	-	ted to Well:		_			
				0 5							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
141 142 143 	120							Ç		10-inch over the 6-inch.	
144											
145							7,3				
146											
147											
148				Topock - Alluvium Deposits	SM	(148')	; and silt; moist to wet; decrease in san	nd			
149		No Sieve		Deposits			,				
150		Samples Collected									
151			•							(151.0 - 157.0') Heaving sands	
152	120									came into casing during clean out to set the sample	
153										screen from 152 to 157 ft. bgs. Sampler	
154			MW-X-VAS- 152-157 (<0.17 U							screen was clogged with sand and had to	
155			ppb) 6/29/2019 09:19			(155')	; some granules to very large pebbles,	angular to		be reinstalled.	
156						suban	gular; little silt; wet; increase in sand	-			
157				L							
158	72				NR	(157.0	7 - 161.0') No recovery (NR)			(157.0 - 167.0') Loose sands fell out of core barrel into hopper when bagging core, 165 to 167 drlling got hard.	
160		LICOS :									
Abbre	viations	s: USCS = l	Jnitied Soil Cl	assitication	n Systen	n, tt = feet, bo	gs = below ground surface, am:	si = above	mean se	a level, GW = g	groundwater,

4/	4K(ADIS	for natural and built assets		Bo	ring	Log		She	et: 9 of	21	
Date S					Surface			Borir	na No.:	MW-91d		
	•	ted: <u>07/31/2</u>			Northin		•	_				
Drilling		Cascac			Easting	•	•	Client: PG&E				
Drilling			<u> Drilling</u> iic Truck Mou		Total De Boreho	•	•	,		GW Remedy Phase 1		
Drill Ri Driller			nos / S. Vasq				Water: 9.6 ft bgs	•			opock, Needles, Calliornia	
Drilling			es / L. Amaya		Samplin		_	- Proiect N	Number: F	RC000753.00	 51	
Logge			M/CS/DC		Samplir	-		,	_			
Editor:		Grant V	Willford		Conver	-						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid	
					NR	X						
161							(161.0 - 167.0') Topock - Alluvium Deposits;	Sandy lean c	lay with			
 162							gravel (CL); brown (7.5YR 4/4); medium plas to very coarse grained sand, angular to subar	ngular: little d	ranules			
102							to very large pebbles, angular to subangular; clasts composed of metadiorite; moist; hard;	blocky; some	rser			
163							meta-diorite clasts are weathered					
	72											
164				Topock - Alluvium	CL							
-				Deposits				•				
165												
-												
166												
407												
167							(167.0 - 174.5') Topock - Alluvium Deposits;			(167.0 - 177.0') Smooth drilling.		
 168							gravel (CL); reddish brown / moderate brown plasticity; some very fine to very coarse grain	ed sand, ang	ular to	Sillootti uliiliig.		
							subangular; little granules to very large pebbl subangular; little silt; coarser clasts compose	ed of metadic				
169							moist; some meta-diorite clasts are weathere	ea				
_												
170		No Sieve Samples										
-		Collected		Topock -	CL							
171				Alluvium Deposits	CL							
l												
172	120											
173												
174							(173.5'); moist to wet					
_												
175							(174.5 - 177.0') Topock - Alluvium Deposits; reddish brown / moderate brown (5YR 4/4); v	ery fine gràir	ned to			
				Topock -			very coarse grained, angular to subround; sol to medium pebbles, angular to subangular; lit	ttle clay; trac	granules e large			
176				Alluvium Deposits	SM		to very large pebbles, angular to subangular;	wet				
-												
177				Topock -	GP		(177.0 - 177.5') Topock - Alluvium Deposits;	Poorly grade	d gravel	(177.0 - 187.0')	(177.0 - 327.0')	
				Alluvium Deposits	<u> </u>	 	(GP); boulders; wet (177.5 - 180.5') No recovery (NR)			Normal drilling.	5395 gallons of water used:	
178						$ \cdot $	(o 155.5) No 1550 York (NIT)				4465 gallons of water	
170	84				NR	$ \ \ $					recovered; 930 gallons of water	
179						$ / \rangle $					lost	
180						/ \						
	viations	: USCS = L	Jnified Soil CI	assification	n Systen	n, ft = fe	eet, bgs = below ground surface, ams	sl = above	mean sea	level, GW =	groundwater,	

9/	١RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	9		She	et: 10 of	21
Date S	tarted:	06/20	/2019	_	Surface	Elevati	on:	465.4 ft amsl	Borine	ı No .	MW-91d	
Date C	omple	ted: <u>07/31</u>	/2019		Northing	g (NAD	83):	2103798.1	Borni	g 110	<u> </u>	
Drilling	Co.:	Casca	ade		Easting	(NAD8	3):	7616739.7		PG&E		
Drilling			Drilling		Total Depth:			417 ft bgs	_ •		V Remedy Ph	
Drill Ri			nic Truck Mou					6-12 inches	_ Location:	PG&E T	opock, Needle	es, California
Driller I			mos / S. Vasq		Depth to First Water:				-		2000250	
Drilling			ores / L. Amaya		Samplin	•		4 Inch X 10 ft Core Barrel	_ Project Nu	ımber: <u>I</u>	RC000753.00	51
Loggeı Editor:								Continuous	_			
Luitoi.		Giani	VVIIIIOIU		T	Ed to v	v CII.	N 163 NO				<u> </u>
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
				L	NR	\times						
181 182 183 184 185 186	84		MW-X-VAS- 182-187 (<0.17 U ppb) 6/29/2019 15:28	Topock - Alluvium Deposits	SM		(SM); r to very mediur subang subang (183.5' subang	- 187.0') Topock - Alluvium Deposits; eddish brown / moderate brown (5YR coarse grained, angular to subround; in pebbles, subangular to subround; in pebbles, subangular to subround; it race clay; trace large to very largular; wet); little granules to very large pebbles, jular; little clay); little granules to large pebbles, angulary	4/4); very fine gittle granules to the silt; trace ge pebbles	grained o		
187	120	No Sieve Samples Collected		Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits			gravel coarse large p compoo pebble (188.0 (ML); rocoarse pebble compoo (189.5 (SM); r 3/4); we some s subrou moist t (190.0 gravel very fin granule very stit (191.5	- 189.5') Topock - Alluvium Deposits; sed (2.5YR 4/6); medium plasticity; sor grained sand, angular to subround; lit s, angular to subangular; little clay; cosed of metadiorite; moist to wet; very s - 190.0') Topock - Alluvium Deposits; eddish brown (2.5YR 4/4) to dark redd ry fine grained to very coarse grained, silt; little granules to very large pebbles ond; little clay; coarser clasts composer o wet - 191.5') Topock - Alluvium Deposits; (CL); reddish brown (2.5YR 4/4); medie to very coarse grained sand, angular es to small pebbles, angular to subround (192.5') Topock - Alluvium Deposits; 192.5') Topock - Alluvium Deposits; 192.5'	fine grained to clay, little granu (it; coarser clast on metadiorite Sandy silt with ne very fine to value granules to arser clasts stiff Silty sand with lish brown (2.5°, angular to subs, angular to d of metadiorite Sandy lean claim plasticity; sr to subround; ind; little silt; me Sandy elastic s	gravel gravel yR gravel yR gravel yR gravel yR ground; ep; gravel gravel yR gravel yR gravel yR gravel yR gravel g	(187.0 - 197.0') Normal drilling.	
	120			Topock - Alluvium Deposits Topock - Alluvium Deposits	ML		fine to granule coarse (192.5 (ML); li very co mediur compo (197.0 (ML); ri mediur mediur	(MH); reddish brown (2.5YR 4/4); high very coarse grained sand, angular to sub r clasts composed of metadiorite; mois - 197.0') Topock - Alluvium Deposits; ght red (2.5YR 7/6); medium plasticity arse grained sand, angular to subroun pebbles, angular to subangular; little sed of metadiorite; moist; green staining - 199.0') Topock - Alluvium Deposits; eddish brown (2.5YR 4/4); low plasticity argained sand, angular to subangular; little arse grained sand angular to subangular; little arse grained sand angular to subangular; little arse grained sand angular to subangular;	subround; little cound; little cound; little clay st; very stiff Sandy silt with r; some very find; little granule e clay; coarser ing Sandy silt with ty; some very filittle granules to e clay; trace coarser country in the country silts with ty; some very filittle granules to e clay; trace coarser country silts with ty; some very filittle granules to e clay; trace coarser country silts with ty; some very filittle granules to e clay; trace coarser country silts with the country	gravel et o construction of co		
200	iations	· 11808 -	Unified Soil Cl	Topock - Alluvium Deposits	CL		gravel very fin	- 202.0') Topock - Alluvium Deposits; (CL); reddish brown (2.5YR 4/4); medi e to very coarse grained sand, angular	ium plasticity; s r to subround; l	some little	a lovel GW =	groundwater

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	\$	Sheet: 11 of	21
	Started:			•	Surface		-	Boring No	o.: <u>MW-91d</u>	
		ted: <u>07/31/</u>			Northin	- '	•			
Drilling		Casca			Easting	•	•	Client: PG&		
_	Metho		Drilling		Total De Borehol	•	417 ft bgs	-	GW Remedy Ph E Topock, Needle	
	ig Type Name:		<u>nic Truck Mou</u> nos / S. Vasqı				eter: <u>6-12 inches</u> Vater: <u>9.6 ft bgs</u>	Location. PG&	E TOPOCK, Needi	es, Calliornia
Drilling			res / L. Amaya		Samplin		_	Proiect Numbe	r: RC000753.00	 51
Logge			SM / CS / DC /		Samplin	•				-
Editor		Grant '	Willford		Convert	ed to V	/ell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
 201 				Topock - Alluvium Deposits	CL		granules to large pebbles, angular to subroun clasts composed of metadiorite; moist; very si			
202 203 204 205 206 207	120						(202.0 - 227.0') Topock - Alluvium Deposits; S(SM); red (2.5YR 4/6); very fine grained to ver angular to subround; some silt; little granules angular to subround; little clay; coarser clasts metadiorite; moist (204'); little silt; trace clay; moist to wet (204.5'); some silt; trace very large pebbles, s subangular; moist to wet (206.3'); little silt; no cobbles, increase in sand	y coarse grained, to large pebbles, composed of		
208	108	No Sieve Samples Collected	MW-X-VAS- 207-212 (<0.17 U ppb) 6/30/2019 13:28	Topock - Alluvium Deposits	SM		(209'); some silt; moist to wet; no clay, weather pebbles (210.5'); little clay; moist to wet; decrease in s	G .	(207.0 - 217.0') Normal drilling, approximately 6 inchs of sample fell out of core barrel at ~208.5 during bagging, material was the same as in the core. Groundwater sample interval 207 to 212 ft. bgs screened across sandy zone 207 to 209 ft bgs.	

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	et: 12 of	21
Date S						Elevation:	465.4 ft amsl	Borin	a No.:	MW-91d	
	-	ted: <u>07/31/2</u>			-	g (NAD83):	2103798.1				
Drilling		Cascac			-	(NAD83):	7616739.7	_ Client:	PG&E		
Drilling			<u> Drilling</u> ic Truck Mou		Total De	epth: e Diameter:	417 ft bgs	_ Project:		V Remedy Phopock, Needl	
Drill Ri			nos / S. Vasqu			e Diameter: o First Water	6-12 inches	_ Location:	PG&E I	ороск, ічееці	es, Calliornia
Drilling			<u>es / L. Amaya</u>		-	g Method:	4 Inch X 10 ft Core Barrel	Project N	umber: F	RC000753.00	 51
Logge			M / CS / DC /		-	g Interval:	Continuous				<u></u>
Editor:		Grant V			-	ed to Well:					
	2			is E	1						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
	114			Topock - Alluvium Deposits	SM						
228 229 230 231 232 232 233 234 235 236 237 	111.6	No Sieve Samples Collected	•	Topock - Alluvium Deposits	SM	reddis graine pebble comp granu (230')	p- 240.0') Topock - Alluvium Deposits; h brown (2.5YR 4/4); very fine grained do, angular to subround; some silt; little as, angular to subangular; trace clay; cosed of metadiorite; moist; iron oxide ses and pebbles increase in silt, decrease in sand is moist to wet	to very coarse granules to la coarser clasts	arge	(237.0 - 237.0') Normal drilling. (232.0 - 237.0') Hard drilling. (237.0 - 245.0') Normal drilling.	
_238 239 	114						re = helew ground surface com				

9/	AKC	ADIS	for natural and built assets		Во	ring	Log			She	et: 13 of	21
Date S					Surface	Elevat		.4 ft amsl	Borir	na No.:	MW-91d	
	•	ted: <u>07/31/</u>			Northin		,	3798.1	_			
Drilling		<u>Casca</u>			Easting		•	6739.7	_ Client:	PG&E		
Drilling					Total D	•		ft bgs	_ Project:		V Remedy Ph	
Drill Ri Driller			<u>nic Truck Mou</u> mos / S. Vasq		Boreho		eter: <u>6-12</u> Vater: <u>9.6 f</u>	? inches	_ Location	: PG&E I	opock, Needl	es, California
Drilling			res / L. Amaya		Samplin			ch X 10 ft Core Barrel	– Project N	Jumher: F	RC000753.00	 51
Logge			SM / CS / DC		Samplir	-		tinuous	_ 1 10,00011	tumber. <u>I</u>	10000100.00	01
Editor:			Willford	, , , , , ,	Conver	-			_			
	>			ی ج								
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS		Soil Description			Drilling Notes	Drilling Fluid
241 242 243 244 245	114			Topock - Alluvium Deposits	SM		(SM); reddish grained, angu large pebbles composed of (243.5 - 244.0 (244.5'); little	D') Topock - Alluvium Deposits; brown (2.5YR 4/4); very fine gr ilar to subround; some silt; little ta, angular to subangular; trace c metadiorite; moist; weathered go'); dry Silt; wet; iron oxide staining; income	rained to very granules to v clay; coarser of granules and	coarse very clasts pebbles		
245 246 			MW-X-VAS- 245-255				(247.0, 254.0	N Torock Allusium Donosite:	Silty cand (Si	M)-	(245.0 - 247.0') Hard drilling.	
248	120	No Sieve Samples Collected	243-255 (<0.033 U ppb) 7/1/2019 13:35	Topock - Alluvium Deposits	SM		reddish browr grained, angu large pebbles coarser clasts granules and		to very coarsi granules to v ay; trace mica sist; weathered	e very a;	(247.0 - 257.0') Normal drilling.	
255 256 257 258 259	120			Topock - Alluvium Deposits	SM		(SM); reddish to very coarse granules to ve moist; mottled pebbles (256'); wet	5') Topock - Alluvium Deposits; brown (2.5YR 4/4) little (7.5R e grained, angular to subround; ery large pebbles, angular to sul d; iron oxide staining; weathered	4/6); very fine some silt; littl bangular; trac d granules an	e grained le ce clay; id	(257.0 - 267.0') Normal drilling, water was observed to contain more bubbles during drilling. Possibly due to increased	
260					SM		(259.5 - 269.0)') Topock - Alluvium Deposits;	Silty sand (SI	M);	specfic conductivity or	
	viations	· USCS =	Unified Soil C	assification	n System	1 ft = fe	et has = ha	elow around surface am	sl = ahove	mean sea		aroundwater

Date Started: 08/20/20/19 Surface Elevation: 465.4 ft.amsl. Boring No.:	9/	4RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	g			She	eet: 14 of	21
Drilling Case. Casecade Easing (NADB3): 71616739.7 Client: PGSE Drilling Mathod: Sonic Drilling Case. Sonic Sonic Drilling Case. Sonic	Date S	Started	06/20/2	2019		Surface	Elevat	ion:	465.4 ft ams	l	Borii	na No.:	MW-91d	
Dalling Method: Dalling Method: Dalling Assider Prospect Fund GW Remedy Phase 1 E. Remos / S. Vasquez Dalling Assider Depth to First Water: Depth to First Water: 9.6 ft bgs Dalling Assider Depth to First Water: 9.6 f	l l	-									_			
Dollie Name: Cager E, Ramos / S, Vasaucuz D, Elores / L, Amaya Cager Semple D Sempl	_					_	•	3):			_			
Drilling Assts D. Glores / L. Amaya. Sampling Method: Sampling of the Constitutions. Grant Willford Converted to Well: Yes No Converted to Well: Yes No Drilling Assts. D. Glores / L. Amaya. Sampling Method: Sampling Method: Sampling Method: Sampling Method: Sampling Interval: Constitutions. Grant Willford Converted to Well: Yes No Drilling Assts. Sampling Interval: Constitutions. Grant Willford Converted to Well: Yes No Tropock Sample D. Groundwater Sampling Method: No statistical sampling Method: Sampling Method: No statistical sampling Method: Sampling	_			•			-		-		-		-	
Dalling Asst Cores / Lamaya Sampling Interval: Continuous											_ Location	: <u>PG&E</u>	l opock, Needle	es, California
Logger GALWAN / S. I DC / AM Sample D Converted to Well: Ves No Serve Sample D Sam				=		-			-	ft Coro Barrol	- Project N		PC000753 004	51
Editor: Grant-Willford Converted to Well: Yes No Service Service Converted to Well: Yes No Soil Description Converted to Well: Yes No Soil Description Defiling Notice Defiling Fluid Togodo Service Definition Togodo Service Definit	_			-		-	-			it Core Darrei	_ Flojecti	Nullibel.	KC000733.000	J I
Simple ID Groundwater Sample ID Groundwater					7 (17)		•			No	_			
261 261 262 263 263 266 266 267 268 268 270 280 281 282 283 284 285 286 286 287 288 288 288 288 288 288 288 288 288				1		1								
261 261 261 261 261 261 261 261 261 261	Depth (ft)	Recovery (in)			Geologic	USCS	USCS		(0.5)(0.4)	•				Drilling Fluid
120		120	No Sieve	Sample ID	Topock - Alluvium Deposits	SM	Sn P	(269.0 (SM); r grained granule little clamoist;	- 327.0') Topock angular; little day; mottled; weathered to very coarse ges to very large pay; trace angular; mottled; weathered to very coarse ges to very large pay; trace angular; mottled; weathered to very coarse ges to very large pay; trace angular; mottled; weathered to very large pay.	- Alluvium Deposits; 357R 4/4) some (7.5R and pebbers) and pebbers and pebbers and granules to small of granules t	Silty sand wi ge pebbles, a posed of met oles Silty sand wi R 4/6); very fil bround; som bangular; soi osed of meta cobbles	th gravel ne e e me silt; adiorite;	(267.0 - 277.0') Normal drilling, during reaming with 10-inch removed 6-inch casing and attempted to dry drill due to reduce water	
		120												

9/	ARC	ADIS	for natural and built assets		Во	ring L	₋og	Sh	neet: 15 of	21
Date S	Started:	06/20/2	2019		Surface	Elevation	n: 465.4 ft amsl	Boring No.	· MW-91d	
Date C	Comple	ted: <u>07/31/2</u>	2019		Northing	g (NAD83	3): <u>2103798.1</u>	_ Dorning No.	. <u>IIIIV-514</u>	
Drilling		Cascad	le			(NAD83)	7616739.7	_ Client: <u>PG&E</u>		
_	Metho		-		Total De	-	417 ft bgs	-	SW Remedy Ph	
	ід Туре		ic Truck Mou			e Diamete		_ Location: <u>PG&E</u>	Topock, Needle	es, California
	Name:		ios / S. Vasq		-		ater: 9.6 ft bgs		D00007F0 000	- 4
Drilling			es / L. Amaya M / CS / DC /		-	ig Methoo ig Interval		_ Project Number:	RC000753.008	01
Logge Editor:		Grant V		AIVI	-	ed to We		_		
		<u>Orant v</u>	VIIIIOIG		1					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	Class	Soil Description		Drilling Notes	Drilling Fluid
 _281 _282									(281.0 - 287.0') Rough drilling.	
283							200 0 005 00 4			
-	120						283.0 - 285.0'); dry			
284										
285										
_286										
_287						(2	287') red / moderate reddish brown (10R 4/	6) and reddish brown	(287.0 - 297.0')	
						[::]::[::[2	2.5YR 4/4); trace clay; dry to moist; decreas and		Rough drilling.	
_288										
289							· ·			
		No Sieve		Topock -						
230_		Samples Collected		Alluvium Deposits	SM					
						(2	291'); decrease in silt, increase in sand			
292	120									
	120									
293										
						(2	293'); moist to wet			
294			MW-X-VAS- 292-297							
<u> </u>			(<0.17 U							
295			ppb) 7/2/2019							
			14:45							
296										
_297									(297.0 - 307.0')	
									Rough drilling.	
298										
	120									
299										
						(2	299.5') reddish brown (2.5YR 4/4) some red	d / moderate reddish		
300 Abbre	viations	: USCS = U	Inified Soil CI	assificatio	n Systen		t. bas = below around surface. am		ealevel GW = 0	rroundwater

						_	Log	9			She	eet: 16 of	21
Date	Started:	06/20/2	019		Surface	Elevati	on:	465.4 ft amsl		Boring	No.:	MW-91d	
	-	ted: <u>07/31/2</u>			Northing			2103798.1					
	g Co.:	<u>Cascad</u>			Easting	•	3):	7616739.7			G&E		
	g Metho				Total De	-		417 ft bgs		-		N Remedy Pha	
	Rig Type		ic Truck Mou		Borehol			6-12 inches		Location: P	G&E I	Fopock, Needle	es, California
	· Name: g Asst:		os / S. Vasq es / L. Amaya		Samplin			9.6 ft bgs 4 Inch X 10 ft Core	a Rarrel	Project Num	her l	RC000753.005	51
Logg	-		M / CS / DC /		Samplin	-		Continuous	C Darrer	, i rojectivan	ibci. <u>i</u>	110000133.000	<i>)</i>
Edito		Grant V		7 (17)	Convert	-				•			
				0 5									
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	h		Description			Drilling Notes	Drilling Fluid
	- 120 - 120 - 120	No Sieve Samples Collected		Topock - Alluvium Deposits	SM		(303'); little sillittle s	ittle granules to very large; increase sand	ge pebbles, an	gular to subanguangular to o moist; decreased / moderate	ular;	(307.0 - 317.0') Rough drilling.	
318 - _319_ - - 320	120											5	

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet: 17 of	21
Date S	Started:	06/20/	/2019		Surface	Elevat	ion: 465.4 ft amsl	Boring	No.: <u>MW-91d</u>	
Date C	Comple	ted: <u>07/31/</u>	<u>/2019</u>		Northing	g (NAD	83): <u>2103798.1</u>	Donnig	140 <u>14144-514</u>	
Drilling	J Co.:	<u>Casca</u>	ıde		Easting	(NAD8	33): <u>7616739.7</u>	Client: Po	G&E	
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	417 ft bgs	Project: Fi	<u>nal GW Remedy Ph</u>	ase 1
Drill Ri	ig Type		<u>nic Truck Mo</u>		Borehol			Location: Po	G&E Topock, Needle	es, California
	Name:		mos / S. Vasq	•	•		Water: <u>9.6 ft bgs</u>	-		
Drilling			res / L. Amay		Samplin	•		Project Num	ber: <u>RC000753.00</u>	51
Logge			SM / CS / DC	<u>/ AM</u>	Samplin	-		-		
Editor:		Grant	Willford		Convert	ed to V	Vell: ⊠ Yes □ No			I
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
	120			Topock - Alluvium Deposits	SM		(321'); little silt; dry to moist; iron oxide staining	9	(323.0 - 326.0') Rough drilling. (326.0 - 327.0') Normal drilling.	
328				Topock - Alluvium Deposits	MH		(327.0 - 328.2') Topock - Alluvium Deposits; (with sand (MH), reddish brown (2.5YR 4/4); m some granules to very large pebbles, angular very fine to very coarse grained sand, subang little clay; some coarser clasts composed of r	nedium plasticity; to subround; little ular to subround;	Normal Drilling.	(327.0 - 412.0') No water used
329 		No Sieve		Topock - Alluvium Deposits	SM		medium stiff; moderate cementation (328.2 - 329.9') Topock - Alluvium Deposits; S (SM); reddish brown (2.5YR 4/4); very fine gra- cobbles, subangular to subround; low plastici- granules to large pebbles, angular to subroun	ained to small tv: some silt: little		
331	1200	Samples Collected		Topock - Alluvium Deposits	МН		weak cementation (329.9 - 334.0') Topock - Alluvium Deposits; (with sand (MH); reddish brown (2.5YR 4/4); not some granules to large pebbles, angular to su fine to very coarse grained sand, subangular to clay; moist; medium stiff; weak cementation (331'); trace clay; increase in granules and pesilt and clay	nedium plasticity; ubangular; little v to subround; little	ery	
_333										
_334					+	╁╂╂╂	(334.0 - 337.5') Topock - Alluvium Deposits; §	Sandy elastic silt	with	
							gravel (MH); reddish brown (2.5YR 4/4); medi fine to very coarse grained sand, subangular	to subround; little	:	
335							granules to very large pebbles, angular to sub moist; medium stiff; weak cementation	oangular; trace cla	ay;	
_ 336_				Topock - Alluvium	МН					
330				Deposits						
227										
_337									(337.0 - 345.0')	
220			MW-X-VAS-	Topock -	ML		(337.5 - 338.0') Topock - Alluvium Deposits; (
338			337-342 (<0.17 U	Alluvium Deposits		1:43	(ML); reddish brown (2.5YR 4/4); low plasticit very large pebbles, angular to subangular; little	e very fine to ver	y 10 0.00g	
339	96		(<0.17 U ppb) 7/11/2019 11:30	Topock - Alluvium Deposits	ML		coarse grained sand, subangular to subround medium stiff; weak cementation (338.0 - 341.0') Topock - Alluvium Deposits; ((ML); reddish brown (2.5/R 4/4); medium pla granules to very large pebbles, angular to sub	l; trace clay; mois Gravelly silt with s sticity; some	sand	
340 Abbre	viations	: USCS = !	Unified Soil C	lassification	 n Systen	<u> [៨ [၀] </u>	eet. bas = below ground surface. ams		-	roundwater

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	J Log	S	heet: 18 of	21
Date S	tarted:	06/20	/2019		Surface	Elevat	tion: 465.4 ft amsl	- Boring No	.: MW-91d	
Date C	omple	ted: <u>07/31</u>	/2019		Northing	g (NAD	D83): <u>2103798.1</u>	Borning itto	<u>IVIVI O I G</u>	
Drilling	Co.:	Casca	ide		Easting	(NAD8	83): <u>7616739.7</u>	_ Client: PG&E	<u> </u>	
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	417 ft bgs	_ Project: <u>Final (</u>	GW Remedy Ph	ase 1
Drill Ri	g Type		<u>nic Truck Μοι</u>		Borehol			_ Location: <u>PG&E</u>	Topock, Needle	es, California
Driller I			<u>mos / S. Vasq</u>		•		Water: 9.6 ft bgs			
Drilling			res / L. Amaya		Samplin	•		_ Project Number	: RC000753.005	51
Logger			SM / CS / DC	<u>/ AM</u>	Samplin	-		_		
Editor:		<u>Grant</u>	Willford		Convert	ed to V	Well: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	SOSO	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
 _341			MW-X-VAS- 337-342 (<0.17 U	Topock - Alluvium Deposits	ML		ine to very coarse grained sand, subangular clay; moist; stiff; moderate cementation (339'); wet to moist; weak cementation; decre			
			ppb) 7/11/2019 11:30	Topock - Alluvium Deposits	GM		(341.0 - 342.5') Topock - Alluvium Deposits; (GM); reddish brown (2.5YR 4/4); granules to angular to subround; some fine to very coars; subangular to subround; little silt; trace clay;	o very <mark>la</mark> rge pebbles, e grained sand,		
343	96			Topock - Alluvium Deposits	SM		(342.5 - 345.0') Topock - Alluvium Deposits; (SM); reddish brown (2.5YR 4/4); medium gragrained, angular to subround; some granules pebbles, angular to subround; little silt; trace cementation	ained to very coarse to very large		
345				Topock - Alluvium Deposits	ML		cementation	ty; some small to to coarse grained soft; weak	(345.0 - 352.0') Normal drilling.	
348 _349_				Topock - Alluvium Deposits	MH		(348.0 - 348.3') Topock - Alluvium Deposits; with sand (MH); light brown (7.5YR 6/4); mec clay; little granules to medium pebbles, angu very fine to fine grained sand, subangular to rementation	dium plasticity; some lar to subround; trace round; dry; soft; weak		
_350	144	No Sieve Samples Collected		Topock - Alluvium Deposits	ML		(348.3 - 352.0') Topock - Alluvium Deposits; (ML); reddish brown (2.5YR 4/4); low plasticil large pebbles, angular to subround; little fine sand, subangular to subround; moist to dry; s cementation	ty; some small to to coarse grained		
352 353 354				Topock - Alluvium Deposits	SW-SM		(352.0 - 355.0') Topock - Alluvium Deposits; with silt and gravel (SW-SM); reddish brown grained to medium grained, subangular to su granules to very large pebbles, angular to sul clay; trace small cobbles, subangular; moist;	(2.5YŘ 4/4); very fine ibround; little bround; little silt; little	(352.0 - 357.0') Rough drilling.	
355 356 				Topock - Weathered Bedrock - conglomerat	IVIH		(355.0 - 357.0') Topock - Weathered Bedrock Gravelly elastic silt with sand (MH); reddish b medium plasticity; some granules to very larg subround; little very fine to fine grained sand, subround; little clay; little coarser clasts compl dry to moist; stiff; moderate cementation	prown (2.5YR 4/4); ge pebbles, angular to subangular to		
358	60			Topock - Weathered Bedrock - conglomera	IVIL		. (357.0 - 359.0') Topock - Weathered Bedrock Sandy silt with gravel (ML); reddish brown (2. plasticity; some very fine to medium grained subround; little granules to very large pebbles subround; little clay; moist; medium stiff; wea	.5YR 4/4); low sand, subangular to s, angular to ak cementation	(357.0 - 362.0') Rough drilling, slough in 4-inch rathole advance 6-inch for clean out.	
	dation-	. 11000	Haiffard Call C	Topock - Weathered Bedrock -	IVIL		(359.0 - 374.0') Topock - Weathered Bedrock Sandy silt with gravel (ML); reddish brown (2. plasticity; some very fine to very coarse grain	.5YR 4/4); low ed sand, subangular	la laval CW =	

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet: 19 of	21
Date S	Started:	06/20/2	2019		Surface	Elevat	tion: 465.4 ft amsl	Borine	g No.: <u>MW-91d</u>	
Date C	Comple	ted: <u>07/31/2</u>	2019		Northing	g (NAD	083): <u>2103798.1</u>		9 140 <u>11111-5 14</u>	
Drilling	Co.:	Cascac	de		Easting	(NAD8	33): <u>7616739.7</u>	Client:	PG&E	
Drilling	Metho	od: <u>Sonic [</u>	<u>Orilling</u>		Total De	epth:	417 ft bgs	Project:	Final GW Remedy Ph	nase 1
Drill Ri			<u>iic Truck Μοι</u>		Borehol			Location:	PG&E Topock, Needl	les, California
Driller			nos / S. Vasq		•		Water: 9.6 ft bgs			
Drilling			es / L. Amaya		Samplir	-		arrel Project Nu	umber: <u>RC000753.00</u>	51
Logge			M/CS/DC		Samplin	-				
Editor:		Grant V	Villford		Convert	ed to V	Vell: ⊠ Yes ☐ No		1	
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Desci	•	Drilling Notes	Drilling Fluid
361 362 363	60			conglomerat	e		to subround; little granules to very la subround; little clay; trace coarser of metadiorite; dry to moist; soft (361'); moist to wet (361.5'); moist to wet; soft; weak ce decrease in silt	clasts composed of		
364 365 366 367 368	120			Topock - Weathered Bedrock - conglomerat	IVIL		12/3		(367.0 - 372.0') Soft Drilling.	
		No Sieve Samples Collected		<	S		(369'); dry to moist; soft; weak ceme decrease in silt	entation; increase in sar	(372.0 - 377.0')	
373 374 375	60			Topody			(374.0 - 377.0') Topock - Weathere Silty sand with gravel (SM); reddish grained to very coarse grained, sub granules to very large pebbles, angi	brown (2.5YR 4/4); fine angular to subround; so	me	
376				Topock - Weathered Bedrock - conglomerat	e		moist; medium dense; moderate ce	mentation		
378 379 380	60			Weathered Bedrock - conglomerat Topock - Weathered Bedrock - conglomerat	€ GM		Well graded gravel with silt and sar (2.5YR 4/4); granules to boulders, s very fine to very coarse grained san little silt; dry to moist; weak cement: (377.5 - 382.0') Topock - Weathere Silty gravel with sand (GM); reddish to very large pebbles, angular to sul coarse grained sand, subangular to trace coarser clasts composed of m	id (GW-GM); reddish brubangular to subround; d, subangular to subroud ation d Bedrock - conglomera brown (2.5YR 4/4); grapround; little very fine to subround; little silt; trac	own little nd; litte; nules very se clay;	
	viations	: USCS = L	Inified Soil C	lassification	Systen	1 ft = fe	eet. bas = below around surfa	ice_amsl = above n	nean sea level GW =	groundwater

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 20 of	21
Date S					Surface	Elevati	on: <u>465.4 ft amsl</u>	Borin	a No.:	MW-91d	
	•	ted: <u>07/31</u>	/2019		Northin	g (NAD	83): <u>2103798.1</u>	_		<u> 0 . ca</u>	
Drilling		Casca			Easting	•	•	Client:	PG&E		
Drilling			Drilling		Total D	•	417 ft bgs	Project:		N Remedy Ph	
Drill Ri			nic Truck Mou		Boreho		· · · · · · · · · · · · · · · · · · ·	Location:	PG&E 1	opock, Needle	es, California
Driller			mos / S. Vasq		•		Vater: 9.6 ft bgs			20000750 000	
Drilling			ores / L. Amaya		Samplir	-		Project N	lumber: <u>I</u>	RC000753.005	21
Logge Editor:			SM / CS / DC Willford		Samplir Convert	-		-			
Editor.		Giani	VVIIIIOIU		T		veii. A res I no				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
 _381 _382_	60			Topock - Weathered Bedrock - conglomerate	GIVI		moderate cementation				
_ 383_							(382.0 - 390.0') Topock - Weathered Bedrock Gravelly lean clay with sand (CL); reddish bro medium plasticity; some granules to very larg subround; little fine to coarse grained sand, su subround; little silt; moist to wet; soft; weak ce	own (2.5YR 4/ e pebbles, ar ubangular to	(4);	(382.0 - 390.0') Normal drilling.	
_ 384_			MW-X-VAS- 382-387				Subround, made sitt, moist to wet, sort, wear or	ementation			
 385			(<0.17 U ppb) 7/13/2019 14:43				100	Ť			
			4	Topock -							
386			4 1	Weathered Bedrock -	CL		(386'); moist to wet; soft; weak cementation; of	decrease in g	ranules		
F	132		4 1	conglomerate	e		and pebbles and sand, increase in silt and cla	ay			
_387				1							
_ 388_											
_ 389_											
 390		No Sieve									
		Collected					(390.0 - 400.0') Topock - Weathered Bedrock Gravelly lean clay with sand (CL); reddish bro			(390.0 - 393.0') Rough drilling.	
_391							medium plasticity; some silt; littlé granules to angular to subround; little fine to very coarse of subangular to subround; moist; soft; weak cer	large pebble grained sand	s,		
392							(392'); moist; soft; weak cementation; increas	se in granules	and		
393							pebbles, decrease in clay (392.7'); moist; soft; weak cementation (393'); moist; soft; weak cementation; increas	se in granules	and	(393.0 - 403.0')	
							pebbles, decrease in sand and clay	o in grandice	dia	Normal drilling.	
				Topock - Weathered	CI						
				Bedrock - conglomerate	CL						
396											
	162										
_397	.02						(396.5'); moist; soft; weak cementation; decre pebbles, increase in silt and clay	ease in granu	les and		
							,				
398											
							(208 5'): majet: eaft to madium atiff: was!:	nontation: i==	rosso in		
399							(398.5'); moist; soft to medium stiff; weak cen granules and pebbles, decrease in silt	nentation, inc	icase III		
-											
400		. 11000	Haifferd Cail O	 : :: :+:	0	<u> </u>	et has = helew ground surface, amo			- 11 (0)//	

Date Started: 06/20/2019 Surface Elevation: 465.4 ft amsl Boring No.: MW-9 Date Completed: 07/31/2019 Northing (NAD83): 2103798.1 Drilling Co.: Cascade Easting (NAD83): 7616739.7 Client: PG&E Drilling Method: Sonic Drilling Total Depth: 417.ft bgs Project: Final GW Remed Drill Rig Type: Prosonic Truck Mount Borehole Diameter: 6-12 inches Location: PG&E Topock, N Driller Name: E. Ramos / S. Vasquez Depth to First Water: 9.6 ft bgs Drilling Asst: O. Flores / L. Amaya Sampling Method: 4 Inch X 10 ft Core Barrel Drilling Asst: O. Flores / L. Amaya Sampling Interval: Continuous Editor: Grant Willford Converted to Well: Yes No Topock-Weathered Bedrock - conglomerate; Gravelly lean day with sand (CL); reddish brown (2.5YR 4/4); medium plasticity; some granular to subround; little first little frameliation to were care grained sand, subangular to subround; little first little frameliation to subround; little first little carser classic weak cementation 162 403 162 405 162 406 Drilling Method: Sonic Drilling Werened Classes and control of the properties of the properti	<u>d</u>
Date Completed: 07/31/2019 Northing (NAD83): 2103798.1 Drilling Co.: Cascade	<u></u>
Drilling Method: Sonic Drilling Total Depth: 417 ft bgs Project: Final GW Remed Drill Rig Type: Prosonic Truck Mount Borehole Diameter: 6-12 inches Location: PG&E Topock, N Driller Name: E. Ramos / S. Vasquez Depth to First Water: 9.6 ft bgs Drilling Asst: O. Flores / L. Amaya Sampling Method: 4 Inch X 10 ft Core Barrel Project Number: RC00075: Continuous Grant Willford Converted to Well: Yes No Sieve Sample ID Sample	
Drill Rig Type: Prosonic Truck Mount Borehole Diameter: 6-12 inches Location: PG&E Topock, N Driller Name: E. Ramos / S. Vasquez Depth to First Water: 9.6 ft bgs Drilling Asst: O. Flores / L. Amaya Sampling Method: 4 Inch X 10 ft Core Barrel Project Number: RC00075: Continuous Continuous Editor: Grant Willford Converted to Well: ▼ Yes No Sieve Sample ID Sieve Sample ID Sample ID Sample ID Sample ID Soil Description Drilling Noi Project Number: RC00075: CL Sample ID Soil Description Drilling Noi Soil Descrip	
Driller Name: Drilling Asst: O. Flores / L. Amaya Sampling Method: Grant Willford Sample ID Sieve Sample ID Sample ID Sieve Sample ID Solid Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Conglomerate Topock - Weathered Bedrock - Conglomerate Bedrock - Cong	
Drilling Asst: O, Flores / L. Amaya Sampling Method: GJ/SM / CS / DC / AM Sampling Interval: Continuous Continuous Continuous Soil Description Drilling Noi Sieve Sample ID Sieve Sample ID Topock - Weathered Bedrock - Conglomerate: Conglomerate GC Bedrock - Conglomerate Conglomerate Topock - Weathered Bedrock - Conglomerate: Continuous Soil Description Drilling Noi (400.0 - 401.0') Topock - Weathered Bedrock - Conglomerate: Continuous Soil Description Drilling Noi (400.0 - 401.0') Topock - Weathered Bedrock - Conglomerate: Continuous Soil Description Drilling Noi (400.0 - 401.0') Topock - Weathered Bedrock - Conglomerate: Congravelly with sand (CL); reddish brown (2.5YR 4/4); most; soft; weak cementation (401.0 - 402.2') Topock - Weathered Bedrock - Conglomerate: Clayey gravel with sand (GC); reddish brown (2.5YR 4/4); low plasticity some granules to very large pebbles, angular to subround; little silt; fittle gravely silt with sand (ML); reddish brown (2.5YR 4/4); low plasticity some granules to very large pebbles, angular to subround; little medium to very coarse grained sand, subangular to subround; little silt; fittle	edles, California
Logger: GJ/SM/CS/DC/AM Sampling Interval: Continuous Editor: Grant Willford Converted to Well: Yes No Soil Description Drilling Not Soil Description Drilling Not Soil Description Drilling Not Soil Description Drilling Not CL Serve Sample ID Soil Description Drilling Not (400.0 - 401.0") Topock - Weathered Bedrock - conglomerate; Gravelly lean clay with sand (CL); reddish brown (2.5YR 4/4); medium plasticity; some silt; little granules to large pebbles, angular; moist; soft to medium stiff; weak cementation (401.0 - 402.2") Topock - Weathered Bedrock - conglomerate; Clayey gravel with sand (GC); reddish brown (2.5YR 4/4); granules to very large pebbles, angular to subround; little fine to very coarse grained sand, subangular to subround; little fine to very coarse grained sand, subangular to subround; little silt; little clay; little coarser clasts composed of metadiorite; moist; weak cementation (401.0 - 402.2") Topock - Weathered Bedrock - conglomerate; Clayey gravel with sand (GC); reddish brown (2.5YR 4/4); gravel still with sand (ML); reddish brown (2.5YR 4/4); gravel still with sand (ML); reddish brown (2.5YR 4/4); gravel with sand (ML); reddish brown (2.5YR 4/4); gravel still with sand (ML); reddish brown (2.5YR 4/4); gravel with sand (GC); reddish brown (2.5YR	
Editor: Grant Willford Converted to Well: Yes No Soil Description Drilling Not Soil Description Drilling Not Soil Description Drilling Not Soil Description Drilling Not CL Weathered Bedrock - Weathered Bedrock - Conglomerate: Gravelly lean clay with sand (CL); reddish brown (2.5YR 4/4); medium plasticity, some sittl, little granules to large pebbles, angular to subround; little fine to very coarse grained sand, subangular to subround; little fine to very coarse grained sand, subangular to subround; little fine to very coarse grained sand, subangular to subround; little fine to very coarse grained sand, subangular to subround; little fine to very coarse grained sand, subangular to subround; little fine to very coarse grained sand, subangular to subround; little fine to very coarse grained sand, subangular to subround; little fine to very coarse grained sand, subangular to subround; little fine to very coarse grained sand, subangular to subround; little fine to very coarse grained sand, subangular to subround; little fine to very coarse grained sand, subangular to subround; little fine to very coarse grained sand, subangular to subround; little fine to very coarse grained sand, subangular to subround; little fine to very coarse grained sand, subangular to subround; little fine to very coarse grained sand, subangular to subround; little fine to very coarse grained sand, subangular to subround; little fine to very coarse grained sand, subangular to subround; little fine to very coarse grained sand, subangular to subround; little fine down to very coarse grained sand, subangular to subround; little fine to very large pebbles, angular to subround; little fine down to very coarse grained sand, subangular to subround; little fine to very large pebbles, angular to subround; little fine to very large pebbles, angular to subround; little fine to very large pebbles, angular to subround; little fine to very large pebbles, angular to subround; little fine little fine to very large pebbles, angular to subround; litt	.0051
Sieve Sample ID Groundwater Sample ID Groun	
Topock - Weathered Bedrock - conglomerate; Gravelly lean clay with sand (CL); reddish brown (2.5YR 4/4); medium plasticity; some silt; little granules to large pebbles, angular to subround; little fine to very coarse grained sand, subangular to subround; little fine to very coarse grained sand, subangular to subround; little fine to very coarse grained sand, subangular to subround; little fine to very coarse grained sand, subangular to subround; little fine to very coarse grained sand, subangular to subround; little fine to very coarse grained sand, subangular to subround; little silt; little clay; little coarser clasts composed of metadiorite; moist; weak cementation Topock - Weathered Bedrock - conglomerate; clay, little coarser clasts composed of metadiorite; moist; weak cementation (403.0 - 404.22 - 403.6') Topock - Weathered Bedrock - conglomerate; Gravelly silt with sand (ML); reddish brown (2.5YR 4/4); low plasticity; some granules to very large pebbles, angular to subround; little endium to very coarse grained sand, subangular to subround; little clay; moist; soft; weak cementation (403.0 - 404.20 - 403.6') Topock - Weathered Bedrock - conglomerate; Gravelly law in sand (ML); reddish brown (2.5YR 4/4); low plasticity; some granules to very large pebbles, angular to subround; little clay; moist; soft; weak cementation (403.0 - 404.0') Topock - Weathered Bedrock - conglomerate; Clayey gravel with sand (ML); reddish brown (2.5YR 4/4); low plasticity; some granules to very large pebbles, angular to subround; little clay; moist; soft; weak cementation	
Weathered Bedrock - conglomerate Topock - Weathered Bedrock - conglomerate Conglomerate Topock - Weathered Bedrock - conglomerate Topock - Weathered Bedrock - conglomerate Conglomerate Topock - Weathered Bedrock - conglomerate Conglomerate Conglomerate Conglomerate Topock - Weathered Bedrock - conglomerate Conglomer	s Drilling Fluid
Topock - Weathered Bedrock - conglomerate 402 403 162 404 405 Topock - Weathered Bedrock - conglomerate	
Topock - Weathered Bedrock - conglomerate 404	
Topock - Weathered Bedrock - conglomerate; GC Weathered Bedrock - conglomerate; Gravelly slit with sand (ML); reddish brown (2.5YR 4/4); low plasticity; some granules to very large pebbles, angular to subround; little medium to very coarse grained sand, subangular to subround; little clay, moist, soft, weak cementation (403.2 - 403.6') Topock - Weathered Bedrock - conglomerate; Clayey gravel with sand (GC); reddish brown (2.5YR 4/4); conglomerate clayer granules to small cobbles, angular to subround; little medium to	(.0')
donglomerate Topock- Weathered Bedrock- conglomerate Topock- Weathered Bedrock- conglomerate SM	
conglomerate congl	
Topock -	
Weathered Bedrock - (404.0 - 406.1') Topock - Weathered Bedrock - conglomerate; conglomerate Topock - (405.0 - 406.1') Topock - Weathered Bedrock - conglomerate; Silty sand with gravel (SM); reddish brown (2.5YR 4/4); fine (407.0 - 41) Soft drilling the conglomerate of the conglomer	
Weathered Bedrock - Conglomerate Weathered Bedrock - Conglomerate Cong	J.
Samples Collected Topock - Weathered Bedrock - conglomerate; Sandy lean clay with gravel (CL); reddish brown (2.5YR 4/4); medium plasticity; some silt; little granules to large pebbles, subangular to subround; little fine to very coarse grained sand,	
Bedrock - conglomerate (407.0 - 408.0') Topock - Weathered Bedrock - conglomerate; Silty sand with gravel (SM); reddish brown (2.5YR 4/4); fine	
grained to very coarse grained, subangular to subround; low plasticity; some granules to very large pebbles, angular to subround; little silt; little clay; moist; weak cementation (408.0 - 411.0') Topock - Weathered Bedrock - conclomerate;	
2120 Clayey gravel with sand (GC); reddish brown (2.5YŘ 4/4); granules to small cobbles, angular to subround; some fine to very coarse grained sand, subangular to subround; little silt; little clay;	
Weathered Bedrock - Bedrock - Conglomerate; Silty sand with gravel (SM); reddish brown (2.5YR 4/4); fine below 10 libelow	dity water used; 0 gallons of water TU recovered; 375
MW-X-VAS- 412-417 (<0.17 U MW-X-VAS- 418-0' MW-X-VAS- 412-417 (<0.17 U MW-X-VAS- 418-0' MW-X-VAS- 412-417 (<0.17 U MW-X-VAS- 412-417 (<0.	s. lost fell -
415. 7/15/2019 (414.8 - 417.0') Topock - Weathered Bedrock - conglomerate; collecting 12:43 Sitty gravel with sand (GM); reddish brown (2.5YR 4/4); granules sample. Using the congruence of the	j ed
Weathered Bedrock - conglomerate Weathered Complementation Bedrock - conglomerate Weathered Bedrock - conglomerate Weathered Bedrock - conglomerate Weathered Bedrock - conglomerate Weathered Bedrock - conglomerate Some coarse grained sand, subangular to subround; little silt; little clay; some coarser clasts composed of metadiorite; moist; moderate the casing fines priority the installation of the bent complementation to subround; little silt; little clay; some coarser clasts composed of metadiorite; moist; moderate the installation of the bent complementation to subround; little silt; little clay; some coarse grained sand, subangular to subround; little silt; little clay; some coarse grained sand, subangular to subround; little silt; little clay; some coarse clasts composed of metadiorite; moist; moderate complementation the coarse grained sand, subangular to subround; little silt; little clay; some coarse grained sand, subangular to subround; little silt; little clay; some coarse grained sand, subangular to subround; little silt; little clay; some coarse grained sand, subangular to subround; little silt; little clay; some coarse grained sand, subangular to subround; little silt; little clay; some coarse grained sand, subangular to subround; little silt; little clay; some coarse grained sand, subangular to subround; little silt; little clay; some coarse grained sand, subangular to subround; little silt; little clay; some coarse grained sand, subangular to subround; little silt; little clay; some coarse grained sand, subangular to subround; little silt; little clay; some coarse grained sand, subangular to subround; little silt; little clay; some coarse grained sand, subangular to subround; little silt; little clay; some coarse grained sand, subangular to subround; little silt; little clay; some coarse grained sand, subangular to subround; little silt; little clay; some coarse grained sand, subround; little silt; li	of to ion
417 seal.	lite
End of Boring at 417.0 'bgs.	
418	
419	

Date Started: BB092019 Sufface Elevation: 485, 5ft ams Sufface Elevation: 485, 5	1.	4KC	ADIS	for natural and built assets		Bo	rıng	LO			She	eet: 1 of	7
Montring (No. Caccade Casting (NADS); 20.5182/45.1 Client: PG&E Topock, Needles, California, Nature Caccade Cacc	Date S	Started:				Surface	Elevat	ion:	465.5 ft amsl	Borin	ıa No.:	MW-91s	
Deliling Method: Sonic Definity Deliling Assistance Deliling Assis	l l	-	ted: <u>08/12</u>	/2019		Easting (NAD83):						<u></u>	
Delic Name Prosente Truck Mount Borehole Dimeller 10.12 inches Location: PG&E Topock, Needles, California Drilling Asst Steve Vasquez Depth for First Water 96 ft bgs Drilling Asst Converted to Well Sampling Intervals Screen Intervals	_							33):					
Deller Name: Deller Marine: Delling Asst: O Flores LL Amarya Sampling Method: Sampling Interval: Converted to Well: Series Interval: Serie				-								•	
Delling Assix Description Project Number: RC000753.0051										_ Location:	PG&E	<u> Topock, Needle</u>	es, California
Logger Anthony Mack Sampling Interval: Screen Intervals Sampling Interval				-		-			_				
Editor: Grant Willord Converted to Well: Yes No Size				-						Project N	lumber:	RC000753.005	51
Size										-			
1	Editor:		Grant	vvillora		Convert	ea to v	veii:	Yes NO				
1	Depth (ft)	Recovery (in)			Geologic Formation	USCS	USCS Class		Soil Description			-	_
		0	Samples	12-17 (<0.033 U ppb) 6/25/2019				MW-9 ²	d for lithology	or log core, s	See	(17.0 - 27.0') Loose fine grained sands did not stay in	(0.0 - 40.0') No water used

PARCADIS for a translation of the state of t		Boring Log		Sheet: 2 of 7							
Date S	Started:	08/09/2	2019		Surface	Elevation:	465.5 ft amsl	Borin	a No .	MW-91s	
l l	-	ted: <u>08/12/2</u>				g (NAD83):			_	1111 013	
Drilling		Cascad				(NAD83):	7616745.1	_ Client:	PG&E		
Drilling					Total De		127 ft bgs	_ Project:		V Remedy Ph	
Drill Ri			<u>ic Truck Μου</u> ,			e Diameter		_ Location:	PG&E T	opock, Needle	es, California
Driller Drilling			/asquez es / L. Amaya				er: 9.6 ft bgs 4 inch x 10 ft. Core Barrel	- Droiget N	Lumbor: E	RC000753.00	<u> </u>
Logge		<u>O. Fiore</u> Anthon	-			g Method: g Interval:	Screen Intervals	_ Project iv	iuiiibei. <u>r</u>	<u> </u>) I
Editor:		Grant V	-		-	ed to Well:		_			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
21 22 23 	0				NR			V.			
24						/\					
						/ \		•			
25						/ \					
						/ \					
26						/ \	\cap				
						/ \					
27						(27.	0 - 36.0') Topock - Fill; Poorly graded sar	nd (SP); dark		(27.0 - 40.0')	
						yello	owish brown (10YR 4/4); very fine grained angular to round; trace silt; wet	d to medium g	rained,	Soft drilling.	
30		No Sieve Samples									
		Collected									
31											
				Topock - Fil	I SP						
32	120										
33											
			MW-X-VAS-								
34			32-37								
25			(<0.033 U ppb)								
35_			6/26/2019 11:45								
- 36											
30					+	(36.	0 - 46.5') Topock - Fluvial Deposits; Well el (SW); grayish brown (10YR 5/2); fine	graded sand	with		
37						rai drai	ned, subangular to subround; little granul angular to subround; trace silt; wet	es to small p	ebbles,		
]		Sup:	angular to subround; trace slit; wet				
38				Topock - Fluvial	SW						
	120			Deposits	344						
39	120										
<u> </u>											
40					<u> </u>						

9/	ARC	ADIS	for natural and built assets		Во	ring Lo	g		She	eet: 3 of	7
	Started			_		Elevation:	465.5 ft amsl	Borir	na No.:	MW-91s	
	-	ted: <u>08/12/2</u>				g (NAD83):	2103782.1				
Drilling		Cascac			-	(NAD83):	7616745.1	_ Client:	PG&E		
	Metho		•		Total De	-	127 ft bgs	_ Project:		N Remedy Ph	
	ig Type Name:		<u>iic Truck Mou</u> /asquez	ınt		e Diameter: o First Water	10-12 inches	_ Location	: <u>PG&E 1</u>	Fopock, Needle	es, California
Drilling			es / L. Amaya		-	g Method:	4 inch x 10 ft. Core Barrel	- Project N	Jumber: I	RC000753.00	 51
Logge			ıy Mack		-	ig Interval:	Screen Intervals	_ 1 10,0011	10111001. <u>1</u>	10000100.000	<u>, , , , , , , , , , , , , , , , , , , </u>
Editor		Grant V	•			ed to Well:		_			
	>			υ <u>Ε</u>							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
414243444546	- 120			Topock - Fluvial Deposits	SW		; little granules to large pebbles; incre:			(40.0') Retracked 10-inch casing and started flushing casing to get past due to rough drilling at 119 to 124 ft. bgs. and too much torque on the drill head.	(40.0 - 127.0') 4960.4 gallons of water used; 2031.68 gallons of water recovered; 2928.72 gallons of water lost
 47				Topock - Fluvial	GW	(46.5)	- 47.0') Topock - Fluvial Deposits; Wel	l graded grav	el with		
484950515253545556575859	0	No Sieve Samples Collected		Deposits Deposits	<u></u>	angul subar (47.0	GW); dark grayish brown / dark yellow ar to subangullar; some fine to coarse graylar to subround; trace silt 97.0') No recovery (NR); did not colled the for lithology	grained sand,	1		
60	<u> </u>	11000		L		1 1	us - holow ground ourfood am			a laval CW = 4	<u> </u>

	4K(ADI5	for natural and built assets		Bo	ring L	og		She	et: 4 of	7
	Started					Elevation:		Borir	na No.:	MW-91s	
	•	ted: <u>08/12/2</u>				j (NAD83)					
Drilling		Cascac				(NAD83):		_ Client:	PG&E		
	Metho		-	unt	Total De	epth: e Diamete	<u>127 ft bgs</u> r: <u>10-12 inches</u>	_ Project:		V Remedy Ph	
	ig Type Name:		<u>ic Truck Mou</u> /asquez	IIIL			ter: <u>9.6 ft bgs</u>	_ Location	. FUXE I	opock, Needl	es, Calliottia
Drilling			es / L. Amaya	 a		g Method:		- Proiect N	 Number: F	RC000753.00	 51
Logge			y Mack			g Interval:		. ,			-
Editor		Grant V				ed to Well					
_	ک			. <u>2</u> 6							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
61	O O	No Sieve Samples Collected	MW-X-VAS- 71-76 (<0.033 U ppb) 6/27/2019 08:52	Gec	NR NR	ST					
79	 -										
80											

PARCADIS Design & Consultancy for natural and built assets			Boring Log			Sheet: 5 of 7					
Date S	Started:	08/09/2	2019			Elevation:	465.5 ft amsl	Bori	na No.:	MW-91s	
	Comple					g (NAD83):	2103782.1	_	_		
Drilling		<u>Cascac</u>				(NAD83):	7616745.1	_ Client:	PG&E		
_	Metho		-		Total De	-	127 ft bgs	_ Project:		W Remedy Ph	
	ig Type		<u>ic Truck Mou</u>			e Diameter:	10-12 inches	_ Locatior	i: <u>PG&E</u>	Fopock, Needle	es, California
	Name:		/asquez		-	o First Water	_	- Droinet l		DC000753 00	E1
Drilling			es / L. Amaya y Mack		-	ng Method: ng Interval:	4 inch x 10 ft. Core Barrel Screen Intervals	_ Projecti	vuilibei.	RC000753.00	01
Logge Editor:		Grant V			-	ed to Well:	× Yes □ No	-			
	_				1						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
81	0	No Sieve Samples Collected			NR					(95.0') Rough drilling starts.	
97 98 99	120			Topock - Fluvial Deposits	sw	• *• *• brown	107.0') Topock - Fluvial Deposits; We (10YR 4/3); fine grained to very coarse round; trace granules, subangular to su	e grained, su	bangular		

ARCADIS Postural and built assets			Boring Log			Sheet: 6 of 7				
Date Started	08/09/	2019		Surface	Elevation:	465.5 ft amsl	Borin	a No.:	MW-91s	
Date Comple				•	g (NAD83):	2103782.1	_			
Drilling Co.:	<u>Casca</u>			_	(NAD83):	<u>7616745.1</u>	_ Client:	PG&E		
Drilling Metho		Drilling		Total De	•	127 ft bgs	_ Project:		V Remedy Ph	
Drill Rig Type		<u>nic Truck Mou</u>	ınt		e Diameter:	10-12 inches	_ Location:	PG&E T	opock, Needle	es, California
Driller Name:		Vasquez		•	First Water:	•	-		2000250 000	F.4
Drilling Asst:		res / L. Amaya		•	g Method:	4 inch x 10 ft. Core Barrel	_ Project N	umber: <u>F</u>	RC000753.00	51
Logger: Editor:		<u>ny Mack</u> Wilford		-	g Interval: ed to Well:	Screen Intervals	-			
	Giani	vvillora		Conven	ed to vveii.					<u> </u>
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
			Topock - Fluvial Deposits	sw			Q.			
			Topock - Fluvial	GW	sand (- 108.0') Topock - Fluvial Deposits; W GW); brown (10YR 4/3); granules to ve	ery large pebb	les,		
	No Sieve Samples Collected	MW-X-VAS- 107-112 (<0.033 U ppb) 6/27/2019 15:04	Topock - Fluvial Deposits	SM	suban (108.0 (SM); fine gr granul	ar to subround; some very fine to mediu gular to subround; trace silt - 112.0') Topock - Fluvial Deposits; Sil dark grayish brown / dark yellowish bro ained to medium grained, subangular t es to large pebbles, angular to subrour ar to subround; wet	Ity sand with g wn (10YR 4/2 to subround; s	gravel !); very		
		MW-X-VAS- 112-117 (<0.033 U ppb) 6/28/2019 09:56	Topock - Fluvial Deposits	GW	sand (granul coarse cobble	- 116.0') Topock - Fluvial Deposits; W GW); dark grayish brown / dark yellowi expression of the control of the control expression of the control of the control of the control expression of the control	ish brown (10) nd; some fine d; trace small	YR 4/2); to very		
			Topock - Alluvium Deposits	GW-GM	with si pale re to rour	I - 117.0') Topock - Alluvium Deposits; It and sand (GW-GM); brown (7.5YR 4 eddish brown (10R 5/4); granules to sm nd; some very fine to medium grained s little silt; wet	/4) trace weal nall cobbles, a	k red / ingular		
			Topock - Alluvium Deposits	SM	(117.0 (SM); graine granul angula (118');	in the sit, wet in 25 to 18 to	R 5/6); very fin bround; some nd; some silt;	e e trace	(119.0 - 124.0') Rough drilling due to large	

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Log	g		She	eet: 7 of	7
Date S						Elevation:	465.5 ft amsl	Bori	na No.:	MW-91s	
	•	ted: <u>08/12/2</u>			-	g (NAD83):	2103782.1				
Drilling		Cascac				(NAD83):	7616745.1	_ Client:	PG&E		
Drilling			-		Total De	-	127 ft bgs	_ Project:		W Remedy Pha	
Drill Ri			ic Truck Mou			e Diameter:	10-12 inches	_ Location	: PG&E	Topock, Needle	es, California
Driller Drilling			/asquez es / L. Amaya		-	o First Water: lg Method:	4 inch x 10 ft. Core Barrel	- Project N	Jumber:	RC000753.005	 51
Logge			y Mack		-	ig Interval:	Screen Intervals	_ 1 10,0001	varriber.	110000133.000	<i>)</i>
Editor		Grant V			-	ed to Well:		_			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	Class	Soil Description			Drilling Notes	Drilling Fluid
 121 _122_ _123_	84			Topock - Alluvium Deposits	SM			Q	5	cobbles and boulders in the formation, increased torque caused spindle bolts to shear. Start flusing casing with water	
124										(404.0407.0)	
125							- 127.0') No recovery (NR); Did not co ld for lithology	ollect or log co	ore, see	(124.0 - 127.0') Drilled an extra 3 ft to get through boulders and	
126	0				NR		7)			cobbles.	
127_						<u> </u>	End of Boring at 127.0 'bo	gs.			
128											
129_						2					
_130				•							
131					12						
-				V							
132											
133											
134											
135											
136											
137											
138											
= - = 139_											
140											

PARCADIS Design & Consultancy for natural and built assets					Well Const	ruction Log	Sheet: 1 of 4		
Date S		09/10/2019			_Surface Elevation:	460.4 ft amsl	Well ID: M\	N-92-37, MW-92-72	
	-	09/24/2019			_Shallow Well Elevation:				
Drilling		<u>Cascade</u>			_Deep Well Elevation:	462.0 ft amsl	Client: PG&I		
		Sonic Drilling	•		Northing (NAD83):	2102811.6		GW Remedy Phase 1	
Driller N		Steve Vasqu			_Easting (NAD83):	<u>7617576.7</u>	Location: <u>PG&</u>	Topock, Needles, California	
Drilling		L. Amaya / (Borehole Diameter:	10-12 inches		D0000750 0054	
Logger Editor:		David Corne Sean McGra			_Water Level Start: _Development End Date:	5.22 ft bgs	Project Numbe	r: RC000753.0051	
Total D		77 ft bgs	ane		Development End Date. Well Completion:	☐ Flush⊠ Stick-up			
Total D	срии.				vvcii oompiciion.	Tidon[M] Ottok-up	T	T	
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed	
					(+2.2 - 3.0') Monument painted — desert sand	— (+1.6 - 52.0') 2" PVC Sch 40 Casing		Note: 12x12-inch Lockable Steel Monument	
0 1					(+0.6 - 3.0') Concrete Pad (+1.5 - 17.0') 2" PVC Sch 40 Casing		13	(+0.6 - 3.0') 17 bags Note: 24-inch Diameter Concrete Pad, King Kon-Crete 4000 PSI, Mixed with Buff dye	
_ 2 _ _ 3 _									
_ 4 _									
5 6									
_ 7 _ _ 7 _ _ 8 _					(1.5 - 13.0') Portland Cement 6% Bentonite		(1.5 - 13.0') 63.3 gallons	(1.5 - 13.0') 85 gallons (34%) Note: Type I, II and V and Benseal, used >20% of the calculated volume due to potential migration into the formation	
9 -			NR		(0.5, 40.5)	(0.0 - 17.0') 12.0" Borehole			
10 11					(9.5 - 10.5') Centralizer				
12									
13 14 15	MW-Y'-VAS- 12-17 (<0.033 U ppb) 8/20/2019				(13.0 - 15.0') Bentonite seal chips		(13.0 - 15.0') 2.1 bags	(13.0 - 15.0') 2.5 bags (19%) Note: Puregold Medium Chips	
 16 17	13:58				(15.0 - 41.0') Cemex #3 MESH (8x10)		(15.0 - 41.0') 26.5 bags	(15.0 - 41.0') 30 bags (13%) Note: Lapis Lustre Sand	
-		Topock - Fluvial Deposits	SP			(17.0 - 77.0') 10.0" Borehole			
Abbrev	iations: U			assifica	tion System, ft = feet, bgs	= below ground surface, a	nsl = above mean	sea level, GW = groundwater,	

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundw ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, groundwater data was collected from MW-91d

Date Started: 09/10/2019 Surface Elevation:	460.4 ft amsl	\4/ !! ID \$404	
		—∣ Well ID: MW	V-92-37, MW-92-72
Date Completed: <u>09/24/2019</u> Shallow Well Elevation:			·
Drilling Co.: <u>Cascade</u> Deep Well Elevation:	462.0 ft amsl	Client: PG&E	
Drilling Method: Sonic Drilling Northing (NAD83):	2102811.6	•	GW Remedy Phase 1
Driller Name: Steve Vasquez Easting (NAD83):	7617576.7	Location: <u>PG&E</u>	Topock, Needles, California
Drilling Asst: L. Amaya / O. Flores Borehole Diameter:	10-12 inches		D0000750 0054
Logger: <u>David Cornell</u> Water Level Start: Editor: <u>Sean McGrane</u> Development End Date	5.22 ft bgs	Project Number	: RC000753.0051
Editor: <u>Sean McGrane</u> Development End Date Total Depth: <u>77 ft bgs</u> Well Completion:	. I0/22/2019 ☐ Flush⊠ Stick-up		
	Tidon[M] Ottok-up		
	Construction	Calculated Material Volumes	Material Volumes Installed
18	(17.0 - 77.0') 10.0" Borehole	(15.0 - 41.0') 26.5 bags	(15.0 - 41.0') 30 bags (13%) Note: Lapis Lustre Sand

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, groundwater data was collected from MW-91d

9/-	ARCA	DIS for natura built asse	al and ets		Well Const	ruction Log	S	Sheet: 3 of 4
Date S	tarted:	09/10/2019			_Surface Elevation:	460.4 ft amsl	Well ID: MV	V-92-37, MW-92-72
	=	09/24/2019			_Shallow Well Elevation:	·		·
Drilling		<u>Cascade</u>			Deep Well Elevation:	462.0 ft amsl	Client: <u>PG&E</u>	
_		Sonic Drilling			Northing (NAD83):	2102811.6	•	GW Remedy Phase 1
Driller I		Steve Vasque			Easting (NAD83):	7617576.7	Location: <u>PG&E</u>	Topock, Needles, California
Drilling		L. Amaya / O			Borehole Diameter:	10-12 inches	— Project Number	DC000752 0051
Logger Editor:		David Cornell Sean McGrar			Water Level Start: Development End Date:	5.22 ft bgs	Project Number	: RC000753.0051
Total D		77 ft bgs	<u>IC</u>		Development End Date. Well Completion:	☐ Flush ⊠ Stick-up		
Total B					VVOII COMPICTION.	ridon otton up		
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
38 39 40 41					(37.5 - 38.5') Centralizer (37.0 - 39.4') Sump — and End Cap	+1.6 - 52.0') 2" PVC Sch 40 Casing	(15.0 - 41.0') 26.5 bags	(15.0 - 41.0') 30 bags (13%) Note: Lapis Lustre Sand
42 43 44 45 46 47 48		Topock - Fluvial Deposits	NR SP		(41.0 - 49.8') Bentonite seal chips	(17.0 - 77.0') 10.0" Borehole	(41.0 - 49.8') 6.4 bags	(41.0 - 49.8') 7 bags (9%) Note: Puregold Medium Chips
49			•					
 50 51		Topock - Fluvial Deposits	SP-SM					
52535455555657	MW-Y'-VAS- 52-57 (<0.033 U ppb) 8/21/2019 11:41	Topock - Fluvial	SP NR SP		(49.8 - 76.5') Cemex #3 MESH (8x10)	— (52.0 - 72.0') 2" Sch 40 PVC (20-slot) Screen	(49.8 - 76.5') 28.1 bags	(49.8 - 76.5') 33 bags (17%) Note: Lapis Lustre Sand
		Deposits		<u> </u>			L	coolovel CW = groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, groundwater data was collected from MW-91d

ARCA	DIS Design & for natura built asse	Consultancy al and ets		Well Const	ruction Log	S	heet: 4 of 4
Date Started:	09/10/2019			_Surface Elevation:	460.4 ft amsl	Well ID: MW	/-92-37, MW-92-72
Date Completed	: <u>09/24/2019</u>			_Shallow Well Elevation:			·
Drilling Co.:	Cascade			_Deep Well Elevation:	462.0 ft amsl	Client: PG&E	
Drilling Method:	Sonic Drilling			_Northing (NAD83):	2102811.6	-	SW Remedy Phase 1
Driller Name:	Steve Vasque			_Easting (NAD83):	7617576.7	Location: <u>PG&E</u>	Topock, Needles, California
Drilling Asst:	L. Amaya / O.			_Borehole Diameter:	10-12 inches	Due is at Number	. DC0007E2 00E4
Logger: Editor:	David Cornell Sean McGrar			_Water Level Start: _Development End Date:	5.22 ft bgs	Project Number:	: RC000753.0051
Total Depth:	77 ft bgs	<u>IC</u>		_Development End Date. _Well Completion:	☐ Flush ⊠ Stick-up		
Total Boptin.				_ vvoii Completion:	raon otox ap		
Groundwa Sample I		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
58 59 60 61 61 62 63 63 64 65 66	Topock - Fluvial Deposits Topock - Fluvial Deposits	SP SP			(52.0 - 72.0') 2" Sch 40 PVC (20-slot) Screen		
67 68 69	Topock - Fluvial Deposits	SP		(49.8 - 76.5') Cemex	(17.0 - 77.0') 10.0" Borehole	(49.8 - 76.5') 28.1 bags	(49.8 - 76.5') 33 bags (17%) Note: Lapis Lustre Sand
70 71 72 72 73 74	Topock - Fluvial Deposits	SP-SM		(72.5 - 73.5') Centralizer	(72.0 - 74.4') Sump		
	Topock - Fluvial Deposits	SP		(76.5 - 77.0)	and End Cap		
 77		NR	X	(76.5 - 77.0') Formation Collapse	0,0		
		•	v V	End of Boring at	<u> </u>		
A b b va v dati a va a v I	ICCC - Unificat	I Cail C	: c :	77.0 'bgs.	_ h_ala awaad afa.a		oog lovel CW = groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, groundwater data was collected from MW-91d

9/	4RC4	DIS Design & for nature built asset	Consultancy al and ets		Well Consti	ruction Log	;	Sheet: 1 of 7
	Started: Completed:	09/06/2019 09/25/2019			Surface Elevation: Shallow Well Elevation:	460.0 ft amsl 462.4 ft amsl	Well ID: M	W-92-102, MW-92-122
Drilling	g Co.:	Cascade		[Deep Well Elevation:	462.3 ft amsl	Client: PG&I	E
-	g Method:	Sonic Drilling			Northing (NAD83):	2102813.6	•	GW Remedy Phase 1
	Name:	J. Khem / S.	•		Easting (NAD83):	7617583.9	Location: <u>PG&I</u>	E Topock, Needles, California
	g Asst:	L. Amaya / O			Borehole Diameter:	6-12 inches	— — — — — — — — — — — — — — — — — — —	D0000752 0054
Logge Editor		G. Willford / E Sean McGran			Water Level Start: Development End Date:	5.77 ft bgs	Project Numbe	er: RC000753.0051
	Depth:	137 ft bgs	ic		Nell Completion:	☐ Flush ⊠ Stick-up		
Depth (ft)	Groundwat Sample II		USCS Code USCS	Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
					(+2.5 - 82.0') 2" — PVC Sch 80 Casing (+3.0 - 2.0') Monument painted — desert sand	— (+2.4 - 112.0') 2" PVC Sch 80 Casing	0	Note: 12x12-inch Lockable Steel Monument
PLOG.GDT 12/31/19 15:24					(+0.5 - 3.4') Concrete Pad			(-0.5 - 3.4') 15 bags Note: 24-inch Diameter Concrete Pad, King Kon-Crete 4000 PSI, Mixed with Buff dye
3	-							
1723.1:91/1907.0PCOK DATA TEMPLATE FOR PLOS GPT 1723/1/9 15:24 8				<u>.</u>	(2.0 - 13.0') Grout		(2.0 - 13.0') 72.1 gallons	(2.0 - 13.0') 90 gallons (25%) Note: Type I, II and V and Benseal, used >20% of the calculated volume due to potential voids forming during
C.UGERSSAMCGRAMEIDOCUMENTSPECRE TOPOCKOPRAFT BORING LOGSIGINT FILESIV23119TOP		Topock - Fill	SP			(0.0 - 48.0') 12.0" Borehole		drilling and grout migration
15161617	MW-Y'-VAS 12-17 (<0.033 U ppb) 8/20/2019 13:58				(13.0 - 79.9') Bentonite seal chips		(13.0 - 79.9') 58.3 bags	(13.0 - 79.9') 60 bags (3%) Note: Puregold Medium Chips
EMppie							msl = above mean	sea level, GW = groundwater,
§ppb =	parts per b	ollion, ∪ = not	detected a	pove th	ne laboratory reporting li	тії, NK = no recovery		

9/-	ARCA	for natura built asse	al and ts		Well Const	ruction Log	S	Sheet: 2 of 7
Date S	Started:	09/06/2019			_Surface Elevation:	460.0 ft amsl	Well ID: MV	V-92-102, MW-92-122
Date C	Completed:	09/25/2019			_Shallow Well Elevation:			
Drilling		Cascade			_Deep Well Elevation:	462.3 ft amsl	Client: PG&E	
_		Sonic Drilling			_Northing (NAD83):	2102813.6	•	GW Remedy Phase 1
Driller I		J. Khem / S. \	-		_Easting (NAD83):	7617583.9	Location: <u>PG&E</u>	Topock, Needles, California
Drilling		L. Amaya / O.			_Borehole Diameter:	6-12 inches		
Logge		G. Willford / D		ell	_Water Level Start:	5.77 ft bgs	Project Number	: RC000753.0051
Editor:		Sean McGran	ne		_Development End Date:			
Total D	Depth:	137 ft bgs			_Well Completion:	☐ Flush⊠ Stick-up		
Depth (ft)	Groundwat Sample II		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
		Topock - Fill	SP		(+2.5 - 82.0') 2" — PVC Sch 80 Casing	— (+2.4 - 112.0') 2" PVC Sch 80 Casing		
18		Topock - Fill	35		1 VO con oo casing	1 VO con oo casing		
_ 10_								
19								
20					(19.5 - 20.5') ————————————————————————————————————			
21								
		Topock -						
22		Fluvial	SP-SM				*	
		Deposits						
23								
24								
25								
 26								
20				1				
				1		(0.0 - 48.0') 12.0"	(42.0 70.0) 59.2	(42.0 70.0!) 60 bogs (20/)
27				1	(13.0 - 79.9') — Bentonite seal chips	Borehole	(13.0 - 79.9') 58.3 bags	(13.0 - 79.9') 60 bags (3%) Note: Puregold Medium Chips
28								
29								
				$1 \setminus I$				
30				$ \setminus I $				
31								
			NR					
32			'''`					
				//				
32								
33				$ \ \ \ $				
├								
34				$\parallel \parallel \parallel \parallel$				
H -				$\parallel \parallel \parallel \parallel$				
35				$\parallel \parallel \parallel$				
├				$\parallel \parallel$				
36								
<u> </u>				1				
37								
Abbrev	viations: U	SCS = Unified	Soil C	lassifica	tion System, ft = feet, bgs	= below ground surface, a	amsl = above mean s	sea level, GW = groundwater,

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery

9/	ARCA	DIS Design & for natura built asset	Consultancy al and ets		Well Const	ruction Log	:	Sheet: 3 of 7
	Started:	09/06/2019			_Surface Elevation:	460.0 ft amsl	Well ID: M\	N-92-102, MW-92-122
	•	09/25/2019			_Shallow Well Elevation:	462.4 ft amsl		
Drilling		Cascade			_Deep Well Elevation:	462.3 ft amsl	Client: PG&I	
_		Sonic Drilling			_Northing (NAD83):	2102813.6	•	GW Remedy Phase 1
	Name:	J. Khem / S. \	-		_Easting (NAD83):	7617583.9	Location: <u>PG&</u>	E Topock, Needles, California
Drilling		L. Amaya / O.			_Borehole Diameter:	6-12 inches		
Logge		G. Willford / E		ell	_Water Level Start:	5.77 ft bgs	Project Numbe	r: RC000753.0051
Editor:		Sean McGrar	ne		_Development End Date:			
Total [Jepin:	137 ft bgs	1	1	_Well Completion:	Flush⊠ Stick-up		
Depth (ft)	Groundwat Sample II		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
	MW-Y'-VAS 52-0.033 U ppb) 8/21/2019 11:41	Topock - Fluvial Deposits	NR		(+2.5 - 82.0') 2" — PVC Sch 80 Casing (13.0 - 79.9') — Bentonite seal chips	— (48.0 - 126.0') 10.0" Borehole — (48.0 - 126.0') 10.0" Borehole	(13.0 - 79.9') 58.3 bags	(13.0 - 79.9') 60 bags (3%) Note: Puregold Medium Chips
57 Abbre	viations: I I	SCS = Unified	Soil C	lassifica	tion System ft = feet has	= below ground surface, a	amsl = above mean	sea level. GW = groundwater.

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery

9/	4RC4	DIS Design & for natu built ass	Consultancy ral and ets		Well Const	ruction Log	S	Sheet: 4 of 7
Date S	Started:	09/06/2019			_Surface Elevation:	460.0 ft amsl	Well ID: MV	V-92-102, MW-92-122
Date C	Completed:	09/25/2019			_Shallow Well Elevation:	462.4 ft amsl		
Drilling	g Co.:	Cascade			_Deep Well Elevation:	462.3 ft amsl	Client: PG&E	
_	Method:	Sonic Drilling			_Northing (NAD83):	2102813.6	•	GW Remedy Phase 1
	Name:	J. Khem / S.	-	<u>z</u>	_Easting (NAD83):	7617583.9	Location: <u>PG&E</u>	Topock, Needles, California
Drilling	g Asst:	L. Amaya / O			_Borehole Diameter:	6-12 inches		
Logge		G. Willford / I		ell	_Water Level Start:	5.77 ft bgs	Project Number	r: RC000753.0051
Editor:		Sean McGra	ne		_Development End Date:			
Total [Depth:	137 ft bgs			_Well Completion:	☐ Flush⊠ Stick-up		Г
Depth (ft)	Groundwat Sample II		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
58		Topock - Fluvial Deposits Topock - Fluvial Deposits	SP-SM		(+2.5 - 82.0') 2" — PVC Sch 80 Casing (59.5 - 60.5') — Centralizer	— (+2.4 - 112.0') 2" PVC Sch 80 Casing		
8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8					(13.0 - 79.9') — Bentonite seal chips	(48.0 - 126.0') 10.0" Borehole	(13.0 - 79.9') 58.3 bags	(13.0 - 79.9') 60 bags (3%) Note: Puregold Medium Chips
		Topock - Fluvial Deposits	SW-SM					
			NR					pool lovel, CW = groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery

ARCA	DIS for natur	ral and sets		Well Constru	action Log	3	heet: 5 of 7
ate Started:	09/06/2019			_Surface Elevation:	160.0 ft amsl	Well ID: MW	/-92-102, MW-92-122
ate Completed:	09/25/2019			_Shallow Well Elevation:	162.4 ft amsl		·
rilling Co.:	Cascade				162.3 ft amsl	Client: <u>PG&E</u>	
rilling Method:	Sonic Drilling			o (,	2102813.6		GW Remedy Phase 1
riller Name:	J. Khem / S.	-		• ,	7617583.9	Location: <u>PG&E</u>	Topock, Needles, Califor
rilling Asst:	L. Amaya / O				3-12 inches		
ogger:	G. Willford / [ell		5.77 ft bgs	Project Number	: RC000753.0051
ditor:	Sean McGrai	ne		Development End Date: <u>:</u>			
otal Depth:	137 ft bgs			_Well Completion:	☐ Flush⊠ Stick-up		
Groundwat Sample II		USCS	USCS Class	Well Cor		Calculated Material Volumes	Material Volumes Installed
	Topock - Fluvial Deposits	SP-SM		(+2.5 - 82.0') 2" — PVC Sch 80 Casing (13.0 - 79.9') — Bentonite seal chips	— (+2.4 - 112.0') 2" PVC Sch 80 Casing	(13.0 - 79.9') 58.3 bags	(13.0 - 79.9') 60 bags (3% Note: Puregold Medium Ch
80 — — — — — — — — — — — — — — — — — — —	Topock - Fluvial Deposits	SW-SM		(82.0 - 102.0') 2" —	(48.0 - 126.0') 10.0" Borehole		
88		SM		(79.9 - 105.0') Cemex #3 MESH (8x10)		(79.9 - 105.0') 25.5 bags	(79.9 - 105.0') 30 bags (18 Note: Lapis Lustre Sand
97					ł [<u>d</u>		
							sea level, GW = groundw

09/06/2019 09/25/2019 Cascade			_Surface Elevation: _Shallow Well Elevation:	460.0 ft amsl	Well ID: MW	V-92-102, MW-92-122
			_Shallow Well Elevation:	462 4 ft amsl	-70	· · · , · · · · · · · · · · · · ·
Cascade				102.116 011101		
			_Deep Well Elevation:	462.3 ft amsl	Client: PG&E	
Sonic Drilling			_Northing (NAD83):	2102813.6	•	GW Remedy Phase 1
<u>l. Khem / S. ∖</u>	/asque	Z	_Easting (NAD83):	7617583.9	Location: <u>PG&E</u>	Topock, Needles, Califor
-			_Borehole Diameter:	6-12 inches		
<u> 3. Willford / D</u>	. Corne	ell		5.77 ft bgs	Project Number	: RC000753.0051
	<u>e</u>					
137 ft bgs			_Well Completion:	☐ Flush区 Stick-up		
Geologic Formation	USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
Topock - Fluvial Deposits	SM		(82.0 - 102.0') 2"	PVC Sch 80 Casing	(79.9 - 105.0') 25.5 bags	(79.9 - 105.0') 30 bags (18º Note: Lapis Lustre Sand
			(102.5 - 103.5')			
Topock - Competent Bedrock -	•		(105.0 - 110.0') Bentonite seal pellets	(48.0 - 126.0') 10.0" Borehole	(105.0 - 110.0') 4.8 buckets	(105.0 - 110.0') 4 buckets (-1 Note: Pel-Plug (TR30) 3/8
Bedrock - conglomerate			(110.0 - 127.0') Cemex #3 MESH — (8x10)	(112.0 - 122.0') 2" Sch 80 PVC (20-slot) Screen	(110.0 - 127.0') 16.8 bags	(110.0 - 127.0') 20 bags (19 Note: Lapis Lustre Sand
100 - Unitio	Scil C1	200150-1	ion System # - feet har	= bolow ground surface	umal = above recer	on lovel CW = are well
	Topock - Fluvial Deposits Topock - Competent Competent Competent Competent Competent Competent Competent Complomerate	Topock - Fluvial Deposits Topock - Competent Bedrock - Conglomerate CCS = Unified Soil CI	Topock - Competent Bedrock - conglomerate Topock - Competent Competent Competent Conglomerate	Amaya / O. Flores Borehole Diameter: Water Level Start: Development End Date: Well Completion: Well Completion: Well Completion: Well Completion: Well Completion: Well Completion: (82.0 - 102.0) 2" - Sch 80 PVC (20-slot) Screen (82.0 - 103.0') Cemex #3 MESH (8x10) (102.5 - 103.5') Centralizer (102.0 - 104.3') Sump and End Cap Topock - Competent Bedrock - conglomerate Completent Bedrock - conglomerate CCS = Unified Soil Classification System, ft = feet, bgs		Amaya / O. Flores

Date Completed: 09 Drilling Co.: Ca Drilling Method: Sc Driller Name: J. Drilling Asst: L. Logger: G. Editor: Se	9/06/2019 9/25/2019 ascade onic Drilling Khem / S. V Amaya / O. Willford / D. ean McGrane 37 ft bgs	Flores Cornell	Surface Elevation: Shallow Well Elevation: Deep Well Elevation: Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Date: Well Completion:	462.3 ft amsl 2102813.6 7617583.9 6-12 inches 5.77 ft bgs	Client: <u>PG&E</u> Project: <u>Final 0</u>	V-92-102, MW-92-122 GW Remedy Phase 1 Topock, Needles, California
Drilling Co.: Ca Drilling Method: Sc Driller Name: J. Drilling Asst: L. Logger: G. Editor: Se Total Depth: 13 Groundwater Sample ID	ascade onic Drilling Khem / S. V Amaya / O. Willford / D. ean McGrane The base	Flores Cornell	Deep Well Elevation: Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Date:	462.3 ft amsl 2102813.6 7617583.9 6-12 inches 5.77 ft bgs	Client: PG&E Project: Final (E GW Remedy Phase 1
Drilling Method: Sc Driller Name: J. Drilling Asst: L. Logger: G. Editor: Se Total Depth: 13	onic Drilling Khem / S. V Amaya / O. Willford / D. ean McGrand	Flores Cornell	Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Date:	2102813.6 7617583.9 6-12 inches 5.77 ft bgs	Project: Final 0 Location: PG&E	GW Remedy Phase 1
Driller Name: J. Drilling Asst: L. Logger: G. Editor: Se Total Depth: 13 Groundwater Sample ID	Khem / S. V . Amaya / O. . Willford / D. ean McGrand 37 ft bgs	Flores Cornell	Easting (NAD83): Borehole Diameter: Water Level Start: Development End Date:	7617583.9 6-12 inches 5.77 ft bgs	Location: <u>PG&E</u>	
Drilling Asst: L Logger: G. Editor: Se Total Depth: 13 Groundwater Sample ID	. Amaya / O. . Willford / D. ean McGrand 37 ft bgs	Flores Cornell	Borehole Diameter:Water Level Start:Development End Date:	6-12 inches 5.77 ft bgs		Topock, Needles, California
Logger: G. Editor: Se Total Depth: 13 Groundwater Sample ID	ean McGrane 37 ft bgs	. Cornell e	Water Level Start:Development End Date:	5.77 ft bgs	— Proiect Number	
Editor: Se Total Depth: 13 Groundwater Sample ID	ean McGrane 37 ft bgs	e	Development End Date:		Project Number	D0000750 0054
Total Depth: 13	37 ft bgs			10/31/2019		". <u>RC000753.0051</u>
Groundwater Sample ID		CS de SS	vveii Completion.	☐ Flush X Stick-up		
	Geologic	SS de SS		☐ Flushi∧ Stick-up	1	
118		USCS Code USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
119120121	Topock - Competent		(110.0 - 127.0') Cemex #3 MESH — (8x10) (122.5 - 123.5') Centralizer	(48.0 - 126.0') 10.0" Borehole (122.0 - 124.3') Sump and End Cap	(110.0 - 127.0') 16.8 bags	(110.0 - 127.0') 20 bags (19%) Note: Lapis Lustre Sand
	Bedrock - conglomerate		(127.0 - 137.0') Bentonite seal pellets End of Boring at	(126.0 - 137.0') 6.0" Borehole	(127.0 - 137.0') 3.45 buckets	(127.0 - 137.0') 3.75 buckets (9%) Note: Pel-Plug (TR30) 3/8"
_ ₁₃₇ Abbreviations: USC			137.0 'bgs.			

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwate ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery

9/.	ARC	ADIS	for natural and built assets		Во	ring	Log		She	et: 1 of	7
	Started:	· · · · · · · · · · · · · · · · · · ·		•		Elevation	-	Borin	a No.:	MW-92d	
	•	ted: <u>09/05/</u>				g (NAD8	•	_			
Drilling		<u>Casca</u>			_	(NAD83	•	_ Client:	PG&E		
_	Metho		Drilling		Total D	-	<u>137 ft bgs</u>	•		N Remedy Ph	
	ід Туре		onic Truck Mo			le Diame		_ Location:	PG&E T	opock, Needle	es, California
	Name:		em / S. Vasqu		-		Vater: 4.6 ft bgs	-		2000750 000	- 4
Drilling			aya / O. Flore		-	ng Metho		_ Project N	lumber: <u>I</u>	RC000753.00	01
Logge Editor:			<u>llford / D. Corı</u> McGrane			ng Interva ted to W		_			
Editor.		<u>Sean i</u>	MicGrane		T	led to vv	Tes NO				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
	60						(0.0 - 18.0') Topock - Fill; Poorly graded same (2.5Y 7/3); very fine grained to fine grained, s subround; trace silt; some organics; dry; hon	subangular to	allow	(0.0 - 3.0') Area around borehole subsided overnight after advancing the 10-inch casing.	(0.0 - 97.0') 4437 gallons of water used; 0 gallons of water recovered; 4437 gallons of water lost
8 9 10 11 12	. 120	No Sieve Samples Collected		Topock - Fil	II SP		(10'); wet			(12.0 - 17.0')	
13 14 15 16			MW-Y'-VAS- 12-17 (<0.033 U ppb) 8/20/2019 13:58							Sample interval was choosen based on moisture content of soils. Static water during sampling was higher possible from drill water used for heaving sands or possible confining unit.	
17				7						(17.0 - 37.0')	
										Soft drilling. Very loose	
18							(18.0 - 26.0') Topock - Fluvial Deposits; Pool	rly graded san	d with	material being pushed out by	
10	102			Topock -			silt (SP-SM); grayish brown (10YR 5/2) with pery fine grained to fine grained, subangular	pale yellow (2. to round; little	5Y //3); silt;	core barrel causing poor	
19				Fluvial Deposits	SP-SM	F. H.H.	trace clay, some organics; moist to wet (19'); no organics			recovery. Heaving sands encountered.	
20 Abbrev	viations	: USCS =	Unified Soil C	lassification	า Svsten	າ. ft = fee	et, bgs = below ground surface, am	sl = above	 mean sea	a level. GW = o	roundwater.

9/	ARC	ADIS	for natural and built assets		Во	ring Lo	g		She	eet: 2 of	7
Date S	Started:					Elevation:	460.0 ft amsl	Borir	na No.:	MW-92d	
Date C	-					g (NAD83):	2102813.6				
Drilling		Cascad			_	(NAD83):	7617583.9	_ Client:	PG&E		
Drilling					Total De	-	137 ft bgs	_ Project:		N Remedy Ph	
	ід Туре		nic Truck Mo			le Diameter:	6-12 inches	_ Location	: <u>PG&E 1</u>	<u> Fopock, Needl</u>	es, California
Driller			n / S. Vasque			o First Water:			. —	2000250	
Drilling			ya / O. Flores		-	ng Method:	4 inch x 10 ft. Core Barrel	_ Project N	Number: <u>I</u>	RC000753.00	51
Logge Editor:			ord / D. Corr IcGrane	<u>nell</u>		ng Interval: ted to Well:	Continuous				
Editor.		<u>Sean iv</u>	icGrane		Conven	led to vveii.	NO				1
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
21	102	No Sieve Samples Collected		Topock - Fluvial Deposits	SP-SM NR	(26.0	37.0') No recovery (NR)			(30.0') Due to borehole conditions 10" casing was retreated from 75 ft bgs to 30 ft bgs and re-advanced to 70 ft bgs on 8.26.19. (37.0 - 47.0') Soft drilling. Very loose material being pushed out by core barrel causing poor recovery. Core barrel pushed down 10 ft bgs down 10	
40 Abbre	viations	: USCS = U	Inified Soil Cl	lassificatio	n Systen	n ft=feet bo	s = below ground surface, an	nsl = above	mean sea	with very little to	uroundwater

9/	4KC	ADIS	for natural and built assets		Во	ring Lo	og		She	et: 3 of	7
Date S	started:	08/20/2	2019		Surface	Elevation:	460.0 ft amsl	Borir	ua No .	MW-92d	
Date C	Comple	ted: <u>09/05/2</u>	2019) (NAD83):	2102813.6	_		11111 024	
Drilling		Cascad				(NAD83):	7617583.9	_ Client:	PG&E		
Drilling			•		Total De	-	<u>137 ft bgs</u>	_ Project:		N Remedy Ph	
Drill Ri			nic Truck Mo			e Diameter	•	_ Location:	: <u>PG&E T</u>	opock, Needle	es, California
Driller Drilling			n / S. Vasque ya / O. Flores		-	g Method:	er: 4.6 ft bgs 4 inch x 10 ft. Core Barrel	– Project N	Lumbor: I	RC000753.005	<u> </u>
Logge			ord / D. Corn			g Interval:	Continuous	_ = 10]ect iv	iuiiibei. <u>I</u>	<u>\C000733.00\</u>	<i>)</i>
Editor:			1cGrane		-	ed to Well:		_			
				ی ج							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
414243444546	6				NR			C.		no resistance, aproximatly 0.5 ft of soil in core barrel. Heaving sands encountered.	
474849505152535455	120	No Sieve Samples Collected	MW-Y'-VAS- 52-57 (<0.033 U ppb) 8/21/2019 11:41	Topock - Fluvial Deposits	SP	ven, sub	0 - 60.0') Topock - Fluvial Deposits; Poor pale brown (10YR 7/3); very fine grained angular to round; trace silt; moist to wet	rly graded sar d to fine graind	nd (SP);	(47.0 - 57.0') Soft drilling. Heaving sands encountered.	
56 57 58 59	120	u Hegg = H	militad C - II C		n Suratur); moist to wet	ol 		(57.0 - 67.0') Soft drilling. Heaving sands encountered.	

9/2	RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	3		She	eet: 4 of	7
Date St	tarted:	08/20/2	:019		Surface	Elevati	ion:	460.0 ft amsl	Bori	na No.:	MW-92d	
Date Co		•			Northing			2102813.6	_			
Drilling		Cascad			Easting	•	3):	7617583.9	Client:	PG&E		
Drilling			•		Total De	•		137 ft bgs	Project:		W Remedy Ph	
Drill Rig Driller N			<u>nic Truck Mo</u> n / S. Vasque		Borehol			6-12 inches 4.6 ft bgs	Location	i: PG&E	Fopock, Needle	es, Calitornia
Drilling .			ya / O. Flores		Samplin			4 inch x 10 ft. Core Barrel	- Project l	Number:	RC000753.00	 51
Logger			ord / D. Corn		Samplin	-		Continuous	_ 1 10,0001	turnbor.	1.00007.00.00	J 1
Editor:			1cGrane		Convert	•			_			
	2			.j F	T							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS		Soil Description			Drilling Notes	Drilling Fluid
61 62 63 64 65 66 67	120			Topock - Fluvial Deposits	SP-SM		silt (SF fine gra	68.0') Topock - Fluvial Deposits; Poorl-SM); very pale brown (10YR 7/3); verained, subangular to round; little mediusubangular to round; little silt; wet	y fine graine	d to very	(67.0 - 77.0') Soft drilling.	
68 69 70 71 72 73 74 75 76	54	No Sieve Samples Collected		Topock - Fluvial Deposits	SW-SM		and gra grained to large	71.5') Topock - Fluvial Deposits; Well avel (SW-SM); very pale brown (10YR do very coarse grained, subangular to e pebbles, subround to round; little silt;	7/3); very fin round; little	ie	Very loose material being pushed out by core barrel causing poor recovery. Heaving sands encountered.	
77	120			Topock - Fluvial Deposits	SP-SM		silt (SF mediur pebble	80.0') Topock - Fluvial Deposits; Poorl -SM); very pale brown (10YR 7/3); very n grained, subangular to round; little gi s, subangular to round; little silt; wet	y fine graine ranules to m	d to nedium	(77.0 - 87.0') Soft drilling. Very loose material being pushed out by core barrel causing poor recovery. Heaving sands encountered. Spindle bolts	

Date	9/-	ARC	ADIS	for natural and built assets		Во	ring	Log	Sh	eet: 5 of	7
Northing (NADS) Calcadad C						Surface	Elevat		Boring No	: MW-92d	
Drilling Methods Sanic Drilling Pro-Sonic Trutk Mounted Borrello Dismeter Pro-Sonic Trutk Mounted Drilling Asset Location: PG&E Topcok, Needles, California, University Location: PG&E Topcok, Needles, California, University Location: PG&E Topcok, Needles, California, PGC&E Topcok, Needles, California, PGC&E Topcok, Needles, California, PGC&E Topcok, Needles, California, PGC&E Topcok, Needles, C			·			-		•	_	 •	
Diff Right Type: Diffied Name Diffied Assi: LAmaya (A) Efters Sanghing Method: Sanghing Interest Editor: Sanghing Interest Sanghing Inter	_					_	•				
Deller Name: J. Khenn / S. Vasquez Depth to First Water: 4.6 ft bgs G. Willford / D. Cornell Sampling Method: Sampling Interval: Sampling Method: Sam	_			•			•	_	•	•	
Dalling Assat: Lamayar J.O. Elbros Sampling Interval: Sampling Inter									_ Location: <u>PG&E</u>	ropock, Needl	es, Calitornia
Logger Seam McGrane Converted to Well: Ves No Service Seam McGrane Converted to Well: Ves No Service Service Continuents Service of Service Service of Service Service of Service Se						-		-	Project Number	RC000753 004	 51
Editor: Sean McGrane Converted to Well: Yes No Service Sample ID Converted to Well: Yes No Source Sample ID Converted to Well: Yes No Topock Flower Investor Invest	_			-		=	-		_ i iojectivallibel.	1.0000133.00	<i>J</i> 1
Sample ID Screen Sample ID Groundstofer ID Groundst						-	-		_		
					٥٥	· -					
31	Depth (ft)	Recover (in)			Geologic	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
Topock Fluidal Deposits SW-SN Deposits D	 82							and gravel (SW-SM); very fine grained to very subangular to round; some granules to very l	y coarse grained, arge pebbles,	advancing	
SM Deposits SW-SM Deposits SW-SM Deposits SW-SM Deposits Silty sand with gravel SMS, pale brown (1078 63), wery fire grained to coarse grained, subdiguished browning sands encountered. SMS, pale brown (1078 63), wery fire grained to coarse grained, subdiguished browning sands encountered. SMS, pale brown (1078 63), wery fire grained to coarse grained, subdiguished browning sands encountered. SMS, pale brown (1078 63), wery fire grained to coarse grained, subdiguished browning sands encountered. SMS, pale browning sands encountered.	83										
	84	120			Fluvial				•		
	-04-				Deposits						
	85							.0-			
88											
88	86										
88 - 88 - 88 - 89 - 89 - 90 - No Sieve Samples Collected 91 - 92 - 120 93 - 94 - 95 - 97 (0.31 ppb) 872/2019 11.43 1 Topock - Fluvial Deposits, Silty sand with gravel (88.0 - 88.2'); fat clay lense 1 (97.5 - 97.0') Topock - Fluvial Deposits, Silty sand with gravel (88.0 - 88.2'); fat clay lense 1 (97.0 - 101.6') Topock - Fluvial Deposits, Silty sand with gravel (88.0 - 88.2'); fat clay lense 1 (97.0 - 101.6') Topock - Fluvial Deposits, Silty sand with gravel (97.0 - 107.0') No water used large pebbles, subangular to round; little silt; trace clay; wet to moist 1 (97.0 - 101.6') Topock - Fluvial Deposits, Silty sand with gravel (97.0 - 107.0') No water used large pebbles, subangular to round; little silt; trace clay; wet to moist	5										
88 _ 88 _ 88 _ 88 _ 88 _ 88 _ 88 _ 88	87										
	<u> </u>									Soft drilling.	
89	88							(SM); pale brown (10YR 6/3); very fine grains	ed to coarse grained,		
99 No Sieve Samples Collected 91 120 92 120 MW-Y-VAS-92-97 (0.31 ppb) 872/2019 94 99 72 MW-Y-VAS-96-103 (-0.033 u) 872/2019 100 MW-Y-VAS-99-103 (-0.033 u) 872/2019 100 MW-Y-VAS-99-103 (-0.033 u) 872/2019 100								subangular to round; little silt; trace small co	m pebbles, bbles, round; trace		
90	89										
90			No Ciovo								
91	90		Samples								
			Collected								
93	91			•							
93											
93	92	120			Topock - Fluvial	SM					
MW-Y-VAS-92-97 (0.31 ppb) 8/22/2019 11:43	03				Deposits						
92-97 (0.31 ppb) 8/22/2019 11:43 96											
92-97 (0.31 ppb) 8/22/2019 11:43 96	94			MIM V VAS							
95	- J-T-			92-97							
	95			8/22/2019							
98				11:43							
98	96										
- 72 MW-Y- VAS-98-103 (<0.033 U ppb) 8/23/2019 21:24 MW-Y- 100 MW-Y- 21:24 MW-Y- 100 MW-Y- 1											
No water used No water used SM Some gray (10YR 6/3) some gray (10YR 6/3) some gray (10YR 6/3); very fine grained to coarse grained, subangular to round; little granules to large pebbles, subangular to round; little silt; trace clay; wet to moist	97							(07.0 404.0) 7			(07.0 107.0"
- 72 MW-Y- VAS-98-103 C<0.033 U ppb) 8/23/2019 21:24 Topock - Fluvial Deposits SM SM SM SM SM SM SM S	<u> </u>							(SM); pale brown (10YR 6/3) some gray (10)	R 6/1); very fine		
- 72 VAS-98-103 (<0.033 U ppb) (<0.032019 21:24 SM)	98							large pebbles, subangular to round; little silt;			
99 (<0.033 U ppb)		72			Fluvial				-		
8/23/2019 21:24	99			(<0.033 U	Deposits						
100				8/23/2019							
		viations	: USCS - U		assificatio	n Sveter	[:: ::[:]: ft = fc	pet has = helow around surface am	sl = ahove mean so	a level C/// - /	aroundwater

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g			She	eet: 6 of	7
	Started:					Elevation:	460.0 ft an		Boring	No.:	MW-92d	
	-	ted: <u>09/05/2</u>				g (NAD83):	2102813.6					
Drilling	-	Cascac			_	(NAD83):	<u>7617583.9</u>	1		G&E		
_	Metho		•		Total De	-	137 ft bgs		-		N Remedy Ph	
	ig Type Name:		nic Truck Mo			e Diameter: o First Water	6-12 inche	<u>S</u>	Location: P	G&E I	Topock, Needle	es, California
Drilling			n / S. Vasque ya / O. Flores		-	g Method:	_	ft. Core Barrel	Project Nur	nher l	RC000753.00	51
Logge	•		ord / D. Corr		-	g Interval:	Continuou		_ 1 Tojoot I v ai	ilbei. <u>i</u>	10000700.00	<i>J</i> 1
Editor			1cGrane		-	ed to Well:	× Yes	_	-			
				υ <u>ς</u>								
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	Class		Soil Description			Drilling Notes	Drilling Fluid
	72		MW-Y'- VAS-98-103 (<0.033 U ppb) 8/23/2019 21:24	Topock - Fluvial Deposits	SM		R 4/8); dry; stror	k - Competent Bedrock g cementation; heavily			(100.0 - 103.0') Rough drilling.	
103											(103.0 - 107.0') Very rough drilling.	
104	10							0				
	48							(3)				
	_											
	-										(107.0 - 117.0') Very rough drilling.	(107.0 - 117.0') 100 gallons of water used; 0 gallons of water recovered; 100
109_												gallons of water lost
110	-	No Sieve Samples Collected		Topock -								
			•	Competent Bedrock - conglomera								
112	120											
113	-											
114	-		MW-Y'-VAS- 112-117 (<0.033 U ppb)									
115_	-		8/23/2019 15:11									
116	_											
117 118 119	- 120										(117.0 - 127.0') Very rough drilling.	(117.0 - 127.0') 60 gallons of water used; 0 gallons of water recovered; 60 gallons of water lost
120		. 11000 - 1	Inified Soil Cl	and if and in	System	ft = foot ha	us = bolow a	ound surface ams	ol = above me	200.000	a layel CW =	aroundwater

Date Starte										
	ed: <u>08/20/</u>	2019			Elevation:	460.0 ft amsl	Boring	:.oN c	MW-92d	
Date Comp				_	j (NAD83):	2102813.6				
Drilling Co.					(NAD83):	7617583.9		PG&E		
Drilling Met				Total De	-	137 ft bgs	•		V Remedy Ph	
Drill Rig Typ Driller Nam	-	nic Truck Mo			e Diameter:	6-12 inches	Location:	PG&E I	opock, Needle	es, California
Drilling Ass		m / S. Vasque aya / O. Flores			First Water: g Method:	4 inch x 10 ft. Core Barrel	Project Nu	ımher. F	RC000753.00	51
Logger:		ford / D. Corn			g Interval:	Continuous	, i iojootive	bci. <u>I</u>	10000700.00	J1
Editor:		/lcGrane		-	ed to Well:		•			
>			υ <u>Ε</u>	Τ						
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
 _121 _122 _123							Ó			
- 120	,									
_124										
6 177										
_125										
126										
107										
127									(127.0 - 132.0')	(127.0 - 137.0')
128_									` Very rough ´ drilling.	735 gallons of water used; 675
120	No Sieve		Topock - Competent	:						gallons of water recovered; 60
129_	Samples Collected		Bedrock - conglomerat							gallons of water lost
60			J							
_130										
131										
			X	Ť						
132									(132.0 - 137.0')	
									`Very rough ´ drilling.	
133_										
		no 6								
		no sample (interval did								
135_		not produce) 8/24/2019								
		12:55								
_136										
137						End of Paring at 127 0 !-				
						End of Boring at 137.0 'bg	э.			
_138										
8 -										
-I I										
_139										
139_										

9/	ARC	ADIS	for natural and built assets		Во	ring	Log	9		Shee	et: 1 of	4
	Started				Surface			460.4 ft amsl	Borir	na No.:	MW-92s	
	•	ted: <u>09/10/</u>			Northin		,	2102811.6	-			
Drilling		Casca			Easting	•	33):	7617576.7	Client:	PG&E		
Drilling			Drilling		Total D	-		77 ft bgs	Project:		V Remedy Ph	
Drill Ri			nic Truck Mou Vasquez	untea	Boreho Denth t			10-12 inches 4.6 ft bgs	Location	PG&E I	opock, Needl	es, Calliornia
Drilling			<u>vasquez</u> aya / O. Flore:		Samplir			4 inch x 10 ft. Core Barrel	Project N	Lumber: F	RC000753.00	 51
Logge			Cornell	<u> </u>	Samplir	-		Screen Intervals	_ 1 10j00t1	1011110011 <u>1</u>	10000700.00	<i>5</i> 1
Editor			McGrane		Conver	-			-			
	>			υ <u>5</u>								
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS		Soil Description			Drilling Notes	Drilling Fluid
1		No Sieve Samples Collected	MW-Y'-VAS- 12-17 (<0.033 U ppb) 8/20/2019 13:58		NR			7.0') No recovery (NR); Core not collected boring log for lithologic descriptions	cted or logge	d, see	(0.0 - 17.0') Heaving sands	(0.0 - 17.0') 300 gallons of water used; 275 gallons of water recovered; 25 gallons of water lost
17 18 19 20	- 144			Topock - Fluvial Deposits	SP		dark gr grained trace c	25.0') Topock - Fluvial Deposits; Poorl ayish brown / dark yellowish brown (10 I to medium grained, subangular to sul lay; wet	ÌΫ́R 4/2); ven bround; trace	/ fine e silt;	(17.0 - 37.0') Heaving sands. Full recovery not obtained likely due to soft material and sloughing out of core barrel.	
Abbre	viations	s: USCS =	Unified Soil C	lassificatio	n Systen	f_0 , f_0	et, bg	s = below ground surface, ams	sl = above	mean sea	level, GW =	groundwater,

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundw ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, groundwater data was collected from MW-91d

Date Started: 09/08/2019 Surface Elevation: 450.4 ft.ams Boring No.: MW-925	9/	ARC	ADIS	for natural and built assets		Во	ring	Log		She	et: 2 of	4
Date Completed Date Log Date Completed Date	l l					Surface	Elevat	on: 460.4 ft amsl	Borin	a No.:	MW-92s	
Deliling Asst: Deliling Asst:		•									<u> 020</u>	
Diff in Type: Drilling Name Steve Vasque Diff Diff Steve Vasque Diff D						_	•	•				
Dolling Assis:Amanya / O. Flores	_	-		-			-	_	-		-	
Dalling Asst: L. Amaya / O. Fores David Cornel Sampling Interval: Seam McGrane Converted to Well: Seam McGrane Sampling Interval: Seam McGrane Sampling Interv									Location:	PG&E T	opock, Needl	es, California
Daylor Daylor Daylor Sean McGrane Sample Daylor Sean McGrane Converted to Well: Yes No				-		-		_	Designet N		2000752.00	T 4
Editor: Sean McGrane Converted to Well: 2 Yes No Service Service Description Cross-triviolate Description Converted to Well: 2 Yes No Scription Converted to Well: 2 Yes No Topock Fluxion Description No Scription Converted to Well: 2 Yes No Topock Fluxion Description No Scription Conve	_			-		-	-		Projectiv	umber: <u>F</u>	<u> </u>	01
Service Sumple ID Corondester Individual Corondester Individual Corondester Individual Corondester ID Corondester						-	-					
22	Luitor		Sean	VICGIAITE		T		veii. 🔼 l'es 📋 No				
Topicisk Floridal Deposits 23 24 25 26 27 27 27 27 27 27 27	Depth (ft)	Recovery (in)	Sieve Sample ID		Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
27					Fluvial Deposits	SP		(25.0 - 29.0') Topock - Fluvial Deposits; Poorl dark grayish brown / dark yellowish brown (10 grained to medium grained, subangular to sub	YR 4/2): verv	fine		
Samples Collected 31	28 28	144	No Siavo		Fluvial	SP		(29.0 - 37.0') No recovery (NR)			recovery due to	
	3131		Samples	•		ND					grained sands out of core barrel or pushed out into	
35 _ 35 _ 35 _ 35 _ 35 _ 35 _ 35 _ 35 _	30_	1				NR						
35 _ 35 _ 35 _ 35 _ 35 _ 35 _ 35 _ 35 _	34]					/\					
37 - 37 - 38 - 38 - 38 - 39 - 40 - 40 - 30 - 30 - 30 - 30 - 30 - 30]					/ \					
37 - 37 - 38 - 38 - 38 - 39 - 40 - 40 - 30 - 30 - 30 - 30 - 30 - 30	35_											
37. ————————————————————————————————————												
37. ————————————————————————————————————	36_ 36_						/ \					
37.0 - 47.0') No recovery (NR); Core not collected or logged, see (37.0 - 47.0') MW-92d boring log for lithologic desriptions NR NR (37.0 - 47.0') Heaving sands.	L C C C						\					
37.0 - 47.0') No recovery (NR); Core not collected or logged, see (37.0 - 47.0') MW-92d boring log for lithologic desriptions NR NR (37.0 - 47.0') Heaving sands.					L	.L	L\	L 				
NR NR	- J						T - 7	(37.0 - 47.0') No recovery (NR); Core not colle	ected or logge	ed, see		
NR NR 40]					$ \setminus $	oza soring log for intrologic destipitotis				
	HI COLON					NID	$\mid \bigvee$					
	39_ _39_					INK						
	n						/ \					

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, groundwater data was collected from MW-91d

9/	ARC	CADIS	for natural and built assets		Во	ring L	_og		Shee	et: 3 of	4
Date S						Elevation		Borii	na No.:	MW-92s	
	•	ted: <u>09/10/</u>) (NAD83	,	_			
Drilling		<u>Casca</u>				(NAD83):		_ Client:	PG&E		
Drilling			Drilling	41	Total De	-	77 ft bgs	_ Project:		V Remedy Ph	
Drill Ri Driller			<u>nic Truck Mo</u> Vasquez	<u>untea</u>		e Diamete	er: <u>10-12 inches</u> ater: <u>4.6 ft bgs</u>	_ Location	i: PG&E I	opock, Needl	es, California
Drilling			<u>vasquez</u> aya / O. Flore		-	g Method	_	- Project N	Jumber: F	RC000753.00	 51
Logge			Cornell		-	ig Interval		_ 1 10,0001	varriber. <u>r</u>	10000700.00	01
Editor:			McGrane		-	ed to We		_			
	>			υ <u>Ε</u>							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
41 42 43 44 45 46 47 48				Topock - Fluvial Deposits	NR SP	(1	7.0 - 49.0°) Topock - Fluvial Deposits; (SP) 0YR 5/2); very fine grained to medium grai ubround; trace coarse grained sand; trace s	ined, subangı	ular to	(47.0 - 57.0') Heaving sands. Full recovery not obtained likely due to	(47.0 - 77.0') 430 gallons of water used; 400 gallons of water recovered; 30
49 50 51		No Sieve Samples Collected		Topock - Fluvial Deposits	SP-SM	J : . / i	9.0 - 51.0') Topock - Fluvial Deposits; (SP- 0YR 5/2); very fine grained to medium grai ubround; little silt; trace clay; wet			compaction.	gallons of water lost
525354555556	108		MW-Y'-VAS- 52-57 (<0.033 U ppb) 8/21/2019 11:41	Topock - Fluvial Deposits	SP	(1 su	61.0 - 56.0') Topock - Fluvial Deposits; (SP) 0YR 5/2); very fine grained to medium grai abround; trace coarse grained sand; trace services of the services of	ined, subangu	ular to		
57				L	NR 	() () () () () ()	7.0 - 62.0') Topock - Fluvial Deposits; (SP)): gravish bra		(57.0 - 67.0')	
 58 59 	90			Topock - Fluvial Deposits	SP		07.0 - 02.0) Topock - Fluvial Deposits, (SP, 07R 5/2); very fine grained to medium grai ubround; trace coarse grained sand; trace s	ined, subangı	ular to	Heaving sands. Full recovery not obtained likely due to compaction and possibly falling out of barrel.	
	viations	: USCS =	Unified Soil C	lassificatio	n System	ft = feet	. bas = below ground surface, am	sl = above	mean sea	level GW = 0	nroundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundw ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, groundwater data was collected from MW-91d

ARC	ADIS	for natural and built assets		Bo	ring	Log	3			Shee	et: 4 of	4
Date Started:	09/09/2	2019	_	Surface	Elevati	ion:	460.4 ft amsl		Borin	a No ·	MW-92s	
Date Complete	ed: <u>09/10/2</u>	2019		Northing	g (NAD	83):	2102811.6		Domi	ig ito	14144-323	
Drilling Co.:	Cascad	le		Easting	(NAD8	33):	7617576.7		Client:	PG&E		
Drilling Method		•		Total De	epth:		77 ft bgs		Project:		/ Remedy Ph	
Drill Rig Type:	<u>Proson</u>	<u>ic Truck Mou</u>		Borehol			<u>10-12 inches</u>		Location:	PG&E T	opock, Needle	es, California
Driller Name:		/asquez		=			4.6 ft bgs			-		
Drilling Asst:		<u>ya / O. Flores</u>		Samplin	•		4 inch x 10 ft. Cor	<u>e Barrel</u>	Project N	lumber: <u>R</u>	C000753.00	51
Logger:	David C			Samplin	-		Screen Intervals					
Editor:	Sean M	1cGrane		Convert	ed to W	Vell:						
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class		Soil D	Description			Drilling Notes	Drilling Fluid
61			Topock - Fluvial Deposits	SP					0			
63 63 64			Topock - Fluvial Deposits	SP		very fin	64.5') Topock - Fluvial I e grained to medium gra parse grained sand; trad	ained, subang <mark>u</mark> l	ar to subrou	R 5/3); nd;		
65 66 67				NR			67.0') No recovery (NR)					
 68 	No Sieve Samples Collected		Topock - Fluvial Deposits	SP		very fin trace co	69.0') Topock - Fluvial I e grained to medium gra parse grained sand; trad	ained, subangul ce silt; trace cla	ar to subrou y; wet	ınd;	(67.0 - 77.0') Heaving sands. Full recovery not obtained likely due to compaction.	
70 71 71 72 108 73 74			Topock - Fluvial Deposits	SP-SM		4/3); ve subrou	74.5') Topock - Fluvial I ry fine grained to mediu nd; trace granules to sm varse grained sand; trac	ım grained, sub nall pebbles, an	angular to ` gular to suba			
			Topock - Fluvial Deposits	SP NR		gravel (grained subrou	76.0') Topock - Fluvial I SP); brown (10YR 5/3); , subangular to subrour nd to round; trace silt; tr 77.0') No recovery (NR)	very fine graine nd; some small race clay	ed to verv coa	arse III		
	_			1	<u>~ </u>		End of Bor	ing at 77.0 'bgs	-			·
	USCS = II	Inified Soil Cla	assification	ງ Svstem	n, ft = fe	eet. bas	s = below ground s	surface, ams	= above	mean sea	level. GW = 0	groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, groundwater data was collected from MW-91d

AF	RCA	DIS Design & Of for natura built asset	Consultancy I and ts		Well Const	ruction Log		Sheet: 1 of 6
Date Com Drilling Co Drilling Me Driller Nan Drilling As Logger: Editor:			za	Surface Elevation: Shallow Well Elevation: Deep Well Elevation: Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Date: Well Completion:	N/A N/A N/A N/A N/A N/A 10-12 inches 10.55 ft bgs 12/7/2019	Client: PG&I Project: Final Location: PG&I	WW-94-30, MW-94-100 E GW Remedy Phase 1 E Topock, Needles, California er: RC000753.0051	
	roundwate Sample ID			Well C	Construction	Calculated Material Volumes	Material Volumes Installed	
colle 2 10 not in th	oundwater VAS ection war i included the drilling scope 1/1/2019 20:16	Topock - Fluvial Deposits Topock - Fluvial Deposits	SW SW		(0.0 - 10.0') 2" PVC — Sch 80 Casing (2.5 - 3.5') Centralizer (1.5 - 5.0') Grout (5.0 - 8.0') Cemex — #60 MESH (10.0 - 30.0') 2" — 0.020" Slot Sch 80 PVC Screen (8.0 - 34.0') Cemex — #3 MESH (8x10)	(0.0 - 7.0') 12.0" Sch 80 Casing (0.0 - 7.0') 12.0" Borehole (7.0 - 105.0') 10.0" Borehole	(5.0 - 8.0') 4 bags (8.0 - 34.0') 26.2 bags	(5.0 - 8.0') 15.5 gallons (-7%) Note: Type I, II and V and Benseal (5.0 - 8.0') 19 bags (375%) Note: Lapis Lustre Sand, used >20% of calculated volume due to potentia voids forming during drilling (8.0 - 34.0') 32 bags (22%) Note: Lapis Lustre Sand, used >20% of calculated volume due to potentia voids forming during drilling
			Soil C	assificat	ion System, ft = feet, bgs	= below ground surface, a	msl = above mean	sea level, GW = groundwater,
NR = no r	ecovery	/						

9	ARCA	Design & for natur built asso	Consultancy ral and ets		Well Consti	ruction Log	:	Sheet: 2 of 6
Date Drill	e Started: e Completed ing Co.: ing Method:	11/14/2019 : 11/16/2019 Cascade Sonic Drilling			_Surface Elevation: _Shallow Well Elevation: _Deep Well Elevation: _Northing (NAD83):	N/A N/A N/A N/A	Client: <u>PG&I</u>	MW-94-30, MW-94-100 E GW Remedy Phase 1
Drill Drill Log Edit	Driller Name: Jose Hernandez Drilling Asst: L. Amaya / P. Almanza Logger: Chris Bonessi Editor: Sean McGrane		_Easting (NAD83): _Borehole Diameter: _Water Level Start: _Development End Date:	N/A 10-12 inches 10.55 ft bgs 12/7/2019	Location: <u>PG&I</u>	E Topock, Needles, California		
Depth	Groundwa Sample I		USCS	USCS Class	_Well Completion:	Flush Stick-up	Calculated Material Volumes	Material Volumes Installed
21 22 23 24 2 24 2 25 2 24 2 25 2 25 2 25	Groundwate VAS Collection w. not include in the drilling scope 11/1/2019 20:16	as d g	SW		(30.5 - 31.5') Centralizer (30.0 - 32.3') Sump and End Cap	(7.0 - 105.0') 10.0" (7.0 - 105.0') 10.0" Borehole	(8.0 - 34.0') 26.2 bags	(8.0 - 34.0') 32 bags (22%) Note: Lapis Lustre Sand, used >20% of calculated volume due to potential voids forming during drilling
34 34 35 35 35 35 35 35	- 5 - - , - , - 3 -		NR		(34.0 - 63.0') Bentonite seal pellets		(34.0 - 63.0') 24.3 buckets	(34.0 - 63.0') 32 buckets (32%) Note: Pel-Plug (TR30) 3/8", used >20% of calculated volume due to potential voids forming during drilling
<u></u>	reviations: U = no recover		Soil C	lassifica	tion System, ft = feet, bgs	= below ground surface, a	msl = above mean	sea level, GW = groundwater,
5 	1.0 1000 VCI	J						

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Date Started: 11/14/2019 Surface Elevation: N/A Well ID: MW-94-30, MW-94-100 Daillog Core: Cascade Deep Well Elevation: N/A Clark: PG&E Dilling Mehod: Sonic Drilling N/A N/A Project: Final GW Remedy Phase 1 Dilling Assist: Lose Hernandez Leasing (NADS3): N/A Location: PG&E Location: PG&E Location: PG&E Location: PG&E Location: PG&E Phase 1 Location: PG&E Location: PG&E Location: PG&E Location: PG&E Project Number: RC000753.0051 Project Number: RC000753.0051 <th>ARC</th> <th>DIS Design & C for natural built asset</th> <th>c<mark>onsultancy</mark> land s</th> <th>W</th> <th>ell Const</th> <th>ruction Log</th> <th></th> <th>Sheet: 3 of 6</th>	ARC	DIS Design & C for natural built asset	c <mark>onsultancy</mark> land s	W	ell Const	ruction Log		Sheet: 3 of 6
	Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger: Editor:	Orate Completed: 11/16/2019 Orilling Co.: Cascade Orilling Method: Sonic Drilling Oriller Name: Jose Hernandez Orilling Asst: L. Amaya / P. Almanza Origger: Chris Bonessi Editor: Sean McGrane Total Depth: 105 ft bgs		Shallow Deep W Northing Easting Borehold Water L Develop	Shallow Well Elevation: N/A Deep Well Elevation: N/A Northing (NAD83): N/A Easting (NAD83): N/A Borehole Diameter: 10-12 inches Water Level Start: 10.55 ft bgs Development End Date: 12/7/2019			E GW Remedy Phase 1 E Topock, Needles, California
	Groundwar Sample II	Geologic Formation	USCS Code USCS	Class	Well C		Material Volumes	
The file recovery	42	digg		Bento	onite seal ellets	(7.0 - 105.0') 10.0 Borehole	(34.0 - 63.0') 24.3 buckets	Note: Pel-Plug (TR30) 3/8", used >20% of calculated volume due to potential voids forming during drilling
	NK = no recover	У						

ARCA	DIS Design & C for natural built assets	consultancy and s	Well Const	ruction Log	;	Sheet: 4 of 6
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger: Editor: Total Depth:	11/14/2019 11/16/2019 Cascade Sonic Drilling Jose Hernand L. Amaya / P. Chris Bonessi Sean McGrand	Almanza	_ Surface Elevation: _ Shallow Well Elevation: _ Deep Well Elevation: _ Northing (NAD83): _ Easting (NAD83): _ Borehole Diameter: _ Water Level Start: _ Development End Date: _ Well Completion:	N/A N/A N/A N/A N/A N/A 10-12 inches 10.55 ft bgs 12/7/2019 Flush Stick-up	Client: PG&I Project: Final Location: PG&I	MW-94-30, MW-94-100 GW Remedy Phase 1 Topock, Needles, California r: RC000753.0051
Groundwar Sample II		USCS Code USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
61		NR	(34.0 - 63.0') Bentonite seal pellets (62.5 - 63.5') Centralizer (63.0 - 68.0') Cemex #60 MESH	— (0.0 - 70.0') 2" PVC Sch 80 Casing	(34.0 - 63.0') 24.3 buckets (63.0 - 68.0') 5.2 bags	(34.0 - 63.0') 32 buckets (32%) Note: Pel-Plug (TR30) 3/8", used >20% of calculated volume due to potential voids forming during drilling (63.0 - 68.0') 9 bags (73%) Note: Lapis Lustre Sand, used >20% of calculated volume due to potentia voids forming during drilling
Groundwate VAS collection wa not included in the drilling scope 11/1/2019 20:16	Alluvium Deposits	SM		(7.0 - 105.0') 10.0" Borehole (70.0 - 100.0') 2" 0.020"-Slot Sch 80 PVC Screen		
73	Topock - Alluvium Deposits	SM	(68.0 - 105.0') Cemex #3 MESH (8x10)	9	(68.0 - 105.0') 38.9 bags	(68.0 - 105.0') 53 bags (36%) Note: Lapis Lustre Sand, used >20% of calculated volume due to potential voids forming during drilling
75 75 76 76 76 76 77 77 77 77 77 77 78	Topock - Alluvium Deposits	SW-SM				
	Topock - Alluvium Deposits	SM Soil Classifica	tion System ft = feet bas	= helow ground surface a	msl = ahove mean	sea level, GW = groundwater,
NR = no recover		Juli Classifica	uon oystem, it – leet, bgs	- below ground surface, a	moi – abuve medil	oca ievei, Gvv – giouriuwater,
MELL						

ARC	Design & Co for natural a built assets	nsultancy and	Well Const	ruction Log	S	Sheet: 5 of 6
Date Started: 11/14/2019 Date Completed: 11/16/2019 Drilling Co.: Cascade Drilling Method: Sonic Drilling Driller Name: Jose Hernandez Drilling Asst: L. Amaya / P. Almanza Logger: Chris Bonessi Editor: Sean McGrane Total Depth: 105 ft bgs		Surface Elevation:Shallow Well Elevation:Deep Well Elevation:Northing (NAD83):Easting (NAD83):Borehole Diameter:Water Level Start:Development End DateWell Completion:	N/A N/A N/A 10-12 inches 10.55 ft bgs	Client: PG&E Project: Final (//W-94-30, MW-94-100 E GW Remedy Phase 1 E Topock, Needles, California E RC000753.0051	
Groundwa Sample I			Well C	Construction	Calculated Material Volumes	Material Volumes Installed
	Topock - Alluvium Deposits	SM		(70.0 - 100.0') 2" 0.020"-Slot Sch 80 PVC Screen		
85	Deposits	SW-SM			30	
Groundwate VAS Collection w not include in the drillin scope 11/1/2019 20:16	as d ng	SM	(68.0 - 105.0') Cemex #3 MESH (8x10)	(7.0 - 105.0') 10.0" Borehole	(68.0 - 105.0') 38.9 bags	(68.0 - 105.0') 53 bags (36%) Note: Lapis Lustre Sand, used >20% of calculated volume due to potentia voids forming during drilling
94	Topock - Alluvium Deposits	SW-SM	5			
96 — — 96 — — 97 — — 98 — — 99 — — 100	Topock - Alluvium Deposits	SM Soil Classifica	tion System ft = feet has	s = below ground surface a	msl = above mean o	sea level, GW = groundwater,
NR = no recover		COII OIGSSIIICA	aon Cystom, it - icci, bys	Sciow ground surface, at	moi – above mean s	Joa lovoi, Ovv – groundwaler,

9/	ARC4	DIS Design & for natur built asso	Consultancy al and ets		Well Constr	ruction Log		Sheet: 6 of 6
Date C Drilling	Co.: Method: Name: Asst:	11/14/2019 11/16/2019 Cascade Sonic Drilling Jose Hernand L. Amaya / P. Chris Boness Sean McGran 105 ft bgs	Almanz i	'a	_Surface Elevation: _Shallow Well Elevation: _Deep Well Elevation: _Northing (NAD83): _Easting (NAD83): _Borehole Diameter: _Water Level Start: _Development End Date: _Well Completion:	N/A N/A N/A N/A N/A 10-12 inches 10.55 ft bgs 12/7/2019 Flush Stick-up	Client: PG& Project: Fina Location: PG&	MW-94-30, MW-94-100 RE al GW Remedy Phase 1 RE Topock, Needles, California er: RC000753.0051
Depth (ft)	Groundwat Sample II		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
	Groundwate VAS collection wa not included in the drillin scope 11/1/2019 20:16	Deposits as	SW-SM		(100.5 - 101.5')	(7.0 - 105.0') 10.0" Borehole (100.0 - 102.3') Sump and End Cap	(68.0 - 105.0') 38.5 bags	(68.0 - 105.0') 53 bags (36%) Note: Lapis Lustre Sand, used >20% of calculated volume due to potential voids forming during drilling
OPOCK DATA TEMPLATE FOR PI		_			End of Boring at 105.0 'bgs.	9	3	
108		•			6			
9)TOPOCK DATABA						K		
GS/GINT FILES/12:30:1			•	Q				
CK/DRAFT BORING LO					CUI			
OMENTS/PG&E TOPO								
117								
3&E TOPOCK C:\USEF								
'n	viations: U		l Soil Cla	assificat	ion System, ft = feet, bgs	= below ground surface, a	nmsl = above mea	n sea level, GW = groundwater,
WELL								

ARC ²	ADIS Design & Co. for natural shullt assets	onsultancy and 5	Well Const	ruction Log	:	Sheet: 1 of 11
Date Started:	11/03/2019		_Surface Elevation:	N/A	Well ID: I	MW-94-175
Date Completed			_Shallow Well Elevation:	N/A		
Drilling Co.:	Cascade		_Deep Well Elevation:	N/A	Client: PG&I	
Drilling Method:	_	- D	_Northing (NAD83):	N/A		GW Remedy Phase 1
Driller Name: Drilling Asst:	S. Vasquez / E		_Easting (NAD83): _Borehole Diameter:	N/A 6-10 inches	Location: PG&t	E Topock, Needles, California
Logger:	L. Amaya / P. / JL / SM/ GJ / F		_ Borenole Diameter. _ Water Level Start:	9.73 ft bgs	— Project Numbe	r: <u>RC000753.0051</u>
Editor:	Kendra Keon	10	_ vvater Eever start. _ Development End Date:	•	1 Toject Numbe	1. 11. 11. 11. 11. 11. 11. 11. 11. 11.
Total Depth:	207 ft bgs		Well Completion:	Flush Stick-up		
			·			
Groundwa Sample		USCS Code USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
1 1 2 1 2 2 1 2 2 2	Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits	SW-SC SM NR	(2.0 - 15.0') Portland Cement 6% Bentonite (15.0 - 145.0') Bentonite seal pellets	(14.0 - 207.0') 6.0" Borehole	(2.0 - 15.0') 30 gallons (15.0 - 145.0') 36.28 buckets	(2.0 - 15.0') 77.5 gallons (158%) Note: Type I, II and V and Hydrogel, used >20% of calculated volume due voids in formation. (15.0 - 145.0') 43 buckets (19%) Note: Pel-Plug (TR-30) 3/8", on 11/4 the 6-inch casing was pulled to 94 ft. bgs to prevent bridging between the well casing and drill casing
E 20 Abbreviations: I	ISCS = Unified	Soil Classifica	tion System ft = feet has	= helow ground surface as	msl = ahove mean	sea level, GW = groundwater,
NR = no recove		JUII CIASSIIICA	uon oysteili, it – leet, bgs	- below ground surface, a	mai – above medn	sea ievei, Gvv – groundwaler,
SINIX - HO TECOVE	у					
₩.						

9	ARC4	DIS Design & for nature built asset	Consultancy al and ets		Well Const	ruction Log		Sheet: 2 of 11
	e Started:	11/03/2019			_Surface Elevation:	N/A	Well ID:	MW-94-175
	e Completed:				_Shallow Well Elevation:	N/A		
	ing Co.:	Cascade Sonic Drilling			_Deep Well Elevation: _Northing (NAD83):	N/A N/A	Client: PG&	I GW Remedy Phase 1
	er Name:	S. Vasquez /		os	_Easting (NAD83):	N/A	-	E Topock, Needles, California
	ing Asst:	L. Amaya / P.			_Borehole Diameter:	6-10 inches		
Log	ger:	JL / SM/ GJ /			_Water Level Start:	9.73 ft bgs	Project Numbe	er: RC000753.0051
Edit		Kendra Keon			_Development End Date:		<u></u>	
Tota	al Depth:	207 ft bgs	1		_Well Completion:	☐ Flush☐ Stick-up		
Depth	Groundwat Sample II		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
21 22 23	_ 2 _				(0.0 - 155.0') 2" — PVC Sch 80 Casing			
- EL /0	-							
24	' -	Topock -						
5 — 25	,	Fluvial Deposits	GW					
26	s				(25.5 - 26.5')			
A P					Centralizer			
<u>27</u>	'							
<u></u>	4							
28	3_							
- A	. –							
29	Groundwate VAS	Topock - Fluvial	SW-SM					(45.0. 445.0); 40.1. 1.4. (400())
≦ — Š 30	collection wa	S Deposits	GW		(15.0 - 145.0')	(14.0 - 207.0') 6.0"	(15.0 - 145.0') 36.28	(15.0 - 145.0') 43 buckets (19%) Note: Pel-Plug (TR-30) 3/8", on 11/4
1018	in the drilling				Bentonite seal pellets	Borehole	buckets	the 6-inch casing was pulled to 94 ft. bgs to prevent bridging between the
31	11/1/2019	Deposits						well casing and drill casing
32	2							
- ING FO	4							
33	3_							
- CKID48	. 🚽							
34	'							
불 - 35	,	Topock -	0.4					
_ John Land		Fluvial Deposits	SM					
36	3_							
- CGRA								
37	, _							
- CHUS	4							
38	3_							
- GRE	-							
39	9-							
- 4C	$^{\prime}$							
		ISCS = Unified	Soil Cl	assificat	tion System, ft = feet, bgs	= below ground surface, a	msl = above mean	n sea level, GW = groundwater,
NR	= no recover	У						

WEL

ARC4	DIS Design & for nature built asset	Consultancy al and ets		Well Consti	ruction Log	5	Sheet: 3 of 11
Date Started: Date Completed: Drilling Co.:	Cascade		;	Surface Elevation: Shallow Well Elevation: Deep Well Elevation:	N/A N/A N/A	Client: <u>PG&E</u>	
Orilling Method:	Sonic Drilling			Northing (NAD83):	N/A	•	GW Remedy Phase 1
Oriller Name:	S. Vasquez /			Easting (NAD83):	N/A	Location: <u>PG&E</u>	E Topock, Needles, Californ
Orilling Asst:	L. Amaya / P.			Borehole Diameter:	6-10 inches		D0000750 0054
Logger:	JL / SM/ GJ /			Water Level Start:	9.73 ft bgs	Project Numbe	r: RC000753.0051
Editor: Fotal Depth:	Kendra Keon 207 ft bgs			Development End Date: Well Completion:	☐ Flush☐ Stick-up		
Total Depth.				vveli Completion.	Flush Stick-up	1	T
Groundwat Sample IE		USCS Code	Class		onstruction	Calculated Material Volumes	Material Volumes Installed
41	Topock - Fluvial Deposits	SM		(0.0 - 155.0') 2" — PVC Sch 80 Casing			
47 48 49 Groundwate 50 not included	Topock -	SP		(15.0 - 145.0')	(14.0 - 207.0') 6.0"	(15.0 - 145.0') 36.28	(15.0 - 145.0') 43 buckets (19 Note: Pel-Plug (TR-30) 3/8", on
in the drilling scope 11/1/2019	Fluvial Deposits Topock -	SM		Bentonite seal pellets	Borehole	buckets	the 6-inch casing was pulled to bgs to prevent bridging between well casing and drill casing
_51 20:16	Fluvial \ Deposits	ML .					
	Topock - Fluvial Deposits	SW D					
_54							
	Topock - Fluvial	SP-SM					
_55	Deposits						
_ 56	Topock -						
	Fluvial	SM 🔡					
_57	Deposits Topock -	MH I					
	Fluvial Deposits	IVIT					
_ 58	Topock - Fluvial Deposits	sc //					
59	Doposito	\ \\\\/\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	///				
59 	Topock - Fluvial	SW-SC					

70 not in the drilling (15.0 - 145.0') Repropries seal (14.0 - 207.0') 6.0" (15.0 - 145.0') 36.28 Note: Pel-Plug (TR-30) 3/8", on 11 the drilling (15.0 - 145.0') 36.28 Note: Pel-Plug (TR-30) 3/8", on 11 the drilling (15.0 - 145.0') 36.28 Note: Pel-Plug (TR-30) 3/8", on 11 the drilling (15.0 - 145.0') 36.28 Note: Pel-Plug (TR-30) 3/8", on 11 the drilling (15.0 - 145.0') 36.28 Note: Pel-Plug (TR-30) 3/8", on 11 the drilling (15.0 - 145.0') 36.28 Note: Pel-Plug (TR-30) 3/8", on 11 the drilling (15.0 - 145.0') 36.28 Note: Pel-Plug (TR-30) 3/8", on 11 the drilling (15.0 - 145.0') 36.28 Note: Pel-Plug (TR-30) 3/8", on 11 the drilling (15.0 - 145.0') 36.28 Note: Pel-Plug (TR-30) 3/8", on 11 the drilling (15.0 - 145.0') 36.28 Note: Pel-Plug (TR-30) 3/8", on 11 the drilling (15.0 - 145.0') 36.28 Note: Pel-Plug (TR-30) 3/8", on 11 the drilling (15.0 - 145.0') 36.28 Note: Pel-Plug (TR-30) 3/8", on 11 the drilling (15.0 - 145.0') 36.28 Note: Pel-Plug (TR-30) 3/8", on 11 the drilling (15.0 - 145.0') 36.28 Note: Pel-Plug (TR-30) 3/8", on 11 the drilling (15.0 - 145.0') 36.28 Note: Pel-Plug (TR-30) 3/8", on 11 the drilling (15.0 - 145.0') 36.28 Note: Pel-Plug (TR-30) 3/8", on 11 the drilling (15.0 - 145.0') 36.28 Note: Pel-Plug (TR-30) 3/8", on 11 the drilling (15.0 - 145.0') 36.28 Note: Pel-Plug (TR-30) 3/8", on 11 the drilling (15.0 - 145.0') 36.28 Note: Pel-Plug (TR-30) 3/8", on 11 the drilling (15.0 - 145.0') 36.28 Note: Pel-Plug (TR-30) 3/8", on 11 the drilling (15.0 - 145.0') 36.28 Note: Pel-Plug (TR-30) 3/8", on 11 the drilling (15.0 - 145.0') 36.28 Note: Pel-Plug (TR-30) 3/8", on 11 the drilling (15.0 - 145.0')	ARCA	DIS Design 8 for natur built ass	Consultancy ral and ets	Well Const	ruction Log	S	Sheet: 4 of 11
Shallow Well Elevation: N/A						Well ID: N	/IW-94-175
Deling Assistration Deling Delin							
Office Name: Dolling Asset; Combination of	_						
Deling Asst LAmava / P. Afmanza Borehole Diameter G-10 inches Project Number: RC000753,0051	_	-		- '		•	-
Logopt		-				Location: <u>PG&E</u>	Topock, Needles, California
Editor:	_						
Topock						Project Number	: <u>RC000753.0051</u>
County C							
Comparison Com	Total Depth:			Well Completion:	☐ Flush☐ Stick-up		I
Fluidal Digeoids Mel Digeoids SG Digeoids SG Digeoids SG Digeoids SM Digeoids SM Digeoids Mel Digeoids SM Digeoids D	Groundwat Sample II		USCS Code USCS Class		onstruction		
Foreign	61	Fluvial	SW-SC	(0.0 - 155.0') 2" — PVC Sch 80 Casing			
Groundwater	62	Topock - Fluvial	МН				
Coccetangle	63	Fluvial	sc ////	•		70	(0)
NR		Ölder Alluvium	SM				
Groundwater VAS collection was not included in the drilling score of the Glider Alluvium Deposits Topock-Older Alluvium Depos			NR NR			3	
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwate	Groundwate VAS Collection wa not included in the drilling scope 11/1/2019 71 20:16 72 - 73 - 73 -	Topock - Older Alluvium	SM	Bentonite seal —	(14.0 - 207.0') 6.0" Borehole		(15.0 - 145.0') 43 buckets (19%) Note: Pel-Plug (TR-30) 3/8", on 11/ the 6-inch casing was pulled to 94 to bgs to prevent bridging between the well casing and drill casing
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwate		Deposits		(75.5 - 76.5') — Centralizer			
NR = no recovery			d Soil Classifica	tion System, ft = feet, bgs	= below ground surface, a	ımsl = above mean s	sea level, GW = groundwate
	NR = no recover	У					

ARCA	DIS Design & for natural built asset	Consultancy al and ets	Well Const	ruction Log	5	Sheet: 5 of 11
Date Started:	11/03/2019		Surface Elevation:	N/A	Well ID: N	MW-94-175
Date Completed:			Shallow Well Elevation:			
Drilling Co.:	Cascade		Deep Well Elevation:	N/A	Client: PG&E	
Drilling Method:	Sonic Drilling		Northing (NAD83):	N/A	-	GW Remedy Phase 1
Driller Name:	S. Vasquez /		Easting (NAD83): Borehole Diameter:	N/A 6-10 inches	Location: PG&E	Topock, Needles, California
Drilling Asst:	L. Amaya / P. JL / SM/ GJ /		Borenole Diameter. Water Level Start:	9.73 ft bgs	— Project Number	r: RC000753.0051
Logger: Editor:	Kendra Keon		water Level Start. Development End Date	-	Project Number	1. KC000753.0051
Total Depth:	207 ft bgs		Development End Date Well Completion:	☐ Flush☐ Stick-up		
Groundwar Sample II		USCS Code USCS Class	Well (Construction	Calculated Material Volumes	Material Volumes Installed
81 82	Topock - Older Alluvium Deposits	SM	(0.0 - 155.0') 2" — PVC Sch 80 Casing			
83 — 83 — 65 — 86 — 86 — 87 — 65 — 88 — 65 — 65 — 88 — 65 — 65 — 88 — 65 — 65	as I	SW-SM	(15.0 - 145.0') Bentonite seal pellets	(14.0 - 207.0') 6.0" Borehole	(15.0 - 145.0') 36.28 buckets	(15.0 - 145.0') 43 buckets (19%) Note: Pel-Plug (TR-30) 3/8", on 11/ the 6-inch casing was pulled to 94 f bgs to prevent bridging between the well casing and drill casing
94 — 95 — 95 — 96 — 96 — 97 — 98 — 99 — 99 — 99 — 99 — 99 — 99	Topock - Older Alluvium Deposits	SM				
	SCS = Unifico	Soil Classifi	cation System ft - feet has	= helow ground surface of	amsl = ahove mean	 sea level, GW = groundwater
NR = no recover		JUII CIASSIII	bauon oystem, it – ieet, bgs	5 – Delow ground Sunace, a		oca ievei, Gvv – groundwater
TIO TECOVEL	у					
£ [

Delining Ast L. Amayar / P. Almanza Borehole Diameter: 6-10 inches	9/	ARCA	DIS Design & for natura built asse	Consultancy Il and ts		Well Const	ruction Log		Sheet: 6 of 11
Deling Method: Sonic Drilling No. Northing (NAD83): NA Project: Final GWR Remety Phase 1 Deling Nate: Amaya IP. Almanza Borehole Diemeter: 9-10 inches Description State Sonic Drilling NAD83: NA Location: PG&E Topock. Needles, California. Development End Date: 123/22/19 Development End Date: 123/22/19	Date C	Completed:	11/05/2019			_Shallow Well Elevation:	N/A		
Deling Ast Amay P. Alman	_								
Major Law San Sa	_		_	E. Ram	nos		N/A	Location: <u>P</u>	G&E Topock, Needles, California
Total Depth: 207 ft bgs	_				za				
Total Depth: 207 ftbgs								Project Nur	nber: RC000753.0051
Well Construction Calculated Material Volumes									
(10.2 - 155.07) 2* PVC Sch 80 Casing 100	lotaiL	Jeptn:		I		_ vveil Completion:	Flusn Stick-up		
PyC Sch 80 Casing PyC	Depth (ft)		Geologic Formation	USCS	USCS		onstruction		
		VAS collection wa not included in the drilling scope 11/1/2019	er as Topock - d Older d Alluvium			(15.0 - 145.0') Bentonite seal			Note: Pel-Plug (TR-30) 3/8", on 11/4 the 6-inch casing was pulled to 94 ft bas to prevent bridging between the
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,	<u> </u>								
· · · · · · · · · · · · · · · · · · · ·									
NR = no recovery				Soil C	lassificat	tion System, ft = feet, bgs	= below ground surface, a	amsl = above me	ean sea level, GW = groundwater,

e Completed: 11/mg Co.: Camg Method: Soier Name: S.' ng Asst: L./ ger: JL or: Kei	J/03/2019 J/05/2019 J/05/2	E. Ramos . Almanza . RC	Surface Elevation: Shallow Well Elevation: Deep Well Elevation: Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Dawell Completion:	N/A N/A N/A 6-10 inches 9.73 ft bgs		W Remedy Phase 1 Topock, Needles, California
ng Co.: Ca. ng Method: So. ng Method: So. er Name: S. Ing Asst: L. / ger: JL or: Kei I Depth: 20 Groundwater Sample ID Groundwater VAS collection was not included in the drilling scope 11/1/2019 20:16	ascade onic Drilling Vasquez / Amaya / P. / SM/ GJ / endra Keon	E. Ramos . Almanza . RC	Deep Well Elevation: Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Daw	N/A N/A N/A 6-10 inches 9.73 ft bgs e: 12/3/2019	Client: PG&E Project: Final G Location: PG&E	W Remedy Phase 1 Topock, Needles, California
ng Method: Soler Name: S. Ing Asst: L. Ing Asst: L. Inger: JL Depth: 201 Groundwater Sample ID Groundwater VAS collection was not included in the drilling scope 11/1/2019 20:16	onic Drilling Vasquez / Amaya / P. . / SM/ GJ / endra Keon 07 ft bgs	E. Ramos . Almanza . RC	Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Dai Well Completion:	N/A N/A 6-10 inches 9.73 ft bgs e: 12/3/2019	Project: Final G Location: PG&E	Topock, Needles, California
er Name: S Ing Asst: L. / ger: JL Or: Ke I Depth: 20 Groundwater Sample ID Groundwater VAS collection was not included in the drilling scope 11/1/2019 20:16	Vasquez / Amaya / P. . / SM/ GJ / endra Keon 77 ft bgs	E. Ramos . Almanza . RC	Easting (NAD83): Borehole Diameter: Water Level Start: Development End Date Well Completion:	N/A 6-10 inches 9.73 ft bgs e: 12/3/2019	Location: <u>PG&E</u>	Topock, Needles, Californi
ger: JL or: Ke I Depth: 207 Groundwater Sample ID Groundwater VAS collection was not included in the drilling scope 11/1/2019 20:16	Amaya / P. _/ SM/ GJ / endra Keon)7 ft bgs	. Almanza ' RC	Borehole Diameter: Water Level Start: Development End Date Well Completion:	6-10 inches 9.73 ft bgs e: 12/3/2019		•
ger: JL or: Ke I Depth: 207 Groundwater Sample ID Groundwater VAS collection was not included in the drilling scope 11/1/2019 20:16	/ SM/ GJ / endra Keon 77 ft bgs	RC	Water Level Start: Development End Da Well Completion:	9.73 ft bgs e: 12/3/2019	Project Number:	RC000753.0051
Groundwater Sample ID Groundwater Sample ID Groundwater VAS collection was not included in the drilling scope 11/1/2019 20:16	endra Keon)7 ft bgs		Development End Date Well Completion:	e: <u>12/3/2019</u>	Project Number: 	RC000753.0051
Groundwater Sample ID Groundwater Sample ID Groundwater VAS collection was not included in the drilling scope 11/1/2019 20:16	7 ft bgs		Well Completion:			
Groundwater Sample ID Groundwater VAS collection was not included in the drilling 20:16		nscs Code USCS		Flush Stick-up		
Groundwater VAS collection was not included in the drilling scope 11/1/2019 20:16	Geologic	Code USCS USCS	Wel		1	
Groundwater VAS Collection was not included in the drilling scope 11/1/2019 20:16				Construction	Calculated Material Volumes	Material Volumes Installed
Groundwater VAS collection was not included in the drilling scope 11/1/2019 20:16	Topock - Older Alluvium Deposits	SM	(0.0 - 155.0') 2" — PVC Sch 80 Casing (125.5 - 126.5') — Centralizer			
_	Topock - Older Alluvium Deposits	ML	(15.0 - 145.0') Bentonite seal pellets	(14.0 - 207.0') 6.0" Borehole	1 (10.0 - 140.0) 30.20 ₁	(15.0 - 145.0') 43 buckets (19% Note: Pel-Plug (TR-30) 3/8", on 1 the 6-inch casing was pulled to 9 bgs to prevent bridging between well casing and drill casing
	Topock - Older Alluvium Deposits	SM				
reviations: USC		1010	ication System ft = feet bo	is = below ground surface a	ımsl = ahove mean se	ea level, GW = groundwat
no recovery	S = Unified	ı Soıl Classi	IOGGOTT O YOUTH, IL - ICCL. DI	is action divalid dulidute of	and ac mean ye	, 3.55

ARC	ADIS for buil	i <mark>gn & Consultancy</mark> natural and t assets		Well Consti	ruction Log	:	Sheet: 8 of 11
Date Started:	11/03/2019			_Surface Elevation:	N/A	Well ID: I	MW-94-175
_	ted: <u>11/05/2019</u>)		_Shallow Well Elevation:	N/A		
Drilling Co.:	<u>Cascade</u>			_Deep Well Elevation:	N/A	Client: <u>PG&</u>	
_	d: Sonic Drilli	-		_Northing (NAD83):	N/A	•	GW Remedy Phase 1
Driller Name:	S. Vasque:			_Easting (NAD83):	N/A	Location: <u>PG&I</u>	E Topock, Needles, California
Drilling Asst:	L. Amaya /		<u>a</u>	_Borehole Diameter: _Water Level Start:	6-10 inches	— Project Numbe	m DC0007E2 00E1
Logger: Editor:	<u>JL / SM/ G</u> <u>Kendra Ke</u>			_vvaler Level Start. _Development End Date:	9.73 ft bgs	Project Numbe	r: RC000753.0051
Total Depth:	207 ft bgs	UII		_Development End Date. _Well Completion:	Flush Stick-up	<u> </u>	
Total Boptin				_ vvoii Compiduon.	ridon odok up		
Ground Samp		USCS	Class		onstruction	Calculated Material Volumes	Material Volumes Installed
				(0.0 - 155.0') 2" — PVC Sch 80 Casing			
142				(15.0 - 145.0')		(15.0 - 145.0') 36.28	(15.0 - 145.0') 43 buckets (19%) Note: Pel-Plug (TR-30) 3/8", on 11/4 the 6-inch casing was pulled to 94 ft.
143				Bentonite seal — pellets		buckets	bas to prevent bridging between the
3							well casing and drill casing
_145				***	6999		
146						10	
-							
_147				(44F 0 4F0 0l)			
				(145.0 - 150.0') Cemex #0/30		(145.0 - 150.0') 1.7 bags	(145.0 - 150.0') 2 bags (18%) Note: Lapis Lustre Sand
148				(MESH)			
				\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\			
Ground VAS				\$ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\			
collection not incl	n was Topock	I .			(14.0 - 207.0') 6.0"		
in the di	rilling Alluviur	n SM			Borehole		
11/1/2	019	"					
20.1							
152_							
153							
_154				(150.0 - 179.0') Cemex #3 MESH			
				(8x10)			
155				(155.0 - 175.0') 2"		(150.0 - 179.0') 10.3 bags	(150.0 - 179.0') 12 bags (17%) Note: Lapis Lustre Sand
				(155.0 - 175.0') 2" — 20-Slot Sch 80 PVC Screen		2495	Troto: Zapio Zaono Gama
156				Solecin			
157							
158					H. A		
					4		
159							
160					### #		
	: USCS = Unif	ied Soil Cla	assificat	ion System, ft = feet, bgs	= below ground surface, a	msl = above mean	sea level, GW = groundwater,
NR = no reco					· · · · · · · · · · · · · · · · · · ·		- -

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ARCA	DIS for natural built asset	Consultancy Land S		Well Cons	truction Log	5	Sheet: 9 of 11
Date Started:	11/03/2019			Surface Elevation:	N/A	Well ID: N	/IW-94-175
Date Completed:				Shallow Well Elevation			
Drilling Co.:	Cascade			Deep Well Elevation:	N/A	Client: PG&E	
Drilling Method: Driller Name:	Sonic Drilling S. Vasquez / I	E Pamo		Northing (NAD83): Easting (NAD83):	N/A N/A		GW Remedy Phase 1 Topock, Needles, California
Drilling Asst:	L. Amaya / P.			Borehole Diameter:	6-10 inches	Location. I Gal	Topock, Needles, California
Logger:	JL / SM/ GJ /			Water Level Start:	9.73 ft bgs	Proiect Number	:: RC000753.0051
Editor:	Kendra Keon			Development End Da		, 	
Total Depth:	207 ft bgs			Well Completion:	☐ Flush☐ Stick-up		
Groundwat Sample ID		Code	Class		Construction	Calculated Material Volumes	Material Volumes Installed
	Topock -	SM		(155.0 - 175.0') 2" —— 20-Slot Sch 80 PVC Screen (150.0 - 179.0') Cemex #3 MESH — (8x10) (175.5 - 176.5') Centralizer (175.0 - 177.3') Sump and End Cap	(14.0 - 207.0') 6.1 Borehole	(150.0 - 179.0') 10.3 bags	(150.0 - 179.0') 12 bags (17%) Note: Lapis Lustre Sand
				(179.0 - 207.0') Bentonite seal pellets		(179.0 - 207.0') 8.7 buckets	(179.0 - 207.0') 10 buckets (15%) Note: Pel-Plug (TR30) 3/8"

ARCA	DIS for natural built asset	Consultancy al and ets	Well Const	ruction Log	S	heet: 10 of 11
Date Started:	11/03/2019		Surface Elevation:	N/A	Well ID: N	IW-94-175
Date Completed:			Shallow Well Elevation:	N/A		
Drilling Co.:	Cascade		Deep Well Elevation:	N/A	Client: PG&E	
Drilling Method: Driller Name:	Sonic Drilling S. Vasquez /	T Dames	Northing (NAD83):	N/A N/A		GW Remedy Phase 1
Drilling Asst:	L. Amaya / P.		Easting (NAD83): Borehole Diameter:	6-10 inches	Location. PG&E	Topock, Needles, California
Logger:	JL / SM/ GJ /		Water Level Start:	9.73 ft bgs	Project Number	: RC000753.0051
Editor:	Kendra Keon		Development End Date:	_		. 110000100.0001
Total Depth:	207 ft bgs		Well Completion:	☐ Flush☐ Stick-up		
Groundwat Sample II		USCS Code USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
	<u>ω</u> Ω	**************************************				
- -	Topock -	SM				
181	Older \ Alluvium	SW-SM ****				
	Deposits /					
182						
<u> </u>						
183						
	Topock - Older	l on like				
184	Alluvium Deposits	SM				
	Doposito					
185						
<u> </u>						
186						
		(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)				
187						
188						
H -	-					
189 Groundwate	r					
VAS collection wa	as		(179.0 - 207.0')	(4.4.0) (007.01) (0.01)		
190 not included in the drilling			Bentonite seal pellets	(14.0 - 207.0') 6.0" Borehole	(179.0 - 207.0') 8.7 buckets	(179.0 - 207.0') 10 buckets (15%) Note: Pel-Plug (TR30) 3/8"
scope 11/1/2019 19120:16			pellets			
19120:16						
H						
192						
102	Topock -					
193	Weathered Bedrock -	sc /////				
	conglomerate					
_194						
195						
_197						
198						
199						
L J						
200						
Abbreviations: U	SCS = Unified	Soil Classifica	ation System, ft = feet, bgs	= below ground surface, a	msl = above mean s	sea level, GW = groundwater

9/	ARCA	DIS Design & C for natura built asset	Consultancy Land s		Well Const	ruction Log]	Sheet: 11 of 11
	Started:	11/03/2019			_Surface Elevation:	N/A	Well ID:	MW-94-175
	-	11/05/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: <u>PG</u>	
	-	Sonic Drilling			_Northing (NAD83):	N/A	•	al GW Remedy Phase 1
	Name:	S. Vasquez / I			_Easting (NAD83): _Borehole Diameter:	N/A 6-10 inches	Location: <u>PG</u>	&E Topock, Needles, California
Logge	g Asst:	L. Amaya / P. JL / SM/ GJ /		<u> </u>	_ Borenole Diameter. _Water Level Start:	9.73 ft bgs	Project Num	per: RC000753.0051
Editor		Kendra Keon			_Vater Edver Start: _Development End Date:		TTOJECTIVATII	361. <u>11.00007 00.0001</u>
	Depth:	207 ft bgs			_Well Completion:	☐ Flush☐ Stick		
	<u> </u>				<u> </u>		<u> </u>	
Depth (ft)	Groundwat Sample II		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
201 	- - - -							
	Groundwate VAS	r					_70>	
203	collection wa	Weathered	SC		(179.0 - 207.0')	(14.0 - 207.		7 (179.0 - 207.0') 10 buckets (15%)
	in the drilling scope 11/1/2019	g Bedrock - conglomerate			Bentonite seal pellets	Boreho	ble buckets	Note: Pel-Plug (TR30) 3/8"
	11/1/2019 20:16							
205	4							
	-							
206	-							
	1							
5 <u>207</u>				(77.7.7.)	End of Boring at			
					207.0 'bgs.			
<u> </u>								
209								
≦								
211_								
<u> </u>	_		,	V				
212	-							
- A	-			Ť				
213	1							
A -	1							
5214	1							
OMEN								
216	1							
E	-							
217	-							
	_							
218_ 	1							
	1							
220								
			Soil C	lassificat	tion System, ft = feet, bgs	= below ground sur	rface, amsl = above mea	n sea level, GW = groundwater,
<u> NK =</u>	no recover	у						

₹

9/	ARC	ADIS	for natural and built assets		Во	ring	Log	3		She	eet: 1 of	11
Date S	Started	10/31/2	2019		Surface	Elevat	ion:	N/A	Borin	a No.:	MW-94d	
	•	ted: <u>11/02/2</u>			Northing		,	N/A	_			
Drilling	-	<u>Cascac</u>			Easting		3):	N/A	_ Client:	PG&E		
_	Metho		•		Total De	•		207 ft bgs	_ Project:		N Remedy Ph	
	ig Type		nic Truck Mou		Borehol			6-10 inches	_ Location:	PG&E	Fopock, Needl	<u>es, Calitornia</u>
Drilling	Name:		quez / E. Rar aya / P. Almar		Samplir			10.55 ft bgs 4 inch x 10 ft Core Barrel	— Project N	Lumbor: I	RC000753.00	 5.1
Logge	•		ıya / P. Aimar // GJ / RC	<u>ıza</u>	Samplir	•		Continuous	_ Projectiv	umber. <u>i</u>	KC000755.00	01
Editor		<u>SE / Sik</u> <u>Kendra</u>			Convert	•		× Yes □ No	_			
		rtoriare			1	1						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
	84			Topock - Fluvial Deposits	SW		gravel (grained subang	.0') Topock - Fluvial Deposits; Well of SW); brown (7.5YR 4/4); very fine gr i, angular to round; some granules to jular to round; little small cobbles, an lit; dry; coarser clast composed of mi	rained to very co very large pet gular to suban	oarse bles,	(0.0 - 7.0') Soft drilling.	(0.0 - 12.0') No water used
- 7		Sieve samples not collected	Groundwater VAS collection was not included in the drilling scope 11/1/2019 20:16	Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial	SW-SC SC SM		and gracoarse pebble: moist; (8.0 - 9 (SC); y grained subang trace si (9.5 - 1 (7.5YR round; subrou composition)	.0') Topock - Fluvial Deposits; Well of avel (SW-SC); brown (7.5YR 5/4); very grained, angular to round; little grants, angular to subround; little clay; traccoarser clast mixed lithology. 5') Topock - Fluvial Deposits; Clayer ellowish brown (10YR 5/6); very fine did angular to round; little granules to I ular to subround; little small cobbles lit; mica; moist; coarser clast mixed I (0.0') Topock - Fluvial Deposits; Silty 5/3); very fine grained to very coarse little silt; trace granules to very large mit, trace small cobbles, subround; mixed of mixed lithology 13.0') Topock - Fluvial Deposits; Weight in the sed of mixed lithology	ry fine grained ules to very large silt; trace mined to very arge pebbles, sund (SM); brown sand sanguage pebbles, anguages; coarser control of the sanguages.	vel coarse e clay; with a recoarse to ar to last	(7.0 - 17.0') Soft drilling, loss of recovery due to sands falling out of core barrel, 9.5 to 13 disturbed.	
12	72			Deposits			yellowis grained mediun little mi mixed l	sh brown / moderate yellowish browr to very coarse grained, angular to ro n pebbles, subangular to subround; to ca; wet; sands composed of mostly of ithology	n (10YR 5/4); wo bund; little gran race silt; trace quartz, coarser	ery fine sules to clay; clast	(12.0 - 17.0') Set temp well to determine static depth to water.	(12.0 - 17.0') 100 gallons of water used; 0 gallons of wate
14	- - -				5		(13.0 - retrieve	17.0') No recovery (NR); lost core do	ownhole could r	not	Water had to be used to set temp well due to heaving sands on	recovered; 100 gallons of wate lost
15	_				NR						10/31/19. Water level collected on 11/1/19 after letting water	
16 17	-			L							levels equilibrate.	
18	120			Topock - Fluvial Deposits	GW		sand (0 5/4); gr very co	29.0') Topock - Fluvial Deposits; We GW); yellowish brown / moderate yell anules to small cobbles, subangular arse grained sand, angular to subrou vet; coarser clast composed of basal	lowish brown (to round; some und; trace silt; t	10YR e fine to race	(17.0 - 57.0') Normal drilling.	(17.0 - 207.0') No water used
Abbre	viations	s: USCS = L	Jnified Soil CI	assificatio	n Systen	n, ft = fe	et, ba	s = below ground surface, an	nsl = above	mean sea	a level, GW =	groundwater.
								ollected from temp well during			, ;	

ARCADIS	Design & Consultancy for natural and built assets	Boring Log	g		Sheet: 2 of	11
	/2019	_ Surface Elevation:	N/A	Boring I	No.: MW-94d	
Date Completed: 11/02		Northing (NAD83):	N/A			
Orilling Co.: <u>Casc</u>		Easting (NAD83):			3 <u>&E</u>	
	Drilling onic Truck Mount	Total Depth: Borehole Diameter:	•	•	nal GW Remedy Ph	
	squez / E. Ramos	Borenole Diameter. Depth to First Water:		Location. PC	S&E Topock, Needle	es, Callionna
	naya / P. Almanza	Sampling Method:	~	Proiect Numl	ber: <u>RC000753.00</u>	 51
-	SM/ GJ / RC	_ Sampling Interval:	Continuous	,		
	ra Keon	_ Converted to Well:				
Depth (ft) (in) Sieve Sample ID	Gronndwater Sample ID Sognation	USCS Code USCS Class	Soil Description		Drilling Notes	Drilling Fluid
	Topock Fluvia Deposi	al GW		3		
	Groundwater VAS collection was not included in the drilling scope 11/1/2019 20:16 Topock Fluvia Deposi Topock Fluvia Deposi	SW-SM (29.0 - 10 10 10 10 10 10 10 1	29.5') Topock - Fluvial Deposits; Well g M); yellowish brown / moderate yellowis ery fine grained to very coarse grained, a It; trace granules to small pebbles, subro cobbles, subround; trace mica; coarser of corite; wet 30.0') Topock - Fluvial Deposits; Well g GW); yellowish brown / moderate yellow ranules to small cobbles, subangular to varse grained sand, angular to subround wet; coarser clast composed of basalt, g 46.5') Topock - Fluvial Deposits; Silty sa 5/3); very fine grained to fine grained, si silt; wet; trace medium to coarse grained very fine grained to medium grained; litt se grain size sand, interbedded sandy si	h brown (10YR angular to subrou ound to round; traclasts composed graded gravel with rish brown (10YR round; some fine; trace silt; trace; tranite, metadiori and (SM); brown abangular to rourd; a sand le silt; laminated	and; ace of h t t tet, nd;	
.36	23,000		ery fine grained to fine grained; increase	silt, decrease in		
8		(39.2')	; some silt; decrease in sand			

	" '		for natural and built assets		DU	ring Lo	9	01	eet: 3 of	11
Date St	arted:	10/31/	2019	_	Surface	Elevation:	N/A	Boring No.	: MW-94d	
	•	d: <u>11/02/</u>			-	g (NAD83):	N/A	_		
Orilling		<u>Casca</u>			_	(NAD83):	N/A	_ Client: <u>PG&E</u>		
•	Method:		Drilling		Total De	-	207 ft bgs	•	W Remedy Ph	
-	г Туре:		nic Truck Mou			e Diameter:	6-10 inches	_ Location: <u>PG&E</u>	Topock, Needl	<u>es, Californ</u>
riller N			<u>squez / E. Rar</u>				r: 10.55 ft bgs			
rilling	Asst:		<u>aya / P. Almaı</u>		-	g Method:	4 inch x 10 ft Core Barrel	_ Project Number:	RC000753.00	51
ogger			M/ GJ / RC		-	g Interval:	Continuous	<u></u>		
ditor:		<u>Kendra</u>	a Keon		Convert	ed to Well:				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Flu
- -41 - -42							very fine grained; and silt; decrease in b) very fine grained to fine grained; son			
43				Topock -		sand) very line grained to line grained, son	ic sit, increase in		
4	120			Fluvial Deposits	SM	(43.5) very fine grained; and silt; decrease	in cand		
44						(43.0) very line grained, and sitt, decrease	iii sailu		
4						(AA E) very fine grained to fine grained; son	o silt: incresse in		
45						sand) very line grained to line grained, son	ie siit, increase in		
4									•	
16										
17							- 49.5') Topock - Fluvial Deposits; Poor (10YR 5/3); very fine grained to fine			
							l; trace silt; little mica; wet; trace medi			
18				Topock - Fluvial	SP					
				Deposits	J SF					
49_			Groundwater							
			VAS							
50_		Sieve	collection was not	Topock -		(49.5	- 50.5') Topock - Fluvial Deposits; Silt R 5/3); very fine grained to fine grained	y sand (SM); brown		
7		mples not ollected	included in the drilling	Fluvial Deposits	SM		e silt; t <mark>race cla</mark> y; little <mark>mic</mark> a; wet	i, subangular to round;		
_			scope 3 11/1/2019	Topock -	ML	(50.5	- 51.0') Topock - Fluvial Deposits; Sai	ndy silt (ML); brown		
51			20:16	Fluvial Deposits			R 4/4); no plasticity, some very fine gracial trace mica; moist to wet; medium			
				Topock -		(51.0	- 53.0') Topock - Fluvial Deposits; Well (SW); brown (10YR 5/3); very fine gr	ell graded sand with		
52_	120			Fluvial Deposits	SW	grain	ed, subangular to subround; some gra	nules to very large		
-				Dehosits			es, subround to round; trace silt; trace osed of metadiorite; wet	mica; coarser clasts		
53_						(52');	increase in granules and pebbles, de			
4						: :: silt (8	- 56.0') Topock - Fluvial Deposits; Po P-SM); brown (10YR 5/3); very fine gr	ained to medium		
4_				Topock -			ed, subangular to subround; little silt; l staining	ittle mica; wet; iron		
4				Fluvial	SP-SM		•			
55_				Deposits						
4										
6						[:::] 	E7 01) Tonosh Fluidal D. 11 011	y and (CM). La		
1				Topock - Fluvial	SM	∵ ∷ ∷ (10Y	 - 57.0') Topock - Fluvial Deposits; Silt R 5/3); very fine grained to fine grained 	i, subround; and silt;		
57				Deposits			clay; trace mica; wet; iron oxide stainin	<u> </u>		1
				Topock - Fluvial	MH		- 57.5') Topock - Fluvial Deposits; Ela brown (7.5YR 5/3); high plasticity; littl		(57.0 - 67.0') Drilling was	
58_				Deposits	/	grain	ed sand, subround to round; little clay;	trace mica; moist; stiff	slightly rougher than previous	
	100			Topock - Fluvial	sc	//// (SC)	- 59.3') Topock - Fluvial Deposits; Clabrown (10YR 4/3); very fine grained to	very coarse grained,	runs.	
59_	102			Deposits		angu	ar to round; some granules to very larger pround; little clay; trace small cobbles,	ge pebbles, subangular		
שני				T		///// trace	mica; coarser clasts composed of me	tadiorite; wet		
				Topock - Fluvial	SW-SC	(59.3	- 61.0') Topock - Fluvial Deposits; We and gravel (SW-SC); pale brown (10YF	ell graded sand with		
60										1

	ARCA	DIO	for natural and built assets		DU	ring	Log		One	eet: 4 of	11
Date S	Started:	10/31/	2019		Surface	Elevati	on: <u>N/A</u>	Borin	a No .	MW-94d	
	Completed:	11/02/	2019		Northing	g (NAD	33): <u>N/A</u>		g '10	171 7 T - J TU	
	Co.:	<u>Casca</u>	de		Easting	(NAD8	3): <u>N/A</u>	_ Client:	PG&E		
	Method:	Sonic	Drilling		Total De	epth:	207 ft bgs	-		W Remedy Ph	
	g Type:		nic Truck Mou		Borehol			_ Location:	PG&E	<u> Fopock, Needl</u>	es, Califo
riller	Name:	S. Vas	<u> quez / E. Rar</u>	nos	Depth to	o First V	Vater: 10.55 ft bgs	_			
Prilling	Asst:		aya / P. Almar		Samplin	•		_ Project N	umber: ˌ	RC000753.00	51
.ogge			M/ GJ / RC		Samplin	•		_			
Editor:		Kendra	a Keon		Convert	ed to V	/ell: Yes No				
Depth (ft)		Sieve mple ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling F
_ _61				Deposits Topock - Fluvial Deposits	SW-SC		to very coarse grained, angular to subround; large pebbles, angular to subround; little clar subangular; trace silt; wet; sand composed of coarser clast mixed lithology	y; trace small of of mostly quart	cobbles, z,		
_ _62				Topock - Fluvial Deposits	MH		(61.0 - 62.5') Topock - Fluvial Deposits; Elas (7.5YR 5/4); high plasticity; and clay; trace wand, subround to round; very stiff	tic silt (MH); be ery fine to fine	rown grained		
_ _63				Topock - Fluvial Deposits	sc		(62.5 - 63.5') Topock - Fluvial Deposits; Clay (SC); dark yellowish brown (10YR 4/4); very coarse grained, subangular to subround; sor	fine grained to	very	0	
.64 	102			Topock -	+	.// <i>L</i> /2	to very large pebbles, angular to subround; t subangular to subround; trace silt; coarser c mixed lithology	race small cob last composed	of		
_ _65				Alluvium Deposits	SM		(63.5 - 65.5') Topock - Older Alluvium Depos gravel (SM); reddish brown / moderate brow grained to very coarse grained, angular to su little granules to large pebbles, angular to su	n (5YR 4/4); ve bround; some bround; trace (ry fine silt;		
.66 					NR		coarser clasts composed of metadiorite; wel (65.5 - 67.0') No recovery (NR); sediments for core barrel		n of		
.67 							(67.0 - 82.4') Topock - Older Alluvium Depos gravel (SM); reddish brown / moderate brow	n (5YR 4/4); ve	ry fine	(67.0 - 77.0') Soft drilling.	
88. _							grained to very coarse grained, angular to su little granules to very large pebbles, angular small cobbles, angular to subangular; trace coarser clasts composed of metadiorite; wel	bround; some to subangular; clay; trace mic	silt; trace		
.69 -	s	ieve	Groundwater VAS collection was not								
_70 _ 	samı	oles not lected	included in the drilling scope 11/1/2019 20:16		2		100				
-71 - -72	120		20:16	V							
.73	120			Topock -			(72.5'); some granules to very large pebbles subangular; little silt; little clay	angular to			
- .74				Older Alluvium Deposits	SM		(74'); increase in sand, no clay				
- .75							(),				
- _76											
_ _77							(77'); decrease in sand, increase in granule nodules	and pebbles, s	silt	(77.0 - 87.0') Soft drilling.	
- 78 _ 79	120						Hodules			Soit unilling.	
-70_ <u>-</u> - 80											
	viations: U	SCS = I	Unified Soil Cl	lassification	System	າ, ft = f∈	et, bgs = below ground surface, am	sl = above r	nean se	a level, GW =	groundw

ate Started ate Comple	. 10/21					3				
ate Compl	. 10/31/	/2019		Surface	Elevation:	N/A	Borin	a No.:	MW-94d	
	eted: <u>11/02</u>			_	(NAD83):	N/A	_		<u> </u>	
rilling Co.:	<u>Casca</u>			_	(NAD83):	N/A	_ Client:	PG&E		
rilling Meth		Drilling		Total De	-	207 ft bgs	_ Project:		W Remedy Ph	
rill Rig Typ		nic Truck Mou			Diameter:	6-10 inches	_ Location:	PG&E	Fopock, Needle	<u>es, Californi</u>
riller Name		squez / E. Rar		-	First Water:					
rilling Asst:		aya / P. Almar		-	g Method:	4 inch x 10 ft Core Barrel	_ Project N	umber: <u> </u>	RC000753.00	51
ogger:		M/ GJ / RC			g Interval:	Continuous No.	_			
ditor:	<u>Kenar</u>	a Keon		Converte	ed to Well:					
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluic
_81			Topock - Older	SM						
4			Alluvium Deposits	SIVI						
_82			·							
-						93.3') Topock - Older Alluvium Depos				
_83					・ំំំំំំំំំំំំំំំំំំំំំំំំំំំំំំំំំំំំ	t and gravel (SW-SM); reddish brown /4); very fine grained to very coarse gr	ained, angulai			
120					subrou	nd; some granules to very large pebble nd; little silt; little mica; coarser clasts	es, angular to composed of			
_84					metadi	orite; wet; silt nodules				
_85										
-00										
_ _86										
.00										
.87										
.07			Topock -						(87.0 - 97.0') Soft drilling.	
.88			Ölder	SW-SM					John drilling.	
.00			Alluvium Deposits							
.89		Groundwater								
		VAS collection								
.90	Sieve samples not	was not included in								
	collected	the drilling								
_91		scope 11/1/2019								
		20:16								
.92120										
.93										
					(93.3 -	129.0') Topock - Older Alluvium Depo	sits; Silty san	d with		
_94					∵∷∷ gravel graine	(SM); reddish brown / moderate brown I to very coarse grained, angular to su	n (5YR 4/4); ve bround; some	ery fine		
1					∵ ∷ granule	es to very large pebbles, angular to sul nica; coarser clasts composed of meta	bangular; little	silt;		
_95						,	,			
4										
.96			.		(06)	acrease in silt increase in cond				
4			Topock - Older	SM	:] :] : (96°); 0	ecrease in silt, increase in sand				
.97			Alluvium Deposits	JIVI					(97.0 - 107.0')	
4			,,						`Soft drilling, '	
.98									change in rig geologist.	
120					(08 51)	some silt; decrease in sand				
7 120						come ont, acorease in saila				
.99										
_99	o: USCS -	Unified Call O	oodfiectis.	Suntaria	ft = foot b =	s = below ground surface, ams	al = abava	moon ==	a lovel CVV -	aroundet-

9/	4RC	ADIS	Design & Consultancy for natural and built assets		Bo	ring L	og		She	et: 6 of	11
	Started			_		Elevation:	N/A	Borir	a No.:	MW-94d	
	Comple					g (NAD83):		_			
Drilling	-	<u>Casca</u>			_	(NAD83):	N/A	_ Client:	PG&E		
_	g Metho		-	unt .	Total D	eptn: le Diameter	207 ft bgs	_ Project:		N Remedy Ph Topock, Needle	
	ig Type Name:		nic Truck Mou quez / E. Rar				: <u>6-10 inches</u> er: <u>10.55 ft bgs</u>	_ Location.	PG&E I	ороск, мееці	es, Calliornia
	g Asst:		aya / P. Almar		-	ng Method:	4 inch x 10 ft Core Barrel	Project N	lumber: I	RC000753.00	 51
Logge			v/ GJ / RC		-	ng Interval:	Continuous	_ · · · · , · · · · ·			-
Editor:			a Keon		-	ted to Well:					
th (:	very	Sieve	Groundwater	ogic	S e	SS SS	0.45			D	5 5
Depth (ft)	Recovery (in)	Sample ID	Sample ID	Geologic Formation	USCS Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
	- 120	Sieve samples not collected	Groundwater VAS collection was not included in the drilling	Topock - Older Alluvium Deposits	SM	(10	3'); little silt; increase in sand 7'); some silt; little granules to very large round; trace small cobbles, subangular;	pebbles, angudecrease in sa	alar to	(107.0 - 117.0') Soft drilling.	
111	120		scope 11/1/2019 20:16	Q		[∷ ∵ ∵ sub	4.5'); some granules to very large pebble angular; trace small cobbles, subangular ease in sand, decrease in silt, trace wea	r; iron oxide st	aining; orite		
	- 120	s: 118C8 - 1	Inified Soil C	assification	n System		o'); decrease in sand, increase in silt ogs = below ground surface, am	ovode = la	mean so	(117.0 - 127.0') Soft drilling.	groundwater
Lunie	viatiOHS	<u>. 0303 - 1</u>	, , , , ,	เฉออกเปสแป	i Oysieli	1, 11 – 1 00 1,	595 - Delow ground Sunace, am	131 - abuve	mean Se	a ievel, GVV – (groundwater,

NR = no recovery, blue water table symbol represents depth to water collected from temp well during drilling

Date Started: 10/31/2019 Surface Elevation: Northing (NAD83): N/A Drilling Co.: Cascade Easting (NAD83): N/A Drilling Method: Sonic Drilling Total Depth: 207 ft bgs Project: Final GW Remedy Ph Drill Rig Type: Prosonic Truck Mount Sonic Drilling Method: Depth to First Water: 10.55 ft bgs Drilling Asst: L. Amaya / P. Almanza Sampling Method: Sampling Method: Sampling Method: Sampling Method: Sampling Interval: Confinuous Editor: Kendra Keon Converted to Well: Yes No Topock Older Sample ID Sam	
Date Completed: 11/02/2019 Northing (NAD83): N/A Client: PG&E Prilling Method: Sonic Drilling Total Depth: 207 ft bgs Project: Final GW Remedy Ph Drill Rig Type: Prosonic Truck Mount Borehole Diameter: 6-10 inches Location: PG&E Topock, Needle Driller Name: S. Vasquez / E. Ramos Depth to First Water: 10.55 ft bgs Drilling Asst: L. Amaya / P. Almanza Sampling Method: Continuous Editor: Kendra Keon Converted to Well: Yes No Editor: Kendra Keon Converted to Well: Yes No Topock Sample ID Topock Older Allowium Deposits SM (122): decrease in sand, increase in silt (122): decrease in sand, increase in silt (127): decrease in sand, increase in silt	
Drilling Method: Sonic Drilling Total Depth: 207 ft bgs Project: Final GW Remedy Ph Drill Rig Type: Prosonic Truck Mount Borehole Diameter: 6-10 inches Location: PG&E Topock, Needle Drilling Asst: L. Amaya / P. Almanza Depth to First Water: 10.55 ft bgs Project Number: RC000753.00! Logger: J. L SM/ GJ / RC Sampling Method: Sampling Interval: Continuous Continuous Editor: Kendra Keon Converted to Well: Yes No No Drilling Notes 121 122 Sieve Sample ID Groundwater Sample ID 30 graphe ID 30 graphe ID 30 graphe ID 30 graphe ID Soil Description Drilling Notes 122 123 120 124 124 125 Soil Description Increase in sand, increase in salt (124.3); increase in sand, decrease in salt 125 126 127 128 129	
Drill Rig Type: Prosonic Truck Mount Borehole Diameter: 6-10 inches Location: PG&E Topock, Needle Diameter: Drilling Asst: L. Amaya / P. Almanza Sampling Method: 4 inch x 10 ft Core Barrel Project Number: RC000753.00! Logger: JL / SM/ GJ / RC Sampling Interval: Continuous Project Number: RC000753.00! Editor: Kendra Keon Converted to Well: Yes No No	
Driller Name: S. Vasquez / E. Ramos Depth to First Water: 10.55 ft bgs Project Number: RC000753.00 Drilling Asst: L. Amaya / P. Almanza Sampling Method: 4 inch x 10 ft Core Barrel Project Number: RC000753.00 Logger: Editor: Kendra Keon Converted to Well: Yes No No 5	
Drilling Asst: L. Amaya / P. Almanza Sampling Method: 4 inch x 10 ft Core Barrel Continuous Project Number: RC000753.009 Editor: Kendra Keon Converted to Well: X Yes No No Egg Sieve Sample ID Groundwater Sample ID Sole Sa	es, California
Logger: Editor: Kendra Keon Converted to Well: Yes No Fig. Sieve Sample ID Groundwater Sample ID Fig. Sieve Sample ID Fig. S	
Editor: Kendra Keon Converted to Well: Yes No Sieve Sample ID Groundwater Sample ID Gro	51
Soil Description Drilling Notes Sieve Sample ID Sample ID Sieve Sample ID Sample ID	
121	
122	Drilling Fluid
Topock - Older Alluvium Deposits SM (124.3'); increase in sand, decrease in silt (127.0 - 137.0') Soft drilling.	
Cider Alluvium Deposits SM (124.3'); increase in sand, decrease in silt (127.0 - 137.0') Soft drilling.	
127	
127	
(127.0 - 137.0') (127'); decrease in sand, increase in silt (127.0 - 137.0') Soft drilling.	
(127.0 - 137.0') (127'); decrease in sand, increase in silt (127.0 - 137.0') Soft drilling.	
Soft drilling.	
Groundwater VAS Topock - (129.0 - 130.0') Topock - Older Alluvium Deposits; Sandy silt with	
collection Older ML gravel (ML); reddish brown / moderate brown (5YR 4/4); no	
samples not included in Deposits some very fine to very coarse grained sand, angular to subround;	
collected the drilling scope (130.0 - 180.5') Topock - Older Alluvium Deposits; Silty sand with 131 (130.0 - 180.5') Topock - Older Alluvium Deposits; Silty sand with cravel (SM); reddish brown (2.5YR 4/4); very fine grained to very	
11/1/2019 gravel (SM); reddish brown (2.5YR 4/4); very fine grained to very coarse grained, angular to subround; some granules to very large	
□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □	
132 120	
Topock - Older Older Subangular increase in sit	
Alluvium SM SM SW	
Deposits Deposits	
137 (137.0 - 147.0) (137); increase in sand, decrease in silt	1
Soft drilling.	
140 (139.5'); increase in silt, decrease in sand	
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = g	

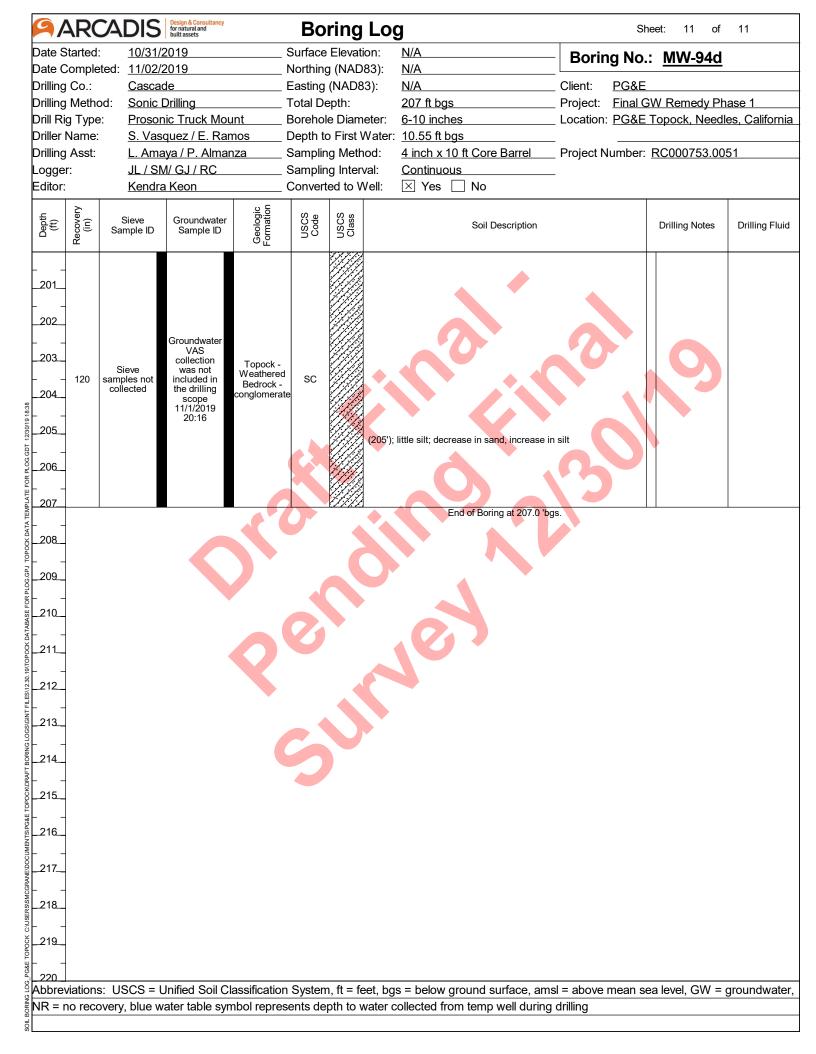
Results in the state of the sta

9/	ARC	ADIS	for natural and built assets		Bor	ing Lo	g		She	eet: 8 of	11
Date S	Started	10/31/2	2019		Surface	Elevation:	N/A	Borin	a No:	MW-94d	
		ted: 11/02/2			•	(NAD83):	N/A	_			
Drilling		Casca				NAD83):	N/A	_ Client:	PG&E		
_	g Metho ig Type		<u> Drilling</u> nic Truck Mou	un t	Total De	otn: Diameter:	207 ft bgs	_ Project:		N Remedy Ph	
	ig Type Name:		quez / E. Rar				6-10 inches 10.55 ft bgs	_ Location.	PGaE	Fopock, Needl	es, Calliornia
Drilling			<u>qaoz / E. rtar</u> aya / P. Almar		=	Method:	4 inch x 10 ft Core Barrel	Proiect N	umber:	RC000753.00	 51
Logge			// GJ / RC			, g Interval:	Continuous	_ ,	-		
Editor		Kendra	a Keon		Converte	ed to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
	- 120						some granules to very large pebbles, gular; trace small cobbles, subangula		silt	9	
148_ 148_ 149_ 150_ 151_ 151_ 152_ 153_ 154_	120	Sieve samples not collected	Groundwater VAS collection was not included in the drilling scope 11/1/2019 20:16	Topock - Older Alluvium Deposits	SM		increase in sand, decrease in granules	es and pebbles	s, no	(147.0 - 157.0') Soft drilling.	
155_ 156_ 157_ 158_ 159_ 160_	120	11000				pebble (159.2 subang	r) reddish brown (2.5YR 4/4); little gra s, angular to subangular; trace clay; o r); some granules to very large pebble gular; decrease in sand, decrease in s	decrease in sai es, angular to silt	nd	(157.0 - 167.0') Soft drilling, change in rig geologist.	
							s = below ground surface, are		mean se	a level, GVV =	groundwater,
; νκ = Ι	по гесс	overy, blue w	ater table syn	npoi repre	sents dep	ui to water o	collected from temp well during	y arıılıng			

9/	ARC	ADIS	for natural and built assets		Bor	ing Lo	g		She	eet: 9 of	11
Date S	Started	10/31/2	2019		Surface I	Elevation:	N/A	Borin	a No.:	MW-94d	
	•	ted: 11/02/2			_	(NAD83):	N/A				
Drilling	-	Casca			Easting (N/A	_ Client:	PG&E		
_	g Metho		<u>Drilling</u> nic Truck Mou	ınt	Total De	oth: Diameter:	207 ft bgs	_ Project:		<u>Ν Remedy Ph</u> Γοροςk, Needl	
	ig Type Name:		quez / E. Rar				6-10 inches 10.55 ft bgs	_ Location.	PG&E	гороск, мееаг	es, Calliornia
Drilling			aya / P. Almar		=	Method:	4 inch x 10 ft Core Barrel	Proiect N	umber: I	RC000753.00	 51
Logge			// GJ / RC		Sampling		Continuous	- <i>,</i>	_		
Editor		Kendra	a Keon		Converte	d to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
161 162 163	120						increase in sand, decrease in granule se in silt, no clay	es and pebbles	,	9	
164 165	- -					(164'); decrea	little clay; moist to wet; increase in grase in sand	anules and pel	obles,		
166	1							(25			
	1										
167							477			(167.0 - 177.0')	<u> </u>
168	_					(168');	wet; decrease in sand, increase in gra	anules and pel	obles	Soft drilling.	
169	-	Sieve	Groundwater VAS collection was not	Topock -							
170 171	-	samples not collected	included in the drilling scope 11/1/2019 20:16	Older Alluvium Deposits	SM		(2)				
			20:16								
172	120										
173	-						trace clay; increase in silt, increase ir es and pebbles	i sand, decrea	se in		
174	_					(174');	little clay; decrease in silt, decrease in	n granules and	ı		
175	1					pebble	s				
175_ - - 176_											
	_									(477.0.407.0")	
<u> </u>						(177');	trace clay; increase in sand			(177.0 - 197.0') Soft drilling,	
178	-					(178');	increase in silt, no clay			additional recovery do to streching of	
	252						-			finer grained lithology.	
179_ 180	_					(179');	trace clay; decrease in silt				
Abbre							s = below ground surface, am		nean se	a level, GW =	groundwater,
NR =	no reco	overy, blue w	ater table syn	nbol repre	sents dep	th to water o	collected from temp well during	drilling			

PARCADIS Design & Consultancy for natural and built assets	Boring Lo	g	She	eet: 10 of	11
Date Started: <u>10/31/2019</u>	Surface Elevation:	N/A	Boring No.:	MW-94d	
Date Completed: <u>11/02/2019</u>	Northing (NAD83):	N/A		11111 0 14	
Drilling Co.: <u>Cascade</u>	Easting (NAD83):	N/A	Client: PG&E		
Drilling Method: Sonic Drilling	Total Depth:	207 ft bgs		W Remedy Ph	
Drill Rig Type: <u>Prosonic Truck Mount</u> Driller Name: <u>S. Vasquez / E. Ramos</u>	Borehole Diameter: Depth to First Water		Location: PG&E	<u>гороск, ічееаю</u>	es, California
Drilling Asst: L. Amaya / P. Almanza	Sampling Method:	_	Project Number:	RC000753 00!	 51
Logger: JL / SM/ GJ / RC	Sampling Interval:	Continuous	r rojost rtambon.	1.00007.00.00.	
Editor: <u>Kendra Keon</u>	Converted to Well:				
Sieve Sample ID Groundwater Sample ID Groundwater Sample ID	USCS Code USCS Class	Soil Description		Drilling Notes	Drilling Fluid
	er um sits sand very fi some	5 - 181.0') Topock - Older Alluvium Depo with silt and gravel (SW-SM); reddish brone grained to very coarse grained, angul granules to very large pebbles, angular ace clay; trace mica; coarser clasts com	own (2.5YR 4/4); lar to subround; to subangular; little		
	(181.0 gravel	liorite; wet 1 186.5') Topock - Older Alluvium Depo (SM); reddish brown (2.5YR 4/4); very fi e grained, angular to subround; some gr as, angular to subangular; little silt; trace	ine grained to very anules to very large	O	
Old Alluv	er SM SM coarse	er clasts composed of metadiorite; wet - 186.5'); some silt; little clay; decrease			
	silt, in	crease in clay			
5 			0		
	///////// Clayer	5 - 207.0') Topock - Weathered Bedrock y sand with gravel (SC); red (2.5YR 4/6); oarse grained, angular to subround; son	very fine grained to		
	large mica;	pebbles, angular to subangular, little silt; coarser clasts composed of metadiorite ered pebble gravel present	; little clay; trace		
252 Groundwater VAS					
Sieve was not samples not included in collected the drilling					
scope 11/1/2019 20:16		10,			
192		trace silt; increase granules and pebble	es, increase in sand,		
Topo Weath Bedro	ck - ered	ase silt			
conglor					
195_					
5 					
197				(197.0 - 207.0')	
198	(197.5	s'); little silt; decrease in sand, increase i	n silt	Soft drilling, change in rig geologist.	
5 – 120 5 – 199 –	(199')	; trace silt; increase in sand, decrease ir	n silt		
300					
Abbreviations: USCS = Unified Soil Classifications	ation System, ft = feet, bo	gs = below ground surface, ams	l = above mean se	a level, GW = g	groundwater,

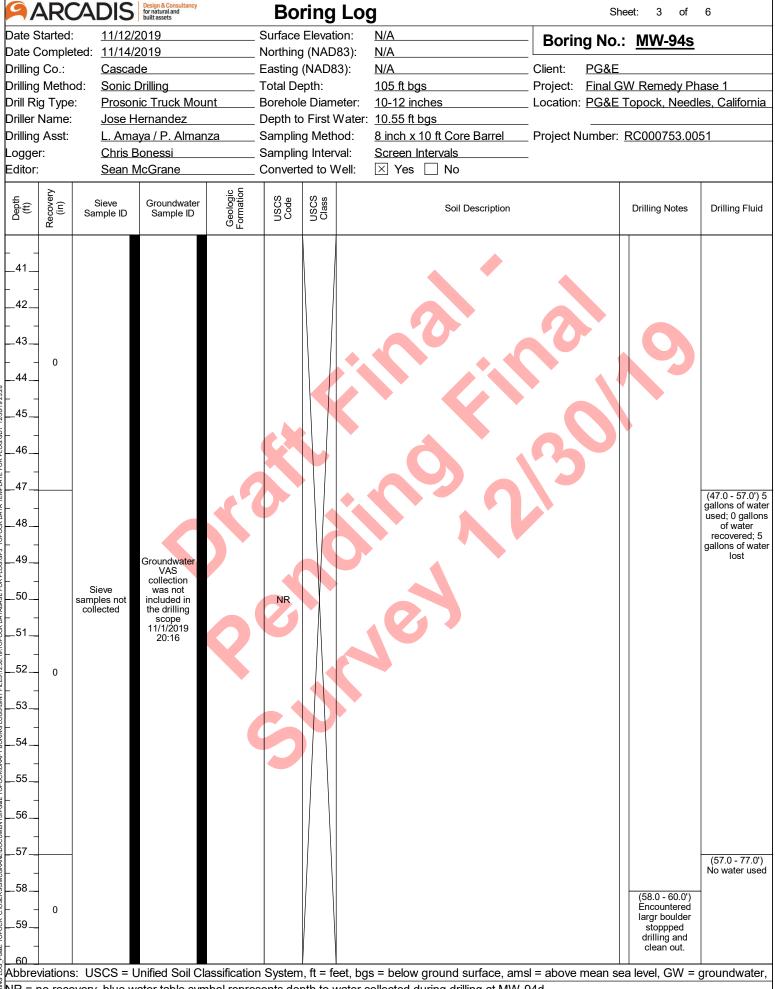
NR = no recovery, blue water table symbol represents depth to water collected from temp well during drilling



ARC	ADIS	for natural and built assets		Bo	ring Lo	g		She	eet: 1 of	6
Date Started:	11/12/	/2019		Surface	Elevation:	N/A	Borin	a No.:	MW-94s	
Date Complet	ted: <u>11/14/</u>	/2019		Northing	j (NAD83):	N/A	_		<u> 0 .0</u>	
Drilling Co.:	<u>Casca</u>			_	(NAD83):	N/A	_ Client:	PG&E		
Drilling Metho		Drilling		Total De	•	<u>105 ft bgs</u>	-		W Remedy Ph	
Drill Rig Type		<u>nic Truck Μοι</u>			e Diameter:	10-12 inches	_ Location:	PG&E	<u> Topock, Needl</u>	es, California
Driller Name:		Hernandez		-	First Wate	-	– Designat N		DC0007E2 00	
Drilling Asst:		aya / P. Almar Bonessi			g Method: g Interval:	8 inch x 10 ft Core Barrel Screen Intervals	_ Project N	umber:	RC000753.00	<u> </u>
Logger: Editor:		McGrane			ed to Well:	Screen intervalsX Yes ☐ No	_			
	<u>Ocan</u>	IVICOIAIIC		T	To to vvcii.					1
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
1			Topock -	NR	MW-1	7.0') No recovery (NR); Core not collected boring log for lithologic description. 8.0') Topock - Fluvial Deposits; Well g	raded sand wi	th	(7.0 - 17.0') Soft drilling.	(0.0 - 17.0') No water used
- 8 _ - 9 _ - 10 _	Sieve samples not collected	Groundwater VAS collection was not included in the drilling	Topock - Fluvial Deposits	sw	5/4); little (6.0 - grave very (pebb mois:	very fine grained to very coarse grained granules to very large pebbles, angular clay, trace mica; dry, coarser clast mix 10.0') Topock - Fluvial Deposits; Well (SW); dark yellowish brown (10YR 4/4 coarse grained, angular to round; some es, subangular to subround; trace silt; ; coarser clast mixed lithology - 12.0') Topock - Fluvial Deposits; Silty	, angular to ro to subround; li ed lithology graded sand w 1); very fine gra granules to ve trace clay; little sand (SM); br	vith sined to erry large emica;	uilling.	
11 12120 60		scope 11/1/2019 20:16	Topock - Fluvial Deposits	SM	ittle little	- 30.0') Topock - Fluvial Deposits; Wel I (SW); dark yellowish brown (10YR 4/4	ngular to subrosed of mixed I graded sand I); medium gra	with		
13 14 				5	pebb subro suba mixed	coarse grained, angular to round; some es, subangular to subround; little small wund to round; little very fine to medium ngular to subround; trace silt; trace mic I lithology	to large cobbl grained sand,	es,		
_					(15.0	- 17.0'); increase in cobbles				
_16			Topock - Fluvial	SW						
_			Deposits							
_17										(47.0 07.0)
_										(17.0 - 27.0') 10 gallons of water
_18										used; 0 gallons of water
- 120										recovered; 10
_19										lost
20										
Abbreviations	: USCS =	Unified Soil Cl	assification	n System	, ft = feet, b	gs = below ground surface, am	sl = above	mean se	a level, GW =	groundwater,
						collected during drilling at MW-			· · · · · · · · · · · · · · · · · · ·	

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	9		She	eet: 2 of	6
Date S				_	Surface			N/A	Borin	a No.:	MW-94s	
Date C					Northing	- '		N/A				
Drilling		Cascac			Easting	•	3):	N/A	_ Client:	PG&E	14/ D D	
Drilling			Drilling ic Truck Mou	unt	Total De Borehol	-	otor:	105 ft bgs 10-12 inches	_ Project:		W Remedy Pha Topock, Needle	
Drill Ri Driller			ernandez	<u> </u>				10.55 ft bgs	_ LOCALION.	FGAE	тороск, пееці	es, Calliottia
Drilling			ya / P. Almar	nza	Samplin			8 inch x 10 ft Core Barrel	- Proiect N	lumber:	RC000753.005	<u></u> 51
Logge		Chris B	•		Samplin	-		Screen Intervals	- , -			
Editor:		Sean M	1cGrane		Convert	ted to V	√ell:					
_	Ž			jic Ion	(0.5)	(0, 10						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
21	120	Sieve samples not collected	Groundwater VAS collection was not included in the drilling scope	Topock - Fluvial Deposits	SW		(25'); a decrea	nd granules to very large pebbles, subse in sand ome granules to very large pebbles, subse in sand 37.0') Topock - Fluvial Deposits; Silty moderate yellowish brown (10YR 5/4)	sand (SM); ye	und;		(27.0 - 47.0') No water used
	120		scope 11/1/2019 20:16	Topock - Fluvial Deposits	SM		(35') ye fine graincreas	anied, subangular to subround; wet; lei own (10YR 5/3); very fine grained to no roos to subround; trace mica ellowish brown / moderate yellowish brained to fine grained, subangular to sube silt, silt in seams, decrease in sand to fine grained, subangular to sube silt, silt in seams, decrease in sand to fine grained, subangular to sube silt, silt in seams, decrease in sand for some substitution of the first substitution of the firs	nedium graine rown (10YR 5 bround; lense	/4); very /d;		
40	viations	s: USCS = U	Inified Soil Cl	assificatio	n Systen	n, ft = fe	et, bg	s = below ground surface, ams	sl = above	mean se	a level, GW = ç	groundwater,

NR = no recovery, blue water table symbol represents depth to water collected during drilling at MW-94d



NR = no recovery, blue water table symbol represents depth to water collected during drilling at MW-94d

/-	AKC	ADIS	for natural and built assets		Во	ring L	og		She	et: 4 of	6
Date S						Elevation:	N/A	Borin	a No.:	MW-94s	
Date C	•				-	g (NAD83)	N/A				
Drilling		Casca			_	(NAD83):	N/A	_ Client:	PG&E		
Drilling			•		Total De	•	105 ft bgs	_ Project:		N Remedy Ph	
Drill Rio			nic Truck Mou			e Diamete	•	_ Location:	PG&E I	opock, Needl	es, California
Driller N Drilling			lernandez aya / P. Almar		-	g Method:	er: 10.55 ft bgs 8 inch x 10 ft Core Barrel	– Project N	Lumbor: I	RC000753.00	 51
Logger			<u>Bonessi</u>		•	ıg ivleti lod. ıg Interval:	Screen Intervals	_ F10Ject IV	iuiiibei. <u>i</u>	10000733.00	<u> </u>
Editor:			McGrane		-	ed to Well		_			
		<u></u>	, io Grano		1	1 1					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
61 62 63 64 65 666	0				NR					9	
67 68						(SM) gra	0 - 72.0') Topock - Alluvium Deposits; Si); reddish brown (2.5YR 4/4); very fine g ned, angular to subround; some granule oles, angular to subangular; little silt; tra ular to subangular; trace clay; trace mica posed of metadiorite; wet	rained to very s to very large ce small cobb	coarse es,		
69			Groundwater VAS	Topock -							
		Sieve	collection was not	Alluvium Deposits	SM						
70		samples not collected	included in the drilling	Deposits							
		collected	scope 11/1/2019				, (74)				
71			20:16								
72	120					(72	0 - 74.5') Topock - Alluvium Deposits; Si	Ity sand with g	ıravel		
						(SI); reddish brown (2.5YR 4/4); very fine g ned, angular to subround; little granules	rained to medi to verv large p	um ebbles.		
73				Topock - Alluvium	SM	ang	ular to subangular; little coarse to very co ular to subangular; little silt; trace small (parse grained	sand,		
				Deposits	9111	∷ sul	angular; trace clay; trace mica; coarser of adiorite; wet				
74							auonte, wet				
						(74	5 - 79.0') Topock - Alluvium Deposits; W	ell graded sar	nd with		
_75							el (SW-SM); reddish brown (2.5YR 4/4); ium grained, angular to subround; some	granules to v	ery		
						livio[dib] larg	e pebbles, angular to subangular; little c ned sand, angular to subangular; trace s	oarse to very o	coarse		
76						• • • • • • • • • • • • • • • • • • •	ubangular; trace clay; trace mica; coarse	er clasts comp	osed of		
				Topock - Alluvium	SW-SM	1000100	adiorite; wet				
77				Deposits	300-300						(77.0 - 87.0') 1
											gallons of water used; 0 gallons
78											of water
- 4	84										recovered; 10 gallons of water
_79				T	1		0 - 84.0') Topock - Alluvium Deposits; Si	Ity sand with a	ıravel		lost
				Topock - Alluvium	SM	: : (SI); reddish brown (2.5YR 4/4); very fine g ned, angular to subround; some silt; little	rained to medi	um		
				Deposits							

NR = no recovery, blue water table symbol represents depth to water collected during drilling at MW-94d

AR	CADIS	Design & Consultancy for natural and built assets		Bo	ring	Log		Sh	eet: 5 of	6
Date Started				Surface		· · · · · · · · · · · · · · · · · · ·	Borin	g No.:	: MW-94s	
=	eted: <u>11/14/</u>			Northing			_			
orilling Co.:	<u>Casca</u>			Easting Tetal D			_ Client:	PG&E	VV Damady Dh	1
rilling Meth Irill Rig Typ		Drilling nic Truck Mou		Total De Borehol	•	105 ft bgs eter: 10-12 inches	_ Project:		W Remedy Ph Topock, Needl	
riller Name		Hernandez		Depth to			_ Location.	1 GaL	тороск, песа	es, Californi
rilling Asst		aya / P. Almar		Samplir		•	- Project N	umber:	RC000753.00	 51
ogger:		Bonessi		Samplin	•		- , -			
ditor:	<u>Sean I</u>	McGrane	(Convert	ed to V	ell: ⊠ Yes □ No				
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
.81 .82 84 83			Topock - Alluvium Deposits	SM		large pebbles, angular to subangular; trace of composed of metadiorite; wet	coarser c	lasts	9	
.84						(84.0 - 89.0') Topock - Alluvium Deposits; W			(84.0 - 87.0')	1
- -85						gravel (SW-SM); reddish brown (2.5YR 4/4); very coarse grained, angular to subround; so	me granules t		Heaving sands.	
						large pebbles, angular to subangular; little sil cobbles, angular to subangular; trace clay; tr	ace mica; coa			
36 86			1			clasts composed of metadiorite; wet; likely di run, silt and clay percentage likely biased low		o short		
			Topock - Alluvium	SW-SM						
.87			Deposits	SVV-SIVI						
		Groundwater VAS				(89.0 - 93.0') Topock - Alluvium Deposits; Sil	ty sand with o	ravel		(87.0 - 97.0') gallons of water used; 0 gallon of water recovered; 5 gallons of water lost
	Sieve samples not collected	collection was not included in the drilling scope 11/1/2019 20:16	Topock - Alluvium	SM		(SM); reddish brown (2.5YR 4/4); very fine gr grained, angular to subround; some granules pebbles, angular to subangular; little silt; trac angular to subangular; trace clay; trace mica composed of metadiorite; wet	ained to very to very large ce small cobbl	es,		
.92		20.10	Deposits	9						
.93						(93.0 - 95.0') Topock - Alluvium Deposits; Sil (SW-SM); reddish brown (2.5YR 4/4); very fir	ty sand with g	ravel		
			Topock -	SW-SM		coarse grained, angular to subround; and grapebbles, angular to subround; little silt; trace	anules to very	large		
			Alluvium Deposits	34V-3IVI		angular to subangular; trace mica; wet	Small CODDIE	٠,		
95_										
_						(95.0 - 100.0') Topock - Alluvium Deposits; S (SM); reddish brown (2.5YR 4/4); very fine gr	ained to very	gravel coarse		
.96 						grained, angular to subround; some granules pebbles, angular to subangular; little silt; trac angular to subangular; trace clay; trace mica composed of metadiorite; wet	s to very large ce small cobbl	es,		
91			Topock -			(97'); little silt; decrease in sand				
98_			Alluvium Deposits	SM						
			•						(98.0') Encountered	1
.99 36									rock stopped	
.55_									run short.	
100										
	s: USCS =	Unified Soil Cl	assification	System	n, ft = fe	et, bgs = below ground surface, am	sl = above	mean se	ea level, GW =	groundwate
R = no rec	overy, blue w	vater table syn	nbol repres	ents de	pth to v	ater collected during drilling at MW-	94d			

AR	CADIS	Design & Consultancy for natural and built assets		Bor	ing Lo	g		She	eet: 6 of	6
Date Starte				Surface E		N/A	Borir	ng No.:	MW-94s	
-	leted: <u>11/14/</u>				(NAD83):	N/A				
Drilling Co.:				Easting (I	•	N/A	Client:	PG&E	A/ Dl Dl-	1
Drilling Metl Drill Rig Typ		<u>Drilling</u> nic Truck Μοι		Total Dep Borebole	Diameter:	105 ft bgs 10-12 inches	Project:		W Remedy Ph Гороск, Needl	
Driller Nam		Hernandez				10.55 ft bgs	Location	. <u>1 Gal</u>	гороск, глееці	ies, California
Drilling Assi		aya / P. Almar		Sampling		8 inch x 10 ft Core Barrel	— Project N	Number:	RC000753.00	 51
Logger:		Bonessi		Sampling		Screen Intervals	_ ,			
Editor:	Sean l	McGrane		Converte	d to Well:					
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
 101 _102_ 60	Sieve samples not collected	Groundwater VAS collection was not included in the drilling	Topock - Alluvium Deposits	SW-SM	with si graine granul traces	- 103.0') Topock - Alluvium Deposits It and gravel (SW-SM); reddish brow d to very coarse grained, angular to se so very large pebbles, angular to small cobbles, angular to subangular composed of metadiorite; wet; likely It percentage likely biased low	n (2.5YR 4/4); subround; some subangular; little ; trace mica; co	very fine e e silt; parser		
_103 _104		scope 11/1/2019 20:16	Topock - Alluvium	SM	(SM);	- 105.0') Topock - Alluvium Deposits reddish brown (2.5YR 4/4); very fine d, round; some granules to very large gular; some silt; trace small cobbles,	grained to very pebbles, ang	coarse ular to	(105.0') Water used to was	(105.0') 500 gallons of water used; 0 gallons of water
			Deposits			clay; trace mica; coarser clasts comp	oosed of metad		flush out casing.	recovered; 500 gallons of water lost
106				4		End of Borning at 103.0	bys.			
 107						700	13			
108										
_109										
110										
_111		•	Q)							
112					1					
113 										
114				7						
115										
116										
117										
_118										
119										
120 Abbreviatio	ne: 11909 - 1	Inified Sail C	accification	System	ft = feet ha	s = below ground surface, ar	nel = abovo	mean so	a level CM -	aroundwater
						collected during drilling at MW		mean se	a icvci, Gvv –	groundwater,

14	RCA	DIO	for natural and built assets		DU	ring	Log		She	eet: 1 of	16
Date Sta		06/28/2				Elevat		Borin	a No.:	RB-2 Pilo	ot .
	ompleted:					g (NAD					
Orilling (Cascac			-	(NAD8	•	_ Client:	PG&E		
_	Method:	Sonic [•		Γotal D	-	307 ft bgs	_ Project:		W Remedy Ph	
Orill Rig			ongyear Trad					_ Location:	PG&E	Topock, Needle	es, Califori
Oriller N		Tyler A	-		-		Vater: 23.77 ft bgs				
Orilling A			<u>delaria, G. Ar</u>	-	•	ng Meth		_ Project N	lumber:	RC000753.005	51
_ogger:		Joe Lat			-	ng Inter		_			
Editor:		Grant V	/Villford		Jonver	ted to V	/ell: Yes □ No				
Depth (ft)		Sieve mple ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fl
1				Topock - Fill	SP		(0.0 - 3.0') Topock - Fill; Poorly graded sand 4/3); fine grained to medium grained, subrou		10YR	(0.0 - 7.0') Soft drilling	2 gallons u 0 gallon recovered gallons lo
- 3	36						(3.0 - 7.0') No recovery (NR)			(3.0 - 7.0') Lost recovery due to soft dredge sands	
_ 5					NR						
_ 6							$V_{O_{I_{i}}}$				
- 7 —				 			(7.0 - 11.0') Topock - Fill; Poorly graded sand	(SP); brown	(7.5YR	(7.0 - 17.0')	1 gallons u
, +							4/3); fine grained to medium grained, subang	jular to subrou	und; dry	Heaving sands. No recovery 11	0 gallon recovered
_ 8										to 17 ft bgs due to loose dredge	gallons le
_						, (X)				sands	
_ 9				Topock - Fill	SP						
				4							
_10				·							
+											
_11							(11.0 - 17.0') No recovery (NR)				
+						\ /					
_12	48					\ /					
						$ \setminus $					
_13						$ \setminus $					
. 4						$ \ \ $					
_14					NR						
- 4						/\					
_15						/ \					
4						/ \					
_16						/ \					
. 4						/					
_17				H	<u> </u>		(17.0 - 18.5') Topock - Fill; Poorly graded sai	nd (SP): hrow	n (10YR		
. 4							4/3); fine grained to medium grained, subang	jular to subrou	und; dry		
_18				Topock - Fill	SP						
. 4	36						(18.5 - 20.0') Topock - Fluvial Deposits; Poor	ly graded son	d (SD).		
_19				Topock -			light yellowish brown (10YR 6/4); very fine gr	ained to fine g	grained,		
. 4				Fluvial Deposits	SP		round; trace silt; dry				
20											
							et, bgs = below ground surface, am				
g = dg	arts per b			d above the	labora	tory rep	orting limit, NR = no recovery, blue	water table	symbol	represents dep	th to wate
	ed during										

9/-	1RC	ADIS	Design & Consultancy for natural and built assets		Bo	ring Lo	g		She	eet: 2 of	16
Date S				;	Surface	Elevation:	480.9 ft amsl	Borin	u No .	RB-2 Pilo	nt .
	-	eted: 07/29/	2019	!	Northing	g (NAD83):	2103398.9			KB Z I IIC	<u>/L</u>
Drilling		<u>Casca</u>			_	(NAD83):	7616014.8	_ Client:	PG&E		
Drilling			Drilling		Total De	•	307 ft bgs	_ Project:		W Remedy Ph	
Drill Ri			Longyear Trac				4-12 inches	_ Location:	PG&E 1	Fopock, Needle	es, California
Driller I		•	•		-		r: 23.77 ft bgs	-		500075000	- 4
Drilling			ndelaria, G. An	-	-	g Method:	4 inch x 10 ft Core Barrel	_ Project N	lumber: <u>l</u>	RC000753.005	<u> </u>
Logge		Joe La			-	g Interval:	Continuous	_			
Editor:		Giant	Willford		Convert	ed to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
21 22 23 24 25 26	36				NR	(20.0	- 27.0') No recovery (NR)	9		(17.0 - 27.0') Heaving sands, no recovery 20 to 27 ft bgs due to loose dredge sands, during backfilling the sand dropped ~12 ft. indicating void at ~15 to 25 ft bgs	
27	48	RB-2-SS-27- 31 7/15/2019 09:31		Topock - Fluvial Deposits	SP	light subai	- 31.5') Topock - Fluvial Deposits; Poor yellowish brown (10YR 6/4); very fine gragular to round; trace silt; moist	ly graded san ained to fine g	d (SP); grained,	(27.0 - 37.0') Heaving sands. No recovery 31.5 to 37 ft bgs due to loose dredge sands (34.0') Approximate depth to water table	2 gallons used; 0 gallons recovered; 2 gallons lost
37 38 39	60	RB-2-SS-37- 42 7/15/2019 09:46	RB-2-VAS- 36.5-41.5 (<0.033 U ppb) 6/29/2019 11:43	Topock - Fluvial Deposits Topock - Fluvial Deposits	SP-SM	silt (S little s (38.0 (10Yl	- 38.0') Topock - Fluvial Deposits; Poor SP-SM); brown (10YR 5/3); fine grained, silt; moist - 39.0') Topock - Fluvial Deposits; Silty R 5/3); very fine grained to fine grained,	subangular to sand (SM); br round; little si	round; rown It; moist		(37.0 - 307.0') No used
40		11000		Topock - Fluvial Deposits	GW-GM	silt ar very l	 - 42.0') Topock - Fluvial Deposits; Wellnd sand (GW-GM); grayish brown (10YF arge pebbles, subangular to subround; 	R 5/2); granule some very fine	es to		
Abbrev	viation:	s: USCS = l	Unified Soil Cl	assification	Svstem	ı. ft = feet. b	gs = below ground surface, am:	sl = above i	mean sea	a level. GW = 0	proundwater.

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	S	heet: 3 of	16
Date S	Started	: 06/28	3/2019		Surface	Elevati	on: <u>480.9 ft amsl</u>	- Boring No	.: RB-2 Pilo	nt .
Date C	Comple	eted: <u>07/29</u>)/2019		Northing	g (NAD	83): <u>2103398.9</u>	_ Borning 140	<u>IXD 2 I IIC</u>	<u>^</u>
Drilling	Co.:	Casc	ade		Easting	(NAD8	3): <u>7616014.8</u>	Client: PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	307 ft bgs	Project: Final 0	GW Remedy Ph	ase 1
Drill Ri	д Туре	e: <u>Boart</u>	Longyear Trad	ck Mount	Borehol	e Diam	eter: <u>4-12 inches</u>	Location: PG&E	Topock, Needle	es, California
Driller I	Name:	<u>Tyler</u>	Alymer		Depth to	First \	Vater: 23.77 ft bgs			
Drilling	Asst:	<u>J. Co</u>	ndelaria, G. An	<u>igiano</u>	Samplin	g Meth	od: 4 inch x 10 ft Core Barrel	Project Number	RC000753.00	51
Logge	r:	Joe L	atham		Samplin	g Inter	<i>r</i> al: <u>Continuous</u>	_		
Editor:		Grant	Willford		Convert	ed to V	/ell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
 41 	60	RB-2-SS-37- 42 7/15/2019 09:46		Topock - Fluvial Deposits	GW-GM		grained to very coarse grained sand; little sm trace caliche; trace coarser clast consists of wet	metidirite and quartz;	(41.5') Bottom	(37.0 - 307.0') No used
43 44 44 45		RB-2-SS-42- 47 7/15/2019 10:06		Topock - Fluvial Deposits	SM		(42.0 - 45.0') Topock - Fluvial Deposits; Silty yellowish brown (10YR 4/4); very fine grained trace clay; wet		at 41.5 instead of 42 ft bgs because of formation collapse	
46 47 		10.00		Topock - Fluvial Deposits	GW-GM		(45.0 - 48.0') Topock - Fluvial Deposits; Well silt and sand (GW-GM); dark gray (10YR 4/1) large pebbles, round; little very fine grained to sand; little silt; trace small cobbles; trace clay coarser clast consists of metidirite and quarta); granules to very o very coarse grained y; little caliche; little		
48 49 50	180	RB-2-SS-47- 50 7/15/2019 10:00					(48.0 - 54.0') Topock - Alluvium Deposits; Silt (GM); reddish brown (5YR 5/4); small pebble pebbles, angular to subangular; some very fir coarse grained sand; little silt; trace clay; son composed of metadiorite; wet	s to very large ne grained to very		
51 52 53		RB-2-SS-50- 55 7/15/2019 10:10		Topock - Alluvium Deposits	GM					
54 55				Topock - Alluvium Deposits	GM		(54.0 - 55.0') Topock - Alluvium Deposits; Sill (GM); reddish brown (5YR 5/4); small pebble pebbles, angular to subangular; some very fir coarse grained sand; some clay; little silt; sor	s to very large ne grained to very		
56 57 58 59	120	RB-2-SS-55- 60 7/15/2019 10:15		Topock - Alluvium Deposits	SM		composed of metadiorite; moist (55.0 - 59.0') Topock - Alluvium Deposits; Sili (SM); reddish brown (5YR 5/4); fine grained t subangular; some granules to medium pebbliclay; little coarser clasts composed of metadiclast composed of quartz; moist	o medium grained, es; little silt; trace		
59				Topock - Alluvium Deposits	SC		(59.0 - 60.0') Topock - Alluvium Deposits; Cla (SC); reddish brown (5YR 5/4); fine grained to angular to subangular; little granules to large	o coarse grained,		

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	She	eet: 4 of	16
Date S	tarted	06/28/	2019		Surface	Elevati	on: <u>480.9 ft amsl</u>	Boring No.:	RB-2 Pilo	nt
Date C	omple	ted: <u>07/29/</u>	2019		Northing	g (NAD	33): <u>2103398.9</u>	Dorning No	IND Z I III	<u>^4</u>
Drilling	Co.:	<u>Casca</u>	de		Easting	(NAD8	3): <u>7616014.8</u>	Client: PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	307 ft bgs	Project: Final G	W Remedy Ph	ase 1
Drill Ri	д Туре	: <u>Boart l</u>	_ongyear Trac	k Mount	Borehol	e Diam	eter: 4-12 inches	Location: PG&E	Topock, Needle	es, California
Driller I	Name:	Tyler A	lymer		Depth to	First V	Vater: <u>23.77 ft bgs</u>			
Drilling	Asst:	J. Con	delaria, G. An	giano	Samplin	g Meth	od: 4 inch x 10 ft Core Barrel	Project Number:	RC000753.005	51
Loggei	r:	Joe La	ıtham		Samplin	g Interv	al: <u>Continuous</u>			
Editor:		<u>Grant</u>	Willford		Convert	ed to V	/ell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
61 62 63 64 65	120	RB-2-SS-60- 65 7/15/2019 10:20		Topock - Alluvium Deposits	GM		subangular; little clay; trace silt; little coarser of metadiorite; little granite; moist (60.0 - 67.0') Topock - Alluvium Deposits; Silt; (GM); reddish brown (5YR 5/4); granules to lat to subangular; some very fine grained to very sand; little silt; trace coarser clasts composed moist	y gravel with sand rge pebbles, angular coarse grained		(37.0 - 307.0') No used
66 67 68		RB-2-SS-65- 70 7/15/2019 10:25					(67.0 - 74.0') Topock - Alluvium Deposits; We (GW); reddish gray / pale brown(5YR 5/2); gracobbles, angular to subangular; and medium is grained sand, angular to subangular; trace sm silt; some coarser clasts composed of metadiand basalt; wet	anules to small to very coarse nall cobbles; trace		
69707172	120	RB-2-SS-70-		Topock - Alluvium Deposits	GW					
73 74		75 7/15/2019 11:38	RB-2-VAS- 72-77	Topock -			(74.0 - 75.0') Topock - Alluvium Deposits; Cla	vey gravel with sand		
 75			(<0.033 U ppb) 6/30/2019 14:10	Alluvium Deposits	GC		(GC); dark reddish gray (5YR 4/2); granules to subangular; some very fine grained to very coal little clay; trace silt; some coarser clasts comproist	medium pebbles, arse grained sand;		
76 76 77				Topock - Alluvium Deposits	SW		(75.0 - 77.0') Topock - Alluvium Deposits; We gravel (SW); reddish brown / moderate brown grained to very coarse grained, angular to sub granules to medium pebbles, angular; trace si clasts composed of metadiorite; wet	(5YR 4/4); medium round; some		
78 79 	120	RB-2-SS-75- 80 7/15/2019 12:14		Topock - Alluvium Deposits	SW-SM		(77.0 - 81.5') Topock - Alluvium Deposits; We silt and gravel (SW-SM); reddish gray / pale b medium grained to coarse grained, angular to granules to large pebbles, angular to subangu coarser clasts composed of metadiorite; little	rown(5YR 5/2); subround; some slar; little silt; little granite; moist		

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	:	Sheet: 5 of	16
Date S	started	: <u>06/28</u>	3/2019		Surface	Elevat	on: <u>480.9 ft amsl</u>	Boring No	o.: <u>RB-2 Pilo</u>	nt .
Date C	Comple	eted: <u>07/29</u>	9/2019		Northing	g (NAD	83): <u>2103398.9</u>		J <u>IXD 21 II</u>	<u>^</u>
Drilling	Co.:	Casc	ade		Easting	(NAD8	3): <u>7616014.8</u>	Client: PG&	<u>E</u>	
Drilling	Metho	od: <u>Soni</u>	Drilling		Total De	epth:	307 ft bgs	Project: Final	GW Remedy Ph	ase 1
Drill Ri	д Туре	e: <u>Boar</u>	Longyear Trad	ck Mount	Borehol	le Diam	eter: <u>4-12 inches</u>	Location: PG&	E Topock, Needl	es, California
Driller	Name:	<u>Tyler</u>	Alymer		Depth to	o First \	Vater: 23.77 ft bgs	. <u> </u>		
Drilling	Asst:	<u>J. Co</u>	ndelaria, G. Ar	ngiano	Samplin	ng Meth	od: 4 inch x 10 ft Core Barrel	Project Numbe	r: RC000753.00	51
Logge	r:	<u>Joe L</u>	_atham		Samplin	ng Inter	val: <u>Continuous</u>	-		
Editor:		<u>Gran</u>	t Willford		Convert	ed to V	Vell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	SOSO	USCS	Soil Description		Drilling Notes	Drilling Fluid
81				Topock - Alluvium Deposits	SW-SM					(37.0 - 307.0') No used
82 83 84 85	120	RB-2-SS-80- 85 7/15/2019 12:21		Topock - Alluvium Deposits	ML		(81.5 - 86.5') Topock - Alluvium Deposits; Silt low plasticity; some granules to large pebbles subangular; little very fine grained to very coal little clay; little coarser clasts composed of me	s, angular to rse grained sand;		
86 87 88 88		RB-2-SS-85- 90 7/15/2019 14:00		Topock - Alluvium Deposits	GC		(86.5 - 90.0') Topock - Alluvium Deposits; Cla yellowish red / light brown(5YR 5/6); granules angular to subangular; some clay; little silt; tra grained sand, subangular to subround; some composed of metadiorite; wet	to large pebbles, ace fine to coarse		
90 91 92 93	120	RB-2-SS-90- 95 7/16/2019 08:04		Topock - Alluvium Deposits	GC		(90.0 - 93.0') Topock - Alluvium Deposits; Cla brown (7.5YR 5/4); granules to very large peb subangular; some clay; trace very fine grained grained sand; trace silt; some coarser clasts of metadiorite; trace granite; moist	bles, angular to d to very coarse	(90.0 - 103.0') Rough drilling	
94 95 96				Topock - Alluvium Deposits	GM		(93.0 - 96.5') Topock - Alluvium Deposits; Silt brown (7.5YR 5/6); granules to very large peb subangular; little silt; trace very fine grained to sand; trace clay; and coarser clasts compose	bles, angular to very coarse grained	1	
97 98 99	120	RB-2-SS-95- 100 7/16/2019 08:12		Topock - Alluvium Deposits	GM		(96.5 - 99.0') Topock - Alluvium Deposits; Silt brown (7.5YR 5/6); granules to very large peb subangular; some silt; little clay; trace very fin coarse grained sand; some coarser clasts cometadiorite; moist (99.0 - 104.0') Topock - Alluvium Deposits; Cl	bles, angular to e grained to very mposed of		
 100				Topock - Alluvium Deposits	GC		yellowish red / light brown(5YR 5/6); granules pebbles, angular to subangular; some clay; lit	to very large		

9/-	١RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	St	neet: 6 of	16
Date S	tarted:	06/28	3/2019		Surface	Elevat	ion: <u>480.9 ft amsl</u>	Boring No.	: RB-2 Pilo	nt .
Date C	omple	ted: <u>07/29</u>	9/2019		Northing	g (NAD	83): <u>2103398.9</u>	Borning itto	. KBZIIIC	
Drilling	Co.:	Casc	ade		Easting	(NAD8	(3): <u>7616014.8</u>	Client: PG&E		
Drilling	Metho	od: <u>Soni</u>	Drilling		Total De	epth:	307 ft bgs	_ Project: Final C	W Remedy Ph	ase 1
Drill Ri	д Туре	: <u>Boar</u>	Longyear Trad	ck Mount	Borehol	e Diam	eter: 4-12 inches	Location: PG&E	Topock, Needle	es, California
Driller I	Name:	<u>Tyler</u>	Alymer		Depth to	First \	Water: 23.77 ft bgs			
Drilling	Asst:	<u>J. Co</u>	<u>ndelaria, G. Ar</u>	•	Samplin	-		_ Project Number:	RC000753.005	51
Loggei			.atham		Samplin	•		_		
Editor:		<u>Gran</u>	t Willford		Convert	ed to V	Vell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
101 102		RB-2-SS-		Topock - Alluvium Deposits	GC		fine grained to very coarse grained sand; son composed of metadiorite; moist	ne coarser clasts	(90.0 - 103.0') Rough drilling	(37.0 - 307.0') No used
103 	120	100-105 7/16/2019 08:20	RB-2-VAS- 102-107	Deposits			(104.0 - 107.0') Topock - All <mark>uvium D</mark> eposits;			
105 106 		PD 0 00	(<0.033 U ppb) 7/1/2019 15:21	Topock - Alluvium Deposits	GM		yellowish red / light brown(5YR 5/6); granules angular to subangular; some silt; little clay; lit composed of metadiorite; wet	ttle coarser clasts		
108 109		RB-2-SS- 105-110 7/16/2019 08:33		Topock - Alluvium Deposits	GC		(107.0 - 109.0') Topock - Alluvium Deposits; sand (GC); yellowish red / light brown(5YR 5, medium pebbles, angular to subangular; little very coarse grained sand; little silt; little clay; coarser clasts composed of metadiorite; moisting the coarse of the composed of metadiorite; moisting the coarse of the co	/6); granules to e very fine grained to trace mica; little st		
 110 _111_				Topock - Alluvium Deposits	GM		(GM); yellowish brown (10YR 5/6); granules t subangular; some silt; little very fine grained grained sand; little clay; little coarser clasts c metadiorite; moist (111.0 - 112.0') Topock - Alluvium Deposits;	to large pebbles, to very coarse composed of	(110.0 - 125.0') Rough drilling	
112	120	RB-2-SS-		Topock - Alluvium Deposits	GM		yellowish brown (10YR 5/6); granules to large subangular; little very fine grained to very coa little silt; little clay; little coarser clasts compo	e pebbles, angular to arse grained sand;		
113 114		110-115 7/16/2019 08:40		Topock - Alluvium Deposits	GM		moist (112.0 - 114.0') Topock - Alluvium Deposits; strong brown (7.5YR 5/6); granules to large p subangular; some silt; little very fine grained i grained sand; trace clay; trace caliche; some composed of metadiorite; moist	ebbles, angular to to very coarse		
115 1 =							(114.0 - 121.0') Topock - Alluvium Deposits; (GM); yellowish brown (10YR 5/6); granules t subangular; some silt; little granules to small trace clay; trace coarser clasts composed of	to small pebbles, pebbles, subangular;		
116				Topock -						
_117		RB-2-SS-		Alluvium Deposits	GM	139				
118	400	115-120 7/16/2019 08:51		Doposito						
119 120	120						(119.5'); less silt, more clay			

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 7 of	16
Date S	started:	06/28/	2019		Surface	Elevat	ion: <u>480.9 ft amsl</u>	Borin	a No .	RB-2 Pilo	nt .
Date C	Comple	ted: <u>07/29/</u>	2019		Northing	g (NAD	83): 2103398.9		9	1321110	
Drilling		<u>Casca</u>	de		Easting	(NAD8	33): <u>7616014.8</u>	Client:	PG&E		
Drilling	Metho	od: <u>Sonic</u>	<u>Drilling</u>		Total De	epth:	307 ft bgs	Project:	Final G	W Remedy Pha	ase 1
Drill Ri			_ongyear Trac	ck Mount	Borehol	e Diam	eter: 4-12 inches	Location:	PG&E	<u> Fopock, Needle</u>	es, California
Driller I		-	•		Depth to	First \	Nater: 23.77 ft bgs				
Drilling	Asst:		delaria, G. An	<u>igiano</u>	Samplin	-		Project N	umber:	RC000753.005	51
Logge		Joe La			Samplin	-					
Editor:		<u>Grant</u>	Willford		Convert	ed to V	Vell: ⊠ Yes ☐ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
 121				Topock - Alluvium Deposits	GM					(110.0 - 125.0') Rough drilling	(37.0 - 307.0') No used
	120	RB-2-SS- 120-125 7/16/2019 09:00		Topock - Alluvium Deposits	GM		(121.0 - 127.0') Topock - Alluvium Deposits; S (GM); yellowish brown (10YR 5/6); granules to subangular; some silt; little granules to small trace clay; trace coarser clasts composed of r	o small pebbl pebbles, sub	les, angular;		
126 127		RB-2-SS- 125-129 7/16/2019 09:09					(127.0 - 131.5') Topock - Alluvium Deposits; (ML); brown (7.5YR 5/4); low plasticity; some	Gravelly silt w	vith sand		
128 129 130 				Topock - Alluvium Deposits	ML		pebbles, angular to subangular; little very fine coarse grained sand; little clay; little coarser o metadiorite; wet	grained to ve	ery		
131		RB-2-SS- 129-134 7/16/2019					(131.5 - 137.0') Topock - Alluvium Deposits; S				
132 133 	120	09:22		Topock -			(GM); yellowish brown (10YR 5/6); granules to subangular; some silt; little very fine grained to grained sand; trace clay; trace coarser clasts metadiorite; moist	o very coarse	•		
 135 136 137		RB-2-SS- 134-139 7/16/2019 10:36		Alluvium Deposits	GM						
138 139 140	120	RB-2-SS- 139-144 7/16/2019		Topock - Alluvium Deposits	SM		(137.0 - 142.0') Topock - Alluvium Deposits; S (SM); dark yellowish brown (10YR 4/6); very fi coarse grained, angular to subround; some gr pebbles, angular; some silt; some coarser cla metadiorite; moist	ne grained to anules to lar	very ge		

9/	ARC	ADI	Design & Consultancy for natural and built assets		Во	ring	Log		Shee	et: 8 of	16
Date S	tarted:	06/2	28/2019		Surface	Elevat	ion: <u>480.9 ft amsl</u>	Boring	No ·	RB-2 Pilo	nt .
Date C	omple	ted: <u>07/</u> 2	29/2019		Northing	g (NAD	983): <u>2103398.9</u>		, 1 1 U	17D-7 LIK	<u>^</u>
Drilling	•		cade		Easting	• •	•	_ Client: _	PG&E		
Drilling		od: <u>Son</u>	ic Drilling		Total De	•	307 ft bgs	Project:	Final GW	/ Remedy Ph	ase 1
Drill Ri			rt Longyear Tra	ck Mount	Borehol	e Diam	neter: 4-12 inches	-	PG&E To	opock, Needl	es, California
Driller	Name:	Tyle	r Alymer		Depth to	First \	Water: 23.77 ft bgs	_			
Drilling	Asst:	<u>J. C</u>	ondelaria, G. Aı	ngiano	Samplin	ig Meth	nod: 4 inch x 10 ft Core Barrel	_ Project Nu	ımber: <u>R</u>	C000753.00	51
Logge	r:	<u>Joe</u>	Latham		Samplin	ıg Inter	val: <u>Continuous</u>	_			
Editor:		<u>Gra</u>	nt Willford		Convert	ed to V	Vell: ⊠ Yes ☐ No				
Depth (ft)	Recovery (in)	Sieve Sample I	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
141		10:45 RB-2-SS- 139-144		Topock - Alluvium Deposits	SM						(37.0 - 307.0') No used
142 143 144 145	120	7/16/2019 10:45	RB-2-VAS- 142-147 (<0.17 U ppb) 7/9/2019	Topock - Alluvium Deposits	GM		(142.0 - 145.5') Topock - Alluvium Deposits; (GM); strong brown (7.5YR 5/6); granules to angular; little silt; trace small cobbles; some composed of metadiorite; moist	very large pebb			
145 146 147		RB-2-SS- 144-149 7/16/2019 10:56	13:20	Topock - Alluvium Deposits	SM		(145.5 - 147.0') Topock - Alluvium Deposits; (SM); strong brown (7.5YR 5/6); very fine grained, subangular to subround; some granu angular to subangular; little coarser clasts cometadiorite; trace granite; moist (147.0 - 149.0') Topock - Alluvium Deposits;	ined to very coa ules to large pe imposed of	arse bbles,		
148 148 149				Topock - Alluvium Deposits	SM		(SM); reddish brown / moderate brown(5YR 4 to coarse grained, subangular to subround; li medium pebbles, angular; little silt; trace coa composed of metadiorite; little granite; wet	4/4); very fine gı ttle granules to	rained		
150 151 152 	120	RB-2-SS- 149-154 7/16/2019 11:06		Topock - Alluvium Deposits	SM		(149.0 - 153.0') Topock - Alluvium Deposits; (SM); yellowish brown (10YR 5/6); medium g grained, angular to subround; little granules t subangular; little silt; trace coarser clasts cor metadiorite; trace granite; wet	rained to very o o very large pel	oarse		
		RB-2-SS- 154-157 7/16/2019 11:14		Topock - Alluvium Deposits	GM		(153.0 - 156.5') Topock - Alluvium Deposits; (GM); strong brown (7.5YR 5/6); granules to angular to subangular; some medium to very subangular to subround; little silt; trace coars of metadiorite; wet	verý ľarge pebb coarse grainec ser clasts comp	oles, d sand, osed		
157 158 159 160	120	RB-2-SS- 157-162 7/16/2019 11:20		Topock - Alluvium Deposits	GM		(156.5 - 159.5') Topock - Alluvium Deposits; strong brown (7.5YR 5/6); granules to very lar to subangular; some silt; little very fine to very sand, subangular to subround; trace clay; sor composed of metadiorite; wet (159.5 - 160.0') Topock - Alluvium Deposits;	rge pebbles, ar y coarse graine me coarser clas	ngular d sts		
160				Alluvium		181/20/	ı .				L

9/	١RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 9 of	16
Date S	tarted:	06/28/2	2019	{	Surface	Elevat	ion: 480.9 ft amsl	Boring No.	: RB-2 Pilo	
	•	ted: <u>07/29/</u>	2019	1	Northing	g (NAD	83): 2103398.9	Dorning ivo.	. <u> </u>	<u></u>
Drilling		Casca			Easting	•	•	Client: PG&E		
Drilling			•		Total De	•	307 ft bgs	-	W Remedy Pha	
Drill Ri			ongyear Trac					Location: PG&E	Topock, Needle	es, California
Driller N		<u>Tyler A</u>	-		•		Water: 23.77 ft bgs	- · · · · ·	D0000750 005	- 4
Drilling			<u>delaria, G. An</u> ''	•	Samplin	-		Project Number:	RC000753.005	01
Logger		Joe La			Samplin Convert	-				
Editor:		Giani	Willford		JOHVER	ed to v	Vell. A res No	Т	Т	
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
161 162 163 164 165	120	RB-2-SS- 157-162 7/16/2019 11:20 RB-2-SS- 162-165 7/16/2019 11:58		Topock - Alluvium Deposits Topock - Alluvium Deposits	GM		yellowish brown (10YR 5/6); granules to very I angular to subangular; some clay; little very fir grained sand, subangular to subround; little si clasts composed of metadiorite; moist (160.0 - 163.0') Topock - Alluvium Deposits; S strong brown (7.5YR 5/6); granules to very large to subangular; some silt; little very fine to very sand, subangular to subround; trace clay; som composed of metadiorite; wet (160.5'); 0.3' lense of grayish green color char (163.0 - 167.0') Topock - Alluvium Deposits; S reddish yellow (7.5YR 6/8); granules to very large angular to subangular; and silt; little very fine to grained sand, subangular to subround; trace of clasts composed of metadiorite; moist	ne to very coarse lt; little coarser silty gravel (GM); ge pebbles, angular coarse grained ne coarser clasts nge silty gravel (GM); urge pebbles, o very coarse		(37.0 - 307.0') No used
166 167 168		RB-2-SS- 165-170 7/16/2019 12:07					(167.0 - 171.0') Topock - Alluvium Deposits; S reddish brown / moderate brown(5YR 4/4); vei fine grained, subangular to subround; and silt; medium pebbles, subangular; trace clay; little composed of metadiorite; wet	ry fine grained to little granules to	(167.0 - 177.0') Rough drilling	
		RB-2-SS-		Topock - Alluvium Deposits	SM		(170'); moist; 0.2' lense of grayish green color	change		
171		170-172 7/16/2019			Ť		(171.0 - 172.5') Topock - Alluvium Deposits; S	Silty sand with gravel		
172	120	12:18		Topock - Alluvium Deposits	SM		(SM); reddish brown / moderate brown(5YR 4, to coarse grained, angular; little granules to m angular; little silt; little coarser clasts compose wet	/4); very fine grained ledium pebbles,		
173 174 175		RB-2-SS- 172-177 7/16/2019 12:29	RB-2-VAS- 172-177 (<0.17 U ppb) 7/12/2019 14:55	Topock - Alluvium Deposits	SM		(172.5 - 177.0') Topock - Alluvium Deposits; S reddish brown / moderate brown(5YR 4/4); ver fine grained, subangular to subround; and silt; medium pebbles, subangular; trace clay; little composed of metadiorite; moist (174'); saturated zone	ry fine grained to little granules to		
 176 _177_							(175.5'); 0.2' lense of grayish green color char	nge		
178				Topock - Alluvium Deposits	SM		(177.0 - 178.0') Topock - Alluvium Deposits; S (SM); reddish brown (5YR 5/4); very fine grain grained, angular; and silt; little granules to me	ed to coarse dium pebbles,		
170 179	120	RB-2-SS- 177-180 7/17/2019 07:59		Topock - Alluvium Deposits	SM		angular to subangular; trace clay; little coarsel metadiorite; wet (178.0 - 179.0') Topock - Alluvium Deposits; S (SM); reddish brown / moderate brown(5YR 4/t to coarse grained, angular; little granules to m	Silty sand with gravel (4); very fine grained		
180	. ,,	110.05		Topock - Alluvium Deposits	SM		angular; little silt; little coarser clasts compose wet	ed of metadiorite;		

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 10 of	16
Date S	Started:	06/28	3/2019		Surface	Elevat	on: <u>480.9 ft amsl</u>	Borino	No :	RB-2 Pilo	nt .
Date C	Comple	ted: <u>07/29</u>	9/2019		Northing	g (NAD	83): <u>2103398.9</u>	Boring	, 110	IXD Z I IIC	<u>~</u>
Drilling	Co.:	<u>Casc</u>	ade		Easting	(NAD8	3): <u>7616014.8</u>	Client: <u>F</u>	PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	307 ft bgs	Project: F	Final GV	V Remedy Ph	ase 1
Drill Ri	д Туре	: <u>Boart</u>	Longyear Tra	ck Mount	Borehol	e Diam	eter: <u>4-12 inches</u>	Location: F	PG&E T	opock, Needle	es, California
Driller	Name:	<u>Tyler</u>	Alymer		Depth to	First \	Vater: 23.77 ft bgs				
Drilling	Asst:	<u>J. Co</u>	ndelaria, G. Ar	ngiano	Samplin	ig Meth	od: 4 inch x 10 ft Core Barrel	Project Nu	mber: <u>F</u>	RC000753.00	51
Logge	r:	Joe L	.atham		Samplin	g Inter	/al: <u>Continuous</u>	-			
Editor:		Gran	t Willford		Convert	ed to V	/ell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
 181		RB-2-SS- 180-182 7/17/2019 08:08		Topock - Alluvium Deposits	SM		(179.0 - 181.0') Topock - Alluvium Deposits; S reddish brown / moderate brown(5YR 4/4); we fine grained, subangular to subround; and silt medium pebbles, subangular; trace clay; little composed of metadiorite; wet	ery fine grained ; little granules coarser clasts	to to		(37.0 - 307.0') No used
182							(181.0 - 188.0') Topock - Alluvium Deposits; N with gravel (SW); strong brown (7.5YR 5/6); v very coarse grained, angular; some granules angular; trace silt; some coarser clasts comp wet	ery fine grained to large pebble:	d to s,		
183 184	120	RB-2-SS-									
 185		182-187 7/17/2019 08:17		Topock - Alluvium Deposits	SW						
186 1 =							VOI				
187 188											
189		RB-2-SS- 187-190 7/17/2019 08:25		Topock - Alluvium Deposits Topock -	GW-GM		(188.0 - 189.0') Topock - Alluvium Deposits; N with silt and sand (GW-GM); strong brown (7 to very large pebbles, angular; and very fine to sand, angular; trace clay; little coarser clasts metadiorite; trace coarser clast composed of	.5YR 5/6); gran o very coarse gr composed of	ules		
190				Alluvium Deposits Topock -			(189.0 - 189.5') Topock - Alluvium Deposits; \$ (SM); strong brown (7.5YR 5/6); very fine graingrained, angular; some granules to large pebl silt; trace clay; little coarser clasts composed	Silty sand with g ned to very coa bles, angular; s	rse ome		
191				Alluvium Deposits	GM		coarser clast composed of quartz; wet (189.5 - 192.0') Topock - Alluvium Deposits; \$ (GM); strong brown (7.5YR 5/6); granules to v angular; some very fine to very coarse grained	<i>r</i> ery large pebbl d sand, angular	es, ; little		
192 193	120	RB-2-SS- 190-195 7/17/2019 08:33					silt; trace clay; little coarser clasts composed coarser clast composed of quartz; wet (192.0 - 197.0') Topock - Alluvium Deposits; with silt and gravel (SW-SM); strong brown (7 grained to very coarse grained, angular; some	Well graded sar 7.5YR 5/6); very	nd fine		
 194				Topock -			large pebbles, angular; little silt; trace clay; lit composed of metadiorite; trace coarser clast wet; green staining	tle coarser clas	tś		
195				Alluvium Deposits	SW-SM						
196 197		RB-2-SS- 195-198 7/17/2019 08:40									
198	120			Topock - Alluvium	SM		(197.0 - 199.5') Topock - Alluvium Deposits; Strong brown (7.5YR 5/6); very fine grained to angular; and silt; little granules to small pebbl clay; trace coarser clasts composed of metad	medium graine les, angular; tra	ed,		
199_	- 120 RB-2-SS- Deposits			ML		(199.5 - 202.0') Topock - Alluvium Deposits; (Gravelly silt with	n sand			
				1 10 11		1011 1 1					·

9/-	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	SI	neet: 11 of	16
Date S	started:	06/2	8/2019		Surface	Elevat	ion: <u>480.9 ft amsl</u>	Boring No.	: RB-2 Pilo	\t
Date C	omple	ted: <u>07/2</u>	9/2019		Northing	g (NAD	83): 2103398.9	Borning No.	. IND-Z I IIC	<u></u>
Drilling	Co.:	Caso	ade		Easting	(NAD8	(3): <u>7616014.8</u>	Client: PG&E		
Drilling	Metho	od: <u>Soni</u>	c Drilling		Total De	epth:	307 ft bgs	Project: Final C	GW Remedy Ph	ase 1
Drill Ri	д Туре	: <u>Boar</u>	t Longyear Trad	ck Mount	Borehol	e Diam	eter: <u>4-12 inches</u>	Location: PG&E	Topock, Needle	es, California
Driller I	Name:	<u>Tyler</u>	Alymer		Depth to	First \	Water: 23.77 ft bgs			
Drilling	Asst:	<u>J. Co</u>	ondelaria, G. Ar	ngiano	Samplin	ig Meth	od: 4 inch x 10 ft Core Barrel	Project Number:	RC000753.005	51
Logge	r:	<u>Joe I</u>	_atham		Samplin	ıg Inter	val: <u>Continuous</u>			
Editor:		<u>Gran</u>	t Willford		Convert	ed to V	Vell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
201		RB-2-SS- 198-203 7/17/2019		Topock - Alluvium Deposits	ML		(ML); strong brown (7.5YR 5/6); low plasticity; small pebbles, angular; little very fine to media angular; little clay; little coarser clasts compos wet	um grained sand,		(37.0 - 307.0') No used
202	120	09:03	RB-2-VAS-	Topock - Alluvium Deposits	SM	a V	(202.0 - 204.0') Topock - Alluvium Deposits; S strong brown (7.5YR 5/6); very fine grained to angular; and silt; little small to very large pebb clay; trace coarser clasts composed of metadi (202.5'); green staining	medium grained, les, angular; trace		
204		RB-2-SS-	202-207 (<0.17 U ppb) 7/14/2019	Topock - Alluvium Deposits	SM		(204.0 - 204.5') Topock - Alluvium Deposits; S strong brown (7.5YR 5/6); fine grained to coan little granules to small pebbles, angular; little s	se grained, angular;		
_205		203-207 7/17/2019 09:09	7/14/2019 09:20	Topock - Alluvium Deposits			coarser clasts composed of metadiorite; wet (204.5 - 205.0') Topock - Alluvium Deposits; G (ML); strong brown (7.5YR 5/6); low plasticity;	Gravelly silt with sand some small to very		
206 _207				Topock - Alluvium Deposits	SM		large pebbles, angular; little very fine to mediu angular; little clay; little coarser clasts compos wet (205.0 - 207.5') Topock - Alluvium Deposits; S strong brown (7.5YR 5/6); very fine grained to	Im grained sand, sed of metadiorite;	(007.01)	
		RB-2-SS- 207-209 7/17/2019					angular; and silt; little small to very large pebb clay; trace coarser clasts composed of metadi (207.5 - 217.0') Topock - Alluvium Deposits; C gravel (SC); brown (7.5YR 4/4); very fine grain	les, angular; trace iorite; moist	(207.0') Switched driller T. Alymer with D. OMara	
209		09:15	-				grained, angular to subround; some small to v angular, little clay, trace silt, little coarser clast metadiorite; moist	ery large pebbles, ts composed of		
210										
211		RB-2-SS- 209-214								
212_	120	7/17/2019 09:22		Topock - Alluvium	SC					
213				Deposits						
214			_							
		RB-2-SS-								
		214-217 7/17/2019								
_216		09:28								
<u> </u>										
_217							(0.47.0040.51).7			
							(217.0 - 219.5') Topock - Alluvium Deposits; C (7.5R 4/4); medium grained to very coarse gra	ined, angular; some		
218		RB-2-SS-		Topock -			clay; trace granules, angular; trace silt; trace composed of metadiorite; wet	coarser clasts		
	180	217-222 7/17/2019		Alluvium Deposits	SC		,			
_219		09:35		'						
					-		(240.5. 222.0!) Topode Allegium Dorit C	Novov gravel with		
220					GC		(219.5 - 222.0') Topock - Alluvium Deposits; C	Jayey gravel with		

	11/1	ADIS	Design & Consultancy for natural and built assets		DU	ring	Log		One	eet: 12 of	16
)ate S	tarted:	06/28/	2019	;	Surface	Elevati	on: 480.9 ft amsl	Borin	a No.:	RB-2 Pilo	ot
		ted: <u>07/29/</u>		I	Northin	g (NAD	33): 2103398.9			1321110	
Drilling		<u>Casca</u>			_	(NAD8	•	Client:	PG&E		
	Metho		Drilling		Total D	•	307 ft bgs	Project:		W Remedy Ph	
	g Type		Longyear Tra					Location:	PG&E	Fopock, Needle	es, California
	Name:	•	Alymer		-		Vater: 23.77 ft bgs				
•	Asst:		<u>idelaria, G. Ar</u>	•	-	ng Meth		Project N	umber:	RC000753.00	51
ogge			atham		-	ng Inter					
ditor:		Grant	Willford		Conver	ted to V	′ell: X Yes No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
- 221		RB-2-SS- 217-222 7/17/2019 09:35		Topock - Alluvium Deposits	GC		sand (GC); strong brown (7.5YR 5/6); granule pebbles, angular; some fine to very coarse grate to subround; little clay; some coarser clasts cometadiorite; trace granite; wet	ained sand, a	e ngular		(37.0 - 307.0' No used
222							(200 0		:41-		
- 223_ - 224_							(222.0 - 237.0') Topock - Alluvium Deposits; C gravel (SC); brown (7.5YR 5/4); very fine grain grained, angular to subround; some small to v angular; little clay; trace silt; little coarser clas metadiorite; moist	ned to very co very large pet	arse bles,		
.4-		RB-2-SS- 222-227									
225_		7/17/2019 09:40									
25_		09.40									
 26											
.20_	180										
27											
21_										(227.0 - 244.0')	
_ 28_										Rough drilling	
20_											
- 29_											
29				Topock -							
30_		RB-2-SS- 227-233		Alluvium Deposits	SC						
30_		7/17/2019 09:45									
- 31		09.45									
31_											
ຸ											
32											
33											
33_											
124		RB-2-SS-									
34		233-235 7/17/2019					(234'); greenish gray staining				
۱	60	09:50									
35_											
- +											
36											
37		RB-2-SS-					(237.0 - 241.0') Topock - Alluvium Deposits; (Clayey gravel	with	(237.0')	
4		RB-2-SS- 235-240 7/17/2019					sand (GC); reddish brown / moderate brown(small pebbles, angular; some fine to coarse g	5YŔ 4/4); gra	nules to	Switched driller D. O'Mara with	
,		10:30	RB-2-VAS- 237-242	Topock			subangular to subround; some clay; trace silt;	little coarser	clasts	S. Vasquez	
238_			(<0.17 U	Topock - Alluvium	GC		composed of metadiorite; moist				
238_ _ 239_ _	84		ppb) 7/15/2019 13:48	Deposits							

9/-	١RC	ADIS	Design & Consultancy for natural and built assets		Bo	ring	Log	St	neet: 13 of	16
Date S	started:	06/28/2	2019	;	Surface	Elevat	ion: <u>480.9 ft amsl</u>	Boring No.	: RB-2 Pilo	nt .
Date C	Comple	ted: <u>07/29/</u> 2	2019		Northin	g (NAD	983): <u>2103398.9</u>	_ Borning itto.	. IND ZITIIC	<u> </u>
Drilling	Co.:	Casca	de		Easting	(NAD8	33): <u>7616014.8</u>	Client: PG&E		
Drilling	Metho	od: <u>Sonic I</u>	Drilling		Total De	epth:	307 ft bgs	Project: Final C	SW Remedy Ph	ase 1
Drill Ri	• • •		<u>ongyear Tra</u>	<u>ck Mount</u> I	Borehol	e Diam	neter: 4-12 inches	Location: PG&E	Topock, Needle	es, California
Driller I		•	-		-		Water: 23.77 ft bgs	<u> </u>		
Drilling			<u>delaria, G. Ar</u>	-	Samplir	-		Project Number:	RC000753.005	51
Logge		Joe La			Samplir	-		_		
Editor:		Grant \	Nillford		Convert	ed to V	Vell:			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
			RB-2-VAS- 237-242 (<0.17 U	Topock - Alluvium Deposits	GC				(227.0 - 244.0') Rough drilling	(37.0 - 307.0') No used
			ppb) 7/15/2019 13:48				(241.0 - 244.0') Topock - Weathered Bedrock Sandy lean clay with gravel (CL); reddish bro plasticity; some granules to very large pebble	wn (5YR 5/4); low s, angular; little fine		
242	84	RB-2-SS- 240-245		Topock - Weathered			to coarse grained sand, subangular to subrou coarser clasts composed of metadiorite; dry	und; little silt; little		
		7/17/2019		Bedrock -	CL					
243		10:35		conglomerate						
_244							(244.0 - 247.0') Topock - Weathered Bedrock			
 245_							Clayey sand with gravel (SC); yellowish red / very fine grained to medium grained, subang	ular to subround;		
240				Topock - Weathered			some granules to large pebbles, angular to so trace silt; little coarser clasts composed of m			
 246	36			Bedrock - conglomerate	sc					
				Congionnerate	1					
247										
		RB-2-SS- 245-250					(247.0 - 274.0') Topock - Weathered Bedrock Gravelly lean clay with sand (CL); reddish bro	c - conglomerate;		
248		7/17/2019 10:40					plasticity; some granules to medium pebbles, subangular; little very fine to fine grained sand	, angular to		
							subround; trace silt; little coarser clasts comp	oosed of metadiorite;		
249							trace coarser clasts composed of granite; mo	DIST		
250										
	84									
251	0.									
									(251.0 - 254.0') Rough drilling	
252		RB-2-SS-								
_		250-255					(252') dark reddish brown (2.5YR 3/4); decreated content, white mottling	ase in moisture		
253		7/17/2019 10:45		Topock -						
_				Weathered Bedrock -	CL					
_254				conglomerate			(254') reddish brown (2.5YR 4/4); increase in	mointura contant		
							(254) reddish brown (2.51K 4/4), mciease in	moisture content		
_255										
256										
_257	84	RB-2-SS-					(257') dark reddish brown (2.5YR 3/4); decrea	ase in moisture		
-		255-260 7/17/2019				\////	content	ass in molecule		
258		10:50								
-										
259										
-										
260		11000	1 :5 10 ::0	'C' ('		<u> </u>	1			

PLAN CANADA CONSULTANCY for natural and built assets					Во	ring l	Log	Sheet: 14 of 16			
Drilling	omple Co.:	ted: <u>07/29</u> <u>Casca</u>	/2019 ade	!	Northing Easting	Elevatio (NAD8: (NAD83	3): 2103398.9): 7616014.8	Client: <u>PC</u>	No.: <u>RB-2 Pilo</u> 6&E		
Drilling Drill Rig Driller I Drilling	g Type Name: Asst:	e: <u>Boart</u> <u>Tyler J. Col</u>	Drilling Longyear Tradymer Alymer Adelaria, G. Areatham	ck Mount 	Depth to Samplin	e Diame	ater: 23.77 ft bgs d: 4 inch x 10 ft Core Barrel	Location: PC	nal GW Remedy Pha G&E Topock, Needle ber: RC000753.005	s, California	
Logge Editor:						ed to We		Continuous			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid	
261 262 263	84	RB-2-SS- 250-265 7/17/2019 10:55						9		(37.0 - 307.0') No used	
264 265 266	72						(264') reddish brown / mode <mark>rate b</mark> rown(5YR 4 moisture content	4/4); decrease in	(265.0 - 267.0') Rough drilling		
		RB-2-SS- 265-270 7/17/2019 11:00		Topock - Weathered Bedrock - conglomerate	CL				(269.0 - 274.0') Rough drilling, drill rig ran out		
	84	RB-2-SS- 270-275 7/17/2019 11:00							of fuel mid-drill run		
275 276 276			RB-2-VAS- 274-279 (<0.17 U ppb) 7/18/2019	Topock - Weathered Bedrock - conglomerate	SC	t l	(274.0 - 277.0') Topock - Weathered Bedrock Clayey sand with gravel (SC); brown (7.5YR 4 o very coarse grained, subangular to subrourery large pebbles, angular; little clay; trace signs; little coarser clasts composed of metadio	l/4); very fine graind; some medium mall cobbles; trac	to		
_ 275-: 7/17/2		RB-2-SS- 275-280 7/17/2019 12:49	09:17	Topock - Weathered Bedrock - conglomerate	CL	i i	277.0 - 279.0') Topock - Weathered Bedrock Sandy lean clay with gravel (CL); reddish brown (5YR 4/4); low plasticity; some very fine sand, subangular to subround; little granules bebbles, subangular; trace silt; little coarser contending the coarser of the coarse of t	vn / moderate to medium grain to very large lasts composed o			
280				Topock - Weathered Bedrock -	CL		279.0 - 285.0') Topock - Weathered Bedrock Gravelly lean clay with sand (CL); reddish bro prown(5YR 4/4); low plasticity; some granules	wn / moderate s to very large			

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	S	Sheet: 15 of	16
Date S					Surface		·	Boring No	o.: RB-2 Pilo	ot
	•	ted: <u>07/29/</u>			Northing		•		<u> </u>	
Drilling		<u>Casca</u>			Easting	•	•	Client: PG&E		
Drilling Drill Ri			Longyear Tra		Total De	•	307 ft bgs eter: 4-12 inches	•	GW Remedy Pha E Topock, Needle	
Driller							Vater: 23.77 ft bgs	Location. I Gai	_ TOPOCK, NEEdic	55, Calliottia
Drilling		•	delaria, G. Ar		Samplin		<u> </u>	Project Number	r: RC000753.005	 51
Logge		Joe La		-	Samplin	-		Continuous		
Editor:		Grant '	Willford		Convert	ed to V	Vell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
281 	108	RB-2-SS- 280-283 7/17/2019 12:56		Topock - Weathered Bedrock - conglomerat	CL		pebbles, angular to subangular; little very fine sand, subangular to subround; trace small col coarser clasts composed of metadiorite; trace white and dark brown mottling	obles; trace silt; little		(37.0 - 307.0') No used
				oong.omorat					(283.0 - 293.0') Rough drilling	
		RB-2-SS- 283-288					(285.0 - 294.0') Topock - Weathered Bedrock Gravelly lean clay with sand (CL); reddish bro	wn / moderate		
_286		7/18/2019 11:15					brown(5YR 4/4); low plasticity; some granules pebbles, angular to subround; some fine to me	to very large edium grained sand,		
-							subangular to subround; trace silt; little coarse of metadiorite; trace granite; moist	er clasts composed		
_287										
							*			
288	120									
 _289			RB-2-VAS-							
209			287-292 (<0.17 U	Topock - Weathered	20					
290			ppb) 7/26/2019	Bedrock - conglomerat	, CL					
		RB-2-SS- 288-293	11:56	3						
_291		7/18/2019 11:20								
292				Ì						
-										
293									(293.0 - 307.0')	
									10' of slough in core barrel.	
294							(294.0 - 303.0') Topock - Competent Bedrock	- conglomerate;	From 303 to 307 very rough	
 295							reddish brown / moderate brown(5YR 4/4); litt medium pebbles, angular to subangular; little	very fine to medium	drilling. (294.0')	
							grained sand; trace silt; little coarser clasts cometadiorite; dry to moist; friable conglomerate	omposed of e, highly pulverized	Independant QC inspector	
296							and fractured		on-site to confirm	
L -	168			Topock -					bedrock	
_297				Competent Bedrock -						
				conglomerat	е					
298										
299										
300										
	3 - 43	. 11000 1	Initial Call O	ifiti	Custon	- Et - E-	ot has - holow ground surface ama	I — -I		

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring L	og		She	eet: 16 of	16
Date S	Started	06/28/2	2019		Surface	Elevation:	480.9 ft amsl	Borir	na No.:	RB-2 Pilo	ot
	-	ted: <u>07/29/2</u>				g (NAD83)		_			<u> </u>
Drilling		Cascac				(NAD83):		_ Client:	PG&E		
Drilling			•		Total De	-	307 ft bgs	_ Project:		W Remedy Ph	
Drill Ri Driller		<u>Boart L</u> <u>Tyler A</u>	<u>ongyear Trad</u> lymor				r: <u>4-12 inches</u> ter: <u>23.77 ft bgs</u>	_ Location	PG&E	Topock, Needle	es, Calliornia
Drilling		-	delaria, G. An		-	g Method:	_	- Proiect N	Jumber	RC000753.005	51
Logge		Joe Lat		•		ig Interval:					
Editor		Grant V			-	ed to Well					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
301				Topock - Competent Bedrock - conglomerat				0		(293.0 - 307.0') 10' of slough in core barrel. From 303 to 307 very rough drilling.	(37.0 - 307.0') No used
303	168					(30 and	3.0 - 307.0'); dry; friable conglomerat <mark>e, mo</mark> d fractured	oderately pul	verized		
304											
305											
200											
306											
307_							End of Boring at 307.0 'bg	10			
308_							Elia di Barrig at cori.o Bg	,			
309_											
310											
311											
312											
313											
314											
315											
316											
_317											
318											
319											
320 Abbre	viations	: LISCS = I	Inified Soil Cl	assification	System	n ft = feet	bas = below around surface, ams	sl = ahove	mean se	a level GW = o	rroundwater

9/-	ARCA	DIS for built	i <mark>ign & Consultan</mark> natural and It assets	тсу	Drilling Log		Sheet:	1 of 13
	Started:	09/24/201			urface Elevation:	N/A	Boring No.: R	B-2
	Completed:		9		orthing (NAD83):	N/A		
Drilling		Cascade			asting (NAD83):	N/A	Client: PG&E	
1	Method:	Dual Rota			otal Depth:	254.35 ft bgs	•	emedy Phase 1
	g Type:	Foremost			onductor Casing Diameter:		Location: PG&E Topo	ock, Needles, California
Driller I		Jon Martin			rill Casing Diameter: rill Bit:	16 inches 15.5 to 17.5 inchTricone	Project Number: PC0	00752 0051
Drilling Tool-P		Arnold La	_		epth to First Water:	23.77 ft bgs	Project Number. <u>RCo</u>	00733.0031
	eologist:	D. Cornell			onverted to Well:	× Yes No	-	
Depth (ft)	Drilling Rur and Averag Penetration R	e Codo	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling	g Notes	Drilling Fluid
1 _ - 1 _ - 2 _ - 2 _ - 3 _		SP			(0.0 - 3.0') Topock - Fill; Poorly graded sand (SP); brown (10YR 4/3)			(0.0 - 19.8') 740 gallons of water used; 700 gallons of water recovered; 40 gallons of water lost
4 5 6 _ 7		NR						
	(0.0 - 19.8) 2.18 mins/ft	SP		(0.0 - 19.8') 18.0" Steel Casing	(7.0 - 11.0') Topock - Fill; Poorly graded sand (SP); brown (7.5YR 4/3)		nex #3 sand observed in retur	n
12 13 14 15 16 17		NR			(11.0 - 17.0') No recovery (NR)			
17		SP			(17.0 - 18.5') Topock - Fill; Poorly graded sand (SP); brown (10YR 4/3)			
19 19 20		SP			(18.5 - 20.0') Topock - Fluvial Deposits; Poorly graded sand (SP); light yellowish brown (10YF 6/4)			

PARCADIS Design & Consultancy for natural and built assets					Drilling Log		Sheet: 2 of 13			
	Started:	09/24/201			urface Elevation:	N/A	Boring No.:	RB-2		
	Completed:		19		orthing (NAD83):	N/A				
Drilling	g Co.: g Method:	Cascade Dual Rota			asting (NAD83): otal Depth:	N/A 254.35 ft bgs	Client: <u>PG&E</u> Project: <u>Final GW</u>	/ Remedy Phase 1		
_	g Type:	Foremost	•		otal Depth. onductor Casing Diameter:		-	opock, Needles, California		
	Name:	Jon Martin			rill Casing Diameter:	16 inches	Location: 1 Oak 1	Spock, Necales, California		
Drilling		A. & H. A			rill Bit:	15.5 to 17.5 inchTricone	Project Number: R	C000753.0051		
	l-Pusher: <u>Arnold Lamon</u>				epth to First Water:	23.77 ft bgs				
Rig G	Geologist: D. Cornell / E.Redner			dner C	onverted to Well:	× Yes No				
Depth (ft)	th Drilling Run and Average Penetration Rate USCS Class Diam		Casing Diameter	Description (See Pilot boring log for full geologic descriptions)		y Notes	Drilling Fluid			
21	(19.8 - 39.3) 3.87 mins/ft			(19.8 - 39.3') 18.0" Steel Casing	(27.0 - 27.0') No recovery (NR) (27.0 - 31.5') Topock - Fluvial Deposits; Poorly graded sand (SP); light yellowish brown (10YF 6/4) (31.5 - 37.0') No recovery (NR) (31.5 - 37.0') Topock - Fluvial Deposits; Poorly graded sand wit silt (SP-SM); brown (10YR 5/3) (38.0 - 39.0') Topock - Fluvial Deposits; Silty sand (SM); brown (10YR 5/3)	(30.0') trace amounts of cemcuttings.		of water used; 5540 gallons of water recovered; 240 gallons of water gained		
	(39.3 - 41.0)			(39.3 - 41.0')	(39.0 - 42.0') Topock - Fluvial Deposits; Well graded gravel with silt and sand (GW-GM); grayish	(39.3') Tripped out drill string	to install BHA 5000 lbs.			
40 Abbre	21.83 mins/f		fied Soil		ion System ft = feet has =	 helow ground surface, amo	el = ahove mean sea	level GW = groundwater		

ARC	DIS	Design & Consultar or natural and ouilt assets	су	Drilling Log		Sheet:	3 of 13
Date Started:	09/24/20)19	Sı	urface Elevation:	N/A	Boring No.: R	B-2
Date Completed	: <u>10/05/2</u> 0)19	N	orthing (NAD83):	N/A	Borning Iton. It	<u> </u>
Drilling Co.:	<u>Cascade</u>)	E	asting (NAD83):	N/A	Client: PG&E	
Drilling Method:	<u>Dual Ro</u>	tary	To	otal Depth:	254.35 ft bgs	Project: Final GW R	emedy Phase 1
Drill Rig Type:	<u>Foremo</u>	st DR-241	HDC	onductor Casing Diameter:	18 inches	Location: PG&E Topo	ock, Needles, California
Driller Name:	<u>Jon Mar</u>			rill Casing Diameter:	16 inches		
Drilling Asst:		<u>Amezguit</u>		rill Bit:	15.5 to 17.5 inchTricone	Project Number: RC0	00753.0051
Tool-Pusher:	Arnold L			epth to First Water:	23.77 ft bgs		
Rig Geologist:	D. Corn	ell / E.Red	dner Co	onverted to Well:	× Yes No		
Depth (ft) Drilling R and Avera Penetration	age 030		Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling	Notes	Drilling Fluid
	O) //ft GW-G	М	Casing (39.3 - 41.0') 18.0" Steel Casing	brown (10YR 5/2)	(38.0 - 50.0') Rough drilling. (40.0') trace amounts of ceme (41.0') Sheared off bolts on the trip out pipe to access diverte	ne diverter plate, cut casing t	7746 gallons of water
43 44 	SM			(42.0 - 45.0') Topock - Fluvial Deposits; Silty sand (SM); dark yellowish brown (10YR 4/4)		S. C.	3
45 46 47 48	GW-G	M		(45.0 - 48.0') Topock - Fluvial Deposits; Well graded gravel with silt and sand (GW-GM); dark gray (10YR 4/1)			
			(41.0 - 58.1') 18.0" Steel Casing	(48.0 - 54.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); reddish brown (5YR 5/4)	(50.0') trace to little amounts cuttings.	of cemex #3 sand in return	
54 55	GM			(54.0 - 55.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); reddish brown (5YR 5/4)			
56 57 58	SM			(55.0 - 59.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (5YR 5/4)			
59 (58.1 - 77. 4.80 mins.	rft SC	offied Soil	(58.1 - 77.6') 18.0" Steel Casing	(59.0 - 60.0') Topock - Alluvium Deposits; Clayey sand with gravel (SC); reddish brown (5YR 5/4) on System, ft = feet, bgs =			(58.1 - 77.6') 4920 gallons of water used; 5527 gallons of water recovered; 607 gallons of water gained

9/	ARCA	DIS for buil	sign & Consultar natural and It assets	псу	Drilling Log			She	et: 4	1 of 13
	Started:	09/24/201			urface Elevation:	N/A	Borin	g No.:	RB	-2
	Completed:		19		orthing (NAD83):	N/A				
Drilling		Cascade			asting (NAD83):	N/A	Client:	PG&E		
_	Method:	Dual Rota	•		otal Depth:	254.35 ft bgs	Project:			nedy Phase 1
	g Type:	Foremost			onductor Casing Diameter:		Location:	PG&E I	ороск	k, Needles, California
	Name:	Jon Martii			rill Casing Diameter: rill Bit:	16 inches 15.5 to 17.5 inchTricone	Droiget N	umbor: E	2000	752 0051
Drilling	usher:	A. & H. A. Arnold La	-		epth to First Water:	23.77 ft bgs	Projectiv	ullibel. <u>r</u>	10000	7733.0031
	eologist:	D. Cornel			onverted to Well:	× Yes No	-			
	Drilling Ru	1			Description					
Depth (ft)	and Averag Penetration R	e Code	USCS Class	Casing Diameter	(See Pilot boring log for full geologic descriptions)	Drilling	y Notes			Drilling Fluid
616263	(58.1 - 77.6) 4.80 mins/ft	GW GC SW		(58.1 - 77.6') 18.0" Steel Casing	(67.0 - 74.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); reddish brown (5YR 5/4) (67.0 - 74.0') Topock - Alluvium Deposits; Well graded gravel (GW); reddish gray / pale brown(5YR 5/2) (75.0 - 77.0') Topock - Alluvium Deposits; Well graded sand with gravel (SW); reddish brown / moderate brown(5YR 4/4)	(77.0') Drill rods chattering.	nts of Cemextings.			(58.1 - 77.6') 4920 gallons of water used; 5527 gallons of water recovered; 607 gallons of water gained
78 79 80	(77.6 - 82.0) 6.18 mins/ft			(77.6 - 82.0') 18.0" Steel Casing	Deposits; Well graded sand with silt and gravel (SW-SM); reddish gray / pale brown(5YR 5/2)	(77.0') Drill rods chattering. (78.0 - 82.0') Rough drilling.				(77.6 - 119.3') 14976 gallons of water used; 18999 gallons of water recovered; 4023 gallons of water gained
	viations: US	SCS = Unit	ied Soil	Classificati	on System, ft = feet, bgs =	below ground surface, ams	sl = above i	mean sea	a level,	GW = groundwater

9/	ARCA	DIS	esign & Consultar r natural and uilt assets	ісу	Drilling Log		Sheet:	5 of 13	
Date S	Started:	09/24/20	19	Sı	urface Elevation:	N/A	Boring No.: RE	R-2	
	Completed:			N	orthing (NAD83):	N/A	Borning No.: INE	<u></u>	
Drilling		<u>Cascade</u>			asting (NAD83):	N/A	Client: PG&E		
_		Dual Rot	•		otal Depth:	254.35 ft bgs	Project: Final GW Remedy Phase 1		
	• • • • • • • • • • • • • • • • • • • •	<u>Foremos</u>			onductor Casing Diameter:		Location: PG&E Topock, Needles, California		
	Name:	Jon Mart			rill Casing Diameter:	16 inches			
_	ng Asst: A. & H. Amezguita I-Pusher: Arnold Lamon				rill Bit:	15.5 to 17.5 inchTricone	Project Number: RC00	0753.0051	
					epth to First Water:	23.77 ft bgs			
Rig Ge	Geologist: D. Cornell / E.Redner			aner C	onverted to Well:	× Yes No			
Depth (ft)				Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling	Notes	Drilling Fluid	
 81 82	(77.6 - 82.0) 6.18 mins/ft	SW-SM		(77.6 - 82.0') 18.0" Steel Casing	(81.5 - 86.5') Topock - Alluvium Deposits; Silt with gravel (ML)	(78.0 - 82.0') Rough drilling. (80.0') Observed trace amou Lapis Luster Sand in drill cut (82.0') Rough drilling, loss of works to get it cleared out.		(77.6 - 119.3') 14976 gallons of water used; 18999 gallons of water recovered; 4023 gallons of water gained	
83 84		ML				(83.0 - 98.0') Rough drilling.	1 6		
85 86							VVI.		
87 88 89 90	(82.0 - 92.0) 3.01 mins/ft	GC		(82.0 - 92.0') 18.0" Steel Casing	(86.5 - 90.0°) Topock - Alluvium Deposits; Clayey gravel (GC); yellowish red / light brown(5YR 5/6)				
 91 92		GC		Q	(90.0 - 93.0') Topock - Alluvium Deposits; Clayey gravel (GC); brown (7.5YR 5/4)	(90.0') Observed trace amou Lapis Luster Sand in drill cut	nts of Cemex #3 MESH (8x10) tings.		
93 94 95	(92.0 - 97.0) 15.77 mins/ft	GM		(92.0 - 97.0') 18.0" Steel Casing	(93.0 - 96.5') Topock - Alluvium Deposits; Silty gravel (GM); strong brown (7.5YR 5/6)	(94.0 - 95.0') Drill rods chatte	ering.		
96 97 98	(97.0 - 119.3)	GM		(97.0 - 119.3'	(96.5 - 99.0') Topock - Alluvium Deposits; Silty gravel (GM); strong brown (7.5YR 5/6)	g (97.0') Added small section of	of casing 1.95 ft.		
99	`5.03 mins/ft	GC		Casing	(99.0 - 104.0') Topock - Alluvium Deposits; Clayey gravel (GC); yellowish red / light brown(5YR	helaw ground aurface, ama			

9/	ARCA	DIS	sign & Consultan natural and ilt assets	су	Drilling Log				Shee	et: 6	of 13
	Started:	09/24/20		Sı	urface Elevation:	<u>N//</u>		Borin	g No.:	RB	-2
Date C	Completed:			N	orthing (NAD83):	<u>N</u> //	Α				<u>=</u>
Drilling		Cascade			asting (NAD83):	<u>N//</u>		Client:	PG&E		
_	Method:	Dual Rota	-		otal Depth:		4.35 ft bgs	•			nedy Phase 1
	g Type:	Foremos			onductor Casing Diameter:			Location:	PG&E T	<u>opocł</u>	k, Needles, California
	Name:	Jon Marti			rill Casing Diameter:		inches				
Drilling		A. & H. A	-		rill Bit:		.5 to 17.5 inchTricone	Project N	umber: <u>F</u>	RC000)753.0051
	Pusher:	Arnold La			epth to First Water:		.77 ft bgs				
Rig Ge	eologist:	D. Corne	II / E.Red	dner Co	onverted to Well:	$\frac{ X }{T}$	Yes No				
Depth (ft)	Drilling Rui and Averag Penetration R	e Codo	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)		Drilling				Drilling Fluid
- 101 - 102 - 103 - 106 - 107 - 110 - 111 - 112 - 1113 - 1114 - 1115 - 1116 - 1117 - 1118 - 1117 - 1118 - 1117 - 1118 - 1117 - 1118 - 1119 - 1119	(97.0 - 119.3 5.03 mins/ft			(97.0 - 119.3') 18.0" Steel Casing	(104.0 - 107.0') Topock - Alluvium Deposits; Silty gravel (GM); yellowish red / light brown(5YR 5/6) (107.0 - 109.0') Topock - Alluvium Deposits; Clayey gravel with sand (GC); yellowish red / light brown(5YR 5/6) (109.0 - 111.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); yellowish brown (10YR 5/6) (111.0 - 112.0') Topock - Alluvium Deposits; Silty gravel (GM); yellowish brown (10YR 5/6) (112.0 - 114.0') Topock - Alluvium Deposits; Silty gravel (GM); strong brown (7.5YR 5/6) (114.0 - 121.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); yellowish brown (10YR 5/6)		(100.0') Observed trace amo (8x10) Lapis Luster Sand in o	drill cuttings	x #3 MESH		(77.6 - 119.3') 14976 gallons of water used; 18999 gallons of water recovered; 4023 gallons of water gained
	(119.3 - 130.0			(119.3 - 130.0') 16.0"	-		(119.0') Observed trace amo (8x10) Lapis Luster Sand in c (119.3') Conductor casing ca	drill cuttings.		ŀ	
120	2.00 mins/ft		R.H.C.	100.0 / 10.0		<u> </u>	, conductor casing ta	o. be auva	a acepe		0111

ARC	DIS	esign & Consultano r natural and uilt assets	су	Drilling Log		Sheet: 7 of 13				
Date Started:	09/24/20	19	Sı	urface Elevation:	N/A	Boring No	o.: RE	3-2		
Date Completed:			N	orthing (NAD83):	N/A			<u> </u>		
Drilling Co.:	Cascade			asting (NAD83):	N/A	Client: PG&				
Drilling Method:	Dual Rot	-		otal Depth:	254.35 ft bgs	-		medy Phase 1		
Drill Rig Type:	<u>Foremos</u>	t DR-241		onductor Casing Diameter:		Location: PG&	E Topoc	k, Needles, California		
Driller Name:	Jon Mart			rill Casing Diameter:	16 inches	<u> </u>				
Drilling Asst:	A. & H. A			rill Bit:	15.5 to 17.5 inchTricone	Project Numbe	r: <u>RC00</u>	0753.0051		
Tool-Pusher:	Arnold La			epth to First Water:	23.77 ft bgs	-				
Rig Geologist:	D. Corne	II / E.Red	iner Co	onverted to Well:	× Yes No			1		
Depth (ft) Drilling R and Avera Penetration	ge USUS	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)		g Notes		Drilling Fluid		
	GM GM		(119.3 - 130.0') 16.0" Steel Casing	(121.0 - 127.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); yellowish brown (10YR 5/6)		in, formation is very	tight.	(119.3 - 176.7') 13778 gallons of water used; 13310 gallons of water recovered; 468 gallons of water lost		
	GM GM		(130.0 - 137.1) 16.0" Steel Casing	(137.0 - 142.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); dark yellowish brown (10YF 4/6)			ESH			
	000		01 .c	0 1 6 1 1						

9/	ARCADIS Design & Consultancy for natural and built assets			псу	Drilling Log			Sheet: 8 of 13					
		09/24/2				urface Elevation:		/A	Bori	ng No.:	RB	5-2	
	Completed:			1		orthing (NAD83):		/A			_		
Drilling	-	Cascad				asting (NAD83):		/A	Client:	PG&E	M D = 11	d. / Dle	
1	g Method: ig Type:	Dual Ro	-			otal Depth: onductor Casing Diameter:		54.35 ft bgs	Project:	Final GV		-	lase i les, California
	Name:	Jon Ma				rill Casing Diameter:		6 inches	Location	i. <u>i Gal i</u>	оросі	K, INCCU	es, California
	illing Asst: A. & H					rill Bit:			Project Number: <u>RC000753.0051</u>		 51		
1	usher: <u>Arnold Lamon</u>			-		epth to First Water:		3.77 ft bgs		_			
Rig G	eologist:	<u> </u>			dner Co	onverted to Well:	Yes No						
Depth (ft)	Drilling Rur and Averag Penetration R			USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)		Drilling) Notes				rilling Fluid
 141 142_		SM										gallons of 13310 ga	176.7') 13778 If water used; Illons of water d; 468 gallons of t
142 143 		GM	0 0 0 0 0			(142.0 - 145.5') Topock - Alluviun Deposits; Silty gravel with sand (GM); strong brown (7.5YR 5/6)		0,	CO				
144		Giv	0 0 0						•	1/			
146 147		SM				(145.5 - 147.0') Topock - Alluviun Deposits; Silty sand with gravel (SM); strong brown (7.5YR 5/6)		9					
148	. (137.1 - 157.1 1.49 mins/ft	SM			(137.1 - 157.1') 16.0" Steel Casing	Deposits; Silty sand with gravel (SM); reddish brown / moderate brown(5YR 4/4)							
149					oteel Cashiy	(149.0 - 153.0') Topock - Alluviun Deposits; Silty sand with gravel (SM); yellowish brown (10YR 5/6)		2)					
151 152	-	SM			?								
153	-					(4500 4505) Tarak Allusius							
154			0 0 0 0			(153.0 - 156.5') Topock - Alluviun Deposits; Silty gravel with sand (GM); strong brown (7.5YR 5/6)							
155 156		GM											
]		0	ФФ									
157]		0			(156.5 - 159.5') Topock - Alluviun Deposits; Silty gravel (GM); stron	ן ו						
158 159	(157.1 - 176.7 1.48 mins/ft	GM			(157.1 - 176.7') 16.0" Steel Casing	brown (7.5YR 5/6)							
160	-	GC	. 8		2	(159.5 - 160.0') Topock - Alluviun	1						

ARCADIS Design & Consultancy for natural and built assets			псу	Drilling Log		Sheet:	9 of 13	
		09/24/20			urface Elevation:	N/A	Boring No.: RE	3-2
	Completed:				orthing (NAD83):	N/A		
Drilling	•	Cascade			asting (NAD83):	N/A	Client: PG&E	
_		Dual Rot	-		otal Depth:	254.35 ft bgs	-	medy Phase 1
	g Type: Name:	Foremos Jon Mart			onductor Casing Diameter: rill Casing Diameter:	16 inches	Location: PG&E Topoc	k, Needles, California
Drilling		A. & H. A			rill Bit:	15.5 to 17.5 inchTricone	Project Number: RC00	0753 0051
_		Arnold La	•		epth to First Water:	23.77 ft bgs	riojostitambor. <u>rtoss</u>	0700.0001
		D. Corne			onverted to Well:	× Yes No		
Depth (ft)	Drilling Rur and Averag Penetration R	e Codo		Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling	Notes	Drilling Fluid
161 162 163		GM			Deposits; Clayey gravel (GC); yellowish brown (10YR 5/6) (160.0 - 163.0') Topock - Alluvium Deposits; Silty gravel (GM); strong brown (7.5YR 5/6)			(119.3 - 176.7') 13778 gallons of water used; 13310 gallons of water recovered; 468 gallons of water lost
164		Г			(163.0 - 167.0') Topock - Alluvium Deposits; Silty gravel (GM); reddish yellow (7.5YR 6/8)			
165 166 		GM				O A	Del	
167 168 169 170	(157.1 - 176.7 1.48 mins/ft		4	(157.1 - 176.7') 16.0" Steel Casing	(167.0 - 171.0') Topock - Alluvium Deposits; Silty sand (SM); reddish brown / moderate brown(5YR 4/4			
171 172		SM			(171.0 - 172.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown / moderate brown(5YR 4/4)			
173 174 175 176		SM			(172.5 - 177.0') Topock - Alluvium Deposits; Silty sand (SM); reddish brown / moderate brown(5YR 4/4	ı		
177 178 179	(176.7 - 197.0 1.09 mins/ft			(176.7 - 197.0') 16.0" Steel Casing	(177.0 - 178.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (5YR 5/4) (178.0 - 179.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown / moderate brown(5YR 4/4) (179.0 - 181.0') Topock - Alluvium Deposits; Silty sand (SM); reddish			(176.7 - 254.0') 13257 gallons of water used; 13862 gallons of water recovered; 605 gallons of water gained
180	datiana, UC	200 - 11-	<u> </u>	Classific - 4	brown / moderate brown(5YR 4/4)		l — abaya maaan aa - !	L CM =

9/	ARCA	DIS of built	sign & Consultan natural and It assets	су	Drilling Log		Sheet:	10 of 13
Date S	started:	09/24/201	19	Sı	urface Elevation:	N/A	Boring No.: RE	1-2
Date C	completed:	10/05/201	19	N	orthing (NAD83):	N/A	Borning No INL	<u> </u>
Drilling	Co.:	Cascade		E	asting (NAD83):	N/A	Client: PG&E	
_		Dual Rota	ary	To	otal Depth:	254.35 ft bgs	Project: Final GW Re	medy Phase 1
Drill Ri	g Type:	<u>Foremost</u>	DR-241	<u>HD</u> C	onductor Casing Diameter:	18 inches	Location: PG&E Topoc	k, Needles, California
Driller I		Jon Marti			rill Casing Diameter:	16 inches		
Drilling		A. & H. A	-		rill Bit:	15.5 to 17.5 inchTricone	Project Number: RC00	0753.0051
Tool-P		Arnold La			epth to First Water:	23.77 ft bgs	-	
Rig Ge	eologist:	D. Cornel	I / E.Red	dner Co	onverted to Well:	× Yes No		T
Depth (ft)	Drilling Rur and Averag Penetration R	e Code	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)		g Notes	Drilling Fluid
 181		SM			(181.0 - 188.0') Topock - Alluvium Deposits; Well graded sand with	(180.0') Observed trace amo (8x10) Lapis Luster Sand in o		(176.7 - 254.0') 13257 gallons of water used; 13862 gallons of water recovered; 605 gallons of water gained
182		L			gravel (SW); strong brown (7.5YR 5/6)	2	2	
183 184		ш						
185 1 =		sw						
186 187		ш				ON	///	
107		L		(176.7 -	(188.0 - 189.0') Topock - Alluvium			
 189	(176.7 - 197.0 1.09 mins/ft	GW-GM		197.0') 16.0" Steel Casing	Deposits; Well graded gravel with			
190		GM			(SM); strong brown (7.5YR 5/6) (189.5 - 192.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); strong brown (7.5YR 5/6)	(190.0') Observed trace amo (8x10) Lapis Luster Sand in (
191 192		Ĺ		X	(192.0 - 197.0') Topock - Alluvium			
 193		ш		¥	Deposits; Well graded sand with silt and gravel (SW-SM); strong brown (7.5YR 5/6)			
194		SW-SM						
195 196 1								
197 198 199	(197.0 - 216.7 1.35 mins/ft) SM		(197.0 - 216.7') 16.0" Steel Casing	(197.0 - 199.5') Topock - Alluvium Deposits; Silty sand (SM); strong brown (7.5YR 5/6)			
200		ML			(199.5 - 202.0') Topock - Alluvium	_		

9/	ARCAI	DIS for buil	sign & Consultan natural and ilt assets	су	Drilling Log			She	eet: 11 of 13
Date S	Started:	09/24/201	19	Sı	urface Elevation:	N/A	Borin	g No.:	RB-2
Date 0	Completed:	10/05/201	19	N	orthing (NAD83):	N/A		.g	<u>11.5 2</u>
Drilling	Co.:	<u>Cascade</u>		Ea	asting (NAD83):	N/A	_ Client:	PG&E	
Drilling	Method:	Dual Rota	ary		otal Depth:	254.35 ft bgs	Project:	Final GV	N Remedy Phase 1
	• • •	<u>Foremost</u>	DR-241	HDC	onductor Casing Diameter:	18 inches	_ Location:	PG&E T	<u> Fopock, Needles, California</u>
		<u>Jon Marti</u>			rill Casing Diameter:	16 inches	_		
Drilling		A. & H. A			rill Bit:	15.5 to 17.5 inchTricone	Project N	lumber: <u>F</u>	RC000753.0051
		Arnold La			epth to First Water:	23.77 ft bgs	-		
Rig Ge	eologist:	D. Cornel	I / E.Red	dner Co	onverted to Well:	× Yes No			-
Depth (ft)	Drilling Run and Average Penetration Ra	Code	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling	g Notes		Drilling Fluid
201 		ML			Deposits; Gravelly silt with sand (ML); strong brown (7.5YR 5/6)	(200.0') Observed trace amo (8x10) Lapis Luster Sand in o		ex #3 MESH	d (176.7 - 254.0') 13257 gallons of water used; 13862 gallons of water recovered; 605 gallons of water gained
		SM			(202.0 - 204.0') Topock - Alluvium Deposits; Silty sand (SM); strong brown (7.5YR 5/6)		O		0
		SM			(204.0 - 204.5') Topock - Alluvium Deposits; Silty sand (SM); strong				
205		ML			brown (7.5YR 5/6) (204.5 - 205.0') Topock - Alluvium				
		SM			Deposits; Gravelly silt with sand (ML); strong brown (7.5YR 5/6) (205.0 - 207.5') Topock - Alluvium Deposits; Silty sand (SM); strong brown (7.5YR 5/6)		10	*	
208 209 	(197.0 - 216.7 1.35 mins/ft			(197.0 - 216.7') 16.0" Steel Casing			•		
 211		ш				(210.0') Observed trace amo (8x10) Lapis Luster Sand in (211.0 - 212.0') Rough drillin	drill cuttings.	ex #3 MESH	1
		SC		X		(211.0 - 212.0) Rough uniin	ıy.		
 214		ш							
215		ш							
216									
_217		1			(247.0. 240.51) Tong-le Alle:	_			
 218 _219_	(216.7 - 236.9 1.18 mins/ft	sc sc		(216.7 - 236.9') 16.0" Steel Casing	(217.0 - 219.5') Topock - Alluvium Deposits; Clayey sand (SC); (7.5f 4/4)				
 220		GC			(219.5 - 222.0') Topock - Alluvium				

9/-	RCADIS Design & Consultancy for natural and but assets				Drilling Log		Sheet: 12 of 13				
Date S	tarted:	09/24/201	19	Sı	urface Elevation:	N/A	Borin	g No.:	RB-	.2	
Date C	completed:	10/05/201	19	N	orthing (NAD83):	N/A		9	<u> </u>	_	
Drilling		<u>Cascade</u>		E	asting (NAD83):	N/A	Client:	PG&E			
_		Dual Rota	-		otal Depth:	254.35 ft bgs	-	Final GV		-	
		<u>Foremost</u>			onductor Casing Diameter:		Location:	PG&E T	<u>opock</u>	, Needl	es, California
Driller I		Jon Marti			rill Casing Diameter:	16 inches					
Drilling		A. & H. A	_		rill Bit:	15.5 to 17.5 inchTricone	Project N	umber: <u>F</u>	RC000	<u>753.00</u>	51
Tool-P		Arnold La			epth to First Water:	23.77 ft bgs					
Rig Ge	eologist:	D. Cornel	I / E.Red	dner Co	onverted to Well:	× Yes No					
Depth (ft)	Drilling Rur and Average Penetration R	e 0303	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling	y Notes			Dr	illing Fluid
	(216.7 - 236.9 1.18 mins/ft	GC		(216.7 - 236.9') 16.0" Steel Casing	Deposits; Clayey gravel with sand (GC); strong brown (7.5YR 5/6) (222.0 - 237.0') Topock - Alluvium Deposits; Clayey sand with gravel (SC); brown (7.5YR 5/4)	(8x10) Lapis Luster Sand in o	unts of Ceme			gallons o 13862 ga	254.0') 13257 f water used; illons of water d; 605 gallons of ned
237 238 239 240	(236.9 - 254.4 1.07 mins/ft			(236.9 - 254.4') 16.0" Steel Casing	(237.0 - 241.0') Topock - Alluvium Deposits; Clayey gravel with sand (GC); reddish brown / moderate brown(5YR 4/4)						

9/	ARCA	D	S S S S S S S S S S S S S S S S S S S	ign & Consultan natural and t assets	су	Drilling Log						Sheet:	13 of 13
Date S	tarted:	09	/24/201	9	S	urface Elevation:	N/A			Bo	rin	g No.: RE	3-2
	ompleted:			9		orthing (NAD83):							<u> </u>
Drilling			ascade			asting (NAD83):	N/A			_ Client:		PG&E	
Drilling	Method:		ual Rota			otal Depth:	254.35	ft	bgs	Projec	:t:	Final GW Re	medy Phase 1
Drill Riç	g Type:	<u>Fc</u>	remost	DR-241	<u>1D</u> C	onductor Casing Diameter:	<u>18 inch</u>	nes		Locati	on:	PG&E Topod	ck, Needles, California
Driller N			<u>n Martir</u>			rill Casing Diameter:	<u>16 inct</u>			_			
Drilling			<u>& H. Ar</u>			rill Bit:			7.5 inchTricone	_ Projec	t N	umber: RC00	0753.0051
Tool-P			nold La			epth to First Water:	23.77	_	<u> </u>	_			
Rig Ge	ologist:	<u>D.</u>	Cornell	/ E.Red	dner C	onverted to Well:	× Yes	.	No				
Depth	Drilling Rui		USCS	USCS	Casing	Description			Drilling	g Notes			Drilling Fluid
(ft)	Penetration R	ate	Code	Class	Diameter	(See Pilot boring log for full geologic descriptions)			Dimin	y 110103			Drining Flaid
			GC						Observed trace amo			ex #3 MESH	(176.7 - 254.0') 13257 gallons of water used;
_241								_,_			J		13862 gallons of water recovered; 605 gallons of
						(241.0 - 244.0') Topock - Weathered Bedrock -							water gained
242						conglomerate; Sandy lean clay with gravel (CL); reddish brown							
			CL			(5YR 5/4)							
243													
244						(244.0 - 247.0') Topock -							
						Weathered Bedrock - conglomerate; Clayey sand with						1 . 1	
_245						gravel (SC); yellowish red / light brown(5YR 5/6)							
			SC										
_246													
_247	(236.9 - 254.4		-		(236.9 - 254 4') 16 0'	(247.0 - 254.3') Topock -		4					
	1.07 mins/ft				Steel Casing	Weathered Bedrock - conglomerate; Gravelly lean clay							
_248						with sand (CL); reddish brown							
						(2.5YR 4/4)							
_249													
250							(050	OIN					
							(250 (20x	40)	Obs <mark>erve</mark> d trace amo Lapis Luster Sand ir	n drill cutti	ings	X # 1/20 MESH	
_251			CL										
							1						
252_													
253													
254_													
			L			End of Boring at 254.4 'bgs.			Observed trace amo				
255_						Life of boiling at 204.4 bgs.	((20%	10)	Lapis Laster Garia II	r driii odta	ngs	·	J
256													
257													
_257													
258													
├ <u>-</u> - ┤													
_259													
├ ┤													
260 Abbrev	iations: 110	300	2 – I ln#	اندع لموا	Classificat	ion System, ft = feet, bgs =	halovi a	ro	ind surface are	al – aba	VC :	mean coo lovo	d CW = groundwater
Lynnig A	เฉแบบอ. ปร		J – UIIII	icu ouli	Ciassilical	ion oysiem, it – leet, bys –	oelow g	ıuu	ina sunace, allis	51 - ab0	ve I	וויטמוו שכם ופעפ	a, Ovv – groundwater

\triangle	RCAL	Design & C for natural built asset	Consultancy Land cs		Well Consti	ruction Log	5	Sheet: 1 of 13			
Date St		0/07/2019			_Surface Elevation:	N/A	Well ID: F	RB-2			
	ompleted: 1				_Shallow Well Elevation:						
Drilling		ascade			_Deep Well Elevation:	N/A	Client: PG&E				
_		ual Rotary			_Northing (NAD83):	N/A	-	GW Remedy Phase 1			
Driller N		on Martinez			_Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, California			
Drilling .		& H. Amezo	<u>guita</u>		_Borehole Diameter:	16-18 inches		D0000750 0054			
Logger:		Ilen Redner			_Water Level Start:	23.77 ft bgs	Project Number: RC000753.0051				
Editor:	litor: <u>Sean McGrane</u> tal Depth: <u>254.35 ft bgs</u>				_Development End Date: _Well Completion:	× Flush Stick-up					
Total D							T				
Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed			
		Topock - Fill	SP NR		(0.0 - 38.0') 8" Suregrip 17 Casing (0.0 - 4.0') Cemex #0/30 Mesh (30x50) (4.5 - 5.5') Gentralizer (4.0 - 24.6') Portland Cement 3% Bentonite	(0.0 - 19.8') 18.0" Borehole	(4.0 - 24.6') 218.4 gallons	(4.0 - 24.6') 253 gallons (16%) Note: Type I, II and V and Benseal			
18		Topock - Fill	SP								
19 		Topock - Fluvial Deposits	SP					aca lavel CW = groundwater			

9/	ARCA	DIS Design & for natura built asse	Consultancy al and its		Well Consti	ruction Log	;	Sheet: 2 of 13	
Date S	Started:	10/07/2019			_Surface Elevation:	N/A	Well ID: F	RB-2	
Date C	•	10/22/2019			_Shallow Well Elevation:	N/A			
Drilling		Cascade			Deep Well Elevation:	N/A	Client: PG&E		
_		Dual Rotary			Northing (NAD83):	N/A	•	GW Remedy Phase 1	
Driller		Jon Martinez			Easting (NAD83):	N/A	Location: <u>PG&E</u>	E Topock, Needles, California	
Drilling		A. & H. Amez	-		Borehole Diameter:	16-18 inches	Decises N. 1994 and DC000752 0054		
Logge		Ellen Redner			Water Level Start:	23.77 ft bgs	Project Number: RC000753.0051		
Editor:		Sean McGrar			Development End Date: Well Completion:	N/A			
TOLALL	Јерин.	254.35 ft bgs			vveii Completion.				
Depth (ft)	Groundwate Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed	
21			NR		(0.0 - 38.0') 8" Suregrip 17 Casing (4.0 - 24.6') Portland Cement 3% Bentonite		(4.0 - 24.6') 218.4 gallons	(4.0 - 24.6') 253 gallons (16%) Note: Type I, II and V and Benseal	
25 26 27					(24.6 - 27.0') Bentonite seal chips		(24.6 - 27.0') 4.7 bags	(24.6 - 27.0') 4 bags (-15%) Note: Puregold Medium Chips	
28 		Topock - Fluvial	SP		(27.0 - 29.3') Cemex— #60 Mesh (40x70)		(27.0 - 29.3') 6.4 bags	(27.0 - 29.3') 7 bags (9%) Note: Lapis Lustre Sand	
30	RB-2-VAS- 36.5-41.5 (<0.033 U ppb) 6/29/2019 11:43	Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial	NR SP-SM SM		(29.3 - 106.0') Cemex #0/30 Mesh (30x50) (35.5 - 36.5') Centralizer (38.0 - 103.0') 8" 10-slot 316L SS Wire Wrap Screen	(19.8 - 39.3') 18.0" Borehole	(29.3 - 106.0') 223.8 bags	(29.3 - 106.0') 196 bags (-12%) Note: Lapis Lustre Sand - Filter packed swabbed for 1 hours and 55 minutes during well construction	
40_	. ,	Deposits				Borehole	<u> </u>		
Abbrev	viations: U	SCS = Unified	i Soil Cl	assifica	ition System. ft = feet. bas	= below ground surface, a	msl = above mean	sea level, GW = groundwater,	

ARCADIS Design & Consultancy for natural and built assets					Well Const	ructi	on Log	Sheet: 3 of 13			
Date Con Drilling Con Drilling M Driller Na Drilling As Logger: Editor:	lling Method: Dual Rotary ller Name: Jon Martinez lling Asst: A. & H. Amezguita gger: Ellen Redner itor: Sean McGrane tal Depth: 254.35 ft bgs			Surface Elevation: N/A Shallow Well Elevation: N/A Deep Well Elevation: N/A Northing (NAD83): N/A Easting (NAD83): N/A Borehole Diameter: 16-18 inches Water Level Start: 23.77 ft bgs Development End Date: N/A Well Completion: Flush Stick-up		Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, California Project Number: RC000753.0051					
	Groundwate Sample ID		USCS	USCS Class		onstruction	n	Calculated Material Volumes	Material Volumes Installed		
41		Topock - Fluvial Deposits	GW-GM		(38.0 - 103.0') 8" 10-slot 316L SS Wire Wrap Screen		_ (39.3 - 41.0') 18.0" Borehole				
43 44 45		Topock - Fluvial Deposits	SM						9		
46 47 48		Topock - Fluvial Deposits	GW-GM					/ Dr			
		Topock - Alluvium Deposits	GM		(29.3 - 106.0°) Cemex #0/30 Mesh — (30x50)		(41.0 - 58.1') 18.0" Borehole	(29.3 - 106.0') 223.8 bags	(29.3 - 106.0') 196 bags (-12%) Note: Lapis Lustre Sand - Filter packed swabbed for 1 hours and 55 minutes during well construction		
55		Topock - Alluvium Deposits	GM								
57		Topock - Alluvium Deposits	SM				_ (58.1 - 77.6') 18.0"				
		Topock - Alluvium Deposits	SC				Borehole		aca level CW = groundwater		

9/	ARCA	DIS Design & for natura built asse	Consultancy I and ts		Well Const	ruction Log	S	sheet: 4 of 13			
Date S Date C Drilling	ompleted:	10/07/2019 10/22/2019 Cascade			_Surface Elevation: _Shallow Well Elevation: _Deep Well Elevation:	N/A N/A N/A	Well ID: R				
_		Dual Rotary			_ Northing (NAD83):	N/A		GW Remedy Phase 1			
Driller I		Jon Martinez			_Easting (NAD83):	N/A	•	Topock, Needles, California			
Drilling		A. & H. Amez	guita		_ Borehole Diameter:	16-18 inches	2004.10111.1 <u>-042</u>	. Toposk, Hoodies, Gamerina			
Logger		Ellen Redner	9		_Water Level Start:	23.77 ft bgs	Project Number	: RC000753.0051			
Editor:		Sean McGrar	ie		_Development End Date:	N/A					
Total D	epth:	254.35 ft bgs			_Well Completion:						
Depth (ft)	Groundwat Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed			
61 62 63 63 64 65 66 66		Topock - Alluvium Deposits	GM		(38.0 - 103.0') 8" — 10-slot 316L SS Wire Wrap Screen			9			
68 69 70 71 72		Topock - Alluvium Deposits	GW		(29.3 - 106.0') Cemex #0/30 Mesh —	(58.1 - 77.6') 18.0" Borehole	(29.3 - 106.0') 223.8 bags	(29.3 - 106.0') 196 bags (-12%) Note: Lapis Lustre Sand - Filter packed swabbed for 1 hours and 55 minutes during well construction			
	RB-2-VAS-				6						
	72-77 (<0.033 U ppb)	Topock - Alluvium Deposits	GC								
75 76 77	6/30/2019 14:10	Topock - Alluvium Deposits	SW								
78 79 		Topock - Alluvium Deposits	SW-SM			(77.6 - 82.0') 18.0" Borehole		sea level. GW = groundwater.			

9/	4RC4	DIS	esign & Consultancy r natural and ilt assets		Well Const	ruction L	og		Sheet: 5 of	13
Date S	Started:	10/07/201	9		_Surface Elevation:	N/A	v	Vell ID: I	RB-2	
	Completed:		9		_Shallow Well Elevation:					
Drilling	-	Cascade			_Deep Well Elevation:	N/A	Clie			
_	g Method:		•		_Northing (NAD83):	N/A	· · · · · · · · · · · · · · · · · · ·	-	GW Remedy Phas	
	Name:	Jon Martir			_Easting (NAD83):	N/A	Loc	cation: <u>PG&</u> l	E Topock, Needles	s, California
_	g Asst:	A. & H. Ar	-		_Borehole Diameter:	<u>16-18 inches</u>				
Logge		Ellen Red			_Water Level Start:	23.77 ft bgs	Pro	ject Numbe	er: <u>RC000753.0051</u>	
Editor		Sean McC			_ Development End Date					
lotait	Depth:	254.35 ft l	-		_Well Completion:		Stick-up		T	
Depth (ft)	Groundwat Sample II		USCS	USCS		Construction		alculated ial Volumes	Material Vol Installe	
81 _		Topoc Alluviu Depos	m SW-S	1 · · · · · · · · · · · · · · · · · · ·	(38.0 - 103.0') 8" — 10-slot 316L SS Wire Wrap Screen	(77.6 - Bc	82.0') 18.0" prehole			
82 83 84 85 86		Topoc Alluviu Depos	m ML					O.	9	
87 88 89 90		Topoc Alluviu Depos	m GC		(29.3 - 106.0') Cemex #0/30 Mesh	(82.0-Bo	92.0') 18.0" orehole (29.3 -	- 106.0') 223.8	(29.3 - 106.0') 196 Note: Lapis Lustre	Sand - Filter
91		Topoc Alluviu Depos	m GC		(30x50)			bags	packed swabbed for minutes during well	1 hours and 55 construction
94 95 96		Topoc Alluviu Depos	m GM			(92.0 _{Bo}	97.0') 18.0" orehole			
97 98 99		Topoc Alluviu Depos	m GM			(97.0 -	119.3') 18.0" orehole			
	_	Topoc Alluviu Depos	m GC							
100	<u> </u>	Dehos	I O	[P/_X/]		[::::1			1 1 014	

All	ARC	ADIS Design & C for natural built asset	<mark>consultancy</mark> and s		Well Constr	uction Log	8	Sheet: 6 of 13		
Sear MoCrane Development End Date: NA Deve	Date Completed: 10/22/2019 Drilling Co.: Cascade Drilling Method: Dual Rotary Driller Name: Jon Martinez Drilling Asst: A. & H. Amezguita				Shallow Well Elevation: _Deep Well Elevation: _Northing (NAD83): _Easting (NAD83): _Borehole Diameter:	N/A N/A N/A N/A 16-18 inches	Client: PG&E Project: Final (GW Remedy Phase 1 Topock, Needles, Californi		
101	Editor: Fotal Depth:	Sean McGran	e			<u>N/A</u>				
101		Geologic Formation	Code	USCS Class	Well Co	onstruction				
105		Alluvium Deposits	GC GC		10-slot 316L SS Wire Wrap Screen (29.3 - 106.0') Cemex #0/30 Mesh	(103.0 - 133.0') 8" Suregrip 17 Casing		(29.3 - 106.0') 196 bags (-12% Note: Lapis Lustre Sand - Filte packed swabbed for 1 hours and minutes during well constructio		
108	(<0.033 (ppb) 7/1/2015 15:21	U Topock - Alluvium	D	H	(106.0 - 106.7') Cemex #60 Mesh			(106.0 - 106.7') 2 bags (-5%) Note: Lapis Lustre Sand		
Topock-Alluvium Deposits Topock-Alluvium De		Alluvium	GC ST		0					
Topock-Alluvium Deposits Topock-Alluvium De		Alluvium	GM ((106.7 - 117.0') Bentonite seal			(106.7 - 117.0') 22.5 buckets (-3		
Topock-Alluvium Deposits GM Topock-Alluvium		Alluvium	GM 0		pellets			Note: Ferring (1130) 3/0		
Topock-Alluvium Deposits GM (117.0 - 118.0') 2.9 (117.0 - 118.0') 2.9 bags (72% Note: Lapis Lustre Sand (40x70) (118.0 - 254.4') 293.8 bags (14% Note: Lapis Lustre Sand - Filt packed swabbed for 2 hours and minutes during well construction. (119.3 - 130.0') 16.0" Borehole (119.3 - 130.0') 16.0" Borehole (119.3 - 130.0') 16.0" Borehole (119.3 - 130.0') 17.0 - 118.0') 5 bags (72% Note: Lapis Lustre Sand - Filt packed swabbed for 2 hours and minutes during well construction. (118.0 - 254.4') 293.8 bags (14% Note: Lapis Lustre Sand - Filt packed swabbed for 2 hours and minutes during well construction. (119.3 - 130.0') 16.0" Borehole		Alluvium	GM (Certificalizer					
Deposits Dep	 _116 									
Lating Lating Solid Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater samples and depth to water collected above the laboratory reporting limit, NR = no recovery, groundwater samples and depth to water collected above the laboratory reporting limit, NR = no recovery, groundwater samples and depth to water collected above the laboratory reporting limit, NR = no recovery, groundwater samples and depth to water collected above the laboratory reporting limit, NR = no recovery, groundwater samples and depth to water collected above the laboratory reporting limit, NR = no recovery, groundwater samples and depth to water collected above the laboratory reporting limit, NR = no recovery, groundwater samples and depth to water collected above the laboratory reporting limit, NR = no recovery, groundwater samples and depth to water collected above the laboratory reporting limit, NR = no recovery, groundwater samples and depth to water collected above the laboratory reporting limit, NR = no recovery, groundwater samples and depth to water collected above the laboratory reporting limit, NR = no recovery, groundwater samples and depth to water collected above the laboratory reporting limit, NR = no recovery, groundwater samples and depth to water collected above the laboratory reporting limit, NR = no recovery, groundwater samples and depth to water collected above the laboratory reporting limit, NR = no recovery, groundwater samples and depth to water collected above the laboratory reporting limit, NR = no recovery, groundwater samples and depth to water collected above the laboratory reporting limit, NR = no recovery, groundwater samples and depth to water collected above the laboratory reporting limit, NR = no recovery, groundwater samples and depth to water collected above the laboratory reporting limit, NR = no recovery, groundwater samples and depth to water collected above the laboratory reporting limit and not recovery and not report the laboratory reporting li			GIVI O					(117.0 - 118.0') 5 bags (72%) Note: Lapis Lustre Sand		
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwarpb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, groundwater samples and depth to water collected.					Cemex #0/30 Mesh :			(118.0 - 254.4') 334 bags (14% Note: Lapis Lustre Sand - Filte packed swabbed for 2 hours and minutes during well construction		
	Abbreviations:									
			etected a	apove	the laboratory reporting li	mii, NK = no recovery, gro	unawater samples	and depth to water collecte		

ARCADIS Design & Consultancy for natural and built assets					Well Const	ruction Log	Sheet: 7 of 13			
	Started:	10/07/2019			_Surface Elevation:	N/A	Well ID: F	RB-2		
	-	10/22/2019			_Shallow Well Elevation:					
Drilling	-	Cascade			_Deep Well Elevation:	N/A	Client: PG&E			
1 -	-	<u>Dual Rotary</u>			_Northing (NAD83):	N/A	-	GW Remedy Phase 1		
	Name:	Jon Martinez			_Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, California		
Drilling		A. & H. Amez			_Borehole Diameter:	16-18 inches	— — — — — — — — — — — — — — — — — — —	DC0007E2 00E4		
Logge		Ellen Redner Sean McGrar			_Water Level Start: _Development End Date:	23.77 ft bgs	Project Number: RC000753.0051			
Editor:	Depth:	254.35 ft bgs			_Development End Date. _Well Completion:	· IN/A				
Total	Јорин. Т				_ Well Completion.					
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well C	construction	Calculated Material Volumes	Material Volumes Installed		
	-	Topock - Alluvium	GM			(103.0 - 133.0') 8" Suregrip 17 Casing				
121		Deposits		20						
122										
123				20						
L _										
124		Topock -	GM	20						
		Deposits								
125	-			1		(119.3 - 130.0') 16.0" Borehole				
	-			640						
126	_			201						
<u> </u>	_			920						
127	-			1919						
-	-			60.4						
128	-			000						
	-			600						
129	-	Topock - Alluvium	ML	000						
	-	Deposits		600	(118.0 - 254.4')		(118.0 - 254.4') 293.8	(118.0 - 254.4') 334 bags (14%) Note: Lapis Lustre Sand - Filter		
130	1				Cemex #0/30 Mesh (30x50)		bags	packed swabbed for 2 hours and 55		
121	-			.00	(Coxico)			minutes during well construction		
131			•	000	(131.0 - 132.0')					
132	-			P P	Centralizer					
102										
133				120						
						(133.0 - 238.0') 8" Suffe@fip 1735cfeen 16.0" Borehole				
134		Topock -		120		16.0" Borehole				
L _		Alluvium Deposits	GM			:F::::1				
135		Deposits		120						
136				6 P D						
L _						HEN .				
137				69 D		H. I				
<u> </u>	_									
138	-	T				:F&:()				
<u> </u>	-	Topock -	SM			(137.1 - 157.1') 16.0" Borehole				
139	-	Deposits								
<u> </u>										
140	<u> </u>	000 H ;t	10 10			.H <u>.: .l</u>		oog lovel CW = groundwater		

PARCADIS Design & Consultancy for natural and built assets					Well Const	ruction Log	Sheet: 8 of 13			
Date S	Started:	10/07/2019			_Surface Elevation:	N/A	Well ID: F	RB-2		
	-	10/22/2019			_Shallow Well Elevation:					
Drilling	-	Cascade			_Deep Well Elevation:	N/A	Client: PG&E			
_	-	Dual Rotary			_Northing (NAD83):	N/A	•	GW Remedy Phase 1		
	Name:	Jon Martinez			_Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, California		
_		A. & H. Amez	guita		_Borehole Diameter:	<u>16-18 inches</u>	— —_			
Logge		Ellen Redner			_Water Level Start:	23.77 ft bgs	Project Number: RC000753.0051			
Editor:		Sean McGrane 254.35 ft bgs			_Development End Date:					
lotall	Depth:		ı		_Well Completion:					
Depth (ft)	Groundwat Sample II		USCS	USCS Class	Well C	Construction	Calculated Material Volumes	Material Volumes Installed		
141		Topock - Alluvium Deposits	SM			(133.0 - 238.0') 8" Suregrip 17 Screen				
143 144 145	- RB-2-VAS- 142-147 - (<0.17 U ppt 7/9/2019 13:20	Topock - Alluvium Deposits	GM					9		
146 147		Topock - Alluvium Deposits	SM				/ Dr.			
148		Topock - Alluvium Deposits	SM			(137.1 - 157.1') 16.0" Borehole				
149 150 151 152 153		Topock - Alluvium Deposits	SM		(118.0 - 254.4') Cemex #0/30 Mesh — (30x50)		(118.0 - 254.4') 293.8 bags	(118.0 - 254.4') 334 bags (14%) Note: Lapis Lustre Sand - Filter packed swabbed for 2 hours and 55 minutes during well construction		
154 155 156		Topock - Alluvium Deposits	GM							
157 158 159 160		Topock - Alluvium Deposits	GM GC			(157.1 - 176.7') 16.0" Borehole				
	viations: II		Soil C	lassifica	tion System ft = feet has	= below ground surface an	nsl = above mean	sea level. GW = groundwater.		

ARCA	DIS Design & C for natural built asset	Consultancy Land cs		Well Construction Log	Sheet: 9 of 13
Oate Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger: Editor:	rilling Co.: Cascade rilling Method: Dual Rotary riller Name: Jon Martinez rilling Asst: A. & H. Amezguita ogger: Ellen Redner ditor: Sean McGrane			Surface Elevation: N/A Shallow Well Elevation: N/A Deep Well Elevation: N/A Northing (NAD83): N/A Easting (NAD83): N/A Borehole Diameter: 16-18 inches Water Level Start: 23.77 ft bgs Development End Date: N/A Well Completion: Stick-up	Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, Californi Project Number: RC000753.0051
Groundwate Sample ID	Geologic Samble ID Code Samble ID Co			Well Construction	Calculated Material Volumes Material Volumes Installed
	Topock - Alluvium Deposits	GM		— (133.0 - 238.0') Suregrip 17 Scre	en en
	Topock - Alluvium Deposits	GM			
	Topock - Alluvium Deposits	SM		(118.0 - 254.4') Cemex #0/30 Mesh (30x50)	
172	Topock - Alluvium Deposits	SM			
RB-2-VAS- 172-177 (<0.17 U ppb) 7/12/2019 14:55) Topock - Alluvium Deposits	SM			
.178	Topock - Alluvium Deposits	SM			
179_	Topock - Alluvium Deposits	SM		(176.7 - 197.0' 16.0" Borehole	
_	Topock - Alluvium Deposits	SM			
180		i		1 '-1 [' ']	e, amsl = above mean sea level, GW = groundwa

ARCADIS Design & Consultancy for natural and built assets					Well Const	ructio	on Log	Sheet: 10 of 13		
	Started:	10/07/2019			_Surface Elevation:	N/A		Well ID:	 RB-2	
	-	10/22/2019			_Shallow Well Elevation:					
Drilling		Cascade			_Deep Well Elevation:	N/A		Client: PG&		
_		<u>Dual Rotary</u>			_Northing (NAD83):	N/A		•	GW Remedy Phase 1	
Driller		Jon Martinez			_Easting (NAD83):	N/A		Location: <u>PG&</u>	E Topock, Needles, California	
Drilling		A. & H. Amez			_Borehole Diameter: Water Level Start:	16-18 ii		— — — — — — — — — — — — — — — — — — —	DC000752 0054	
Logge Editor:		Ellen Redner				23.77 ft	<u>r bgs</u>	Project Numbe	er: RC000753.0051	
	or: <u>Sean McGrane</u> al Depth: <u>254.35 ft bgs</u>				_Development End Date: _Well Completion:	. <u>IN/A</u>	sh Stick-up			
Total	Горин.						Ottok-up	T	T	
Depth (ft)	Groundwat Sample ID		USCS Code	USCS Class	Well C	Construction		Calculated Material Volumes	Material Volumes Installed	
		Topock - Alluvium	SM			H	- (133.0 - 238.0') 8" Suregrip 17 Screen			
181		Deposits	0			H:: 1				
L _						\mathbb{R}^{2}				
182						H:::I				
						H^{*}				
_183						Hal				
L _						\Box				
184						H \				
<u> </u>		Topock - Alluvium	SW							
185		Deposits								
<u> </u>						H::I				
186						H		1 123		
<u> </u>										
_187						$\mathbb{H}^{\mathbb{N}}$				
						H				
188						H^{\bullet} .				
<u> </u>		Topock - Alluvium	GW-GM			'H:::: -	_ (176.7 - 197.0') 16.0" Borehole			
189		Deposits Topock -				\mathbb{R}^{n}	10.0 Borenoie			
<u> </u>		Alluvium	SM			$\mathbb{R} : \mathbb{L}$			(118.0 - 254.4') 334 bags (14%)	
190		Deposits /			(118.0 - 254.4') Cemex #0/30 Mesh	\mathbb{H}		(118.0 - 254.4') 293.8 bags	Note: Lapis Lustre Sand - Filter packed swabbed for 2 hours and 55	
<u> </u>		Topock -			(30x50)	HV		bags	minutes during well construction	
191		Alluvium Deposits	GM			HAI				
				00						
192						.H∷I				
193						出 : :				
						Hill				
194		Topock -				$\mathbb{H}^{\mathbb{H}}$				
- -		Alluvium	SW-SM			$\exists : \exists$				
195		Deposits				H:::1				
						H::1				
196						\mathbb{R}^{n}				
- -						H:: 1				
197						H:::				
<u> </u>										
198		Topock - Alluvium	SM			\square	(107.0 040.71)			
- -		Deposits	J.VI				(197.0 - 216.7') 16.0" Borehole			
199										
- -			ML	विवि		H				
200		CCC - Unifica		101401		<u>. [:::]</u>			and lovel CW = groundwater	

PARCADIS Design & Consultancy for natural and built assets					Well Const	ructio	on Log	Sheet: 11 of 13			
Date S	Started:	10/07/2019			_Surface Elevation:	N/A		Well ID:	RB-2		
	-	10/22/2019			_Shallow Well Elevation:						
Drilling		Cascade			_Deep Well Elevation:	N/A		Client: <u>PG&</u>			
1 -		Dual Rotary			_Northing (NAD83):	N/A		•	GW Remedy Phase 1		
	Name:	Jon Martinez			_Easting (NAD83):	N/A		Location: <u>PG&</u>	E Topock, Needles, California		
Drilling		A. & H. Amez	-		_Borehole Diameter:	16-18 ii					
Logge		Ellen Redner			_Water Level Start:	23.77 ft	t bgs	Project Number: RC000753.0051			
Editor: Total [_Development End Date:		ah Ctiak un				
TOTAL	лерин. Т	254.35 ft bgs	· 		Well Completion: X Flush Stick-up						
Depth (ft)	Groundwat Sample ID		SOSU Code	USCS Class	Well C	Construction		Calculated Material Volumes	Material Volumes Installed		
201 		Topock - Alluvium Deposits	ML				- (133.0 - 238.0') 8" Suregrip 17 Screen				
203 	RB-2-VAS-	Topock - Alluvium Deposits	SM				0		0		
	202-207 (<0.17 U ppb	Topock - Alluvium	SM								
_205	7/14/2019 09:20	Topock -	/ ML			H∷ I					
		Alluvium Deposits	/			□∷∷					
_206		Topock -						1 125			
		Alluvium Deposits	SM								
_207						\mathbb{H}^{\vee}					
L -				7777		H					
_208						H^{\bullet}	(407.0 040.71)				
L -						'H::::h	_ (197.0 - 216.7') 16.0" Borehole				
209						\mathbb{R}^{n}					
						\mathbb{R}			(118.0 - 254.4') 334 bags (14%)		
_210					(118.0 - 254.4') Cemex #0/30 Mesh	\mathbf{H}		(118.0 - 254.4') 293.8 bags	Note: Lapis Lustre Sand - Filter packed swabbed for 2 hours and 55		
					(30x50)	H.V.		bags	minutes during well construction		
211						HAI					
212		Topock -				.H∷I					
		Alluvium Deposits	SC			H::I					
_213						.H∷ll					
<u> </u>						出土					
_214						\mathbb{H}^{\times}					
						H : I					
_215						$\mathbb{H}^{\mathbb{H}}$					
<u> </u>						H: 1					
216						\mathbb{R}^{2}					
- -	-										
_217											
						\mathbf{H}					
218		Topock - Alluvium	sc			H: 1	(216.7 - 236.9')				
	1	Deposits				\Box	16.0" Borehole				
219	1					H					
220	1		GC								
	.datia.a. 11	CCC - Unific		. w // x /	O	سندادات			and level CM = groundwater		

ARCADIS Design & Consultancy for natural and built assets					Well Const	ruction Log	Sheet: 12 of 13			
	Started:	10/07/2019			_Surface Elevation:	N/A	Well ID: F	RB-2		
Date C	Completed:	10/22/2019			_Shallow Well Elevation:	N/A				
Drilling	J Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E			
_		Dual Rotary			_Northing (NAD83):	N/A	•	GW Remedy Phase 1		
	Name:	Jon Martinez			_Easting (NAD83):	N/A	Location: <u>PG&</u> E	Topock, Needles, California		
Drilling		A. & H. Amez	-		_Borehole Diameter:	<u>16-18 inches</u>				
Logge		Ellen Redner			_Water Level Start:	23.77 ft bgs	Project Number	: RC000753.0051		
Editor:	: <u>Sean McGrane</u>				_Development End Date:					
I otal L	Depth:	254.35 ft bgs			_Well Completion:					
Depth (ft)	Groundwat Sample ID		nscs Code	USCS Class	Well C	Construction	Calculated Material Volumes	Material Volumes Installed		
		Topock - Alluvium Deposits Topock - Alluvium Deposits	SC SC	DE COMPANY OF THE COM	(118.0 - 254.4") Cemex #0/30 Mesh — (30x50)	(216.7 - 236.9') (216.7 - 236.9') (216.0" Borehole				
236	RB-2-VAS- 237-242 (<0.17 U ppt 7/15/2019 13:48	Topock - o) Alluvium Deposits	GC			(236.9 - 254.4') 16.0" Borehole				
	viations: II	SCS = Unified	LSoil C	lassificat	tion System ft = feet has	= below ground surface ar	nsl = ahove mean s	sea level. GW = groundwater.		

AR	CA	DIS Design & C for natural built asset	consultancy and s		Well Const	ruction Log	;	Sheet: 13 of 13		
Date Starte		10/07/2019			_Surface Elevation:	N/A	Well ID: RB-2			
-		10/22/2019			_Shallow Well Elevation:			<u> </u>		
Orilling Co.		Cascade			_ Deep Well Elevation:	N/A N/A	Client: PG&E			
Driller Nam		Dual Rotary Jon Martinez			_Northing (NAD83): _Easting (NAD83):	N/A		GW Remedy Phase 1		
Orilling Ass		A. & H. Amez	auita		Easting (NAD63). Borehole Diameter:	16-18 inches	Location: PG&E Topock, Needles, Californ Project Number: RC000753.0051			
ogger:		Ellen Redner	guila		Boreflole Dlameter. Water Level Start:	23.77 ft bgs				
Editor: Sean McGrane			Development End Date:		Floject Nulliber. RC000753.0051					
	otal Depth: 254.35 ft bgs			Well Completion:						
_	oundwate		USCS	CS	·		Calculated	Material Volumes		
Sa Sa	ample ID	<u>9</u> 6	ട്ട	USCS	weil C	onstruction	Material Volumes	Installed		
23	2-VAS- 7-242	Topock - Alluvium Deposits	GC		(240.0 - 241.0') Centralizer					
241— (<0.1 7/1	7 U ppb) 5/2019 3:48									
2421	3:48									
242		Topock - Weathered	01							
243		Bedrock - conglomerate	CL							
240.		Congromerate								
						(238.0 - 243.9') Sump and End Cap				
2-1-1-						Sump and End Cap				
		Topock - Weathered	00					,		
 246		Bedrock - conglomerate	SC							
240		Congromerate								
_ 247					(118.0 - 254.4')	(0000 051 41)		(118.0 - 254.4') 334 bags (14%)		
247					Cemex #0/30 Mesh	(236.9 - 254.4') 16.0" Borehole	(118.0 - 254.4') 293.8 bags	Note: Lapis Lustre Sand - Filter packed swabbed for 2 hours and 5		
 248					(30x50)			minutes during well construction		
240										
250										
200_		Topock -								
 251		Weathered Bedrock -	CL							
201_		conglomerate								
252										
 253										
_ 254										
					F-1-(P)	<u> </u>				
255					End of Boring at 254.4 'bgs.					
4										
256										
4										
257										
4										
258										
4										
259										
260	ne: 11	200 - Hzifia-l	Scil C	locaifica	tion System ft - fact bas	- holow ground ourfoce -	mal - above mas-	soo lovol CM - aroundwate		
								sea level, GW = groundwate and depth to water collected		
pp = part uring drilli	-		ietecte	u abuve	s the laboratory reporting i	inii, ivin – no recovery, gro	ounuwater samples	and depth to water collected		
aring urill	ing of p	iiOt								

74	RCA	DIO	for natural and built assets		DU	ring	Log		She	eet: 1 of	16
Date Sta		06/28/2				Elevat		Borin	a No.:	RB-2 Pilo	ot .
	ompleted:					g (NAD					
Orilling (Cascac			-	(NAD8	•	_ Client:	PG&E		
_	Method:	Sonic [•		Γotal D	-	307 ft bgs	_ Project:		W Remedy Ph	
Orill Rig			ongyear Trad					_ Location:	PG&E	Topock, Needle	es, Califori
Oriller N		Tyler A	-		-		Vater: 23.77 ft bgs				
Orilling A			<u>delaria, G. Ar</u>	-	•	ng Meth		_ Project N	lumber:	RC000753.005	51
_ogger:		Joe Lat			-	ng Inter		_			
Editor:		Grant V	/Villford		Jonver	ted to V	/ell: Yes □ No				
Depth (ft)		Sieve mple ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fl
_ 1				Topock - Fill	SP		(0.0 - 3.0') Topock - Fill; Poorly graded sand 4/3); fine grained to medium grained, subrou		10YR	(0.0 - 7.0') Soft drilling	2 gallons u 0 gallon recovered gallons lo
- 3	36						(3.0 - 7.0') No recovery (NR)			(3.0 - 7.0') Lost recovery due to soft dredge sands	
_ 5					NR						
_ 6							$V_{O_{I_{i}}}$				
- 7 —				 			(7.0 - 11.0') Topock - Fill; Poorly graded sand	(SP); brown	(7.5YR	(7.0 - 17.0')	1 gallons u
, +							4/3); fine grained to medium grained, subang	jular to subrou	und; dry	Heaving sands. No recovery 11	0 gallon recovered
_ 8										to 17 ft bgs due to loose dredge	gallons le
_						, (X)				sands	
_ 9				Topock - Fill	SP						
				4							
_10				·							
+											
_11							(11.0 - 17.0') No recovery (NR)				
+						\ /					
_12	48					\ /					
						$ \setminus $					
_13						$ \setminus $					
. 4						$ \ \ $					
_14					NR						
- 4						/\					
_15						/ \					
4						/ \					
_16						/ \					
. 4						/					
_17				H	<u> </u>		(17.0 - 18.5') Topock - Fill; Poorly graded sai	nd (SP): hrow	n (10YR		
. 4							4/3); fine grained to medium grained, subang	jular to subrou	und; dry		
_18				Topock - Fill	SP						
. 4	36						(18.5 - 20.0') Topock - Fluvial Deposits; Poor	ly graded son	d (SD).		
_19				Topock -			light yellowish brown (10YR 6/4); very fine gr	ained to fine g	grained,		
. 4				Fluvial Deposits	SP		round; trace silt; dry				
20											
							et, bgs = below ground surface, am				
g = dg	arts per b			d above the	labora	tory rep	orting limit, NR = no recovery, blue	water table	symbol	represents dep	th to wate
	ed during										

9/-	1RC	ADIS	Design & Consultancy for natural and built assets		Bo	ring Lo	g		She	eet: 2 of	16
Date S				;	Surface	Elevation:	480.9 ft amsl	Borin	u No .	RB-2 Pilo	nt .
	-	eted: 07/29/	2019	!	Northing	g (NAD83):	2103398.9			KB Z I IIC	<u>/L</u>
Drilling		<u>Casca</u>			_	(NAD83):	7616014.8	_ Client:	PG&E		
Drilling			Drilling		Total De	•	307 ft bgs	_ Project:		W Remedy Ph	
Drill Ri			Longyear Trac				4-12 inches	_ Location:	PG&E 1	Fopock, Needle	es, California
Driller I		•	•		-		r: 23.77 ft bgs	-		500075000	- 4
Drilling			ndelaria, G. An	-	-	g Method:	4 inch x 10 ft Core Barrel	_ Project N	lumber: <u>l</u>	RC000753.005	<u> </u>
Logge		Joe La			-	g Interval:	Continuous	_			
Editor:		Giant	Willford		Convert	ed to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
21 22 23 24 25 26	36				NR	(20.0	- 27.0') No recovery (NR)	9		(17.0 - 27.0') Heaving sands, no recovery 20 to 27 ft bgs due to loose dredge sands, during backfilling the sand dropped ~12 ft. indicating void at ~15 to 25 ft bgs	
27	48	RB-2-SS-27- 31 7/15/2019 09:31		Topock - Fluvial Deposits	SP	light subai	- 31.5') Topock - Fluvial Deposits; Poor yellowish brown (10YR 6/4); very fine gragular to round; trace silt; moist	ly graded san ained to fine g	d (SP); grained,	(27.0 - 37.0') Heaving sands. No recovery 31.5 to 37 ft bgs due to loose dredge sands (34.0') Approximate depth to water table	2 gallons used; 0 gallons recovered; 2 gallons lost
37 38 39	60	RB-2-SS-37- 42 7/15/2019 09:46	RB-2-VAS- 36.5-41.5 (<0.033 U ppb) 6/29/2019 11:43	Topock - Fluvial Deposits Topock - Fluvial Deposits	SP-SM	silt (S little s (38.0 (10Yl	- 38.0') Topock - Fluvial Deposits; Poor SP-SM); brown (10YR 5/3); fine grained, silt; moist - 39.0') Topock - Fluvial Deposits; Silty R 5/3); very fine grained to fine grained,	subangular to sand (SM); br round; little si	round; rown It; moist		(37.0 - 307.0') No used
40		11000		Topock - Fluvial Deposits	GW-GM	silt ar very l	 - 42.0') Topock - Fluvial Deposits; Wellnd sand (GW-GM); grayish brown (10YF arge pebbles, subangular to subround; 	R 5/2); granule some very fine	es to		
Abbrev	viation:	s: USCS = l	Unified Soil Cl	assification	Svstem	ı. ft = feet. b	gs = below ground surface, am:	sl = above i	mean sea	a level. GW = 0	proundwater.

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	S	heet: 3 of	16
Date S	Started	: 06/28	3/2019		Surface	Elevati	on: <u>480.9 ft amsl</u>	- Boring No	.: RB-2 Pilo	nt .
Date C	Comple	eted: <u>07/29</u>)/2019		Northing	g (NAD	83): <u>2103398.9</u>	_ Borning 140	<u>IXD 2 I IIC</u>	<u>^</u>
Drilling	Co.:	Casc	ade		Easting	(NAD8	3): <u>7616014.8</u>	Client: PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	307 ft bgs	Project: Final 0	GW Remedy Ph	ase 1
Drill Ri	д Туре	e: <u>Boart</u>	Longyear Trad	ck Mount	Borehol	e Diam	eter: <u>4-12 inches</u>	Location: PG&E	Topock, Needle	es, California
Driller I	Name:	<u>Tyler</u>	Alymer		Depth to	First \	Vater: 23.77 ft bgs			
Drilling	Asst:	<u>J. Co</u>	ndelaria, G. An	<u>igiano</u>	Samplin	g Meth	od: 4 inch x 10 ft Core Barrel	Project Number	RC000753.00	51
Logge	r:	Joe L	atham		Samplin	g Inter	<i>r</i> al: <u>Continuous</u>	_		
Editor:		Grant	Willford		Convert	ed to V	/ell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
 41 	60	RB-2-SS-37- 42 7/15/2019 09:46		Topock - Fluvial Deposits	GW-GM		grained to very coarse grained sand; little sm trace caliche; trace coarser clast consists of wet	metidirite and quartz;	(41.5') Bottom	(37.0 - 307.0') No used
43 44 44 45		RB-2-SS-42- 47 7/15/2019 10:06		Topock - Fluvial Deposits	SM		(42.0 - 45.0') Topock - Fluvial Deposits; Silty yellowish brown (10YR 4/4); very fine grained trace clay; wet		at 41.5 instead of 42 ft bgs because of formation collapse	
46 47 		10.00		Topock - Fluvial Deposits	GW-GM		(45.0 - 48.0') Topock - Fluvial Deposits; Well silt and sand (GW-GM); dark gray (10YR 4/1) large pebbles, round; little very fine grained to sand; little silt; trace small cobbles; trace clay coarser clast consists of metidirite and quarta); granules to very o very coarse grained y; little caliche; little		
48 49 50	180	RB-2-SS-47- 50 7/15/2019 10:00					(48.0 - 54.0') Topock - Alluvium Deposits; Silt (GM); reddish brown (5YR 5/4); small pebble pebbles, angular to subangular; some very fir coarse grained sand; little silt; trace clay; son composed of metadiorite; wet	s to very large ne grained to very		
51 52 53		RB-2-SS-50- 55 7/15/2019 10:10		Topock - Alluvium Deposits	GM					
54 55				Topock - Alluvium Deposits	GM		(54.0 - 55.0') Topock - Alluvium Deposits; Sill (GM); reddish brown (5YR 5/4); small pebble pebbles, angular to subangular; some very fir coarse grained sand; some clay; little silt; sor	s to very large ne grained to very		
56 57 58 59	120	RB-2-SS-55- 60 7/15/2019 10:15		Topock - Alluvium Deposits	SM		composed of metadiorite; moist (55.0 - 59.0') Topock - Alluvium Deposits; Sili (SM); reddish brown (5YR 5/4); fine grained t subangular; some granules to medium pebbliclay; little coarser clasts composed of metadiclast composed of quartz; moist	o medium grained, es; little silt; trace		
59				Topock - Alluvium Deposits	SC		(59.0 - 60.0') Topock - Alluvium Deposits; Cla (SC); reddish brown (5YR 5/4); fine grained to angular to subangular; little granules to large	o coarse grained,		

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	She	eet: 4 of	16
Date S	tarted	06/28/	2019		Surface	Elevati	on: <u>480.9 ft amsl</u>	Boring No.:	RB-2 Pilo	nt
Date C	omple	ted: <u>07/29/</u>	2019		Northing	g (NAD	33): <u>2103398.9</u>	Dorning No	IND Z I IIC	<u>^4</u>
Drilling	Co.:	<u>Casca</u>	de		Easting	(NAD8	3): <u>7616014.8</u>	Client: PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	307 ft bgs	Project: Final G	W Remedy Ph	ase 1
Drill Ri	д Туре	: <u>Boart l</u>	_ongyear Trac	k Mount	Borehol	e Diam	eter: 4-12 inches	Location: PG&E	Topock, Needle	es, California
Driller I	Name:	Tyler A	lymer		Depth to	First V	Vater: <u>23.77 ft bgs</u>			
Drilling	Asst:	J. Con	delaria, G. An	giano	Samplin	g Meth	od: 4 inch x 10 ft Core Barrel	Project Number:	RC000753.005	51
Loggei	r:	Joe La	ıtham		Samplin	g Interv	al: <u>Continuous</u>			
Editor:		<u>Grant</u>	Willford		Convert	ed to V	/ell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
61 62 63 64 65	120	RB-2-SS-60- 65 7/15/2019 10:20		Topock - Alluvium Deposits	GM		subangular; little clay; trace silt; little coarser of metadiorite; little granite; moist (60.0 - 67.0') Topock - Alluvium Deposits; Silt; (GM); reddish brown (5YR 5/4); granules to lat to subangular; some very fine grained to very sand; little silt; trace coarser clasts composed moist	y gravel with sand rge pebbles, angular coarse grained		(37.0 - 307.0') No used
66 67 68		RB-2-SS-65- 70 7/15/2019 10:25					(67.0 - 74.0') Topock - Alluvium Deposits; We (GW); reddish gray / pale brown(5YR 5/2); gracobbles, angular to subangular; and medium is grained sand, angular to subangular; trace sm silt; some coarser clasts composed of metadiand basalt; wet	anules to small to very coarse hall cobbles; trace		
69707172	120	RB-2-SS-70-		Topock - Alluvium Deposits	GW					
73 74		75 7/15/2019 11:38	RB-2-VAS- 72-77	Topock -			(74.0 - 75.0') Topock - Alluvium Deposits; Cla	vey gravel with sand		
 75			(<0.033 U ppb) 6/30/2019 14:10	Alluvium Deposits	GC		(GC); dark reddish gray (5YR 4/2); granules to subangular; some very fine grained to very coal little clay; trace silt; some coarser clasts comproist	medium pebbles, arse grained sand;		
76 76 77				Topock - Alluvium Deposits	SW		(75.0 - 77.0') Topock - Alluvium Deposits; We gravel (SW); reddish brown / moderate brown grained to very coarse grained, angular to sub granules to medium pebbles, angular; trace si clasts composed of metadiorite; wet	(5YR 4/4); medium round; some		
78 79 	120	RB-2-SS-75- 80 7/15/2019 12:14		Topock - Alluvium Deposits	SW-SM		(77.0 - 81.5') Topock - Alluvium Deposits; We silt and gravel (SW-SM); reddish gray / pale b medium grained to coarse grained, angular to granules to large pebbles, angular to subangu coarser clasts composed of metadiorite; little	rown(5YR 5/2); subround; some slar; little silt; little granite; moist		

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	:	Sheet: 5 of	16
Date S	started	: <u>06/28</u>	3/2019		Surface	Elevat	on: <u>480.9 ft amsl</u>	Boring No	o.: <u>RB-2 Pilo</u>	nt .
Date C	Comple	eted: <u>07/29</u>	9/2019		Northing	g (NAD	83): <u>2103398.9</u>		J <u>IXD 21 II</u>	<u>^</u>
Drilling	Co.:	Casc	ade		Easting	(NAD8	3): <u>7616014.8</u>	Client: PG&	<u>E</u>	
Drilling	Metho	od: <u>Soni</u>	Drilling		Total De	epth:	307 ft bgs	Project: Final	GW Remedy Ph	ase 1
Drill Ri	д Туре	e: <u>Boar</u>	Longyear Trad	ck Mount	Borehol	le Diam	eter: <u>4-12 inches</u>	Location: PG&	E Topock, Needl	es, California
Driller	Name:	<u>Tyler</u>	Alymer		Depth to	o First \	Vater: 23.77 ft bgs	. <u> </u>		
Drilling	Asst:	<u>J. Co</u>	ndelaria, G. Ar	ngiano	Samplin	ng Meth	od: 4 inch x 10 ft Core Barrel	Project Numbe	r: RC000753.00	51
Logge	r:	<u>Joe L</u>	_atham		Samplin	ng Inter	val: <u>Continuous</u>	-		
Editor:		<u>Gran</u>	t Willford		Convert	ed to V	Vell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	SOSO	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
81				Topock - Alluvium Deposits	SW-SM					(37.0 - 307.0') No used
82 83 84 85	120	RB-2-SS-80- 85 7/15/2019 12:21		Topock - Alluvium Deposits	ML		(81.5 - 86.5') Topock - Alluvium Deposits; Silt low plasticity; some granules to large pebbles subangular; little very fine grained to very coal little clay; little coarser clasts composed of me	s, angular to rse grained sand;		
86 87 88 88		RB-2-SS-85- 90 7/15/2019 14:00		Topock - Alluvium Deposits	GC		(86.5 - 90.0') Topock - Alluvium Deposits; Cla yellowish red / light brown(5YR 5/6); granules angular to subangular; some clay; little silt; tragrained sand, subangular to subround; some composed of metadiorite; wet	to large pebbles, ace fine to coarse		
90 91 92 93	120	RB-2-SS-90- 95 7/16/2019 08:04		Topock - Alluvium Deposits	GC		(90.0 - 93.0') Topock - Alluvium Deposits; Cla brown (7.5YR 5/4); granules to very large peb subangular; some clay; trace very fine grained grained sand; trace silt; some coarser clasts of metadiorite; trace granite; moist	bles, angular to d to very coarse	(90.0 - 103.0') Rough drilling	
94 95 96				Topock - Alluvium Deposits	GM		(93.0 - 96.5') Topock - Alluvium Deposits; Silt brown (7.5YR 5/6); granules to very large peb subangular; little silt; trace very fine grained to sand; trace clay; and coarser clasts compose	bles, angular to very coarse grained	1	
97 98 99	120	RB-2-SS-95- 100 7/16/2019 08:12		Topock - Alluvium Deposits	GM		(96.5 - 99.0') Topock - Alluvium Deposits; Silt brown (7.5YR 5/6); granules to very large peb subangular; some silt; little clay; trace very fin coarse grained sand; some coarser clasts cometadiorite; moist (99.0 - 104.0') Topock - Alluvium Deposits; Cl	bles, angular to e grained to very mposed of		
 100				Topock - Alluvium Deposits	GC		yellowish red / light brown(5YR 5/6); granules pebbles, angular to subangular; some clay; lit	to very large		

9/-	١RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	St	neet: 6 of	16
Date S	tarted:	06/28	3/2019		Surface	Elevat	ion: <u>480.9 ft amsl</u>	Boring No.	: RB-2 Pilo	nt .
Date C	omple	ted: <u>07/29</u>	9/2019		Northing	g (NAD	83): <u>2103398.9</u>	Borning itto	. KBZI IIC	
Drilling	Co.:	Casc	ade		Easting	(NAD8	(3): <u>7616014.8</u>	Client: PG&E		
Drilling	Metho	od: <u>Soni</u>	Drilling		Total De	epth:	307 ft bgs	_ Project: Final C	W Remedy Ph	ase 1
Drill Ri	д Туре	: <u>Boar</u>	Longyear Trad	ck Mount	Borehol	e Diam	eter: 4-12 inches	Location: PG&E	Topock, Needle	es, California
Driller I	Name:	<u>Tyler</u>	Alymer		Depth to	First \	Water: 23.77 ft bgs			
Drilling	Asst:	<u>J. Co</u>	<u>ndelaria, G. Ar</u>	•	Samplin	-		_ Project Number:	RC000753.005	51
Loggei			.atham		Samplin	•		_		
Editor:		<u>Gran</u>	t Willford		Convert	ed to V	Vell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
101 102		RB-2-SS-		Topock - Alluvium Deposits	GC		fine grained to very coarse grained sand; son composed of metadiorite; moist	ne coarser clasts	(90.0 - 103.0') Rough drilling	(37.0 - 307.0') No used
103 	120	100-105 7/16/2019 08:20	RB-2-VAS- 102-107	Deposits			(104.0 - 107.0') Topock - All <mark>uvium D</mark> eposits;			
105 106 		PD 0 00	(<0.033 U ppb) 7/1/2019 15:21	Topock - Alluvium Deposits	GM		yellowish red / light brown(5YR 5/6); granules angular to subangular; some silt; little clay; lit composed of metadiorite; wet	ttle coarser clasts		
108 109		RB-2-SS- 105-110 7/16/2019 08:33		Topock - Alluvium Deposits	GC		(107.0 - 109.0') Topock - Alluvium Deposits; sand (GC); yellowish red / light brown(5YR 5, medium pebbles, angular to subangular; little very coarse grained sand; little silt; little clay; coarser clasts composed of metadiorite; moisting the coarse of the composed of metadiorite; moisting the coarse of the co	/6); granules to e very fine grained to trace mica; little st		
 110 _111_				Topock - Alluvium Deposits	GM		(GM); yellowish brown (10YR 5/6); granules t subangular; some silt; little very fine grained grained sand; little clay; little coarser clasts c metadiorite; moist (111.0 - 112.0') Topock - Alluvium Deposits;	to large pebbles, to very coarse composed of	(110.0 - 125.0') Rough drilling	
112	120	RB-2-SS-		Topock - Alluvium Deposits	GM		yellowish brown (10YR 5/6); granules to large subangular; little very fine grained to very coa little silt; little clay; little coarser clasts compo	e pebbles, angular to arse grained sand;		
113 114		110-115 7/16/2019 08:40		Topock - Alluvium Deposits	GM		moist (112.0 - 114.0') Topock - Alluvium Deposits; strong brown (7.5YR 5/6); granules to large p subangular; some silt; little very fine grained i grained sand; trace clay; trace caliche; some composed of metadiorite; moist	ebbles, angular to to very coarse		
115 1 =							(114.0 - 121.0') Topock - Alluvium Deposits; (GM); yellowish brown (10YR 5/6); granules t subangular; some silt; little granules to small trace clay; trace coarser clasts composed of	to small pebbles, pebbles, subangular;		
116				Topock -						
_117		RB-2-SS-		Alluvium Deposits	GM	139				
118	400	115-120 7/16/2019 08:51		Doposito						
119 120	120						(119.5'); less silt, more clay			

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 7 of	16
Date S	started:	06/28/	2019		Surface	Elevat	ion: <u>480.9 ft amsl</u>	Borin	a No .	RB-2 Pilo	nt .
Date C	Comple	ted: <u>07/29/</u>	2019		Northing	g (NAD	83): 2103398.9		9	1321110	
Drilling		<u>Casca</u>	de		Easting	(NAD8	33): <u>7616014.8</u>	Client:	PG&E		
Drilling	Metho	od: <u>Sonic</u>	<u>Drilling</u>		Total De	epth:	307 ft bgs	Project:	Final G	W Remedy Pha	ase 1
Drill Ri			_ongyear Trac	ck Mount	Borehol	e Diam	eter: 4-12 inches	Location:	PG&E	<u> Fopock, Needle</u>	es, California
Driller I		-	•		Depth to	First \	Nater: 23.77 ft bgs				
Drilling	Asst:		delaria, G. An	<u>igiano</u>	Samplin	-		Project N	umber:	RC000753.005	51
Logge		Joe La			Samplin	-					
Editor:		<u>Grant</u>	Willford		Convert	ed to V	Vell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
 121				Topock - Alluvium Deposits	GM					(110.0 - 125.0') Rough drilling	(37.0 - 307.0') No used
	120	RB-2-SS- 120-125 7/16/2019 09:00		Topock - Alluvium Deposits	GM		(121.0 - 127.0') Topock - Alluvium Deposits; S (GM); yellowish brown (10YR 5/6); granules to subangular; some silt; little granules to small trace clay; trace coarser clasts composed of r	o small pebbl pebbles, sub	les, angular;		
126 127		RB-2-SS- 125-129 7/16/2019 09:09					(127.0 - 131.5') Topock - Alluvium Deposits; (ML); brown (7.5YR 5/4); low plasticity; some	Gravelly silt w	vith sand		
128 129 130 				Topock - Alluvium Deposits	ML		pebbles, angular to subangular; little very fine coarse grained sand; little clay; little coarser o metadiorite; wet	grained to ve	ery		
131		RB-2-SS- 129-134 7/16/2019					(131.5 - 137.0') Topock - Alluvium Deposits; S				
132 133 	120	09:22		Topock -			(GM); yellowish brown (10YR 5/6); granules to subangular; some silt; little very fine grained to grained sand; trace clay; trace coarser clasts metadiorite; moist	o very coarse	•		
 135 136 137		RB-2-SS- 134-139 7/16/2019 10:36		Alluvium Deposits	GM						
138 139 140	120	RB-2-SS- 139-144 7/16/2019		Topock - Alluvium Deposits	SM		(137.0 - 142.0') Topock - Alluvium Deposits; S (SM); dark yellowish brown (10YR 4/6); very fi coarse grained, angular to subround; some gr pebbles, angular; some silt; some coarser cla metadiorite; moist	ne grained to anules to lar	very ge		

9/	ARC	ADI	Design & Consultancy for natural and built assets		Во	ring	Log		Shee	et: 8 of	16
Date S	tarted:	06/2	28/2019		Surface	Elevat	ion: <u>480.9 ft amsl</u>	Boring	No ·	RB-2 Pilo	nt .
Date C	omple	ted: <u>07/</u> 2	29/2019		Northing	g (NAD	983): <u>2103398.9</u>		, 1 1 U	17D-7 LIK	<u>^</u>
Drilling	•		cade		Easting	• (•	_ Client: _	PG&E		
Drilling		od: <u>Son</u>	ic Drilling		Total De	•	307 ft bgs	Project:	Final GW	/ Remedy Ph	ase 1
Drill Ri			rt Longyear Tra	ck Mount	Borehol	e Diam	neter: 4-12 inches	-	PG&E To	opock, Needl	es, California
Driller	Name:	Tyle	r Alymer		Depth to	First \	Water: 23.77 ft bgs	_			
Drilling	Asst:	<u>J. C</u>	ondelaria, G. Aı	ngiano	Samplin	ig Meth	nod: 4 inch x 10 ft Core Barrel	_ Project Nu	ımber: <u>R</u>	C000753.00	51
Logge	r:	<u>Joe</u>	Latham		Samplin	ıg Inter	val: <u>Continuous</u>	_			
Editor:		<u>Gra</u>	nt Willford		Convert	ed to V	Vell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample I	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
141		10:45 RB-2-SS- 139-144		Topock - Alluvium Deposits	SM						(37.0 - 307.0') No used
142 143 144 145	120	7/16/2019 10:45	RB-2-VAS- 142-147 (<0.17 U ppb) 7/9/2019	Topock - Alluvium Deposits	GM		(142.0 - 145.5') Topock - Alluvium Deposits; (GM); strong brown (7.5YR 5/6); granules to angular; little silt; trace small cobbles; some composed of metadiorite; moist	very large pebb			
145 146 147		RB-2-SS- 144-149 7/16/2019 10:56	13:20	Topock - Alluvium Deposits	SM		(145.5 - 147.0') Topock - Alluvium Deposits; (SM); strong brown (7.5YR 5/6); very fine grained, subangular to subround; some granu angular to subangular; little coarser clasts cometadiorite; trace granite; moist (147.0 - 149.0') Topock - Alluvium Deposits;	ined to very coa ules to large pe imposed of	arse bbles,		
148 148 149				Topock - Alluvium Deposits	SM		(SM); reddish brown / moderate brown(5YR 4 to coarse grained, subangular to subround; li medium pebbles, angular; little silt; trace coa composed of metadiorite; little granite; wet	4/4); very fine gı ttle granules to	rained		
150 151 152 	120	RB-2-SS- 149-154 7/16/2019 11:06		Topock - Alluvium Deposits	SM		(149.0 - 153.0') Topock - Alluvium Deposits; (SM); yellowish brown (10YR 5/6); medium g grained, angular to subround; little granules t subangular; little silt; trace coarser clasts cor metadiorite; trace granite; wet	rained to very o o very large pel	oarse		
154 155 156		RB-2-SS- 154-157 7/16/2019 11:14		Topock - Alluvium Deposits	GM		(153.0 - 156.5') Topock - Alluvium Deposits; (GM); strong brown (7.5YR 5/6); granules to angular to subangular; some medium to very subangular to subround; little silt; trace coars of metadiorite; wet	verý ľarge pebb coarse grainec ser clasts comp	oles, d sand, osed		
157 158 159 160	120	RB-2-SS- 157-162 7/16/2019 11:20		Topock - Alluvium Deposits	GM		(156.5 - 159.5') Topock - Alluvium Deposits; strong brown (7.5YR 5/6); granules to very lar to subangular; some silt; little very fine to very sand, subangular to subround; trace clay; sor composed of metadiorite; wet (159.5 - 160.0') Topock - Alluvium Deposits;	rge pebbles, ar y coarse graine me coarser clas	ngular d sts		
160				Alluvium		181/20/	ı .				L

9/	١RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 9 of	16
Date S	tarted:	06/28/2	2019	{	Surface	Elevat	ion: 480.9 ft amsl	Boring No.	: RB-2 Pilo	
	•	ted: <u>07/29/</u>	2019	1	Northing	g (NAD	83): 2103398.9	Dorning ivo.	. <u> </u>	<u></u>
Drilling		Casca			Easting	•	•	Client: PG&E		
Drilling			•		Total De	•	307 ft bgs	-	W Remedy Pha	
Drill Ri			ongyear Trac					Location: PG&E	Topock, Needle	es, California
Driller N		<u>Tyler A</u>	-		•		Water: 23.77 ft bgs	- · · · · ·	D0000750 005	- 4
Drilling			<u>delaria, G. An</u> ''	•	Samplin	-		Project Number:	RC000753.005	01
Logger		Joe La			Samplin Convert	-				
Editor:		Giani	Willford		JOHVER	ed to v	Vell. A res No	Т	Т	
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
161 162 163 164 165	120	RB-2-SS- 157-162 7/16/2019 11:20 RB-2-SS- 162-165 7/16/2019 11:58		Topock - Alluvium Deposits Topock - Alluvium Deposits	GM		yellowish brown (10YR 5/6); granules to very I angular to subangular; some clay; little very fir grained sand, subangular to subround; little si clasts composed of metadiorite; moist (160.0 - 163.0') Topock - Alluvium Deposits; S strong brown (7.5YR 5/6); granules to very large to subangular; some silt; little very fine to very sand, subangular to subround; trace clay; som composed of metadiorite; wet (160.5'); 0.3' lense of grayish green color char (163.0 - 167.0') Topock - Alluvium Deposits; S reddish yellow (7.5YR 6/8); granules to very large angular to subangular; and silt; little very fine to grained sand, subangular to subround; trace of clasts composed of metadiorite; moist	ne to very coarse lt; little coarser silty gravel (GM); ge pebbles, angular coarse grained ne coarser clasts nge silty gravel (GM); urge pebbles, o very coarse		(37.0 - 307.0') No used
166 167 168		RB-2-SS- 165-170 7/16/2019 12:07					(167.0 - 171.0') Topock - Alluvium Deposits; S reddish brown / moderate brown(5YR 4/4); vei fine grained, subangular to subround; and silt; medium pebbles, subangular; trace clay; little composed of metadiorite; wet	ry fine grained to little granules to	(167.0 - 177.0') Rough drilling	
		RB-2-SS-		Topock - Alluvium Deposits	SM		(170'); moist; 0.2' lense of grayish green color	change		
171		170-172 7/16/2019			Ť		(171.0 - 172.5') Topock - Alluvium Deposits; S	Silty sand with gravel		
172	120	12:18		Topock - Alluvium Deposits	SM		(SM); reddish brown / moderate brown(5YR 4, to coarse grained, angular; little granules to m angular; little silt; little coarser clasts compose wet	/4); very fine grained ledium pebbles,		
		RB-2-SS- 172-177 7/16/2019 12:29	RB-2-VAS- 172-177 (<0.17 U ppb) 7/12/2019 14:55	Topock - Alluvium Deposits	SM		(172.5 - 177.0') Topock - Alluvium Deposits; S reddish brown / moderate brown(5YR 4/4); ver fine grained, subangular to subround; and silt; medium pebbles, subangular; trace clay; little composed of metadiorite; moist (174'); saturated zone	ry fine grained to little granules to		
 176 _177_							(175.5'); 0.2' lense of grayish green color char	nge		
178				Topock - Alluvium Deposits	SM		(177.0 - 178.0') Topock - Alluvium Deposits; S (SM); reddish brown (5YR 5/4); very fine grain grained, angular; and silt; little granules to me	ed to coarse dium pebbles,		
170 179	120	RB-2-SS- 177-180 7/17/2019 07:59		Topock - Alluvium Deposits	SM		angular to subangular; trace clay; little coarsel metadiorite; wet (178.0 - 179.0') Topock - Alluvium Deposits; S (SM); reddish brown / moderate brown(5YR 4/t to coarse grained, angular; little granules to m	Silty sand with gravel (4); very fine grained		
180	. ,,	110.05		Topock - Alluvium Deposits	SM		angular; little silt; little coarser clasts compose wet	ed of metadiorite;		

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 10 of	16
Date S	Started:	06/28	3/2019		Surface	Elevat	on: <u>480.9 ft amsl</u>	Borino	No :	RB-2 Pilo	nt .
Date C	Comple	ted: <u>07/29</u>	9/2019		Northing	g (NAD	83): <u>2103398.9</u>	Boring	, 110	IXD Z I IIC	<u>~</u>
Drilling	Co.:	<u>Casc</u>	ade		Easting	(NAD8	3): <u>7616014.8</u>	Client: F	PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	307 ft bgs	Project: F	Final GV	V Remedy Ph	ase 1
Drill Ri	д Туре	: <u>Boart</u>	Longyear Tra	ck Mount	Borehol	e Diam	eter: <u>4-12 inches</u>	Location: F	PG&E T	opock, Needle	es, California
Driller	Name:	<u>Tyler</u>	Alymer		Depth to	First \	Vater: 23.77 ft bgs				
Drilling	Asst:	<u>J. Co</u>	ndelaria, G. Ar	ngiano	Samplin	ig Meth	od: 4 inch x 10 ft Core Barrel	Project Nu	mber: <u>F</u>	RC000753.00	51
Logge	r:	Joe L	.atham		Samplin	g Inter	/al: <u>Continuous</u>	-			
Editor:		Gran	t Willford		Convert	ed to V	/ell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
 181		RB-2-SS- 180-182 7/17/2019 08:08		Topock - Alluvium Deposits	SM		(179.0 - 181.0') Topock - Alluvium Deposits; S reddish brown / moderate brown(5YR 4/4); we fine grained, subangular to subround; and silt medium pebbles, subangular; trace clay; little composed of metadiorite; wet	ery fine grained ; little granules coarser clasts	to to		(37.0 - 307.0') No used
182							(181.0 - 188.0') Topock - Alluvium Deposits; N with gravel (SW); strong brown (7.5YR 5/6); v very coarse grained, angular; some granules angular; trace silt; some coarser clasts comp wet	ery fine grained to large pebble:	d to s,		
183 184	120	RB-2-SS-									
 185		182-187 7/17/2019 08:17		Topock - Alluvium Deposits	SW						
186 1 =							VOI				
187 188											
189		RB-2-SS- 187-190 7/17/2019 08:25		Topock - Alluvium Deposits Topock -	GW-GM		(188.0 - 189.0') Topock - Alluvium Deposits; N with silt and sand (GW-GM); strong brown (7 to very large pebbles, angular; and very fine to sand, angular; trace clay; little coarser clasts metadiorite; trace coarser clast composed of	.5YR 5/6); gran o very coarse gr composed of	ules		
190				Alluvium Deposits Topock -			(189.0 - 189.5') Topock - Alluvium Deposits; \$ (SM); strong brown (7.5YR 5/6); very fine graingrained, angular; some granules to large pebl silt; trace clay; little coarser clasts composed	Silty sand with g ned to very coa bles, angular; s	rse ome		
191				Alluvium Deposits	GM		coarser clast composed of quartz; wet (189.5 - 192.0') Topock - Alluvium Deposits; \$ (GM); strong brown (7.5YR 5/6); granules to v angular; some very fine to very coarse grained	<i>r</i> ery large pebbl d sand, angular	es, ; little		
192 193	120	RB-2-SS- 190-195 7/17/2019 08:33					silt; trace clay; little coarser clasts composed coarser clast composed of quartz; wet (192.0 - 197.0') Topock - Alluvium Deposits; with silt and gravel (SW-SM); strong brown (7 grained to very coarse grained, angular; some	Well graded sar 7.5YR 5/6); very	nd fine		
 194				Topock -			large pebbles, angular; little silt; trace clay; lit composed of metadiorite; trace coarser clast wet; green staining	tle coarser clas	tś		
195				Alluvium Deposits	SW-SM						
196 197		RB-2-SS- 195-198 7/17/2019 08:40									
198	120			Topock - Alluvium	SM		(197.0 - 199.5') Topock - Alluvium Deposits; Strong brown (7.5YR 5/6); very fine grained to angular; and silt; little granules to small pebbl clay; trace coarser clasts composed of metad	medium graine les, angular; tra	ed,		
199_	120	RB-2-SS- 198-203 7/17/2019 09:03		Deposits	ML		(199.5 - 202.0') Topock - Alluvium Deposits; (Gravelly silt with	n sand		
200				1 10 11		1011 1 1					·

9/-	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	SI	neet: 11 of	16
Date S	started:	06/2	8/2019		Surface	Elevat	ion: <u>480.9 ft amsl</u>	Boring No.	: RB-2 Pilo	\t
Date C	omple	ted: <u>07/2</u>	9/2019		Northing	g (NAD	83): 2103398.9	Borning No.	. IND-Z I IIC	<u></u>
Drilling	Co.:	Caso	ade		Easting	(NAD8	(3): <u>7616014.8</u>	Client: PG&E		
Drilling	Metho	od: <u>Soni</u>	c Drilling		Total De	epth:	307 ft bgs	Project: Final C	GW Remedy Ph	ase 1
Drill Ri	д Туре	: <u>Boar</u>	t Longyear Trad	ck Mount	Borehol	e Diam	eter: <u>4-12 inches</u>	Location: PG&E	Topock, Needle	es, California
Driller I	Name:	<u>Tyler</u>	Alymer		Depth to	First \	Water: 23.77 ft bgs			
Drilling	Asst:	<u>J. Co</u>	ondelaria, G. Ar	ngiano	Samplin	ig Meth	od: 4 inch x 10 ft Core Barrel	Project Number:	RC000753.005	51
Logge	r:	<u>Joe I</u>	_atham		Samplin	ıg Inter	val: <u>Continuous</u>			
Editor:		<u>Gran</u>	t Willford		Convert	ed to V	Vell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
201		RB-2-SS- 198-203 7/17/2019		Topock - Alluvium Deposits	ML		(ML); strong brown (7.5YR 5/6); low plasticity; small pebbles, angular; little very fine to media angular; little clay; little coarser clasts compos wet	um grained sand,		(37.0 - 307.0') No used
202	120	09:03	RB-2-VAS-	Topock - Alluvium Deposits	SM	a U	(202.0 - 204.0') Topock - Alluvium Deposits; S strong brown (7.5YR 5/6); very fine grained to angular; and silt; little small to very large pebb clay; trace coarser clasts composed of metadi (202.5'); green staining	medium grained, les, angular; trace		
204		RB-2-SS-	202-207 (<0.17 U ppb) 7/14/2019	Topock - Alluvium Deposits	SM		(204.0 - 204.5') Topock - Alluvium Deposits; S strong brown (7.5YR 5/6); fine grained to coan little granules to small pebbles, angular; little s	se grained, angular;		
_205		203-207 7/17/2019 09:09	7/14/2019 09:20	Topock - Alluvium Deposits			coarser clasts composed of metadiorite; wet (204.5 - 205.0') Topock - Alluvium Deposits; G (ML); strong brown (7.5YR 5/6); low plasticity;	Gravelly silt with sand some small to very		
206 _207				Topock - Alluvium Deposits	SM		large pebbles, angular; little very fine to mediu angular; little clay; little coarser clasts compos wet (205.0 - 207.5') Topock - Alluvium Deposits; S strong brown (7.5YR 5/6); very fine grained to	Im grained sand, sed of metadiorite;	(007.01)	
		RB-2-SS- 207-209 7/17/2019					angular; and silt; little small to very large pebb clay; trace coarser clasts composed of metadi (207.5 - 217.0') Topock - Alluvium Deposits; C gravel (SC); brown (7.5YR 4/4); very fine grain	les, angular; trace iorite; moist Clayey sand with	(207.0') Switched driller T. Alymer with D. OMara	
209		09:15	-				grained, angular to subround; some small to v angular, little clay, trace silt, little coarser clast metadiorite; moist	ery large pebbles, ts composed of		
210										
211		RB-2-SS- 209-214								
212_	120	7/17/2019 09:22		Topock - Alluvium	SC					
213				Deposits						
214			_							
		RB-2-SS-								
		214-217 7/17/2019								
_216		09:28								
<u> </u>										
_217							(0.47.0040.51).7			
							(217.0 - 219.5') Topock - Alluvium Deposits; C (7.5R 4/4); medium grained to very coarse gra	ined, angular; some		
218		RB-2-SS-		Topock -			clay; trace granules, angular; trace silt; trace composed of metadiorite; wet	coarser clasts		
	180	217-222 7/17/2019		Alluvium Deposits	SC		,			
_219		09:35		'						
					-		(240.5. 222.0!) Topode Allegium Dorit C	Novov gravel with		
220					GC		(219.5 - 222.0') Topock - Alluvium Deposits; C	Jayey gravel with		

	11/1	ADIS	Design & Consultancy for natural and built assets		DU	ring	Log		One	eet: 12 of	16
)ate S	tarted:	06/28/	2019	;	Surface	Elevati	on: 480.9 ft amsl	Borin	a No.:	RB-2 Pilo	ot .
		ted: <u>07/29/</u>		I	Northin	g (NAD	33): 2103398.9			1321110	
Drilling		<u>Casca</u>			_	(NAD8	•	Client:	PG&E		
	Metho		Drilling		Total D	•	307 ft bgs	Project:		W Remedy Ph	
	g Type		Longyear Tra					Location:	PG&E	Fopock, Needle	es, California
	Name:	•	Alymer		-		Vater: 23.77 ft bgs				
•	Asst:		<u>idelaria, G. Ar</u>	•	-	ng Meth		Project N	umber: .	RC000753.00	51
ogge			atham		-	ng Inter					
ditor:		Grant	Willford		Conver	ted to V	′ell: X Yes No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
- 221		RB-2-SS- 217-222 7/17/2019 09:35		Topock - Alluvium Deposits	GC		sand (GC); strong brown (7.5YR 5/6); granule pebbles, angular; some fine to very coarse grate to subround; little clay; some coarser clasts cometadiorite; trace granite; wet	ained sand, a	e ngular		(37.0 - 307.0' No used
222							(200 0		:41-		
- 223_ - 224_							(222.0 - 237.0') Topock - Alluvium Deposits; C gravel (SC); brown (7.5YR 5/4); very fine grain grained, angular to subround; some small to v angular; little clay; trace silt; little coarser clas metadiorite; moist	ned to very co very large pet	arse bles,		
.4-		RB-2-SS- 222-227									
225_		7/17/2019 09:40									
25_		09.40									
 26											
.20_	180										
27											
21_										(227.0 - 244.0')	
_ 28_										Rough drilling	
20_											
- 29_											
29				Topock -							
30_		RB-2-SS- 227-233		Alluvium Deposits	SC						
30_		7/17/2019 09:45									
- 31		09.45									
31_											
ຸ											
32											
33											
33_											
124		RB-2-SS-									
34		233-235 7/17/2019					(234'); greenish gray staining				
۱	60	09:50									
35_											
- +											
36											
37		RB-2-SS-					(237.0 - 241.0') Topock - Alluvium Deposits; (Clayey gravel	with	(237.0')	
4		RB-2-SS- 235-240 7/17/2019					sand (GC); reddish brown / moderate brown(small pebbles, angular; some fine to coarse g	5YŔ 4/4); gra	nules to	Switched driller D. O'Mara with	
,		10:30	RB-2-VAS- 237-242	Topock			subangular to subround; some clay; trace silt;	little coarser	clasts	S. Vasquez	
238_			(<0.17 U	Topock - Alluvium	GC		composed of metadiorite; moist				
238_ _ 239_ _	84		ppb) 7/15/2019 13:48	Deposits							

9/-	١RC	ADIS	Design & Consultancy for natural and built assets		Bo	ring	Log	St	neet: 13 of	16
Date S	started:	06/28/2	2019	;	Surface	Elevat	ion: <u>480.9 ft amsl</u>	Boring No.	: RB-2 Pilo	nt .
Date C	Comple	ted: <u>07/29/</u> 2	2019		Northin	g (NAD	983): <u>2103398.9</u>	_ Borning itto	. IND ZITIIC	<u> </u>
Drilling	Co.:	Casca	de		Easting	(NAD8	33): <u>7616014.8</u>	Client: PG&E		
Drilling	Metho	od: <u>Sonic I</u>	Drilling		Total De	epth:	307 ft bgs	Project: Final C	SW Remedy Ph	ase 1
Drill Ri	• • •		<u>ongyear Tra</u>	<u>ck Mount</u> I	Borehol	e Diam	neter: <u>4-12 inches</u>	Location: PG&E	Topock, Needle	es, California
Driller I		•	-		-		Water: 23.77 ft bgs	<u> </u>		
Drilling			<u>delaria, G. Ar</u>	-	Samplir	-		Project Number:	RC000753.005	51
Logge		<u>Joe La</u>			Samplir	-		_		
Editor:		Grant \	Nillford		Convert	ed to V	Vell:			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
			RB-2-VAS- 237-242 (<0.17 U	Topock - Alluvium Deposits	GC				(227.0 - 244.0') Rough drilling	(37.0 - 307.0') No used
			ppb) 7/15/2019 13:48				(241.0 - 244.0') Topock - Weathered Bedrock Sandy lean clay with gravel (CL); reddish bro plasticity; some granules to very large pebble	wn (5YR 5/4); low s, angular; little fine		
242	84	RB-2-SS- 240-245		Topock - Weathered			to coarse grained sand, subangular to subrou coarser clasts composed of metadiorite; dry	und; little silt; little		
		7/17/2019		Bedrock -	CL					
243		10:35		conglomerate						
_244							(244.0 - 247.0') Topock - Weathered Bedrock			
 245_							Clayey sand with gravel (SC); yellowish red / very fine grained to medium grained, subang	ular to subround;		
240				Topock - Weathered			some granules to large pebbles, angular to so trace silt; little coarser clasts composed of m			
 246	36			Bedrock - conglomerate	sc					
				Congionnerate	1					
247										
		RB-2-SS- 245-250					(247.0 - 274.0') Topock - Weathered Bedrock Gravelly lean clay with sand (CL); reddish bro	c - conglomerate;		
248		7/17/2019 10:40					plasticity; some granules to medium pebbles, subangular; little very fine to fine grained sand	, angular to		
							subround; trace silt; little coarser clasts comp	oosed of metadiorite;		
249							trace coarser clasts composed of granite; mo	DIST		
250										
	84									
251	0.									
									(251.0 - 254.0') Rough drilling	
252		RB-2-SS-								
_		250-255					(252') dark reddish brown (2.5YR 3/4); decreated content, white mottling	ase in moisture		
253		7/17/2019 10:45		Topock -						
_				Weathered Bedrock -	CL					
_254				conglomerate			(254') reddish brown (2.5YR 4/4); increase in	mointura contant		
							(254) reddish brown (2.51K 4/4), mciease in	moisture content		
_255										
_256										
_257	84	RB-2-SS-					(257') dark reddish brown (2.5YR 3/4); decrea	ase in moisture		
-		255-260 7/17/2019				\////	content	ass in molecule		
258		10:50								
-										
259										
-										
260		11000	1 :5 10 ::0	'C' ('		<u> </u>	1			

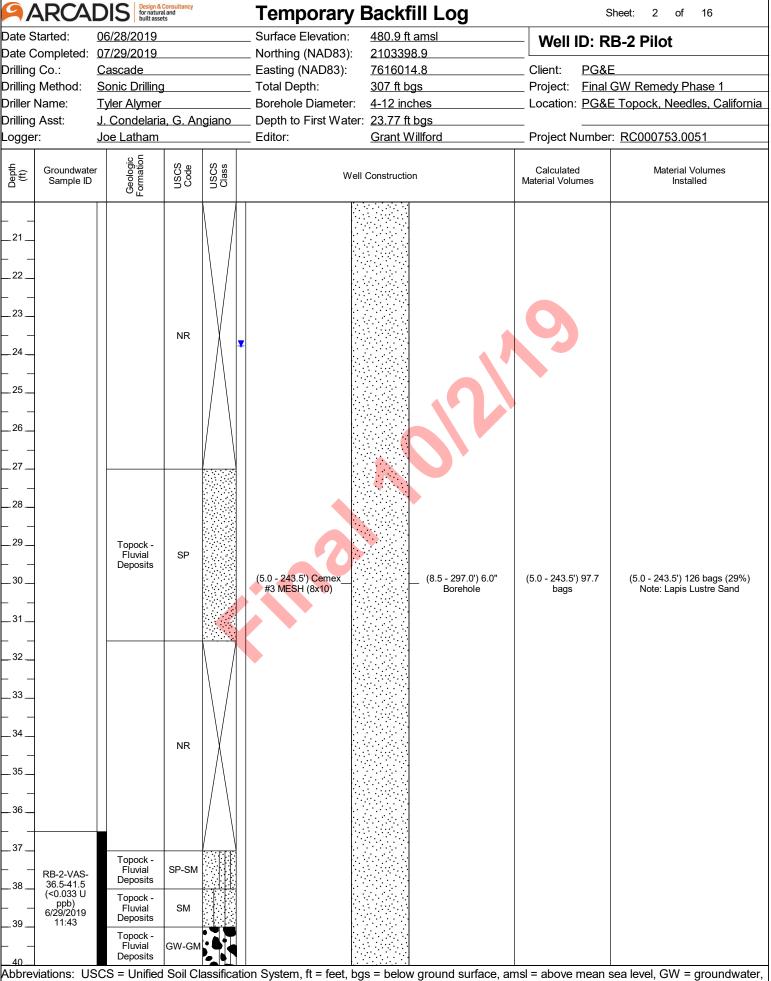
9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring l	Log		Sheet: 14 of	16
Drilling	omple Co.:	ted: <u>07/29</u> <u>Casca</u>	/2019 ade	!	Northing Easting	Elevatio (NAD8: (NAD83	3): 2103398.9): 7616014.8	Client: <u>PC</u>	No.: <u>RB-2 Pilo</u> 6&E	
Drilling Drill Rig Driller I Drilling	g Type Name: Asst:	e: <u>Boart</u> <u>Tyler J. Col</u>	Drilling Longyear Trad Alymer Indelaria, G. Ar Indelaria	ck Mount 	Depth to Samplin	e Diame	ater: 23.77 ft bgs d: 4 inch x 10 ft Core Barrel	Location: PC	nal GW Remedy Pha G&E Topock, Needle ber: RC000753.005	s, California
Logge Editor:			Willford		-	ed to We				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
261 262 263	84	RB-2-SS- 250-265 7/17/2019 10:55						9		(37.0 - 307.0') No used
264 265 266	72						(264') reddish brown / mode <mark>rate b</mark> rown(5YR 4 moisture content	4/4); decrease in	(265.0 - 267.0') Rough drilling	
		RB-2-SS- 265-270 7/17/2019 11:00		Topock - Weathered Bedrock - conglomerate	CL				(269.0 - 274.0') Rough drilling, drill rig ran out	
	84	RB-2-SS- 270-275 7/17/2019 11:00							of fuel mid-drill run	
275 276 277			RB-2-VAS- 274-279 (<0.17 U ppb) 7/18/2019	Topock - Weathered Bedrock - conglomerate	SC	t l	(274.0 - 277.0') Topock - Weathered Bedrock Clayey sand with gravel (SC); brown (7.5YR 4 o very coarse grained, subangular to subrourery large pebbles, angular; little clay; trace signs; little coarser clasts composed of metadio	l/4); very fine graind; some medium mall cobbles; trac	to	
278 278 279	108	RB-2-SS- 275-280 7/17/2019 12:49	09:17	Topock - Weathered Bedrock - conglomerate	CL	i i	277.0 - 279.0') Topock - Weathered Bedrock Sandy lean clay with gravel (CL); reddish brown (5YR 4/4); low plasticity; some very fine sand, subangular to subround; little granules bebbles, subangular; trace silt; little coarser contending its moist	vn / moderate to medium grain to very large lasts composed o		
280				Topock - Weathered Bedrock -	CL		279.0 - 285.0') Topock - Weathered Bedrock Gravelly lean clay with sand (CL); reddish bro prown(5YR 4/4); low plasticity; some granules	wn / moderate s to very large		

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	S	Sheet: 15 of	16
Date S					Surface		·	Boring No	o.: RB-2 Pilo	ot
	•	ted: <u>07/29/</u>			Northing		•		<u> </u>	
Drilling		<u>Casca</u>			Easting	•	•	Client: PG&E		
Drilling Drill Ri			Longyear Tra		Total De	•	307 ft bgs eter: 4-12 inches	•	GW Remedy Pha E Topock, Needle	
Driller							Vater: 23.77 ft bgs	Location. I Gai	_ TOPOCK, NEEdic	55, Calliottia
Drilling		•	delaria, G. Ar		Samplin		<u> </u>	Project Number	r: RC000753.005	 51
Logge		Joe La		-	Samplin	-		•		
Editor:		Grant '	Willford		Convert	ed to V	Vell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
281 282 	108	RB-2-SS- 280-283 7/17/2019 12:56		Topock - Weathered Bedrock - conglomerat	CL		pebbles, angular to subangular; little very fine sand, subangular to subround; trace small col coarser clasts composed of metadiorite; trace white and dark brown mottling	obles; trace silt; little		(37.0 - 307.0') No used
				oong.omorat					(283.0 - 293.0') Rough drilling	
		RB-2-SS- 283-288					(285.0 - 294.0') Topock - Weathered Bedrock Gravelly lean clay with sand (CL); reddish bro	wn / moderate		
_286		7/18/2019 11:15					brown(5YR 4/4); low plasticity; some granules pebbles, angular to subround; some fine to me	to very large edium grained sand,		
-							subangular to subround; trace silt; little coarse of metadiorite; trace granite; moist	er clasts composed		
_287										
-							*			
288	120									
 _289			RB-2-VAS-							
209			287-292 (<0.17 U	Topock - Weathered	20					
290			ppb) 7/26/2019	Bedrock - conglomerat	, CL					
		RB-2-SS- 288-293	11:56	3						
_291		7/18/2019 11:20								
292				Ì						
-										
293									(293.0 - 307.0')	
									10' of slough in core barrel.	
294							(294.0 - 303.0') Topock - Competent Bedrock	- conglomerate;	From 303 to 307 very rough	
 295							reddish brown / moderate brown(5YR 4/4); litt medium pebbles, angular to subangular; little	very fine to medium	drilling. (294.0')	
							grained sand; trace silt; little coarser clasts cometadiorite; dry to moist; friable conglomerate	omposed of e, highly pulverized	Independant QC inspector	
296							and fractured		on-site to confirm	
L -	168			Topock -					bedrock	
_297				Competent Bedrock -						
				conglomerat	е					
298										
299										
300										
	3 - 43	. 11000 1	Initial Call O	ifiti	Custon	- Et - E-	ot has - holow ground surface ama	I — -I		

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring L	og		She	eet: 16 of	16
Date S	Started	06/28/2	2019		Surface	Elevation:	480.9 ft amsl	Borir	na No.:	RB-2 Pilo	ot
	-	ted: <u>07/29/2</u>				g (NAD83)		_			<u> </u>
Drilling		Cascac				(NAD83):		_ Client:	PG&E		
Drilling			•		Total De	-	307 ft bgs	_ Project:		W Remedy Ph	
Drill Ri Driller		<u>Boart L</u> <u>Tyler A</u>	<u>ongyear Trad</u> lymor				r: <u>4-12 inches</u> ter: <u>23.77 ft bgs</u>	_ Location	PG&E	Topock, Needle	es, Calliornia
Drilling		-	delaria, G. An		-	g Method:	_	- Proiect N	Jumber	RC000753.005	51
Logge		Joe Lat		•		ig Interval:					
Editor		Grant V			-	ed to Well					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
301				Topock - Competent Bedrock - conglomerat				0		(293.0 - 307.0') 10' of slough in core barrel. From 303 to 307 very rough drilling.	(37.0 - 307.0') No used
303	168					(30 and	3.0 - 307.0'); dry; friable conglomerat <mark>e, mo</mark> d fractured	oderately pul	verized		
304											
305											
200											
306											
307_							End of Boring at 307.0 'bg	10			
308_							Elia di Barrig at cori.o Bg	,			
309_											
310											
311											
312											
313											
314											
315											
316											
_317											
318											
319											
320 Abbre	viations	: LISCS = I	Inified Soil Cl	assification	System	n ft = feet	bas = below around surface, ams	sl = ahove	mean se	a level GW = o	rroundwater

ARC	DIS Design & for natura built asset	Consultancy al and ts		Temporary I	Backfill Log	S	heet: 1 of 16
Date Started: Date Completed Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	Date Started: 06/28/2019 Date Completed: 07/29/2019 Drilling Co.: Cascade Drilling Method: Sonic Drilling Driller Name: Tyler Alymer Drilling Asst: J. Condelaria, G. Angiano		Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	480.9 ft amsl 2103398.9 7616014.8 307 ft bgs 4-12 inches 23.77 ft bgs Grant Willford	Well ID: RB-2 Pilot Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, California Project Number: RC000753.0051		
Groundwa Sample		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
1	Topock - Fill	SP		(0.0 - 0.5') Temporary Steel Plate with BMP (0.5 - 5.0') Cemex #1/20 MESH (20x40)		(0.5 - 5.0') 7.9 bags	(0.5 - 5.0') 7 bags (-11%) Note: Lapis Lustre Sand
4		NR			(0.0 - 8.5') 12.0" Borehole	(2)	
5 _ 8 _ 9 _ 10 _ 11 _	Topock - Fill	SP					
12				(5.0 - 243.5') Cemex #3 MESH (8x10)		(5.0 - 243.5') 97.7 bags	(5.0 - 243.5') 126 bags (29%) Note: Lapis Lustre Sand
14		NR			(8.5 - 297.0') 6.0" Borehole		
17 18	Topock - Fill	SP					
19 19 20 Abhreviations: I	Topock - Fluvial Deposits	Sp.	assificat	ion System ft = feet ha	s = helpw ground surface of	msl = ahove means	sea level, GW = groundwater,

ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.



ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of

ARC4	ARCADIS Design & Consultancy for natural and built assets				Backfill Log	S	Sheet: 3 of 16
Date Started: Date Completed Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	prate Completed: 07/29/2019 prilling Co.: Cascade prilling Method: Sonic Drilling priller Name: Tyler Alymer prilling Asst: J. Condelaria, G. Angiano		ngiano	Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	Northing (NAD83): 2103398.9 Easting (NAD83): 7616014.8 Total Depth: 307 ft bgs Borehole Diameter: 4-12 inches Depth to First Water: 23.77 ft bgs		B-2 Pilot GW Remedy Phase 1 Topock, Needles, California RC000753.0051
Groundwa Sample I		SOSO	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
41	Topock - Fluvial Deposits	GW-GM					
43	Topock - Fluvial Deposits	SM				2	
45454647	Topock - Fluvial Deposits	GW-GM					
48	Topock - Alluvium Deposits	GM		(5.0 - 243.5') Cemex #3 MESH (8x10)	(8.5 - 297.0') 6.0 Borehole	" (5.0 - 243.5') 97.7 bags	(5.0 - 243.5') 126 bags (29%) Note: Lapis Lustre Sand
52							
	Topock - Alluvium Deposits	GM					
56	Topock - Alluvium Deposits	SM					
59 50 60 Abbreviations: \textsqr	Topock - Alluvium Deposits JSCS = Unifie	sc d Soil C	lassificati	ion System, ft = feet, ba	s = below ground surface	e, amsl = above mean s	sea level, GW = groundwater,

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of

ARCADIS Design & Consultancy bulk asserts				Temporary I	Backfill Log	S	heet: 4 of 16
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	Cascade		 Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor: 	Northing (NAD83): 2103398.9 Easting (NAD83): 7616014.8 Total Depth: 307 ft bgs Borehole Diameter: 4-12 inches Depth to First Water: 23.77 ft bgs		B-2 Pilot SW Remedy Phase 1 Topock, Needles, California RC000753.0051	
Groundwate Sample ID		USCS	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed
	Topock - Alluvium Deposits	GM					
	Topock - Alluvium Deposits	GW		(5.0 - 243.5') Cemex #3 MESH (8x10)	(8.5 - 297.0') 6.0" Borehole	(5.0 - 243.5') 97.7 bags	(5.0 - 243.5') 126 bags (29%) Note: Lapis Lustre Sand
73							
72-77 (<0.033 U ppb) 6/30/2019 14:10	Topock - Alluvium Deposits	GC					
	Topock - Alluvium Deposits	SW					
	Topock - Alluvium Deposits	SW-SM		ion System ft - foot ha	s = helpw ground surface of	amel = ahove moon o	sea level, GW = groundwater,

ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

9 _A	PARCADIS Design & Consultancy for natural and built assets				Temporary E	Backfill Log	S	Sheet: 5 of 16
Date State Condition of Control o	ompleted: Co.: Method: ame: Asst:	o6/28/2019 cd: 07/29/2019 Cascade : Sonic Drilling Tyler Alymer J. Condelaria, G. Angiano Joe Latham		Surface Elevation: 480.9 ft amsl Northing (NAD83): 2103398.9 Easting (NAD83): 7616014.8 Total Depth: 307 ft bgs Borehole Diameter: 4-12 inches Depth to First Water: 23.77 ft bgs Editor: Grant Willford		Location: PG&E		
Depth (ft)	Groundwate Sample ID	Geologic Formation	USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
81 82		Topock - Alluvium Deposits	SW-SM					
83		Topock -					0	
84		Alluvium Deposits	ML					
87		Topock - Alluvium	GC					
		Deposits			(5.0 - 243.5') Cemex_ #3 MESH (8x10)	(8.5 - 297.0') 6.0" Borehole	(5.0 - 243.5') 97.7 bags	(5.0 - 243.5') 126 bags (29%) Note: Lapis Lustre Sand
9192		Topock - Alluvium Deposits	GC					
93		Topock -						
95		Alluvium Deposits	GM					
97		Topock - Alluvium Deposits	GM					
99	ations: US	Topock - Alluvium Deposits	GC d Soil C	assificati	on System, ft = feet, bg	s = below ground surface,	amsl = above mean s	sea level, GW = groundwater,

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of

ARCADIS Design & Consultancy for natural and by for				Temporary I	Backfill Log	S	Sheet: 6 of 16		
Date Started: Date Completed Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	ate Completed: 07/29/2019 rilling Co.: Cascade rilling Method: Sonic Drilling riller Name: Tyler Alymer rilling Asst: J. Condelaria, G. Angiano		Total Depth: 307 ft bgs Borehole Diameter: 4-12 inches		Location: <u>PG&E</u>				
Groundwa Sample I		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed		
	Topock - Alluvium Deposits	GC				9			
	Topock - Alluvium Deposits	GM							
	Topock - Alluvium Deposits	GC							
110	Topock - Alluvium Deposits	GM		(5.0 - 243.5') Cemex #3 MESH (8x10)	(8.5 - 297.0') 6.0" Borehole	(5.0 - 243.5') 97.7 bags	(5.0 - 243.5') 126 bags (29%) Note: Lapis Lustre Sand		
	Topock - Alluvium Deposits	GM							
113	Topock - Alluvium Deposits	GM							
	Topock - Alluvium Deposits	GM					sea level, GW = groundwater,		

ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of

ARC ⁴	for natura built asse	Consultancy al and its		Temporary E	Backfill Log	SI	neet: 7 of 16
ate Started:	06/28/2019			_ Surface Elevation:	480.9 ft amsl	Well ID: RE	B-2 Pilot
ate Completed	07/29/2019			_ Northing (NAD83):	2103398.9		
Orilling Co.:	Cascade			Easting (NAD83): 7616014.8		Client: PG&E	
Orilling Method:	Sonic Drilling			_ Total Depth:	307 ft bgs	Project: <u>Final (</u>	GW Remedy Phase 1
Oriller Name:	Tyler Alymer			_ Borehole Diameter:	4-12 inches	Location: PG&E	Topock, Needles, Califor
Orilling Asst:	J. Condelaria		ngiano	_ Depth to First Water:	23.77 ft bgs		
.ogger:	Joe Latham		-	_ Editor:	Grant Willford	Project Number:	RC000753.0051
Groundwa Sample I		USCS	USCS Class	Well (Construction	Calculated Material Volumes	Material Volumes Installed
	Topock - Alluvium	GM					
	Topock - Alluvium Deposits Topock - Alluvium	GM					
	Deposits			(5.0 - 243.5') Cemex_ #3 MESH (8x10)	(8.5 - 297.0') 6.0" Borehole	(5.0 - 243.5') 97.7 bags	(5.0 - 243.5') 126 bags (29% Note: Lapis Lustre Sand
	Topock - Alluvium Deposits	GM					
138_ - - - - - - - - - - - - - - - - - - -	Topock - Alluvium Deposits	SM					oo lovel CW = crossed
					s = below ground surface, a		
pp = parts per l					limit, NR = no recovery, bli ill be excavated from the pil		
and a constant of the constant					w no overvoted from the ni	iou poropolo durina di	

ARCA	DIS Design & for natur built asset	Consultancy al and ets		Temporary I	Backfill Log	S	Sheet: 8 of 16	
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	06/28/2019 07/29/2019 Cascade Sonic Drilling Tyler Alymer J. Condelaria, G. Angiano Joe Latham		Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	Northing (NAD83): 2103398.9 Easting (NAD83): 7616014.8 Total Depth: 307 ft bgs Borehole Diameter: 4-12 inches Depth to First Water: 23.77 ft bgs		B-2 Pilot GW Remedy Phase 1 Topock, Needles, California RC000753.0051		
Groundwat Sample ID		USCS Code	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed	
141	Topock - Alluvium Deposits	SM						
143 144 RB-2-VAS- 142-147 (<0.17 U ppt 	Topock - Alluvium Deposits	GM				9		
146	Topock - Alluvium Deposits	SM						
148 	Topock - Alluvium Deposits	SM						
	Topock - Alluvium Deposits	SM		(5.0 - 243.5') Cemex #3 MESH (8x10)	(8.5 - 297.0') 6.0" Borehole	(5.0 - 243.5') 97.7 bags	(5.0 - 243.5') 126 bags (29%) Note: Lapis Lustre Sand	
	Topock - Alluvium Deposits	GM						
157 158 	Topock - Alluvium Deposits	GM						
160 Abbreviations: U	Topock - Alluvium SCS = Unified	GC I Soil C	lassificati	on System, ft = feet, bq	s = below ground surface, a	msl = above mean s	sea level, GW = groundwater,	

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

AR	CAI	DIS Design & for natur built asset	Consultancy al and ets		Temporary E	Backfill Log	S	heet: 9 of 16
Date Started Date Compl Drilling Co.:	te Started: 06/28/2019 te Completed: 07/29/2019 Iling Co.: Cascade Iling Method: Sonic Drilling Iller Name: Tyler Alymer		Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water:	480.9 ft amsl 2103398.9 7616014.8 307 ft bgs 4-12 inches	•			
Logger:		J. Condelaria Joe Latham		igiario	_ Editor:	Grant Willford	Project Number:	RC000753.0051
	undwater mple ID	Geol	USCS	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed
		Topock - Alluvium Deposits	GM					
163							9	
165 166		Topock - Alluvium Deposits	GM					
167 168 169		Topock - Alluvium Deposits	SM					
		Topock -	SM		(5.0 - 243.5') Cemex #3 MESH (8x10)	(8.5 - 297.0') 6.0" Borehole	(5.0 - 243.5') 97.7 bags	(5.0 - 243.5') 126 bags (29%) Note: Lapis Lustre Sand
		Deposits	Sivi					
(<0.17 - 7/12	2-VAS- 2-177 7 U ppb) 2/2019 4:55	Topock - Alluvium Deposits	SM					
		Topock - Alluvium Deposits	SM					
179		Topock - Alluvium Deposits	SM					
 _ _{_180} Abbreviatior	ns: US	Topock - Alluvium Deposits CCS = Unified	SM Soil C	lassificat	ion System, ft = feet, bg	s = below ground surface, ar	msl = above mean s	ea level, GW = groundwater,

ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

PARCADIS Design & Consultancy for natural and built assets				Temporary E	Backfill Log	S	sheet: 10 of 16
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	Started: 06/28/2019 Completed: 07/29/2019 g Co.: Cascade g Method: Sonic Drilling r Name: Tyler Alymer g Asst: J. Condelaria, G. Angiano		Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	Northing (NAD83): 2103398.9 Easting (NAD83): 7616014.8 Total Depth: 307 ft bgs Borehole Diameter: 4-12 inches Depth to First Water: 23.77 ft bgs		B-2 Pilot GW Remedy Phase 1 Topock, Needles, California RC000753.0051	
Groundwat Sample II		USCS	USCS Class		Grant Willford Construction	Calculated Material Volumes	Material Volumes Installed
181	Topock - Alluvium Deposits	SM					
182 183 						9	
184 185 186	Topock - Alluvium Deposits	SW					
 187 188	Topock -						
<u></u>	Alluvium Deposits Topock -	GW-GN					
	Alluvium Deposits Topock - Alluvium Deposits	SM /		(5.0 - 243.5') Cemex #3 MESH (8x10)	(8.5 - 297.0') 6.0" Borehole	(5.0 - 243.5') 97.7 bags	(5.0 - 243.5') 126 bags (29%) Note: Lapis Lustre Sand
194 195 196	Topock - Alluvium Deposits	SW-SM					
5198 5 6 7 8199	Topock - Alluvium Deposits	SM					
200 Abbreviations: U	ISCS = Unified	ML Soil C	lassificat	ion System, ft = feet, bg	s = below ground surface,	amsl = above mean s	sea level, GW = groundwater,

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of

ARCADIS Design & Consultancy for natural and built assets					Temporary E	Backfill Log	S	Sheet: 11 of 16
Date C Drilling Drilling	g Co.: g Method: Name: g Asst:	06/28/2019 d: 07/29/2019 Cascade : Sonic Drilling Tyler Alymer J. Condelaria, G. Angiano Joe Latham		Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	Northing (NAD83): 2103398.9 Easting (NAD83): 7616014.8 Total Depth: 307 ft bgs Borehole Diameter: 4-12 inches Depth to First Water: 23.77 ft bgs		B-2 Pilot GW Remedy Phase 1 Topock, Needles, California RC000753.0051	
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
201		Topock - Alluvium Deposits	ML					
203	RB-2-VAS-	Topock - Alluvium Deposits	SM				9	
	202-207 (<0.17 U ppb)	Topock - Alluvium	SM					
_205	7/14/2019 09:20	Deposits Topock - Alluvium	ML					
	_	Deposits	1					
206 		Topock - Alluvium Deposits	SM					
208		Topock - Alluvium Deposits	SC		(5.0 - 243.5') Cemex #3 MESH (8x10)	(8.5 - 297.0') 6.0 Borehole	(5.0 - 243.5') 97.7 bags	(5.0 - 243.5') 126 bags (29%) Note: Lapis Lustre Sand
218		Topock - Alluvium Deposits	SC GC					
Abbre	viations: US	SCS = Unified	Soil C	lassificati	ion System, ft = feet, bg	s = below ground surface	e, amsl = above mean s	sea level, GW = groundwater,

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of

ARCADIS Design & Consultancy for natural and bill asserts				Temporary I	Backfill Log	S	heet: 12 of 16
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	e Completed: 07/29/2019 ng Co.: Cascade ng Method: Sonic Drilling er Name: Tyler Alymer ng Asst: J. Condelaria, G. Angiano		Total Depth: 307 ft bgs Borehole Diameter: 4-12 inches Depth to First Water: 23.77 ft bgs		Location: <u>PG&E</u>		
Groundwat Sample II		USCS	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed
	Topock - Alluvium Deposits	GC					
		Sc GC	lassificati	(5.0 - 243.5') Cemex #3 MESH (8x10)	(8.5 - 297.0') 6.0" Borehole	(5.0 - 243.5') 97.7 bags	(5.0 - 243.5') 126 bags (29%) Note: Lapis Lustre Sand

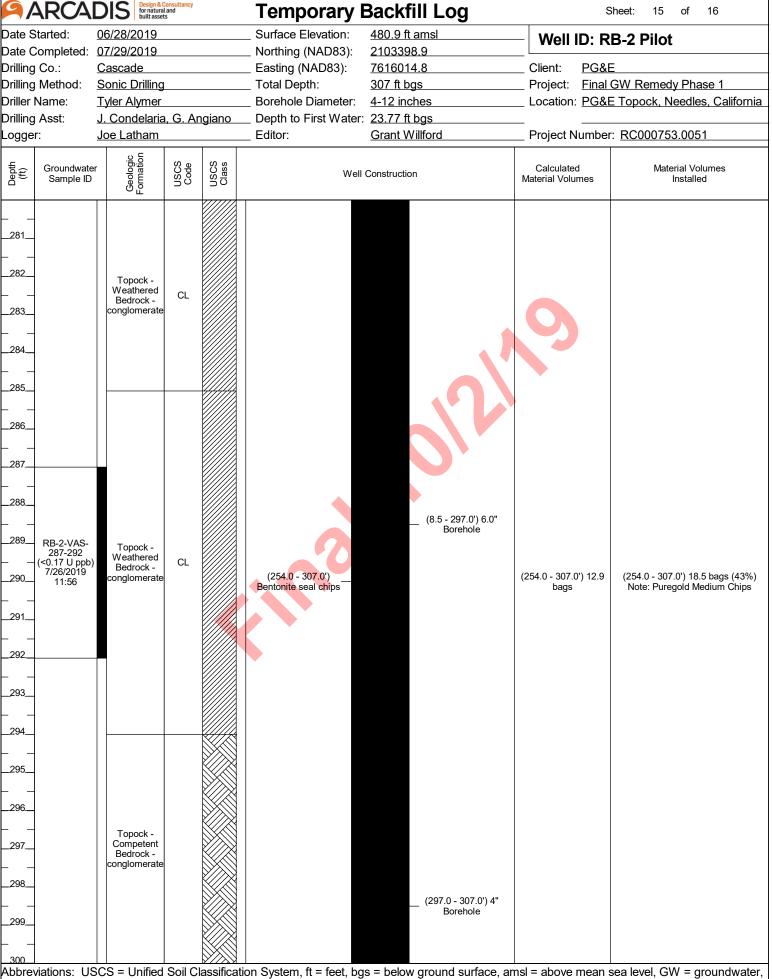
ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of

9/-	ARCA	DIS Design & for natura built asse	Consultancy al and its		Temporary Ba	ackfill Log	S	heet: 13 of 16
Date S Date C Drilling	Started: Completed: Co.: Method: Name: Asst:	06/28/2019 07/29/2019 Cascade Sonic Drilling Tyler Alymer J. Condelaria Joe Latham]	ngiano	Surface Elevation: 4 Northing (NAD83): 2 Easting (NAD83): 7 Total Depth: 3 Borehole Diameter: 4 Depth to First Water: 2	180.9 ft amsl 2103398.9 7616014.8 307 ft bgs I-12 inches	_ Location: <u>PG&E</u> 	
Depth (ft)	Groundwate Sample ID	Geologic Formation	USCS Code	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
	RB-2-VAS- 237-242 (<0.17 U ppb) 7/15/2019 13:48	Topock - Alluvium Deposits Topock - Weathered Bedrock - conglomerate	GC		(5.0 - 243.5') Cemex #3 MESH (8x10)		(5.0 - 243.5') 97.7 bags	(5.0 - 243.5') 126 bags (29%) Note: Lapis Lustre Sand
244		Topock - Weathered Bedrock - conglomerate	SC					
248		Topock - Weathered Bedrock - conglomerate	CL		(243.5 - 254.0') Cemex #1/20 MESH (20x40)	(8.5 - 297.0') 6.0" Borehole	(243.5 - 254.0') 4.1 bags	(243.5 - 254.0') 8 bags (95%) Note: Lapis Lustre Sand
255					(254.0 - 307.0') Bentonite seal chips		(254.0 - 307.0') 12.9 bags	(254.0 - 307.0') 18.5 bags (43%) Note: Puregold Medium Chips

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of

9 AF	RCAI	DIS Design & Control for natural built asset	Consultancy Land s		Temporary I	Backfill Log	S	Sheet: 14 of 16
Date Starte Date Compositing Co Drilling Me Driller Nam Drilling Ass Logger:	npleted: o.: ethod: ne: est:	06/28/2019 07/29/2019 Cascade Sonic Drilling Tyler Alymer J. Condelaria Joe Latham		ngiano	Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	480.9 ft amsl 2103398.9 7616014.8 307 ft bgs 4-12 inches 23.77 ft bgs Grant Willford	_ Location: <u>PG&E</u> _	
	roundwatei Sample ID	Geologic Formation	USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
		Topock - Weathered Bedrock - conglomerate	CL		(254.0 - 307.0') Bentonite seal chips	(8.5 - 297.0') 6.0" Borehole	(254.0 - 307.0') 12.9 bags	(254.0 - 307.0') 18.5 bags (43%) Note: Puregold Medium Chips
	B-2-VAS- 274-279 .17 U ppb) 18/2019 09:17	Topock - Weathered Bedrock - conglomerate	SC					
	U9.1 <i>1</i>	Topock - Weathered Bedrock - conglomerate	CL					
280	ions: US	Topock - Weathered Bedrock - conglomerate CCS = Unified	CL Soil Cl	lassificati	on System, ft = feet, bg	s = below ground surface, am	nsl = above mean s	sea level, GW = groundwater,

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of



ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

/-	ARCA	DIS Design & Control for natura built asset	l and ts		Temporary I	Backfill Log	S	heet: 16 of 16
Date S		06/28/2019			_ Surface Elevation:	480.9 ft amsl	Well ID: R	B-2 Pilot
Date C Drilling		07/29/2019 Cascade			Northing (NAD83):	2103398.9 7616014.8		<u> </u>
		Sonic Drilling			_ Easting (NAD83): _ Total Depth:	307 ft bgs		: GW Remedy Phase 1
Oriller N		Tyler Alymer			_ Borehole Diameter:	4-12 inches		Topock, Needles, California
Orilling	Asst:	J. Condelaria	a, G. Aı	ngiano	_ Depth to First Water:			· · · · · · · · · · · · · · · · · · ·
Logger	:	Joe Latham	<u> </u>		_ Editor:	Grant Willford	Project Number	: RC000753.0051
Depth (ft)	Groundwate Sample ID	Geologic Formation	Code	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
		Topock - Competent Bedrock - conglomerate			(254.0 - 307.0') Bentonite seal chips	(297.0 - 307.0') 4" Borehole	(254.0 - 307.0') 12.9 bags	(254.0 - 307.0') 18.5 bags (43%) Note: Puregold Medium Chips
308								
_309 _310								
_310								
_311								
312								
- – _313								
314								
- – _315								
_316								
_317								
318								
319								

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 1 of	16
Date S					Surface			Borin	g No.:	RB-2 Pilo	ot
	•	ted: <u>07/29/2</u>			Northinดู Easting		•		PG&E		
Drilling Drilling		Cascadod: Sonic I			⊏asung Total D∈	•	,			N Remedy Ph	 ase 1
Drill Ri			ongyear Tra			•		•		Fopock, Needle	
Driller							Water: 23.77 ft bgs			<u>'</u>	,
Drilling	Asst:	J. Con	<u>delaria, G. Aı</u>		Samplin	-		Project N	umber: <u>I</u>	RC000753.00	51
Logge			<u>tham</u>		Samplin	-					
Editor:		N/A			Convert	ed to V	Vell: ☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
1 - 1 - 2 				Topock - Fill	SP		(0.0 - 3.0') Topock - Fill; Poorly graded sand (S 4/3); fine grained to medium grained, subround staining	SP); brown (1 l; dry; no odd	OYR or; no	(0.0 - 7.0') Soft drilling	2 gallons used; 0 gallons recovered; 2 gallons lost
_ 4 _	36						(3.0 - 7.0') No recovery (NR)			(3.0 - 7.0') Lost recovery due to soft dredge sands	
5 5					NR		9/				
7							(7.0 - 11.0') Topock - Fill; Poorly graded sand (SP); brown	7.5YR	(7.0 - 17.0')	1 gallons used;
_ 8							4/3); fine grained to medium grained, subangul no odor; no staining	ar to subrou	nd; dry;	Heaving sands. No recovery 11 to 17 ft bgs due to loose dredge sands	0 gallons recovered; 1 gallons lost
9				Topock - Fill	SP					Sands	
10 											
	48						(11.0 - 17.0') No recovery (NR)				
13						$ \setminus /$					
14					NR						
15						/					
16 17						$/ \setminus$					
18	36			Topock - Fill	SP		(17.0 - 18.5') Topock - Fill; Poorly graded sand 4/3); fine grained to medium grained, subangul no odor; no staining	ar to subrou	nd; dry;	(17.0 - 27.0') Heaving sands. No recovery 20 to 27 ft bgs due to loose dredge sands	
19 				Topock - Fluvial Deposits	SP		(18.5 - 20.0') Topock - Fluvial Deposits; Poorly light yellowish brown (10YR 6/4); very fine grair round; trace silt; dry; no odor; no staining	ned to fine g	rained,		
			Jnified Soil C	lassification	System	n, ft = fe	eet, bgs = below ground surface, amsl	= above r	nean sea	a level, GW = (groundwater,
ppb =	parts p	er billion									

ARC	ADIS	Design & Consultancy for natural and built assets		Bo	ring Lo	g		She	eet: 2 of	16
Date Started:				Surface	Elevation:	N/A	Borin	a No.:	RB-2 Pilo	ot .
Date Comple					g (NAD83):	N/A				
Drilling Co.:	Casca			_	(NAD83):	N/A	Client:	PG&E		
Drilling Metho		•		Total De	•	307 ft bgs	Project:		W Remedy Ph	
Drill Rig Type		<u>ongyear Trac</u>				4-12 inches	Location:	PG&E 1	<u> Fopock, Needle</u>	es, California
Driller Name:	_	-		-		23.77 ft bgs			500075000	- 4
Drilling Asst:		<u>delaria, G. An</u>	•		g Method:	4 inch x 10 ft Core Barrel	Project N	umber: <u>I</u>	RC000753.00	51
Logger:	Joe La	<u>tham</u>		-	g Interval:	Continuous	-			
Editor:	N/A	1		Convert	ed to Well:	☐ Yes ⊠ No				
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
				NR	(20.0 -	27.0') No recovery (NR)			(17.0 - 27.0') Heaving sands. No recovery 20 to 27 ft bgs due to loose dredge sands	
27					ight ye	31.5') Topock - Fluvial Deposits; Poorl Blowish brown (10YR 6/4); very fine gra gular to round; trace silt; moist; no odor	ained to fine q	d (SP); rained,	(27.0 - 37.0') Heaving sands. No recovery	2 gallons used; 0 gallons recovered; 2
28	RB-2-SS-27- 31 7/15/2019 09:31		Topock - Fluvial Deposits	SP					31.5 to 37 ft bgs due to loose dredge sands	gallons lost
32					(31.5 -	37.0') No recovery (NR)	. – – – –			
48					\					
33					$ \setminus / $					
					$ \setminus / $					
34					\/					
				NR						
_35					/\					
					/ \					
36					/ \					
					/ \					
37				.L	<u> </u>					
G.F.A.		BB 6 1 11 =	Topock - Fluvial	SP-SM		38.0') Topock - Fluvial Deposits; Poorl P-SM); brown (10YR 5/3); fine grained,				
38		RB-2-VAS- 36.5-41.5	Deposits	3P-3M	iittle si	It; moist; no odor; no staining				
N	RB-2-SS-37- 42	(<0.033 U ppb)	Topock -	0.1	(38.0 -	39.0') Topock - Fluvial Deposits; Silty s 5/3); very fine grained to fine grained, r	sand (SM); br	own		
5 - 60 5 _ 39 _	42 7/15/2019 09:46	6/29/2019 11:43	Fluvial Deposits	SM	moist,	no odor; no staining				
	00. ro	1110	Topock -	0111 511	(39.0 -	42.0') Topock - Fluvial Deposits; Well d sand (GW-GM); grayish brown (10YR	graded grave	l with		
# 40			Fluvial Deposits	GW-GM	very la	rge pebbles, subangular to subround; s	some very fine	9		
U	s: USCS = L	Jnified Soil Cla	<u> </u>	n System		s = below ground surface, ams	sl = above i	mean sea	a level, GW =	groundwater,
ppb = parts p						- · · · ·			· · · · · · · · · · · · · · · · · · ·	· · · · · ·

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ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring L	og		She	eet: 3 of	16
ate Started				Surface	Elevation:	N/A	Borin	a No.:	RB-2 Pilo	ot
	eted: <u>07/29/</u> 2			-	g (NAD83)	N/A				
rilling Co.:	Casca			_	(NAD83):	N/A	Client:	PG&E		
rilling Meth		•		Total De	•	307 ft bgs	Project:		W Remedy Ph	
rill Rig Type		<u>.ongyear Trac</u>					Location:	PG&E	Topock, Needl	es, California
iller Name:		-		•		er: 23.77 ft bgs	— _{Б : (N}		D0000750 00	F 4
illing Asst:		<u>delaria, G. An</u>	•	•	g Method:	4 inch x 10 ft Core Barrel	_ Project N	umber:	RC000753.00	51
ogger:	Joe La	tham			g Interval:	Continuous				
ditor:	N/A	T		Convert	ed to Well	☐ Yes ⊠ No				1
(ft) (Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
- 4160 -	RB-2-SS-37- 42 7/15/2019 09:46		Topock - Fluvial Deposits	GW-GM	trac	ned to very coarse grained sand; little; l e coarser clast consists of metidirite an taining				
42 - 43 - 44 - 45	RB-2-SS-42- 47 7/15/2019 10:06		Topock - Fluvial Deposits	SM	yell trad	0 - 45.0') Topock - Fluvial Deposits; Silowish brown (10YR 4/4); very fine graine clay; wet; no odor; no staining	ed, round; little	silt;		
46 - 47			Topock - Fluvial Deposits	GW-GM	silt larg sar cor	0 - 48.0') Topock - Fluvial Deposits; We and sand (GW-GM); dark gray (10YR 4. e pebbles, round; little very fine grained dt; little silt; trace; trace clay; little calich sists of metidirite and quartz; wet; no or	(1); granules to to very coarse e; little coarser	very grained		
48 49 - 180	RB-2-SS-47- 50 7/15/2019 10:00				(GI)	0 - 54.0') Topock - Alluvium Deposits; \$ 1); reddish brown (5YR 5/4); small pebb bles, angular to subangular; some very se grained sand; little silt; trace clay; si posed of metadiorite; wet; no odor; no	les to very large fine grained to ome coarser cla	very		
515253	RB-2-SS-50- 55 7/15/2019 10:10		Topock - Alluvium Deposits	GM						
54					1° 12° 1					
55			Topock - Alluvium Deposits	GM	(GI)	0 - 55.0') Topock - Alluvium Deposits; \$ l); reddish brown (5YR 5/4); small pebb bles, angular to subangular; some very se grained sand; some clay; little silt; s	les to very large fine grained to ome coarser cl	e very		
- 120	RB-2-SS-55- 60 7/15/2019 10:15		Topock - Alluvium Deposits	SM	(55 (55 (SM sub	posed of metadiorite; moist; no odor; n 0 - 59.0') Topock - Alluvium Deposits; S); reddish brown (5YR 5/4); fine grainet angular; some granules to medium peb ; little coarser clasts composed of meta t composed of quartz; moist; no odor; r	o staining Silty sand with g d to medium gra bles; little silt; to diorite; little co	ravel ained, race		
.59			Topock - Alluvium Deposits	SC	(SC)	0 - 60.0') Topock - Alluvium Deposits; 0); reddish brown (5YR 5/4); fine grained ular to subangular; little granules to larg ogs = below ground surface, ar	I to coarse graing pe pebbles, ang	ned, ular to		

Date Standard: 06/28/2019 Surface Elevation: NA Boring No.: RB-2 Pilot Northing (NADRS): NA Clear Pilot Completed C	AR	CADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sh	eet: 4 of	16
Trilling Co: Cascade Santa Dulling Asset Smith Month of Sonta Dulling Month of Sonta Dulling Month of Sonta Dulling Asset Smith Month of Sonta Dulling Month of So				•				Borin	ıg No.:	: RB-2 Pilo	ot
Total Depth: 307. F.Dgs. — Project: Final GW Remedy Phase 1 Depth: 307. F.Dgs. — Project: Final GW Remedy Phase 1 Depth: 307. F.Dgs. — Project: Final GW Remedy Phase 2 Depth of First Water: 23.77 f.Dgs. — Project: Final GW Remedy Phase 1 Depth of First Water: 23.77 f.Dgs. — Project: Final GW Remedy Phase 1 Depth of First Water: 23.77 f.Dgs. — Project Number: RC000753.0051	•	<u></u>			•	,	•	_			
Differ Name: Differ Name: Depart Track Mount Borehole Diameter: 4-12 inches Location: PG&E Topock, Needles, Californ Differ Name: Depart of Project Name: Depart of Project Name: Depart of Project Name: Recognition of Project Name: Recognition Name: Depart of Name: Depart of Project Name: Recognition Name: Depart of Name: Dep	-				_			_		NA/ Daves a di / Dh	
Delith O First Water. 23.77 ft bgs. Condesing Asst. Condesing G. Gangiano. Special Condesing	•		•			•	•	-		•	
Decided in the property of t			••					_ Location.	IGAL	тороск, песа	ies, Californi
Sampling Interval: Confluences Converted to Well: Ves S No Converted to Well: No Conver			•		•		<u> </u>	- Project N	lumber:	RC000753.00	51
Silver Surgice D Groundwater See Surgice D Groundwater See Surgice D Surgice	•			•	•	•	·	- ,			
September 1 Septem		N/A			-	-	☐ Yes ⊠ No				
September 1 Septem	Depth (ft) Recovery (in)	Sieve Sample ID		Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
RB-2-SS-65 7/15/2019 10:25 RB-2-SS-70- 7/15/2019 11:38 RB-2-SS-70- 7/15/2019 12:14 RB-2-SS-70- 7/15/2019 13:15 RB-2-SS-70- 7/15/2019 14:10 RB-2-SS-70- 70- 8-70-		65 7/15/2019		Topock - Alluvium	GM	(60.0 (GM) to su sand	diorite; little granite; moist; no odor; no s i- 67.0') Topock - Alluvium Deposits; Sil ; reddish brown (5YR 5/4); granules to lab bangular; some very fine grained to very ; little silt; trace coarser clasts compose	staining ty gravel with arge pebbles, coarse grain	sand angular ed		
Topock Alluvium Deposits GC GC Gark reddish gray (SYR 4/2); granules to medium pebbles, subangular; some very fine grained to very coarse grained sand; titlled each grace clasts composed of metadiorite; moist; no door; no staining GE GE GE GE GE GE GE G	67	70 7/15/2019				(GW cobb grain coars); reddish gray / pale brown(5YR 5/2); gr les, angular to subangular; and medium ed sand, angular to subangular; trace; tr ser clasts composed of metadiorite,quar	anules to sm to very coars ace silt; som	all e e		
RB-2-VAS-75-77/15/2019 11:38 RB-2-VAS-72-77 (<0.033 U ppb) 6/30/2019 14:10 RB-2-SS-75-76 77 RB-2-SS				Alluvium	GW		, , , , , , , , , , , , , , , , , , ,				
Alluvium Deposits Alluvium Deposits Company Compa		75 7/15/2019	72-77	Topock -		87/X) (74.0	- 75.0') Topock - Alluvium Deposits; Cla	ayey gravel w	ith sand		
14:10 Topock - Alluvium Deposits RB-2-SS-75-80 778	_75_		` ppb)		GC	<i>∑</i> //√ suba	ngular; some very fine grained to very co	arse grained	sand;		
RB-2-SS-75-80 7/15/2019 12:14 Topock - Alluvium Deposits; Well graded sand with silt and gravel (SW-SM); reddish gray / pale brown(5YR 5/2); medium grained to coarse grained, angular to subround; some granules to large pebbles, angular to subangular; little silt; little coarser clasts composed of metadiorite; little granite; moist; no odor; no staining SW-SM Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwaters	76 			Alluvium	SW	Mois 175.0 17	t; no odor; no staining - 77.0') Topock - Alluvium Deposits; Wiel (SW); reddish brown / moderate brown ed to very coarse grained, angular to sulules to medium pebbles, angular; trace so composed of metadiorite; wet; no odor	ell graded san n(5YR 4/4); m bround; some silt; and coars ; no staining	nd with nedium e		
		80 7/15/2019		Alluvium	SW-SM	silt a silt a medi grand coars	nd gravel (SW-SM); reddish gray / pale lum grained to coarse grained, angular to ules to large pebbles, angular to subang ser clasts composed of metadiorite; little	orown(5YR 5/ o subround; s ular; little silt;	2); ome little		
	ou ∖bbreviatio	ns: USCS = I	Unified Soil CI	assification	System	າ, ft = feet. h	gs = below ground surface, ame	sl = above	mean se	ea level. GW =	groundwate
			Ju Ju Ju			., 1001, D	g- 25.5 ground 3dridos, diffe	42010			J. 2 2114 WAIL

AR	CADIS	for natural and built assets		Во	ring L	og		She	et: 5 of	16
Date Started					Elevation		Borin	g No.:	RB-2 Pilo	ot .
	eted: <u>07/29/</u>				(NAD83		_			_
Drilling Co.:	<u>Casca</u>			_	(NAD83):	N/A	Client:	PG&E	A/ D D -	1
Drilling Meth		•		Total De	•	307 ft bgs	•		N Remedy Ph	
Drill Rig Typ Driller Name		<u>_ongyear Trac</u>				r: <u>4-12 inches</u> ter: <u>23.77 ft bgs</u>	Location:	PG&E I	opock, Needle	es, California
Drilling Asst:	-	delaria, G. An		•	g Method	· · · · · · · · · · · · · · · · · · ·	Project N	umbor: I	RC000753.005	 5.1
Logger:	Joe La		•	-	g Interval		FIOJECTN	umber. <u>I</u>	<u>\C000733.00\</u>	<i>)</i>
Editor:	<u>300 La</u> <u>N/A</u>	iuiaiii		-	ed to Wel		-			
	14/7 (T						
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
81			Topock - Alluvium Deposits	SW-SM						
	RB-2-SS-80- 85 7/15/2019 12:21		Topock - Alluvium Deposits	ML	lo Sullitt	.5 - 86.5') Topock - Alluvium Deposits; Sili r plasticity; some granules to large pebbles bangular; little very fine grained to very coa e clay; little coarser clasts composed of m or; no staining	s, angular to ` rse grained sa	and;		
86 87	RB-2-SS-85- 90 7/15/2019				ye ar gr	5.5 - 90.0') Topock - Alluvium Deposits; Cla lowish red / light brown(5YR 5/6); granules gular to subangular; some clay; little silt; tr ined sand, subangular to subround; some nposed of metadiorite; wet; no odor; no st	to large pebb ace fine to coa coarser clast	oles, arse		
88 89 	14:00		Topock - Alluvium Deposits	GC						
85	RB-2-SS-90- 95 7/16/2019 08:04		Topock - Alluvium Deposits	GC	br su gr	1.0 - 93.0') Topock - Alluvium Deposits; Clawn (7.5YR 5/4); granules to very large pet oangular; some clay; trace very fine graine ined sand; trace silt; some coarser clasts tadiorite; trace granite; moist; no odor; no	bles, angular d to very coars composed of	to	(90.0 - 103.0') Rough drilling	
94 95 96			Topock - Alluvium Deposits	GM	br su sa	.0 - 96.5') Topock - Alluvium Deposits; Siliwn (7.5YR 5/6); granules to very large pet bangular; little silt; trace very fine grained tod; trace clay; and coarser clasts compose odor; no staining	bles, angular o very coarse	to grained		
97	RB-2-SS-95- 100 7/16/2019 08:12		Topock - Alluvium Deposits	GM	br su co m	i.5 - 99.0') Topock - Alluvium Deposits; Sili wn (7.5YR 5/6); granules to very large pet pangular; some silt; little clay; trace very fir arse grained sand; some coarser clasts co tadiorite; moist; no odor; no staining	bles, angular ne grained to v mposed of	to very		
			Topock - Alluvium Deposits	GC	ye pe	.0 - 104.0') Topock - Alluvium Deposits; C lowish red / light brown(5YR 5/6); granules obles, angular to subangular; some clay; li	to very large ttle silt; trace			

rilling Crilling Mrill Rig Triller Nariller Narilling Arogger:	mplet Co.: /letho Type: ame:	<u>Borat I</u> <u>Tyler A</u> <u>J. Con</u>	2019 de Drilling _ongyear Trad	Ek Mount E giano S	Northing Easting Fotal De Borehol Depth to Samplir Samplir Convert	e Diame	3): N/A): N/A 307 ft bgs ter: 4-12 inches 23.77 ft bgs d: 4 inch x 10 ft Core Barrel Political PG Client: PG Client: PG Client: PG Client: PG A core barrel Project Numb	RB-2 Pilo RE I GW Remedy Pha RE Topock, Needle er: RC000753.008	ase 1 es, California
rilling Crilling Mrill Rig Triller Na rilling Ariller Na rilling Arilling A	Metho Type: ame:	d: Sonic Borat L Tyler A J. Con Joe La N/A	de Drilling Longyear Trac Alymer delaria, G. An tham Groundwater	ck Mount Egiano S	Easting Fotal De Borehol Depth to Samplir Samplir Convert	(NAD83 epth: e Diame o First W ng Metho ng Interva	3): N/A Client: PGa	kE I GW Remedy Ph kE Topock, Needle	ase 1 es, California
rilling M rill Rig 1 riller Na rilling A: pgger: ditor:	Metho Type: ame: Asst:	d: Sonic Borat L Tyler A J. Con Joe La N/A Sieve	Drilling Longyear Trac Llymer delaria, G. An tham Groundwater	ck Mount E	Fotal De Borehol Depth to Samplir Samplir Convert	epth: e Diame o First W ig Metho ig Interva	307 ft bgs Project: Final ter: 4-12 inches Location: PGo ater: 23.77 ft bgs Project Numb d: 4 inch x 10 ft Core Barrel Project Numb	l GW Remedy Pha &E Topock, Needle	es, California
rill Rig 1 riller Na rilling A: ogger: ditor:	Type: ame: \sst:	Borat L Tyler A J. Con Joe La N/A	Longyear Trace Llymer delaria, G. An tham Groundwater	ck Mount E	Borehol Depth to Samplir Samplir Convert	e Diame First W Metho Ig Interva	ter: 4-12 inches Location: PGarater: 23.77 ft bgs Project Numb	kE Topock, Needle	es, California
riller Na rilling A: ogger: ditor:	ame:	Tyler A J. Con Joe La N/A Sieve	Alymer delaria, G. An tham Groundwater	giano (Depth to Samplir Samplir Convert	o First W ng Metho ng Interva	ater: 23.77 ft bgs d: 4 inch x 10 ft Core Barrel Project Numb		
rilling A: ogger: ditor:	Asst:	J. Con Joe La N/A	delaria, G. An	giano S	Samplir Samplir Sonvert	ng Methong ng Interva	d: 4 inch x 10 ft Core Barrel Project Numb	er: <u>RC000753.00</u> 5	51
ogger: ditor:		Joe La N/A Sieve	Groundwater		Samplir Convert	ig Interva	•	51. <u>110000700.</u>	<i>.</i>
ditor:	Recovery (in)	N/A Sieve	Groundwater	(Convert	•			
-	Kecovery (in)			logic					
-	(in)			logi	1				
101_				Geo	Code	USCS	Soil Description	Drilling Notes	Drilling Fluid
101_							ine grained to very coarse grained sand; some coarser clasts composed of metadiorite; moist; no odor; no staining	(90.0 - 103.0') Rough drilling	
							, , ,		
4									
102		RB-2-SS-		Topock - Alluvium	GC				
		100-105 7/16/2019		Deposits					
103		08:20							
- 1	120								
104			RB-2-VAS- 102-107				(104.0 - 107.0') Topock - Alluvium Deposits, Silty gravel (GM);	_	
4			(<0.033 U ppb)			10 PTC 3	ellowish red / light brown(5YR 5/6); granules to medium pebble	5,	
105	-		7/1/2019 15:21	Tanaak		[37]	angular to subangular; some silt; little clay; little coarser clasts composed of metadiorite; wet; no odor; no staining		
4			10.21	Topock - Alluvium	GM				
106				Deposits					
-									
107		RB-2-SS-					(107.0 - 109.0') Topock - Alluvium Deposits; Clayey gravel with		
-		105-110 7/16/2019		Topock -		018/2	and (GC); yellowish red / light brown(5YR 5/6); granules to nedium pebbles, angular to subangular; little very fine grained to		
108		08:33		Alluvium Deposits	GC	1/X/A	very coarse grained sand; little silt; little clay; trace mica; little		
4				Deposits			staining		
109							109.0 - 111.0') Topock - Alluvium Deposits; Silty gravel with san	 	
110				Topock -			GM); yellowish brown (10YR 5/6); granules to large pebbles, subangular; some silt; little very fine grained to very coarse		
110	+			Alluvium Deposits	GM		grained sand; little clay; little coarser clasts composed of metadiorite; moist; no odor; no staining	(110.0 - 125.0')	
111				, F - 410		13 P. 14	, , ,,	Kough drilling	
, I I				Topock -		THY I	111.0 - 112.0') Topock - Alluvium Deposits; Silty gravel (GM);		
112				Alluvium Deposits	GM		renowish prown (1018 5/b); granules to large pebbles, angular t subangular; little very fine grained to very coarse grained sand;	'	
1	120	RB-2-SS-		·		1421	Ittle silt; little clay; little coarser clasts composed of metadiorite; noist; no odor; no staining	/	
112		7/16/2019		Topock -			112.0 - 114.0') Topock - Alluvium Deposits; Silty gravel (GM);	_[
		00. 4 0		Alluvium Deposits	GM	leg pl	subangular; some silt; little very fine grained to very coarse		
114							composed of metadiorite; moist; no odor; no staining		
						177	114.0 - 119.5') Topock - Alluvium Deposits; Silty gravel with san	d	
115							subangular; some silt; little granules to small pebbles, subangular	ır; [
						12 P	nace cray, nace coarser clasts composed of metadionie; moist; no odor; no staining		
116									
				Topock -					
117		DD 6 25		Alluvium	GM				
] _		RB-2-SS- 115-120		Deposits		PP P			
118		7/16/2019 08:51				1113			
1	120					PAP			
119 ່						SHIC			
_						4	csm); yellowish brown (10YR 5/b); granules to large peobles, subangular; some silt; little very fine grained to very coarse grained sand; little clay; little coarser clasts composed of metadiorite; moist; no odor; no staining (111.0 - 112.0') Topock - Alluvium Deposits; Silty gravel (GM); yellowish brown (10YR 5/6); granules to large peobles, angular to subangular; little very fine grained to very coarse grained sand; tittle silt; little clay; little coarser clasts composed of metadiorite; moist; no odor; no staining (112.0 - 114.0') Topock - Alluvium Deposits; Silty gravel (GM); strong brown (7.5YR 5/6); granules to large peobles, angular to subangular; some silt; little very fine grained to very coarse grained sand; trace clay; trace caliche; some coarser clasts composed of metadiorite; moist; no odor; no staining (114.0 - 119.5') Topock - Alluvium Deposits; Silty gravel with sar GM); yellowish brown (10YR 5/6); granules to small peobles, subangular; some silt; little granules to small pebbles, subangular; some silt; little granules to small pebbles, subangular race clay; trace coarser clasts composed of metadiorite; moist; no odor; no staining		
120							[119.5]; less silt, more clay		

9/	ARC	ADIS	for natural and built assets		Во	ring Lo	g		Shee	et: 7 of	16
Date S						Elevation:	N/A	Boring	No.:	RB-2 Pilo	ot
	•	ted: <u>07/29/</u>				g (NAD83):	N/A				_
Drilling		<u>Casca</u>	ae Drilling		⊨asting Total De	(NAD83):	N/A 307 ft bgs		PG&E	V Remedy Ph	000 1
Drilling Drill Ri			Longyear Trad			•	4-12 inches	-		opock, Needle	
Driller							: 23.77 ft bgs		<u> </u>	opoon, riocan	oo, oamorria
Drilling		_	idelaria, G. Ar		-	ng Method:	4 inch x 10 ft Core Barrel	Project Nu	mber: <u>F</u>	RC000753.00	51
Logge	r:	Joe La	atham		•	ng Interval:	Continuous	-			
Editor:		N/A			Convert	ted to Well:	☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
										(110.0 - 125.0') Rough drilling	
121						ρΨ V (121 () - 127.0') Topock - Alluvium Deposits; S	Silty gravel with	sand		
						(GM);	yellowish brown (10YR 5/6); granules to gular; some silt; little granules to small	o small pebbles	s,		
122		RB-2-SS-				trace	clay; trace coarser clasts composed of i	metadiorite; mo	pist;		
400		120-125 7/16/2019					, ottaning				
123		09:00				1991					
 _124	120			Topock -		6-010					
1				Alluvium Deposits	GM	- d					
- 125							40-1				
						h p h					
_126											
		RB-2-SS-				120					
_127		125-129 7/16/2019				6 PT P (127.0	- 131.5') Topock - Alluvium Deposits; (Gravelly silt with	n sand		
		09:09				• (ML);	brown (7.5YR 5/4); low plasticity; some es, angular to subangular; little very fine	granules to sm	all		
128						coars	e grained sand; little clay; little coarser of ionite; wet; no odor; no staining	clasts compose	d of		
 129							,,,				
129				Topock - Alluvium	ML	000					
130				Deposits							
_131		RB-2-SS-									
		129-134 7/16/2019				000	5 - 137.0') Topock - Alluvium Deposits; S	Silty gravel with	cand		
_132	120	09:22				(GM);	yellowish brown (10YR 5/6); granules to gular; some silt; little very fine grained t	o very large pel			
						graine	d sand; trace clay; trace coarser clasts				
_133						le Diagrametad	liorite; moist; no odor; no staining				
134				Topock - Alluvium	GM	600					
 _135				Deposits		H H					
						5419					
136		DD 0.00				PP					
		RB-2-SS- 134-139 7/16/2019									
_137		10:36				60 1) - 142.0') Topock - Alluvium Deposits; S	Silty cand with	ravel		
						∵ ∵ ∵ (SM);	า - 142.0) 1 opock - Alluvium Deposits; ร dark yellowish brown (10YR 4/6); very fi e grained, angular to subround; some gi	ine grained to v	ery		
_138				Topock -		pebble	es, angular; some silt; some coarser cla				
	120			Alluvium Deposits	SM	metac	liorite; moist; no odor; no staining				
_139		RB-2-SS-		Dehosita							
 140		139-144 7/16/2019									
	viations	s: USCS = l	Jnified Soil Cl	assification	Systen	n, ft = feet, bo	gs = below ground surface, ams	sl = above m	ean sea	level, GW = Q	groundwater
ppb =	parts p	er billion									

9/	ARC	ADIS	for natural and built assets		Во	ring Lo	g		Sh	eet: 8 of	16
Date S	Started	06/28/2	2019		Surface	Elevation:	N/A	Borin	a No.:	RB-2 Pilo	ot
	•	ted: <u>07/29/2</u>	2019			g (NAD83):	N/A			145 2 1 114	<u></u>
Drilling		<u>Cascac</u>			-	(NAD83):	N/A	Client:	PG&E		
Drilling			•		Total De	•	307 ft bgs	Project:		W Remedy Ph	
Drill Ri			ongyear Trad	ck Mount			4-12 inches	Location:	PG&E	Topock, Needl	es, California
Driller Drilling		_	iymei delaria, G. Ar	naiana	•	o First Water. ng Method:	23.77 ft bgs 4 inch x 10 ft Core Barrel	Project N		RC000753.00	 51
Logge			tham	•	•	ng Interval:	Continuous	Tiojectiv	idilibei.	10000733.00	<u> </u>
Editor:		<u>N/A</u>	aram		•	ted to Well:	Yes × No	•			
		<u>- </u>		0 5							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
		10:45									
141				Topock - Alluvium	SM						
		DD 0 00		Deposits	0						
142		RB-2-SS- 139-144					445 50 7	S:11			
		7/16/2019 10:45				(GM);	- 145.5') Topock - Alluvium Deposits; S strong brown (7.5YR 5/6); granules to v	ery large pet	bles,		
143							r; little silt; trace; some coarser clasts of orite; moist; no odor; no staining	composed of			
	120			Topock -	-						
144			RB-2-VAS- 142-147	Alluvium Deposits	GM						
-			(<0.17 U ppb)								
145			7/9/2019 13:20				1601				
						(145.5	- 147.0') Topock - Alluvium Deposits; S	Silty sand wit	h gravel		
146		RB-2-SS-		Topock - Alluvium	SM	graine	strong brown (7.5YR 5/6); very fine grain d, subangular to subround; some granu	ıles to large p	oarse bebbles,		
447		144-149 7/16/2019		Deposits		angula metad	r to subangular; little coarser clasts con orite; trace granite; moist; no odor; no	mposed of staining			
147		10:56				(147.0	- 149.0') Topock - Alluvium Deposits; S	Silty sand wit			
 148				Topock -		to coa	eddish brown / moderate brown(5YR 4 se grained, subangular to subround; lit	tle granules t			
140				Alluvium Deposits	SM		m pebbles, angular; little silt; trace coar sed of metadiorite; little granite; wet; no		aining		
149											
							- 153.0') Topock - Alluvium Deposits; S /ellowish brown (10YR 5/6); medium gr				
150						graine	d, angular to subround; little granules to gular; little silt; trace coarser clasts com	o very large p			
							orite; trace granite; wet; no odor; no sta				
151		RB-2-SS-		Topock - Alluvium	SM						
		149-154 7/16/2019		Deposits							
152	120	11:06									
-											
153						(153.0	- 156.5') Topock - Alluvium Deposits; S	Silty gravel wi	th sand		
-						(GM);	strong brown (7.5YR 5/6); granules to v r to subangular; some medium to very	ery large pel	bles,		
154						suban	gular to subround; little silt; trace coarse adiorite; wet; no odor; no staining				
455				Topock - Alluvium	GM	1: PJd					
155		RB-2-SS- 154-157		Deposits							
156		7/16/2019 11:14				6 610					
130		11.14				199					
157							- 159.5') Topock - Alluvium Deposits; S brown (7.5YR 5/6); granules to very lar				
						to sub	angular; some silt; little very fine to very subangular to subround; trace clay; son	coarse grain	ned		
158		DD 4 25		Topock - Alluvium	GM		subangular to subround, trace clay, son sed of metadiorite; wet; no odor; no sta		usis		
	120	RB-2-SS- 157-162		Deposits	JIVI						
159	120	7/16/2019 11:20				127					
				Topody		250 450 5	- 160.0') Topock - Alluvium Deposits; (Clayer === -	(CC):		
160	.: _ 4°	. 11000	I:E10 '10'	Topock - Alluvium	GC	YNXØ/] `			` /	- 11 0\4/	
Appre	viations	s: USUS = L	mittea Soll Cl	assiticatioi	n Systen	ı, π = reet, bg	s = below ground surface, ams	si = apove	mean se	ea ievei, GVV =	groundwater

y		ADIS	for natural and built assets		Вυ	ring	-09			eet: 9 of	16
	tarted:					Elevati		Borir	g No.:	RB-2 Pilo	ot
	•	ted: <u>07/29/</u>				g (NAD		_		1	
rilling		<u>Casca</u>				(NAD8		Client:	PG&E	N Remedy Ph	1
_	Metho Type		Drilling Longyear Trad			-	307 ft bgs er: 4-12 inches	Project:		rv Remedy Ph Fopock, Needle	
	vame:	Tyler A	•				ater: 23.77 ft bgs	_ Location.	I Cal	гороск, пессик	cs, Camorri
	Asst:	-	delaria, G. An		-	ng Meth	_	- _ Project N	lumber:	RC000753.00	51
ogger			atham	•	•	ng Interv		-			
ditor:		N/A		(Conver	ted to W	ell: ☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic	USCS	USCS	Soil Description			Drilling Notes	Drilling Flu
4		RB-2-SS-		Deposits	1		ellowish brown (10YR 5/6); granules to very ngular to subangular; some clay; little very f	ne to very co	arse		
161_		157-162 7/16/2019					rained sand, subangular to subround; little s lasts composed of metadiorite; moist; no od	or; no stainin	g		
4		11:20		Topock - Alluvium	GM		160.0 - 163.0') Topock - Alluvium Deposits; trong brown (7.5YR 5/6); granules to very la	Silty gravel (C	GM); angular		
162	-			Deposits			o subangular; some silt; little very fine to very and, subangular to subround; trace clay; so	coarse grain	neď		
4						[BH	omposed of metadiorite; wet; no odor; no st rayish green color change from 160.5' to 16	aining; 0.3' le			
63		RB-2-SS-				10 P	163.0 - 167.0') Topock - Alluvium Deposits;		SM);		
+	120	162-165 7/16/2019				600	eddish yellow (7.5YR 6/8); granules to very l ngular to subangular; and silt; little very fine	arge pebbles			
64		11:58				66	rained sand, subangular to subround; trace lasts composed of metadiorite; moist; no od	clay; some co	oarser		
				Topock -		100	lasts composed of metadione, moist, no oc	or, no stairiir	9		
65	-			Alluvium Deposits	GM	H	190				
_				Вороско		100					
66_						13 H					
67						600					
67		RB-2-SS- 165-170					167.0 - 171.0') Topock - Alluvium Deposits;			(167.0 - 177.0')	
- 88		7/16/2019 12:07					ed <mark>dish b</mark> rown / moderate brown(5YR 4/4); vone grained, subangular to subround; and sil	t; little granul	es to	Rough drilling	
JU_		12.01					nedium pebbles, subangular; trace clay; little omposed of metadiorite; wet; no odor; no st		SIS		
- 69_				Topock -							
Ju				Alluvium Deposits	SM						
70											
							170'); moist; 0.2' lense of color change - gra o 170.2' bgs	yish green fro	om 170		
71		RB-2-SS- 170-172					•				
		7/16/2019 12:18		Topock -			171.0 - 172.5') Topock - Alluvium Deposits; SM); reddish brown / moderate brown(5YR 4	1/4); very fine	grained		
72_	120			Alluvium Deposits	SM		o coarse grained, angular; little granules to r ngular; little silt; little coarser clasts compos	nedium pebb	les,		
				2 3000110			vet; no odor; no staining				
73							172.5 - 177.0') Topock - Alluvium Deposits; eddish brown / moderate brown(5YR 4/4); v	ery fine graine	ed to		
_							ne grained, subangular to subround; and sil nedium pebbles, subangular; trace clay; little	coarser clas	its		
74		RB-2-SS-	RB-2-VAS- 172-177				omposed of metadiorite; moist; no odor; no rayish green color change from 175.5 to 17		lense of		
4		172-177 7/16/2019	(<0.17 U	Topock -	0.4			-			
75		12:29	ppb) 7/12/2019 14:55	Alluvium Deposits	SM						
4											
76											
┤											
77				Topock -			177.0 - 178.0') Topock - Alluvium Deposits;				
				Alluvium Deposits	SM		SM); reddish brown (5YR 5/4); very fine grain rained, angular; and silt; little granules to market.	edium pebble	s,		
78		RB-2-SS-		Topock -			ngular to subangular; trace clay; little coarsonetadiorite; wet; no odor; no staining				
	120	177-180 7/17/2019		Alluvium Deposits	SM		178.0 - 179.0') Topock - Alluvium Deposits;	Silty sand wit	h gravel		
79		07:59		Topock -			SM); reddish brown / moderate brown(5YR 4 o coarse grained, angular; little granules to r	nedium pebb	les,		
I				Alluvium	SM	1:4:4:4	ngular; little silt; little coarser clasts compos	ed of metadi	orite;		
80				Deposits			et; no odor; no staining				

LOG PG&E TOPOCK CIUSERSISMICGRANEIDOCUMENTSIPG&E TOPOCKIDRAFT BORING LOGGIGINT FILESIO8 08 :1917OPOCK DATABASE FOR PLOGGP J TOPOCK DATA TEMPLATE FOR PLOGGDT 09109:191807

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 10 of	16
	Started				Surface			Borin	a No.:	RB-2 Pilo	ot
l l		ted: <u>07/29/</u>			Northing		•	_			
Drilling		<u>Casca</u>			Easting	•	•	Client:	PG&E		
_	Metho		Drilling Trace		Total De	•	307 ft bgs	Project:		W Remedy Ph	
	ig Type Name:		Longyear Trac				eter: <u>4-12 inches</u> Vater: 23.77 ft bgs	_ Location.	PG&E	Topock, Needl	es, Calliornia
Drilling		-	idelaria, G. An		Samplin			- Proiect N	umber:	RC000753.00	 51
Logge		Joe La		•	Samplin	•		_ 1 10,00011	dilibor.	110000700.00	<i>5</i> 1
Editor		N/A			Convert	-		_			
	>			.º 5							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description	C:lt (CA	Α).	Drilling Notes	Drilling Fluid
 181		RB-2-SS- 180-182 7/17/2019		Topock - Alluvium Deposits	SM		(179.0 - 181.0") Topock - Alluvium Deposits; v reddish brown / moderate brown(5YR 4/4); fine grained, subangular to subround; and silt medium pebbles, subangular; trace clay; little	ery fine graine t; little granule e coarser clas	ed to es to		
		08:08					composed of metadiorite; wet; no odor; no sta (181.0 - 188.0') Topock - Alluvium Deposits; N		and		
182							with gravel (SW); strong brown (7.5YR 5/6); very coarse grained, angular; some granules	ery fine grain	ed to		
							angular; trace silt; some coarser clasts comp	osed of meta	diorite;		
183							wet; no odor; no staining				
	120										
184		RB-2-SS-		Topock -							
		182-187 7/17/2019		Alluvium	SW	0					
185		08:17		Deposits			1601				
186											
187											
 188											
100		RB-2-SS- 187-190		Topock -			(188.0 - 189.0') Topock - Alluvium Deposits; With silt and sand (GW-GM); strong brown (7				
 189		7/17/2019 08:25		Alluvium Deposits	GW-GM		to very large pebbles, angular; and very fine to	o very coarse	grained		
				Topock - Alluvium	SM		sand, angular; trace clay; little coarser clasts metadiorite; trace coarser clast composed of				
190				Deposits		0	no staining (189.0 - 189.5') Topock - Alluvium Deposits;	Silty sand with	n gravel		
L -				Topock -		Pala	(SM); strong brown (7.5YR 5/6); very fine graingrained, angular; some granules to large peb	ined to very co bles, angular	oarse some		
191				Alluvium Deposits	GM		silt; trace clay; little coarser clasts composed coarser clast composed of quartz; wet; no od	of metadiorit	e: trace		
├ -				2 5 5 5 5 1 5			(189.5 - 192.0') Topock - Alluvium Deposits; (GM); strong brown (7.5YR 5/6); granules to	Silty gravel wi	th sand		
192	120	RB-2-SS-				b Y D	angular; some very fine to very coarse graine	d sand, angul	ar; little		
ļ -		190-195 7/17/2019					silt; trace clay; little coarser clasts composed coarser clast composed of quartz; wet; no od	or; no stainin	g		
193		08:33					(192.0 - 197.0') Topock - Alluvium Deposits; with silt and gravel (SW-SM); strong brown (7	7.5YR 5/6): ve	rv fine		
ļ -							grained to very coarse grained, angular; some large pebbles, angular; little silt; trace clay; lit	e granules to	verv		
194				Topock -			composed of metadiorite; trace coarser clast wet; no odor; green staining	composed of	quartz;		
				Alluvium	SW-SM		, 555, 3.55 5549				
195				Deposits							
<u> </u>											
196		RB-2-SS-									
L _		195-198 7/17/2019									
197		08:40					(197.0 - 199.5') Topock - Alluvium Deposits; \$				
							strong brown (7.5YR 5/6); very fine grained to angular; and silt; little granules to small pebb	les, angular; t	race		
198				Topock - Alluvium	SM		clay; trace coarser clasts composed of metacodor; no staining				
100	120	RB-2-SS- 198-203		Deposits			, 3				
199		7/17/2019									
185186187188189190191192193194195196197198199199		09:03			ML	۲۳	(199.5 - 202.0') Topock - Alluvium Deposits; (Gravelly silt w	rith sand		
Abbre	viations	s: USCS = I		assification	System	ft = fe	et, bgs = below ground surface, ams	sl = above	mean se	a level, GW =	groundwater,

Sample ID Sample		4K(ADIS	for natural and built assets		Во	ring Lo	g		She	et: 11 of	16
Drilling Co. Cascade Easting (NAD83): N/A Client PG&E Easting (NAD									Borin	ıq No.:	RB-2 Pilo	ot
Drilling Method: Drilling Type: Drilling Asst: Logger: Joe Latham Sampling Method: Joe Latham Sample ID Sampling Method: Joe Latham Sampling Method: Joe Latham Sample ID Sampling Method: Joe Latham Sampling Method: Joe Latham Sample ID Sampling Method: Joe Latham Sampling Method: Joe Latham Sample ID Sampling Method: Joe Latham Sampling Method: Joe L			<u> </u>				- , ,		_			
Drilling Name: Drilling Assirt Congress Track Mount Tyler Abriner Tyler Abriner Depth to First Water: 23.77 ft bgs J. Condelating. S. Angiano. Sampling Method: J. Condelating. S. Angiano. Joe Latham Depth Sampling Interval: Converted to Well: Converted to Well: Ves No Soil Description Soil Description Soil Description Drilling Notes	_					_					A/ D	4
Driller Name: Drilling Asst: Logger: Editor: N/A Sample D Groundwater Sample D Groun	_				ak Maunt		•	•	•		•	
Drilling Asst: Logger: J_Condelaria, G, Angiano Sampling Interval: Sampling Interval: Sampling Interval: Sampling Interval: Converted to Well: Sample ID Sam					<u> JK IVIOUITL</u>				_ Localion.	FG&E I	ороск, мееці	es, California
Sampling Interval: Continuous Property			_	-	ngiano	•		_	- Proiect N	lumber: F	RC000753.00	 51
Editor: N/A Converted to Well:					•	•	•		,			•
Topock-Alluvium Deposits M.L. Control Co			N/A			-	-	☐ Yes ⊠ No				
Topock-Alluvium Deposits M.L. Control Co	Depth (ft)	Recovery (in)			Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
Topock-Alluvium Deposits Sity sand (SM); strong brown (7 SYR 5/6), very fine grained to medium grained, angular, trace day, trace coarser clasts composed of medialorite; wet, no odor; no staining (207.5 YS 76), very fine grained to medium grained, angular, trace day, trace coarser clasts composed of medialorite; wet, no odor; no staining green staining at 202.5 bgs. RB-2-SS-203-207 (17/2019 09:09 09:20 0			198-203 7/17/2019		Topock - Alluvium		small angul	pebbles, angular; little very fine to medi ar; little clay; little coarser clasts compo	um grained s	and,		
202-207 (<0.17 U ppb) 7/14/2019 (09:20 Ppb)		120	03.03		Alluvium	SM	strongangul	g brown (7.5YR 5/6); very fine grained <mark>to</mark> ar; and silt; little small to very large p <mark>eb</mark> l trace coarser clasts composed <mark>of</mark> met <mark>ac</mark>	medium gra bles, angular;	ined, trace		
Alluvium Deposits Topock Alluvium Topock Alluvium Topock Alluvium T	_204_			202-207		SM						
Alluvium Deposits Topock-Alluvium Deposits SM Deposits RB-2-SS- 207-209 7/17/2019 09:15 RB-2-SS- 209-214 7/17/2019 120 RB-2-SS- 209-214 7/17/2019 09:22 Topock-Alluvium Deposits Topock-Alluvium Deposits Topock-Alluvium Deposits Topock-Alluvium Deposits Topock-Alluvium Deposits Topock-Alluvium Deposits; Gravelly silt with sand (ML); strong brown (7.5 % 78.6 %); low plasticity, some small to very large pebbles, angular; trace dangular, intelled calls of medicing moist, no oder, no staining (205.0 - 207.5) Topock-Alluvium Deposits; Clayey sand with gravel (SC); brown (7.5 % R.4/4); very fine grained to very coarse grained angular obstround; some small to very large pebbles, angular; ittle clay, trace coarse clasts composed of medicinite; moist, no odor; no staining RB-2-SS- 209-214 7/17/2019 09:22 Topock-Alluvium Deposits Topock-Alluvium Deposits; Clayey sand with gravel (SC); brown (7.5 % R.4/4); very fine grained to very coarse grained angular in stude of medicinite; moist, no odor; no staining RB-2-SS- 209-214 7/17/2019 09:22 Topock-Alluvium Deposits SC Deposits Topock-Alluvium Deposits; Clayey sand with gravel (SC); brown (7.5 % R.4/4); very fine grained to very coarse grained angular; little clay, trace coarse class composed of medicinite; wet, no odor, no staining Topock-Alluvium beposits; little coarser class composed of medicinite; wet, no odor, no staining Topock-Alluvium beposits; little clay, trace coarse grained to very large pebbles, angular, ittle clay, trace coarse grained to very coarse grained to very coarse grained to very large pebbles, angular, little clay, trace coarse grained to very coarse grained to very coarse grained to very coarse grained to very large pebbles, angular, little clay, title coarser class composed of medicinite; wet, no odor, no staining Topock-Alluvium beposits; little clay, trace coarse grained to very coarse gra		-			Deposits	-		granules to small pebbles, angular; little	silt; trace cla	y; trace		
Deposits Deposits Topock Alluvium Deposits Topock Alluvium Deposits M.D. strong brown (7.5 YR 56); low plasticity, some small to very large pebbles, angular, ittle very fine to medium grained sand, angular, ittle caps related to medium grained, some small to very large pebbles, angular; trace very fine properties and the properties of the prop	_205_	-	7/17/2019	09:20	Alluvium		· · · · · · · · · · · · · · ·					
Alluvium Deposits SM wet, no odor, no staining (205.0 - 207.5') Topock - Alluvium Deposits; Silty sand (SM); strong brown (7.5YR 5/6); very fine grained to medium grained, angular, rate or law, race coarser clasts composed of metadiorite; wet, no odor, no staining RB-2-SS-207-209 7/1/17/2019 209. 210. 211. RB-2-SS-209-214 7/17/2019 212. 213. 214. 214. 215. Alluvium Deposits SM wet, no odor, no staining (205.0 - 207.5') Topock - Alluvium Deposits; Silty sand (SM); strong brown (7.5YR 5/6); very fine grained to medium grained, angular, trace clay, trace saits composed of metadiorite; moist; no odor, no staining (207.0') Switched driller T. Alymer with D. OMara (207.0') Switched T. Alymer wit	206		09.09		` '		: : (ML);	strong brown (7.5YR 5/6); low plasticity	; some small	to very		
207. 208. RB-2-SS-207-209 7/17/2019 09:15 210					Alluvium	SM	i∷i∵ii angul	ar; little clay; little coarser clasts compo				
RB-2-SS- 208					Deposits		(205	0 - 207.5') Topock - Alluvium Deposits;				
			207-209 7/17/2019				angul clay; odor; (207 grave grain; angul	ar, and silt; little small to very large peblitrace coarser clasts composed of metacino staining 5 - 217.0') Topock - Alluvium Deposits; (I (SC); brown (7.5YR 4/4); very fine graied, angular to subround; some small to ar; little clay; trace silt; little coarser class	bles, angular; diorite; moist; Clayey sand very covery large pel	trace no with parse obles,	Switched driller T. Alymer with	
	 _211 _212 _213	- 120	209-214 7/17/2019		Alluvium	sc	meta	diorite; moist; no odor; no staining				
RB-2-SS- 214-217 7/17/2019 09:28			214-217 7/17/2019									
218 RB-2-SS-217-222 7/17/2019 09:35 RB-2-SS-219 RB-2-SS-217-222 7/17/2019 09:35 RB-2-SS-217-222 7/17/2019 09:35 RB-2-SS-217-222 7/17/2019 09:35		180	217-222 7/17/2019		Alluvium		(7.5R clay, comp	4/4); medium grained to very coarse grarace granules, angular; trace silt; trace osed of metadiorite; wet; no odor; no state	ainéd, angulà coarser clast aining	r; some		
GC (219.5 - 222.0') Topock - Alluvium Deposits; Clayey gravel with Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundw							YAXØ/					<u> </u>

7/	4K(ADIS	for natural and built assets		Во	ring	Log		She	eet: 12 of	16
	Started				Surface			Borin	g No.:	RB-2 Pilo	ot
	•	ted: <u>07/29</u>			Northin		•				_
-	Co.:	<u>Casca</u>			Easting	•	•	Client:	PG&E	A/ Damadı / Dh	1
-	Metho		<u>Drilling</u> <u>Longyear Tra</u>		Total D	-	307 ft bgs neter: 4-12 inches	-		W Remedy Ph Γοροςk, Needl	
	Name:		Alymer				Water: 23.77 ft bgs	Location.	1 GaL	гороск, песси	es, Callioni
	Asst:		ndelaria, G. Ar		Sampli		_	Project N	umber:	RC000753.00	51
gge		Joe La	atham	-	Sampli	-		•			
ditor:		N/A			Conver	ted to \	Vell: ☐ Yes ⊠ No				
(£)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description			Drilling Notes	Drilling Flui
- !21_		RB-2-SS- 217-222 7/17/2019		Topock - Alluvium	GC		sand (GC); strong brown (7.5YR 5/6); granule pebbles, angular; some fine to very coarse gra to subround; little clay; some coarser clasts co metadiorite; trace granite; wet; no odor; no sta	ained sand, a omposed of			
-		09:35		Deposits							
22_							(222.0 - 237.0') Topock - Alluvium Deposits; C	layey sand v	vith		
-							gravel (SC); brown (7.5YR 5/4); very fine grain grained, angular to subround; some small to v	ed to very co	arse		
23_							angular; little clay; trace silt; little coarser clast metadiorite; moist; no odor; no stain <mark>ing;</mark> green	ts composed	of		
- 24							234' bgs		-		
		RB-2-SS- 222-227									
25_		7/17/2019 09:40					10-1				
_											
26	180										
-							V				
27										(227.0 - 244.0')	1
- 20										Rough drilling	
28_											
- 29_											
		DD 0 00		Topock - Alluvium	SC						
30		RB-2-SS- 227-233 7/17/2019		Deposits	100						
_		09:45									
31											
-											
32_											
- 33											
34		RB-2-SS- 233-235 7/17/2019									
_	60	7/17/2019 09:50									
35_											
-											
36_											
_											
37		RB-2-SS- 235-240					(237.0 - 241.0') Topock - Alluvium Deposits; (Clayey gravel	with	(237.0') Switched driller	
- 38		7/17/2019 10:30	RB-2-VAS-				sand (GC); reddish brown / moderate brown(5 small pebbles, angular; some fine to coarse g	rained sand,		D. OMara with	
JU	0.4	10.50	237-242 (<0.17 U	Topock - Alluvium	GC		subangular to subround; some clay; trace silt; composed of metadiorite; moist; no odor; no s		clasts	S. Vasquez	
- 39_	84		ppb) 7/15/2019	Deposits	GC						
_			13:38								
40_								-			
			Unified Soil C	lassificatior	n Syster	n, ft = f	eet, bgs = below ground surface, ams	I = above	mean se	a level, GW =	groundwat
		er billion	30110		_ , 5.01	., 1	, .g- 2230 g. cana canace, ame				J 331141

SA	RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 13 of	16
Date Sta		06/28/				Elevat	•	Borin	a No.:	RB-2 Pilo	ot
	•	ed: <u>07/29/</u>				g (NAD	•				<u>-</u>
Orilling (Casca			_	(NAD8	•		PG&E		
Orilling I			•		Total De	•	307 ft bgs	-		W Remedy Pha	
Orill Rig Oriller N		<u>Borat i</u> <u>Tyler A</u>	<u>_ongyear Tra</u>				eter: <u>4-12 inches</u> Vater: 23.77 ft bgs	Location:	PG&E	Topock, Needle	es, Calliornia
Orilling /		-	delaria, G. Ar		•	ng Meth	<u> </u>	Project N	ımher	RC000753.005	 51
.ogger:		-	itham		•	ng Inter		Trojectiv	arribor.	110000100.000	71
Editor:		<u>N/A</u>	tt rom		•	ted to V		•			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
			RB-2-VAS- 237-242	Topock - Alluvium	GC					(227.0 - 244.0') Rough drilling	
241	84	RB-2-SS- 240-245 7/17/2019 10:35	(<0.17 U ppb) 7/15/2019 13:38	Topock - Weathered Bedrock - conglomerate	CL	15	(241.0 - 244.0') Topock - Weathered Bedrock Sandy lean clay with gravel (CL); reddish brov plasticity; some granules to very large pebbles to coarse grained sand, subangular to subrou coarser clasts composed of metadiorite; dry;	vn (5YR 5/4); s, angular; litt ind; little silt; li	low e fine ttle		
244							(244.0 - 247.0') Topock - Weathered Bedrock	- conglomera	ite;		
245_	36			Topock - Weathered Bedrock -	SC		Clayey sand with gravel (SC); yellowish red / I very fine grained to medium grained, subangu some granules to large pebbles, angular to su trace silt; little coarser clasts composed of me odor; no staining	ight brown(5\ ılar to subrouı ıbangular; littl	/R 5/6); nd; e clay;		
246 - 247_				conglomerate	ż		0)				
248		RB-2-SS- 245-250 7/17/2019 10:40		Topock - Weathered Bedrock - conglomerate	CL		(247.0 - 252.0') Topock - Weathered Bedrock Gravelly lean clay with sand (CL); reddish bro plasticity; some granules to medium pebbles, subangular; little very fine to fine grained sanc subround; trace silt; little coarser clasts comp trace coarser clasts composed of granite; mo staining	wn (2.5YR 4/- angular to d, subangular osed of meta	to diorite;		
	84										
252_										(251.0 - 254.0') Rough drilling	
253_		RB-2-SS- 250-255 7/17/2019 10:45					(252.0 - 274.0') dark reddish brown (2.5YR 3/4 moisture content, white mottling	4); decrease i	n		
254							(254') reddish brown (2.5YR 4/4); increase in	moisture con	tent		
255_											
256_											
_257	84	RB-2-SS- 255-260 7/17/2019 10:50					(257') dark reddish brown (2.5YR 3/4); decreacontent	ase in moistur	e		
259_											
260											
hhravi	ations	· USCS = I	Jnified Soil C	assification	Systen	n. ft = fe	et, bgs = below ground surface, ams	sl = above r	nean se	a level. GW = c	roundwater

	KC	ADIS	for natural and built assets		Bo	rıng	Log		She	et: 14 of	16
Date S					Surface			Borin	g No.:	RB-2 Pilo	ot
		ted: <u>07/29/</u>			Northino 	- '	•		_		_
rilling		<u>Casca</u>			Easting	•		Client:	PG&E	N Domody Dh	1
-	Metho Type		בייוווות <u>Longyear Tra</u>		Fotal De Borehol	•	307 ft bgs eter: 4-12 inches			N Remedy Phopock, Needle	
_	lame:	Tyler A					Vater: 23.77 ft bgs	Location.	· Oul	ороок, поссы	co, Camorri
rilling			delaria, G. Aı		Samplin		_	Project N	umber: <u>I</u>	RC000753.00	51
ogger	:	Joe La	atham		Samplin						
ditor:		N/A		(Convert	ed to V	′ell: ☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Flui
261	84										
262_		BB-3 66									
4		RB-2-SS- 250-265 7/17/2019									
263		10:55									
264	72						(264') reddish brown / moderate brown(5YR 4	/4); decrease	in		
65							moisture content				
55_	Ī						190'			(265.0 - 267.0') Rough drilling	
66										Trough unling	
37		RB-2-SS-									
4		265-270 7/17/2019									
68_		11:00									
4											
69										(269.0 - 274.0')	_
70										Rough drilling	
,,,	84										
71_	04										
4											
72_		RB-2-SS-									
4		270-275 7/17/2019									
73		11:00									
₇₄ -											
274							(274.0 - 277.0') Topock - Weathered Bedrock	- conglomera	ite;		1
75				l _			Clayey sand with gravel (SC); brown (7.5YR 4 to very coarse grained, subangular to subrour	d; some med	ium to		
_	Ī			Topock - Weathered	sc		very large pebbles, angular; little clay; trace; to coarser clasts composed of metadiorite; wet;	no odor; no s	taining		
76			RB-2-VAS-	Bedrock - conglomerate							
4			274-279 (<0.17 U ppb)								
77	108	RB-2-SS-	7/18/2019 09:17				(277.0 - 279.0') Topock - Weathered Bedrock	- conglomers	ote:		
4		275-280 7/17/2019	09.17	Topock -			Sandy lean clay with gravel (CL); reddish brow brown(5YR 4/4); low plasticity; some very fine	vn / moderate			
78		12:49		Weathered Bedrock -	CL		sand, subangular to subround; little granules in pebbles, subangular; trace silt; little coarser c	to very large			
-				conglomerate			metadiorite; moist; no odor; no staining	.asto compos	54 01		
79				Topock -			(279.0 - 285.0') Topock - Weathered Bedrock	- conglomera	ite;		
+				Weathered Bedrock -	CL		Gravelly lean clay with sand (CL); reddish bro brown(5YR 4/4); low plasticity; some granules	wn / moderat s to very large	9		
280 L				-		11/////		l = above r			

9/	ARC	ADIS	for natural and built assets		Во	ring	Log		She	et: 15 of	16
	Started				Surface			Borin	g No.:	RB-2 Pilo	ot .
	•	ted: <u>07/29</u>			Northin	- '	•	_			_
Orilling		Casca			Easting	•	•	Client:	PG&E		
	Metho		<u>Drilling</u> <u>Longyear Tra</u>		Total De	•	307 ft bgs	Project:		N Remedy Ph	
	g Type Name:		Longyear fra Alymer				neter: <u>4-12 inches</u> Water: <u>23.77 ft bgs</u>	Location.	PG&E I	гороск, мееан	es, Calliorni
	Asst:	-	ndelaria, G. Ar		Samplir		-	Proiect N	umber l	RC000753.00	 51
ogge				-	Samplir	-		. 1 10,00011	u	10000100.00	0 1
ditor:		N/A			Convert	•		-			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
- 281		RB-2-SS-		conglomerate			pebbles, angular to subangular; little very fine sand, subangular to subround; trace; trace sil composed of metadiorite; trace mica; moist; i some white and dark brown mottling	t; little coarse	r clasts		
- 282_	108	280-283 7/17/2019 12:56		Topock - Weathered	01						
- 283 -				Bedrock - conglomerate	CL •					(283.0 - 293.0') Rough drilling	
284 <u> </u>											
285_		RB-2-SS-					(285.0 - 294.0') Topock - Weathered Bedrock	- conglomer	ate.		
_		283-288 7/18/2019					Gravelly lean clay with sand (CL); reddish bro	wn / moderat	e l		
286		11:15					brown(5YR 4/4); low plasticity; some granules pebbles, angular to subround; some fine to m subangular to subround; trace silt; little coars	edium graine	d sand,		
_							of metadiorite; trace granite; moist; no odor; r		posed		
287											
-											
288_	120										
- 289			RB-2-VAS-								
			287-292 (<0.17 U	Topock - Weathered	CL						
			ppb) 7/26/2019	Bedrock - conglomerate							
_		RB-2-SS- 288-293	11:56								
291		7/18/2019 11:20									
_											
292_											
_											
293_										(293.0 - 307.0')	_
_										10' of slough in core barrel.	
294				 			(294.0 - 303.0') Topock - Competent Bedrock	- conglomera		From 303 to 307 very rough	
-							reddish brown / moderate brown(5YR 4/4); lit medium pebbles, angular to subangular, little	tle granules to very fine to n	o	drilling.	
295_							grained sand; trace silt; little coarser clasts cometadiorite; dry to moist; no odor; no staining	omposed of ; friable			
- 296							conglomerate, highly pulverized and fractured	i			
<u> </u>	400										
- 297	168			Topock - Competent							
				Bedrock - conglomerate							
				3 12.24							
_											
299_											
_											
300_	·	11000	11 :5 : 6 :: 5			V XX()	1			1 1 0:::	
		er billion	Unitied Soil C	assification	Systen	n, π = fe	eet, bgs = below ground surface, ams	si = above i	nean sea	a ievel, GVV = (groundwate
, _D –	pui io þ	OI DIIIIOII									

9/	4RC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	et: 16 of	16
	Started					Elevation:	N/A	Borin	a No.:	RB-2 Pilo	t
	-	ted: <u>07/29/</u> 2				g (NAD83):	N/A				
Drilling		<u>Casca</u>				(NAD83):	N/A	Client:	PG&E	A/ Dl Dl-	1
1	g Metho ig Type		<u>⊃rilling</u> _ongyear Tra		Total De	-	307 ft bgs 4-12 inches	Project:		N Remedy Pha Topock, Needle	
	Name:						23.77 ft bgs	Location.	FG&E I	ороск, пееці	55, Calliottia
Drilling			<u>delaria, G. Ar</u>			g Method:	4 inch x 10 ft Core Barrel	Project N	umber: [RC000753.005	51
Logge		Joe La		-		ig Interval:	Continuous	. ,	_		
Editor	•	N/A			Convert	ed to Well:	☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
301 302 303				Topock - Competent Bedrock - conglomerate	ė	(303.0	- 307.0'); dry; friable conglomerate, mo	vderately pully	orized	(293.0 - 307.0') 10' of slough in core barrel. From 303 to 307 very rough drilling.	
-	168					and fra	actured	deratery purv	enzeu		
304											
								•			
305	-						140)				
306_											
¥											
307											
						N. C.	End of Boring at 307.0 'bg				
310_											
311_ 											
312											
313											
314											
<u> </u>											
315_ 											
316											
317											
318											
5_319_											
<u>-</u>											
320	<u></u>	. 11000	L-10 " 0"	:c ··	0. /		b - b - c - c - c - c - c - c - c -	1 !		- 11 - 0244	
		s: USCS = L er billion	Unified Soil C	assitication	System	n, tt = teet, bg	s = below ground surface, ams	si = above i	mean sea	a ievel, GW = g	roundwater,

ARCA	DIS for natura built asset	'S		Temporary I	Backiiii Lug	9	heet: 1 of 16
Date Started:	06/28/2019			_ Surface Elevation:	N/A	Well ID: R	B-2 Pilot
Date Completed:				Northing (NAD83):	N/A		
Orilling Co.:	<u>Cascade</u>			_ Easting (NAD83):	N/A	Client: PG&E	
Orilling Method:	Sonic Drilling			_ Total Depth:	307 ft bgs	-	GW Remedy Phase 1
Oriller Name:	Tyler Alymer			_ Borehole Diameter:	4-12 inches	Location: <u>PG&E</u>	Topock, Needles, Califo
Orilling Asst:	J. Condelaria	ı, G. Ar	ngiano	Depth to First Water: Editor:		Droingt Niverland	: RC000753.0051
Logger:	Joe Latham			Editor:	N/A	Project Number	: RC000753.0051
Groundwate Sample ID		OSCS Code	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
	Topock - Fill	SP		(0.0 - 5.0') Cemex #1/20 MESH (20x40)		(0.0 - 5.0') 7.9 bags	(0.0 - 5.0') 7 bags (-11%) Note: Lapis Lustre Sand
 - 4 - - 5 -		NR			(0.0 - 8.5') 12.0 Borehole	9	
-	Topock - Fill	SP					
 _12 _ _13 _ _14 _		ЫD		(5.0 - 243.5') Cemex #3 MESH (8x10)		(5.0 - 243.5') 97.7 bags	(5.0 - 243.5') 126 bags (29 Note: Lapis Lustre Sand
- 15 _ 15 _ 16		NR			(8.5 - 297.0') 6.1 Borehole)"	
_17 _ _18 _ 	Topock - Fill	SP	/				
19 	Topock - Fluvial Deposits	SP					

	or natura built asse	ets		Temporary E	Jaokiiii Log		Sheet: 2 of 16		
	06/28/2019			_ Surface Elevation:	N/A	Well ID: R	RB-2 Pilot		
Date Completed:				_ Northing (NAD83):	N/A				
•	Cascade			_ Easting (NAD83):	N/A	Client: PG&			
-	Sonic Drilling	-		_ Total Depth:	307 ft bgs		GW Remedy Phase 1		
	Tyler Alymer J. Condelaria		ngiano	_ Borehole Diameter: _ Depth to First Water:	4-12 inches	Location: PG&	E Topock, Needles, Califo		
-	Joe Latham	a, G. Ai	igiario	_ Editor:	23.77 ft bgs				
99									
Groundwater Sample ID	Geologic Formation	Code	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed		
	Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits	NR SP-SM SM GW-GM		(5.0 - 243.5') Cemex_#3 MESH (8x10)	(8.5 - 297.0') Borehole		(5.0 - 243.5') 126 bags (29% Note: Lapis Lustre Sand		
1	Deposits			I 189	76,774				

ARCA	DIS Design 8 for natural built ass	Consultancy ral and ets		Temporary I	Backfill Log		Sheet: 3 of 16
Date Started:	06/28/2019			_ Surface Elevation:	N/A	— Well IΓ): RB-2 Pilot
Date Completed:				_ Northing (NAD83):	N/A		
Drilling Co.:	Cascade			_ Easting (NAD83):	N/A		PG&E
Drilling Method: Driller Name:	Sonic Drilling	_		_ Total Depth: _ Borehole Diameter:	307 ft bgs	•	Final GW Remedy Phase 1 PG&E Topock, Needles, California
Drilling Asst:	Tyler Alymer J. Condelari		ngiano	_ Borenole Diameter. _ Depth to First Water:	4-12 inches 23 77 ft bas	Location. <u>F</u>	7G&E TOPOCK, Needles, California
Logger:	Joe Latham		rigiano	_ Editor:	N/A	Project Nu	mber: RC000753.0051
Groundwate Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volume	Material Volumes es Installed
41	Topock - Fluvial Deposits	GW-GN					
43 44 45	Topock - Fluvial Deposits	SM				9	
46 47 48	Topock - Fluvial Deposits	GW-GN					
49	Topock - Alluvium Deposits	GM		(5.0 - 243.5') Cemex #3 MESH (8x10)	(8.5 - 297.0') 6.0" Borehole	(5.0 - 243.5') 9 bags	7.7 (5.0 - 243.5') 126 bags (29%) Note: Lapis Lustre Sand
54 55	Topock - Alluvium Deposits	GM					
	Topock - Alluvium Deposits	SM					
	Topock - Alluvium Deposits SCS = Unified	sc d Soil C	lassificati	ion System ft = feet ha	s = below ground surface	amsl = above m	ean sea level, GW = groundwater,

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwage ppb = parts per billion Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

	ARCA	DIS for natura built asse	ets		i ciliporary L	Backfill Log		Sheet: 4 of 16				
	Started:	06/28/2019			_ Surface Elevation:	N/A	Well ID:	RB-2 Pilot				
	-	07/29/2019			_ Northing (NAD83):	N/A						
Drilling		Cascade			_ Easting (NAD83):	N/A		8&E				
_	Method:	Sonic Drilling			_ Total Depth:	307 ft bgs	•	al GW Remedy Phase 1				
	Name:	Tyler Alymer			_ Borehole Diameter:	4-12 inches	Location: <u>PG</u>	<u> 8&E Topock, Needles, Califor</u>				
_	Asst:	J. Condelaria	a, G. Aı	ngiano	_ Depth to First Water:							
ogge	r:	Joe Latham			_ Editor:	N/A	Project Num	Project Number: RC000753.0051				
Depth (ft)	Groundwate Sample ID		USCS	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed				
61 62 63 64 65 66 67		Topock - Alluvium Deposits	GM									
	RB-2-VAS-	Topock - Alluvium Deposits	GW		(5.0 - 243.5') Cemex #3 MESH (8x10)	(8.5 - 297.0' Borehol		7 (5.0 - 243.5') 126 bags (29% Note: Lapis Lustre Sand				
- 74 — - – _ 75 <u>—</u>	72-77 (<0.033 U ppb) 6/30/2019 14:10	Topock - Alluvium Deposits	GC									
- – _76 <u>–</u>		Topock - Alluvium Deposits	sw									
_77 _												
 _78 _ _79 _ 		Topock - Alluvium Deposits	SW-SM									
80			1	1,0°4	<u> </u>	<u>. + .: .: .: .1</u>		 an sea level, GW = groundwa				

	or natura built asse	rts		Temporary E	ackiiii Log		Sheet: 5 of 16			
	06/28/2019				N/A	Well I	D: RB-2 Pilot			
ate Completed:				_ ,	N/A					
•	Cascade Sonic Drilling	1		• ,	N/A 307 ft bgs		PG&E Final GW Remedy Phase 1			
-	Tyler Alymer	-			4-12 inches	-	PG&E Topock, Needles, Califo			
Prilling Asst:	J. Condelaria		ngiano	_ Depth to First Water:		Ecoculon. Call repeat, resource, Gamen				
ogger:	Joe Latham		· —		N/A	Project N	umber: RC000753.0051			
Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Well C	Construction	Calculated Material Volun				
 _81	Topock - Alluvium Deposits	SW-SM								
	Topock - Alluvium Deposits	ML								
_ 87	Topock - Alluvium Deposits	GC		(5.0 - 243.5') Cemex	(8.5 - 297.0') 6	5.0" (5.0 - 243.5')	97.7 (5.0 - 243.5') 126 bags (29			
	Topock - Alluvium Deposits	GC		#3 MESH (8x10)	Borehole	bags´	` Note: Lapís Lustre Sand			
	Topock - Alluvium Deposits	GM								
	Topock - Alluvium Deposits	GM								
_99	Topock - Alluvium Deposits	GC								

Date Started:	06/28/2019	ets		Temporary E Surface Elevation:	N/A	ii Log		heet: 6 of 16	
Date Started. Date Completed:				Northing (NAD83): N/A			Well ID: RB-2 Pilot		
Orilling Co.:	Cascade		Easting (NAD83): N/A			Client: PG&E			
Orilling Method:			_ Total Depth:	307 ft bgs	3		GW Remedy Phase 1		
Oriller Name:	Tyler Alymer	-		•	4-12 inch		•	Topock, Needles, Californ	
Orilling Asst:	J. Condelaria		ngiano	_ Depth to First Water:	23.77 ft b	gs		· 	
_ogger:	Joe Latham	T	1 1	_ Editor:	N/A		Project Number	: RC000753.0051	
Groundwate Sample ID		USCS	USCS	Well (Construction		Calculated Material Volumes	Material Volumes Installed	
	Topock - Alluvium Deposits	GC					0		
102-107 (<0.033 U ppb) 7/1/2019 15:21 	Topock - Alluvium Deposits	GM				81			
_107	Topock - Alluvium Deposits	GC) '			
	Topock - Alluvium Deposits	GM		(5.0 - 243.5') Cemex_ #3 MESH (8x10)		(8.5 - 297.0') 6.0" Borehole	(5.0 - 243.5') 97.7 bags	(5.0 - 243.5') 126 bags (29%) Note: Lapis Lustre Sand	
_111 _112	Topock - Alluvium Deposits	GM							
 _113 	Topock - Alluvium Deposits	GM							
_114									
_115									
_116									
 _117 	Topock - Alluvium Deposits	GM							
_118 _119									
			10 Not						
120					<u>::::::: </u>			sea level, GW = groundwat	

ARCA	DIS Design & for nature built asset	at and ets		Temporary Ba	ckiiii Log		Sheet: 7 of 16	
Date Started:	06/28/2019			_ Surface Elevation: <u>N//</u>		Well ID: RB-2 Pilot		
Date Completed:	Cascade		_ Northing (NAD83): N/A		Client: <u>PG&E</u>			
Orilling Co.:			_ Easting (NAD83): <u>N/A</u>					
Orilling Method:	Sonic Drilling	-			7 ft bgs 2 inches	•	al GW Remedy Phase 1 &E Topock, Needles, Califo	
Oriller Name: Orilling Asst:	Tyler Alymer J. Condelaria		naiana	_ Borenole Diameter: <u>4-1</u> _ Depth to First Water: <u>23.</u>		Location: PGo	&E Topock, Needles, Callic	
ogger:	Joe Latham	م, ن. Al	- Igidi 10	_ Editor: N//	~	Project Numb	er: RC000753.0051	
€ Groundwate	tion	φΩ	လှ အ			Calculated	Material Volumes	
Groundwate Sample ID		Code	USCS	Well Cons	truction	Material Volumes	Installed	
	Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits	GM		(5.0 - 243.5') Cemex_ #3 MESH (8x10)	(8.5 - 297.0') 6.0" Borehole	(5.0 - 243.5') 97.7 bags	(5.0 - 243.5') 126 bags (29' Note: Lapis Lustre Sand	
	Alluvium Deposits	SM						
_					수 등 수 등			
				I Resid				

ARCA	built asse	tural and assets		Temporary E	ackiii	ıı Log	Sheet: 8 of 16		
Date Started:	e Completed: 07/29/2019 ing Co.: <u>Cascade</u>		Surface Elevation: N/A Northing (NAD83): N/A Easting (NAD83): N/A			Client: PG&E Project: Final GW Remedy Phase 1			
Orilling Co.:									
Orilling Method: Oriller Name:	Sonic Drilling Tyler Alymer	-			307 ft bgs 4-12 inch		•	<u> 300 Remedy Phase 1</u> <u> Topock, Needles, Califor</u>	
Orilling Asst:	J. Condelaria		ngiano	_ Depth to First Water:			Location. <u>FGXE</u>	Topock, Needles, Callion	
.ogger:	Joe Latham	a, O. 7 ti	igiano		N/A	90	 Project Number	: RC000753.0051	
	.2 C	l							
Groundwate Sample ID		Code	USCS	Well C	Construction		Calculated Material Volumes	Material Volumes Installed	
	Topock - Alluvium Deposits	SM							
.142	Topock - Alluvium Deposits	GM					9		
	Topock - Alluvium Deposits	SM				18,			
	Topock - Alluvium Deposits	SM							
	Topock - Alluvium Deposits	SM		(5.0 - 243.5') Cemex #3 MESH (8x10)		(8.5 - 297.0') 6.0" Borehole	(5.0 - 243.5') 97.7 bags	(5.0 - 243.5') 126 bags (29% Note: Lapis Lustre Sand	
153									
_154 _155	Topock - Alluvium Deposits	GM							
	Topock -								
	Alluvium Deposits	GM							
	Topock - Alluvium	GC	Porto					sea level, GW = groundwa	

	for natural and built assets		Temporary E	dokim Log		Sheet: 9 of 16			
Date Started:	06/28/2019				N/A	Well ID: R	Well ID: RB-2 Pilot		
Date Completed:	Cascade		_	N/A		Client: PG&E			
Orilling Co.:			• ,	N/A					
Orilling Method: Oriller Name:	Sonic Drilling Tyler Alymer	-		•	307 ft bgs 4-12 inches	•	E Topock, Needles, Califo		
Orilling Asst:	J. Condelaria		ngiano	_ Depth to First Water:		Location. FGX	E TOPOCK, Needles, Callic		
.ogger:	Joe Latham	u, O. 7 ti	igiano		N/A	 Project Numbe	r: RC000753.0051		
	۰ <u>۶</u>								
Groundwate Sample ID	Geol	Code	USCS	Well (Construction	Calculated Material Volumes	Material Volumes Installed		
 _161 	Topock -	<i>J</i> GM							
_162	Deposits								
_163 									
_164	Topock -					Va			
_165	Alluvium Deposits	GM							
_166 _167									
	Topock - Alluvium	SM							
- – _170	Deposits			(5.0 - 243.5') Cemex #3 MESH (8x10)	(8.5 - 297.0 Borehol		(5.0 - 243.5') 126 bags (29 Note: Lapis Lustre Sand		
- – _171									
	Topock - Alluvium Deposits	SM			- 1945 1945 1955				
RB-2-VAS- 172-177 - (<0.17 U ppb) 7/12/2019) Topock -								
_17514:55	Alluvium Deposits	SM							
_176									
_177									
- – _178	Topock - Alluvium Deposits	SM							
- – _179	Topock - Alluvium Deposits	SM							
	Topock - Alluvium Deposits	SM							

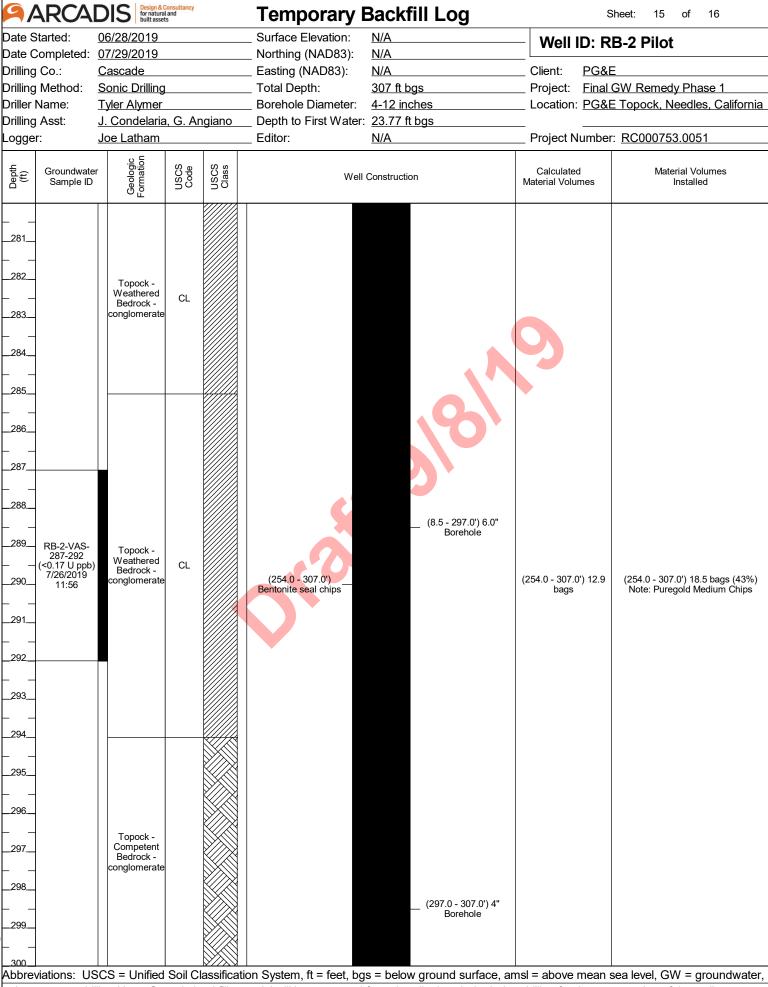
ARCA	TOTAL STATE STATE OF THE STATE		Temporary Backfill Log			Sheet: 10 of 16		
Date Started:	Completed: <u>07/29/2019</u> ng Co.: <u>Cascade</u>		Surface Elevation: N/A Northing (NAD83): N/A			Well ID: RB-2 Pilot		
Orilling Co.:				Easting (NAD83): N/A			Client: PG&E Project: Final GW Remedy Phase 1	
Orilling Method: Oriller Name:	Sonic Drilling	-		_ Total Depth: _ Borehole Diameter:	307 ft b	-		SW Remedy Phase 1 Topock, Needles, Califor
Orilling Asst:	Tyler Alymer J. Condelaria		niano	_ Depth to First Water:			Location. <u>PG&E</u>	TOPOCK, Needles, Callion
.ogger:	Joe Latham	-	giario	_ Editor:	N/A	- Ugo	Project Number	: RC000753.0051
Groundwate Sample ID		USCS	USCS	Well	Constructio	n	Calculated Material Volumes	Material Volumes Installed
- – _181	Topock - Alluvium Deposits	SM						
		4						
_183								
_								
_184								
	Topock - Alluvium	SW						
_185	Deposits							
						.0		
_186						140'		
4								
187								
4								
188	Tanaak							
_	Topock - Alluvium	GW-GM						
_189	Deposits Topock -	014						
	Alluvium Deposits	SM :	, 4					
_190			391	(5.0 - 243.5') Cemex #3 MESH (8x10)		(8.5 - 297.0') 6.0" Borehole	(5.0 - 243.5') 97.7 bags	(5.0 - 243.5') 126 bags (29% Note: Lapis Lustre Sand
	Topock - Alluvium	GM G	, P					
_191	Deposits	JIVI	2419					
_			7 H					
192								
400								
_193								
404								
_194	Topock -							
105	Alluvium Deposits	SW-SM						
_195								
-100-								
_198	Topost							
	Topock - Alluvium	SM						
_199	Deposits							
200		ML	4.4.					
			:£:+:	ion System ft - feet ha	holov	around curface	msl = ahove mean s	sea level, GW = groundwa

,, u to t	DIS Design & for natura built asse	ets		Temporary E	Jacki	III LUG	Sheet: 11 of 16		001. 11 01 10								
Date Started:	06/28/2019			_ Surface Elevation:		Well ID: RB-2 Pilot											
Date Completed:				Northing (NAD83): N/A													
Orilling Co.:	Cascade Sonic Drilling		Easting (NAD83): N/A			Client: PG&E											
Orilling Method:			•	307 ft b	-	Project: Final GW Remedy Phase 1											
Oriller Name: Orilling Asst:	Tyler Alymer J. Condelaria		ngiano	Borehole Diameter:Depth to First Water:	4-12 inc		Location:	PG&E	Topock, Needles, Califo								
Logger:	Joe Latham	a, G. A	rigiario	· ·	N/A	bys	— Project N	umber:	RC000753.0051								
Groundwate Sample ID	Geologic Formation	USCS	USCS	Well (Construction	n	Calculated Material Volur		Material Volumes Installed								
	Topock - Alluvium Deposits	ML															
	Topock - Alluvium Deposits	SM					0										
	Topock - Alluvium	SM															
202-207 (<0.17 U ppb) 7/14/2019	Deposits Topock -	ML	4.0														
_205 09:20	Alluvium Deposits					0	*										
_206	Topock -	'				140											
	Alluvium Deposits	SM			40)												
207																	
			72774														
_208																	
_209																	
												(5.0. 040.5))		(0.5007.01) 0.011	(5.0.040.51)	07.7	(F.O. 040 FI) 400 L (000
_210				(5.0 - 243.5') Cemex #3 MESH (8x10)		(8.5 - 297.0') 6.0" Borehole	(5.0 - 243.5') bags	97.7	(5.0 - 243.5') 126 bags (29% Note: Lapis Lustre Sand								
_211																	
	Tanaak																
	Topock - Alluvium Deposits	sc															
_213	Deposits																
_214																	
_215																	
_216																	
_217																	
218																	
_218	Topock -	sc															
 _219	Deposits																
		GC															

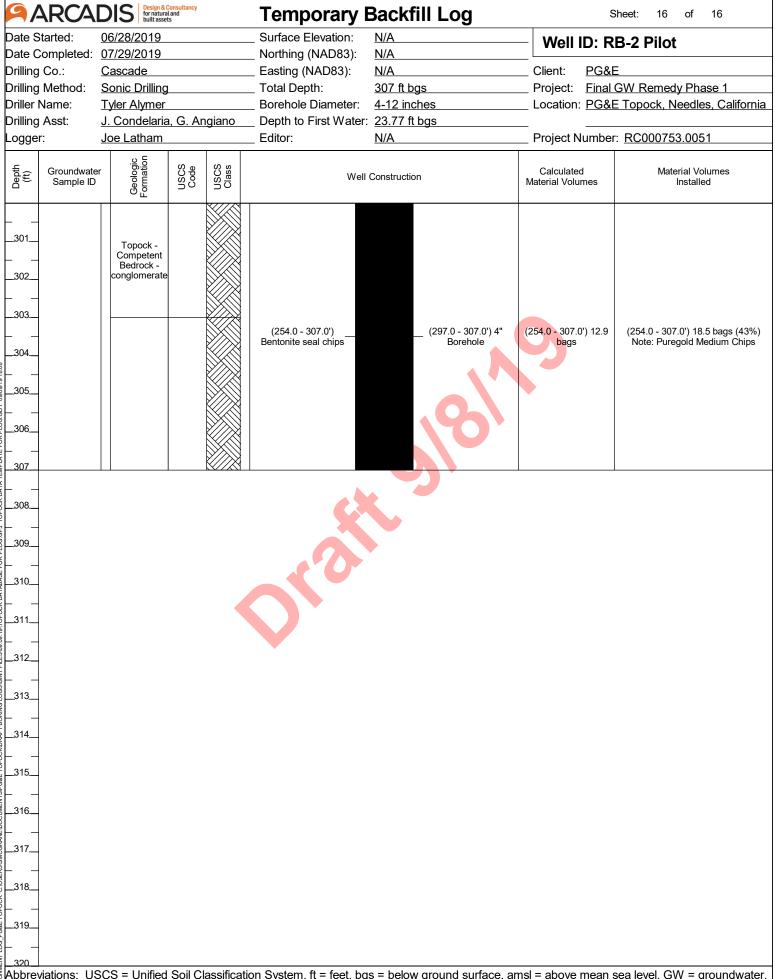
,, ,, ,,	DIS Design & for natura built asse	at and ets		Temporary E	sackiiii Log		Sheet: 12 of 16
ate Started:	06/28/2019			_ Surface Elevation:	N/A	Well I	D: RB-2 Pilot
ate Completed:				_ Northing (NAD83):	N/A		
Orilling Co.:	Cascade	•		_ Easting (NAD83):	N/A	Client:	PG&E Final CW Romody Phase 1
Orilling Method: Oriller Name:	Sonic Drilling Tyler Alymer	-		_ Total Depth: Borehole Diameter:	307 ft bgs 4-12 inches	Project:	Final GW Remedy Phase 1 PG&E Topock, Needles, Califo
orilling Asst:	J. Condelaria		ngiano	_ Depth to First Water:		Location.	FG&E Topock, Needles, Callic
ogger:	Joe Latham	.,		_ Editor:	N/A	 Project N	umber: RC000753.0051
Groundwat Sample IE		USCS	USCS	Well	Construction	Calculated Material Volu	
	Topock - Alluvium Deposits	GC					
223	Topock - Alluvium Deposits	SC		(5.0 - 243.5') Cemex #3 MESH (8x10)	(8.5 - 297.0') 6. Borehole	0" (5.0 - 243.5") bags	97.7 (5.0 - 243.5') 126 bags (29' Note: Lapis Lustre Sand
238— RB-2-VAS- 237-242 (<0.17 U ppt 7/15/2019 13:38	Topock - Alluvium Deposits	GC					

	ARCA	DIS for natura built asse	ts		Temporary	Backiiii Log		Sheet: 13 of 16
	tarted:	06/28/2019			_ Surface Elevation:	N/A	Well ID: F	RB-2 Pilot
	•	07/29/2019 Cascade		_ Northing (NAD83):	N/A	Client: PG&E		
rilling				_ Easting (NAD83):	N/A			
_	Method:	Sonic Drilling			_ Total Depth:	307 ft bgs		GW Remedy Phase 1
	Name:	Tyler Alymer		- ale	_ Borehole Diameter:	4-12 inches	Location: <u>PG&</u>	E Topock, Needles, Califo
Orilling		J. Condelaria Joe Latham	ı, G. Ar	igiano	_ Depth to First Water _ Editor:	: 23.77 ft bgs N/A	Droigot Numbe	r: RC000753.0051
.ogger	•				_ Editor:	<u>IN/A</u>	Project Numbe	r: <u>RC000753.0051</u>
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
	RB-2-VAS- 237-242 (<0.17 U ppb) 7/15/2019 13:38	Topock - Alluvium Deposits	GC					
242	13.30	Topock - Weathered Bedrock -	CL		(5.0 - 243.5') Cemex #3 MESH (8x10)		(5.0 - 243.5') 97.7 bags	(5.0 - 243.5') 126 bags (29% Note: Lapis Lustre Sand
_243 _244		conglomerate			 	· · · · · · · · · · · · · · · · · · ·		
245		Topock -			 			
246		Weathered Bedrock - conglomerate	SC		 			
247					 			
_248					(243.5 - 254.0')		(243.5 - 254.0') 4.1	(243.5 - 254.0') 8 bags (95°
_249		Topock - Weathered Bedrock -	CL		Cemex #1/20 MESH— (20x40)		bags	Note: Lapis Lustre Sand
_250 _251		conglomerate				(8.5 - 297.0') 6.0 Borehole		
					\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\			
 _253					 			
- – _254 - –					 			
_255								
_256					(254.0 - 307.0')		(254.0 - 307.0') 12.9	(254.0 - 307.0') 18.5 bags (4
_257 _258					Bentonite seal chips		(254.0 - 307.0) 12.9 bags	Note: Puregold Medium Ch
- 4								
260			0 110	<u> </u>				sea level, GW = groundwa

	DIS Design & for natura built asse	ts		Temporary I	Sackilli Log	3	Sheet: 14 of 16	
Date Started:	06/28/2019			_ Surface Elevation:	N/A	Well ID: R	B-2 Pilot	
Date Completed:				_ Northing (NAD83):	N/A			
Orilling Co.:	Cascade			_ Easting (NAD83):	N/A	Client: PG&I		
Orilling Method:	Sonic Drilling			_ Total Depth:	307 ft bgs		GW Remedy Phase 1	
Oriller Name:	Tyler Alymer			_ Borehole Diameter:	4-12 inches	Location: <u>PG&</u>	E Topock, Needles, Califo	
Orilling Asst:	J. Condelaria	a, G. Aı	ngiano	_ Depth to First Water:			D0000=== 05= :	
.ogger:	Joe Latham	ı	<u> </u>	_ Editor:	N/A	Project Number	:: RC000753.0051	
Groundwate Sample ID		USCS	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed	
	Topock - Weathered Bedrock - conglomerate Topock - Weathered Bedrock - conglomerate Topock - Weathered Bedrock -	CL		(254.0 - 307.0¹) Bentonite seal chips	(8.5 - 297.0') 6.0 Borehole	(254.0 - 307.0') 12.9 bags	(254.0 - 307.0') 18.5 bags (4 Note: Puregold Medium Ch	



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwappb = parts per billion Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

A	RC	ADIS	Design & Consultancy for natural and built assets		Bo	ring	Log	S	heet: 1 of	13
Date Sta	rted:	04/25/2	2019	;	Surface	Elevati	on: 466.3 ft amsl	orina No	.: <u>RB-3 Pilo</u>	ot .
	-	ted: <u>05/07/2</u>			Northing		33): <u>2103172.5</u>			<u></u>
Drilling C		<u>Cascac</u>			Easting	•	•	· · · · · · · · · · · · · · · · · · ·		
Drilling M			-		Total De	-	245 ft bgs Proje		GW Remedy Ph	
Drill Rig			onic track mo		Borehol			ation: <u>PG&E</u>	lopock, lopoc	k, California
Driller Na Drilling A		<u>Dan O'</u>	llmantel / J. I		-		Vater: <u>11.35 ft bgs</u> od: <u>4 inch x 10 ft Core Barrel </u> Proje	oct Numbor	· DC000753 006	 :1
Logger:	1551.	Gantt J			Samplin	-		ect Number	. <u>INCOUOT 55.000</u>	<i>)</i>
Editor:			Nillford		Convert	•				
<u> </u>	<u>, T</u>			1						
Depth (ft) Recover	(in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
1	0						(0.0 - 8.0') Topock - Fill; Poorly graded sand (SP); pale 6/3); fine grained to medium grained, subangular to roudry; roots and wood fragments present		(0.0 - 4.0') No recovery due to loose dredge sands.	
: I	12			Topock - Fill	SP					
- 5 6 7 8 8 8							(5') very fine grained to medium grained; trace silt; decresize (6.5'); moist; iron oxide staining; no roots or fragments of		(5.0 - 10.0') Poor recovery due to loose dredge sands.	
9	36				NR		(8.0 - 15.0') No recovery (NR)		(11.5') Approximate Depth to Water	
13 14 15							(15.0. 19.0) Topock, Eill: Dooth graded and (SD) de	ork gravish		
16 17 18	36	RB-3-SS-15- 18 5/2/2019 09:19	RB-3-VAS- 15-20 (<0.033 U) 4/26/2019	Topock - Fill	SP		(15.0 - 18.0') Topock - Fill; Poorly graded sand (SP); dabrown / dark yellowish brown(10YR 4/2); very fine grain grained, subangular to round; trace silt; trace organics; wet; organic odor	ned to medium		
 19 			15:35		NR		(18.0 - 20.0') No recovery (NR) feet, bgs = below ground surface, amsl :			

9/	AR(CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet: 2 of	13
Date S	Started	: <u>04/25/2</u>	2019		Surface	Elevat	ion: <u>466.3 ft amsl</u>	Boring N	o.: RB-3 Pilo	nt
Date 0	Comple	eted: <u>05/07/2</u>	2019		Northin	g (NAD	83): <u>2103172.5</u>	_ Dorning it	0 <u>IND-01 II</u>	<u>,, </u>
Drilling	g Co.:	Cascad	le		Easting	(NAD8	33): <u>7616213.0</u>	Client: PG8	kΕ	
Drilling	g Meth	od: <u>Sonic D</u>	Drilling		Total D	epth:	245 ft bgs	Project: Fina	ll GW Remedy Ph	nase 1
Drill R	ig Тур	e: <u>Terrasc</u>	onic track mo	ount	Borehol	le Diam	neter: 6-12 inches	Location: PG8	E Topock, Topod	ck, California
Driller	Name	: <u>Dan O'l</u>	Mara		Depth to	o First	Water: <u>11.35 ft bgs</u>			
Drilling	g Asst:	E. Huel	llmantel / J.	<u>Pacheco</u>	Samplir	ng Meth	nod: 4 inch x 10 ft Core Barrel	Project Numb	er: RC000753.00	51
Logge	r:	<u>Gantt J</u>	effers		Samplir	ng Inter	val: <u>Continuous</u>	-		
Editor		<u>Grant V</u>	Villford		Conver	ted to V	Vell: ⊠ Yes 🗌 No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
21	60	RB-3-SS-20- 25 5/2/2019 09:21					(20.0 - 33.0') Topock - Fill; Poorly graded sand (brown / dark yellowish brown(10YR 4/2) little bla fine grained to fine grained, subangular to round mica; wet; organic odor	ick (5Y 2.5/1); very; little organics; trace		
26 27 28 29 30	96	RB-3-SS-25- 30 5/2/2019 09:24		Topock - Fill	SP		(25') brown (7.5YR 4/2); very fine grained; no or sand grain size, color change (27.5') dark grayish brown / dark yellowish brown grained to fine grained; no organics; increase in change (29.5') very fine grained to medium grained; increand	n(10YR 4/2); very fin sand grain size, colc		(25.0 - 35.0') 10 gallons of water used; 0 gallons of water recovered; 10 gallons of water lost
31 32 33		RB-3-SS-30- 33 5/2/2019 09:26				N 7	(33.0 - 35.0') No recovery (NR)			
_ 34 _ 35					NR					
36 37 38 39	108	RB-3-SS-35- 40 5/2/2019 09:39		Topock - Fill			(35.0 - 39.5') Topock - Fill; Poorly graded sand (brown / dark yellowish brown(10YR 4/2); very fir grained, subangular to round; trace mica; wet	ne grained to medium		(35.0 - 45.0') 15 gallons of water used; 0 gallons of water recovered; 15 gallons of water lost
40					SW	~ · · · · ·				
Abbre	viation	s: USCS = L	Jnified Soil C	Classification	on Syste	em. ft =	feet, bgs = below ground surface, a	amsl = above n	nean sea level. G	W =

Date Started: Delt/25/2019	9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	SI	neet: 3 of	13
Nothing (No. 1997) Cascade Cast (No. 1997) Cascade Cas									Boring No.	: RB-3 Pile	ot
Deling Nethods Deling Assis: Literasanic track mount Deposits Deling Name: Deling								,			<u></u>
Description	_					_	•	•			
Daller Marter Dan O'Marta Dillor Marter Dillor Marter Dan O'Marta Dan O'Marta Dan O'Marta Deposits Sampling Method: J. J. Packsoc. Sampling Method: J. J. Dan D'Marta Donard Marter Sampling Method: J. J. Dan D'Marta Sampling Method: J. J. Dan D'Marta Sampling Method: J. J. Dan D'Marta Continuous Sampling Method: Continuous Sampling Interval: Continuous Sampling Interval: Continuous Sampling Interval: Continuous Sampling Method: J. J. Dan D'Marta Donard Marter Sampling Method: J. J. Dan D'Marter Sampling Method: J. Dan D'Marter Sampling Method: J. Dan D'Marter Sampling Interval: Continuous Sampling Method: J. Dan D'Marter J. Dan D	_			_			•			•	
Dalling Assist E. Huellmanter J. Pachase Sampling Interval Conditionus Co									Location: <u>PG&E</u>	Topock, Topo	ck, California
Continue						•		<u> </u>	Drainet Number	DC000752.00	
Editor:	_					-	-		Project Number:	RC000753.00	51
Simple D Controlled Simple D Controlled Simple D Sim						-	-				
1	Luitoi.		Oranic	T		T		Veli. E res 140			
141	Depth (ft)	Recovery (in)			Geologic Formation	Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
46 - 47	42 43 44	108	44 5/2/2019		Fluvial			to round; trace granules to large pebbles, round;			gallons of water used; 0 gallons of water recovered; 15 gallons of water
- 48 _	 46 		PR-3-SS-45-		Fluvial	sw		brown (10YR 5/3); very fine grained to very coar to round; trace granules to large pebbles, round;	se grained, subround trace mica; wet		gallons of water used; 0 gallons of water recovered; 10 gallons of water
Filvial Deposits SP Drown (10YR 5/3); fine grained, subround to round; trace mica; wet	 49 	72	50 5/2/2019		Fluvial	GW		(GW); dark grayish brown / dark yellowish brown to small cobbles, subround to round; some very grained sand, subangular to round; trace silt; sor composed of metadiorite; trace mica; wet	(10YR 4/2); granules fine to very coarse me coarser clasts		
		12				SP		(50.0 - 51.0') Topock - Fluvial Deposits; Poorly g brown (10YR 5/3); fine grained, subround to rour	graded sand (SP); nd; trace mica; wet		
	51					5"_					
Topock - Fluvial Deposits RB-3-SS-56-60 5/2/2019 09:53 RB-3-SS-56-60 ML Topock - Fluvial Deposits GW Topock - Fluvial Deposits; Silt with sand (ML); brown (7.5 YR 5/4); medium plasticity, slow dilatency; little very fine to very coarse grained sand, subangular to round; trace silt; some coarser clasts composed of metadiorite; trace mica; wet GW Topock - Fluvial Deposits; Silt with sand (ML); brown (7.5 YR 5/4); medium plasticity, slow dilatency; little very fine to very coarse grained sand, subangular to subround; little clay; trace small to very large pebbles, subround to round; trace subround; trace organics; trace mica; wet; soft to medium stiff ML ML (59.5 - 65.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML);			56 5/2/2019	50-55 (0.100 J) 4/27/2019		NR					
RB-3-SS-56-60 5/2/2019 09:53 RB-3-SS-56-60 Topock - Fluvial Deposits ML Topock - Fluvial Deposits					Fluvial	GW		(GW); dark grayish brown / dark yellowish brown to small cobbles, subround to round; some very t grained sand, subangular to round; trace silt; sor composed of metadiorite; trace mica; wet	n(10YR 4/2); granules fine to very coarse me coarser clasts		gallons of water used; 0 gallons of water recovered; 15 gallons of water
	 58 	120	60 5/2/2019		Fluvial	ML		(7.5YR 5/4), medium plasticity, slow dilatency; lit coarse grained sand, subangular to subround; lit very large pebbles, subround to round; trace sub	tle very fine to very ttle clay; trace small to		
						- 	H+H	(59.5 - 65.0') Topock - Alluvium Deposits; Sandy	y silt with gravel (ML);		
		/iation	s: USCS =	■ Unified Soil C	L Classificati		<u> </u>	, , ,		∟l an sea level. G	W =

Driller Name: Dan O'Mara Depth to First Water: 11.35 ft bgs Drilling Asst: E. Huellmantel / J. Pacheco Sampling Method: 4 inch x 10 ft Core Barrel Project Number: RC000753.0051 Logger: Gantt Jeffers Sampling Interval: Continuous	9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log]		She	eet: 4 of	13
Nothing (NADRS) 2013172.5 Client: PG&E Continue										Borin	a No.:	: RB-3 Pilo	ot
Delling Method: Delling Agest: Larrasanic Larrack mount Dan OMara Delling Agest: Larrasanic Larrack mount Dan OMara Dan OMara Dan OMara Sampling Method: Samt Jeffers Sampling Method: Color: Sampling Method: Color: Samt Jeffers Sampling Method: Color: Sampling Method: Color: Samt Jeffers Sampling Method: Color: Samplin						-							
Dail Ref Type: Darrasonic track mount Borehole Diameter S-12 Inches Location: PG&E Topock. California Dailing Assis: E. Huellmantel / J. Pacheco Sampling Method: d. Inches 1.0 ft. Rose Project Number: RC000753.0051	_					_	•	33):		_		W. D	
Daller Marter Dan O'Marta Den D'Marta D'Mar	_			-			•		_				
Dalling Assis: E. Huellmantel / J. Paches Sampling Interval: Conditionus Cond										_ Location:	PG&E	Topock, Topoc	ck, California
Settler: Grant Willford Converted to Well: Vers No Silve Sample D Converted to Well: Vers No Advance Mall Vers No Sample D Converted to Well: Vers No Sampl						•			<u> </u>	- Project Ni	ımher:	PC000753 004	 51
Editor: Grant Willford Convented to Well: Ves No Service Servi	_					-	-			_ 1 10,000114	umber.	110000733.000	<i>7</i> I
Surgice ID Control close ID						-	-			_			
Company Comp					υ 5								
distancy, some granules to very large pebbles, angular to subangular, and an application of very large pebbles and periodic subangular control of policins and pebbles. 7,700-1, 120 120 120 120 120 120 120 120	Depth (ft)	Recover (in)			Geologi	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
Topock Alluvum Deposits Silty grave with sear (GM); (65.0 - 75.0) 15 (GS - 75.0)	62 63 64	120	65 5/2/2019		Alluvium	ML		dilatency some ve coarser weak ce	y; some granules to very large pebbles, ery fine to very coarse grained sand, an clasts composed of metadiorite; trace n ementation; interbeded silt and granule t	angular to suba gular to subroui nica; moist; very	angular; nd; stiff;		gallons of water used; 0 gallons of water recovered; 15 gallons of water
Subcounts the silf coarser class composed of metadoricity trace 70					Alluvium	GM		brown (7 subangt	7.5YR 4/3); granules to very large pebbular; and very fine to very coarse graine	les, angular to d sand, angular	to		gallons of water used; 0 gallons
Topock-Alluvium Deposits RB-3-SS-70-75 5/2/2019 10:06 RB-3-SS-70-75 5/2/2019 10:06 RB-3-SS-75-80 5/2/2019 10:10 RB-3-SS-75	68 69 	120	70 5/2/2019					mica; we (66.0 - 7 reddish coarse of pebbles clay; coarweak ce	et	sand with grave fine grained to ranules to very lessubangular; tra ace mica; dry to	el (SM); very arge ace moist;		recovered; 15 gallons of water
RB-3-SS-75- 80 5/2/2019 10:10 RB-3-SS-75- Alluvium Deposits; Sandy silt with gravel (ML); reddish brown (5YR 5/4) trace red (2.5YR 4/6); no plasticity, no dilatency; some granules to very large pebbles, angular to subangular; some angular to subangular; trace clay; coarser clasts composed of metadiorite; trace mica; wet; very stiff; weak cementation; weathered pebbles Topock - Alluvium Deposits Topock - Alluvium Deposits; Silty sand with gravel (ML); reddish brown (5YR 5/4) trace red (2.5YR 4/6); fine grained to very coarse grained, angular to subangular; some granules to very large			75 5/2/2019		Alluvium	SM							
pebbles Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (5YR 5/4) trace red (2.5YR 4/6); fine grained to very coarse grained, angular to subangular; some granules to very large	76 77 77	120	80 5/2/2019		Alluvium	ML		reddish dilatenc some ar	brown (5YR 5/4) trace red (2.5YR 4/6); y; some granules to very large pebbles, ngular to subangular; trace clay; coarse	no plasticity, no angular to suba r clasts compos	angular; ed of		
80	79 				Topock - Alluvium	SM		pebbles (79.0 - 8 reddish	39.0') Topock - Alluvium Deposits; Silty brown (5YR 5/4) trace red (2.5YR 4/6);	sand with grave fine grained to	el (SM); very		
	80 Abbres	/iation	s: USCS = I	Unified Soil C		on Syste		`			•	n sea level GV	N =

9/	AR(CADIS	Design & Consultancy for natural and built assets		Во	ring	Log Sheet:	5 of 13
Date S	Started	d: <u>04/25/</u>	2019	;	Surface	Eleva	ation: 466.3 ft amsl Boring No.: RE	
	•	eted: <u>05/07/</u>			Northin	- '	D83): <u>2103172.5</u>	/ 0 1 1101
Drilling	g Co.:	<u>Casca</u>	de	I	Easting	(NAD	,	
Drilling	y Meth	od: <u>Sonic</u>	Drilling		Total D	•	-	medy Phase 1
Drill R			onic track mo				meter: <u>6-12 inches</u> Location: <u>PG&E Topoc</u>	<u>:k, Topock, California</u>
Driller							Water: 11.35 ft bgs	
Drilling '			ellmantel / J.		-	-		0753.0051
Logge			Jeffers		Samplir	-		
Editor:		<u>Grant</u>	Willford		Convert	lea to	Well: ⊠ Yes □ No	
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	·	ng Notes Drilling Fluid
81 82 83 84 85 86 87	120	RB-3-SS-80- 85 5/2/2019 10:18	RB-3-VAS- 80-85 (0.132 J) 4/27/2019 15:18	Topock - Alluvium Deposits	SM		metadiorite; trace mica; wet; weak cementation; interbedded silt and granule to very large pebble lenses, weathered pebbles osbe interv	0 - 85.0') Geology rved good al to collect sample (85.0 - 95.0') 2/ gallons of wate used; 0 gallons of water recovered; 20 gallons of wate lost
 88 89 	120	90 5/2/2019 10:21		Topock -	ML		very large pebbles, angular to subangular; some silt; trace clay; weak cementation; color change (89.0 - 91.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML); reddish brown / moderate brown(5YR 4/4) trace red (2.5YR 4/6); no plasticity, no dilatency; some very fine to very coarse grained sand, angular to subround; little granules to very large pebbles, angular to	
 91 	120			Deposits	ML		subangular; trace subangular; trace clay; trace mica; coarser clasts composed of metadiorite; moist; weak cementation; interbedded very fine to very coarse sand and granule to very large pebble lenses, weathered pebbles (91.0 - 95.0') Topock - Alluvium Deposits; Silty sand with gravel (SM);	
92 93		RB-3-SS-90- 95 5/2/2019 11:09		Topock - Alluvium Deposits	SM		reddish brown / moderate brown(5YR 4/4) trace red (2.5YR 4/6); fine grained to very coarse grained, angular to subangular; some granules to very large pebbles, angular to subangular; some silt; coarser clasts composed of metadiorite; trace mica; wet; interbedded silt and granule to very large pebble lenses, weathered pebbles	
 94								
'								
95							:	
95 96 97 98 99	120	RB-3-SS-95- 1000 5/2/2019 11:11		Topock - Alluvium Deposits	GM		(95.0 - 101.5') Topock - Alluvium Deposits; Silty gravel with sand (GM); reddish brown / moderate brown(5YR 4/4) trace red (2.5YR 4/6); granules to very large pebbles, angular to subangular; some very fine to very coarse grained sand, angular to subround; little silt; coarser clasts composed of metadiorite; trace mica; wet; interbedded silt and very fine to very coarse sand lenses, weathered pebbles	(95.0 - 105.0') 25 gallons of water used; 0 gallons of wate recovered; 25 gallons of wate lost
100						10 PM]	
	viation	s: USCS =	Unified Soil (Classification	n Svste	em. ft	= feet, bgs = below ground surface, amsl = above mean sea	level GW =

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log			She	et: 6 of	13
Date S	Started	: <u>04/25/</u>	2019		Surface	Eleva	ion: <u>466.3 ft am</u>	nsl	Borin	a No.:	RB-3 Pilo	ot
Date C	Comple	eted: <u>05/07/</u>	2019		Northing	g (NAD	83): <u>2103172.5</u>			9	112 0 1 111	<u> </u>
Drilling	g Co.:	<u>Casca</u>	de		Easting	(NAD8	3): <u>7616213.0</u>			PG&E		
Drilling	g Meth	od: <u>Sonic</u>	Drilling		Total De	epth:	245 ft bgs		Project:	Final G\	N Remedy Ph	nase 1
Drill Ri			onic track mo	ount	Borehol	le Dian	eter: 6-12 inches	S	Location:	PG&E T	opock, Topod	ck, California
Driller	Name				•		Water: <u>11.35 ft bg</u> :					
Drilling			<u>ellmantel / J. I</u>		-	-		ft Core Barrel	Project N	umber: <u>F</u>	RC000753.00	51
Logge		· ·	<u>Jeffers</u>		Samplir	•						
Editor:		<u>Grant '</u>	Willford		Convert	ted to \	Vell: ⊠ Yes □	」No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
 101				Topock - Alluvium Deposits	GM							(95.0 - 105.0') 25 gallons of water used; 0 gallons of water recovered; 25
	120	RB-3-SS- 100-105 5/2/2019 11:16		Topock - Alluvium Deposits	SM		(SM); reddish brown / m 4/6); fine grained to very some granules to very la coarser clasts compose	- Alluvium Deposits; Silt noderate brown(5YR 4/4) y coarse grained, subang arge pebbles, angular to d of metadiorite; trace mixed silt and granule to very	trace red (2.5 jular to subrou subangular; lit ca; wet; weak	YR nd; tle silt;		gallons of water lost
106 107 108		RB-3-SS- 105-107 5/2/2019 11:18		Topock - Alluvium Deposits	GM		(GM); reddish brown / n granules to very large p to very coarse grained s clasts composed of met	- Alluvium Deposits; Silt noderate brown(5YR 4/4) ebbles, angular to suban- sand, angular to subroun- adiorite; trace mica; wet; sand lenses, weathered	little red (2.5) gular; some ve d; little silt; coa interbedded si	'R 4/6); ery fine erser		(105.0 - 115.0') 25 gallons of water used; 0 gallons of water recovered; 25 gallons of water lost
108 109		11.10		Topock - Alluvium Deposits	SM		(SM); reddish brown / m fine grained to very coa granules to very large p	- Alluvium Deposits; Silt noderate brown(5YR 4/4) rse grained, subangular t ebbles, angular to suban	little red (2.5Y to subround; s gular; some si	'R 4/6); ome lt;		
	120	RB-3-SS- 110-115 5/2/2019 11:21		Topock - Alluvium Deposits	GM		silt and granule to very I (109.0 - 115.0') Topock (GM); reddish brown / n 4/6); granules to very la fine to very coarse grair coarser clasts compose silt and very fine to very	d of metadiorite; trace mi arge pebble lenses, weal - Alluvium Deposits; Silt noderate brown(5YR 4/4) rge pebbles, angular to sued sand, angular to sub d of metadiorite; trace mi coarse sand lenses, weather the same trace with the same trace of the same trace mi coarse sand lenses, weather the same trace of the same trace mi coarse sand lenses, weather trace mi coarse sand lenses sand	thered pebbles y gravel with s trace red (2.5 ubangular; an angular; little s ca; wet; interb athered pebble	and YR d very illt; edded es		
116 117 118 119 120	120	RB-3-SS- 115-120 5/2/2019 11:24		Topock - Alluvium Deposits	SM		(SM); reddish brown / m fine grained to very coa granules to very large p angular; coarser clasts interbedded silt and grai pebbles	- Alluvium Deposits; Silt noderate brown (5YR 4/4) rse grained, subangular tebbles, angular to subancomposed of metadiorite; nule to very large pebble	little red (2.5) o subround; s gular; some si trace mica; w lenses, weath	(R 4/6); ome tit; trace et; ered		

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	neet: 7 of	13
Date S						Elevati		Boring No.	: <u>RB-3 Pilo</u>	ot
	•	eted: <u>05/07/</u>				g (NAD8	•	_		
Drilling	-	<u>Casca</u>			_	(NAD8:		_ Client: PG&E		4
Drilling Drill R	-		Drilling		Total D	eptn: e Diame	eter: 6-12 inches	_ Project: <u>Final 0</u> _ Location: <u>PG&E</u>	SW Remedy Ph	
Driller			onic track mo 'Mara				Water: 11.35 ft bgs	_ Location. <u>PG&E</u>	тороск, торос	K, Calliottia
Drilling			ellmantel / J. I		-			Proiect Number:	RC000753.00	 51
Logge			Jeffers			ng Interv		_ , _		
Editor	:	<u>Grant</u>	Willford		Conver	ted to W	Vell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
	120	RB-3-SS- 120-125 5/2/2019 11:31	RB-3-VAS- 120-125 (<0.17 U) 4/28/2019 11:29				(120.5'); weak cementation; increase in silt, depebbles	ecrease in granule to		
126 127 128 129 130	120	RB-3-SS- 125-130 5/2/2019 11:44		Topock - Alluvium Deposits	SM		(127.5'); none cementation; increase in granul sit	e to pebbles, decrease		(125.0 - 135.0') 25 gallons of water used; 0 gallons of water recovered; 25 gallons of water lost
		RB-3-SS- 130-135 5/2/2019 11:46								
_ 136_ _ 137_ _ 138_ _ 139_ _ 140	120	RB-3-SS- 135-140 5/2/2019 11:50		Topock - Alluvium Deposits	GM		(135.0 - 144.5') Topock - Alluvium Deposits; \$ (GM); reddish brown / moderate brown(5YR 4 4/6); granules to small cobbles, angular to subtovery coarse grained sand, angular to suban clasts composed of metadiorite; trace mica; we very fine to very coarse sand lenses, weathered	(4) trace red (2.5YR angular; and very fine gular; little silt; coarser st; interbedded silt and ed pebbles		(135.0 - 145.0') 25 gallons of water used; 0 gallons of water recovered; 25 gallons of water lost
Abbre	viation	s: USCS =	Unified Soil C	Classification	on Syste	<u>em, ft =</u>	feet, bgs = below ground surface	, amsl = above mea	an sea <u>l</u> evel, G'	W =

Data S		ADIS	for natural and built assets		DU	ring Lo	1			13
Jale 3	tarted	: <u>04/25/</u>	2019		Surface	Elevation:	466.3 ft amsl	Boring N	No.: RB-3 Pile	ot
	-	eted: <u>05/07/</u>				g (NAD83):	2103172.5	_		
Drilling		<u>Casca</u>			_	(NAD83):	7616213.0		i&E	
Drilling			•	7		•	245 ft bgs	•	al GW Remedy Ph	
	д Туре		sonic track mo				6-12 inches	Location: <u>PG</u>	&E Topock, Topo	ck, California
	Name:				•		11.35 ft bgs			
-	Asst:		ellmantel / J.		-	-	4 inch x 10 ft Core Barrel	Project Numl	per: <u>RC000753.00</u>	51
.oggei	:		<u>Jeffers</u>		-	ng Interval:	Continuous	-		
Editor:		<u>Grant</u>	Willford	(Conver	ted to Well:	Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
	120	RB-3-SS- 140-145 5/2/2019 11:54		Topock - Alluvium Deposits	GM					(135.0 - 145.0' 25 gallons of water used; 0 gallons of wate recovered; 25 gallons of wate lost
_ _145							- 149.0') Topock - Alluvium Deposits; Sil eddish brown / moderate brown(5YR 4/4 e grained to very coarse grained, suban	trace red (2.5YR		(145.0 - 155.0'
		RB-3-SS- 145-150 5/2/2019 11:57		Topock - Alluvium Deposits	SM	some coarse silt and	ranules to very large pebbles, angular to clasts composed of metadiorite; trace m granule to very large pebble lenses	subangular; some iica; wet; interbedde		35 gallons of water used; 0 gallons of wate recovered; 35 gallons of wate lost
_							- 152.0') Topock - Alluvium Deposits; Sil eddish brown / moderate brown(5YR 4/4			
_150 _151 _ _ _152	120		DD 2 VAC	Topock - Alluvium Deposits	GM	4/6); g to very clasts	anules to small cobbles, angular to subal coarse grained sand, angular to subangi omposed of metadiorite; trace mica; wet; ery fine to very coarse sand lenses	ngular; some very fi ular; some silt; coar:	ser	
-104_		RB-3-SS- 150-155	RB-3-VAS- 150-155				- 155.0') Topock - Alluvium Deposits; Sil eddish brown / moderate brown(5YR 4/4			
 _153 _ _ _154		5/2/2019 12:05	(<0.17 U) 4/29/2019 10:13	Topock - Alluvium Deposits	SM	4/6); fi granul coarse	equisit blown? Industries blownight 4/4 e grained to very coarse grained, angulas s to very large pebbles, angular to subar clasts composed of metadiorite; trace m granule to very large pebble lenses	er to subround; som ngular; some silt;		
155						(155.0	- 191.5') Topock - Weathered Bedrock -	conglomerate: San	dy (155.0 - 165.0')	
 _156 _ _157 _ _158	120	RB-3-SS- 155-160 5/2/2019 12:11		Topock - Weathered Bedrock - conglomerate	ML	silt with 3/6); lo sand, angula clasts weak o	gravel (ML); reddish brown (2.5YR 4/4) w plasticity, no dilatency; some very fine ubangular to subround; little granules to to subangular; trace angular to subanguomposed of metadiorite; trace mica; moismentation; interbedded very fine to very to very large pebble lenses	trace dark red (2.5\) to very coarse grain very large pebbles, ılar; trace clay; coar st; very stiff to hard;	/Ŕ Core is moderately cemented groundwater	
_159									1 1	
_ _159 _										

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log)		Sh	eet: 9 of	13
Date S	Started	: <u>04/25/2</u>	2019	:	Surface	Elevat	ion:	466.3 ft amsl	Bori	na No.	: RB-3 Pilo	ot
	-	eted: <u>05/07/2</u>			Northin			2103172.5	_		- IND OT III	<u>~</u>
Drilling	-	Cascad			Easting		33):	7616213.0	_ Client:	PG&E		
Drilling			-		Total D	•		245 ft bgs	Project:		<u>SW Remedy Ph</u>	
Drill R Driller			onic track mo					6-12 inches 11.35 ft bgs	_ Locatior	i: PG&E	Topock, Topoc	k, California
Drilling			llmantel / J. I		-			4 inch x 10 ft Core Barrel	- Project l	Viimher:	RC000753 004	 51
Logge		Gantt J			Samplir	•		Continuous	_ 1 10,0001	Turribor.	10000100.000	
Editor		Grant V			Convert	-			_			
	2			.2 F	Τ.							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS		Soil Description			Drilling Notes	Drilling Fluid
161 162 163 164 165	120	RB-3-SS- 160-165 5/2/2019 12:13					(160'); d	dry			(155.0 - 165.0') Core is moderately cemented groundwater sample to be collected above	
166 167 168 169 170	120	RB-3-SS- 165-170 5/2/2019 12:14		Topock - Weathered	MI		(169'); c	dry			(165.0 - 175.0') Rough drilling	(165.0 - 175.0') 30 gallons of water used; 10 gallons of water recovered; 20 gallons of water lost
	120			Bedrock - conglomerate								
171				· ·								
172		DD 0 00										
		RB-3-SS- 170-175 5/2/2019										
173		12:18										
174												
- <u>-</u> -												
175												
 176												
177		DD 0.00										
	120	RB-3-SS- 175-180										
178		5/2/2019 12:20										
179												
180 Abbre	viation:	s: USCS = I	 Jnified Soil (L Classification	<u>I</u> on Svst	<u> </u>	feet.	bgs = below ground surface,	amsl = ah	ove mea	⊥ ın sea level. G\	W =

9/	NRC	ADIS	Design & Consultancy for natural and built assets		Boring Lo	g	Sh	neet: 10 of	13
Date S	tarted	04/25/	2019	{	Surface Elevation:	466.3 ft amsl	Boring No.	: RB-3 Pilo	nt .
	-	ted: <u>05/07/</u>		1	Northing (NAD83):	2103172.5	. —		
Orilling		<u>Casca</u>	de		Easting (NAD83):	7616213.0	Client: PG&E		
Drilling			<u>Drilling</u>		Total Depth:	245 ft bgs	•	<u>GW Remedy Ph</u>	
Drill Ri			onic track mo		Borehole Diameter		Location: PG&E	Topock, Topoc	k, California
	Name:				Depth to First Wate	_	· 		
_	Asst:				Sampling Method:		Project Number:	RC000753.005	51
.ogger	:		<u>Jeffers</u>		Sampling Interval:	Continuous			
ditor:		<u>Grant</u>	Willford	_	Converted to Well:				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code USCS Class	Soil Description		Drilling Notes	Drilling Fluid
_ _181_									
-									
182_		RB-3-SS-	RB-3-VAS- 180-185						
-	120	180-185 5/2/2019	(<0.033 U <0.033 U)						
183_		12:22	4/29/2019 15:38						
-			10.00						
184_									
4							F		
185									
_				Topock - Weathered	<u> </u>				
186				Bedrock - conglomerate	ML				
4				congiomerate					
187		RB-3-SS-							
_		185-190							
188_		5/2/2019 12:24							
189_									
190_	120								
					(190); dry			
191_									
192_						5 - 196.0') Topock - Weathered Bedrock - c with gravel (SM); reddish brown (2.5YR 4/4			
		RB-3-SS- 190-195			4/6);	fine grained to very coarse grained, angular ules to very large pebbles, angular to subang	r to subangular; some		
193_		5/2/2019 12:28			angu	lar; trace clay; coarser clasts composed of r			
				Topock -	mica	Wet			
194_				Weathered Bedrock -	SM				
				conglomerate					
195_									
190								(195.0 - 215.0')	
106								Rough drilling	
196_						0 - 212.5') Topock - Weathered Bedrock - c			
						ith gravel (ML); reddish brown (2.5YR 4/4) to no plasticity, no dilatency; some granules to			
197		RB-3-SS-			angu	lar to subangular; some very fine to very coangular to subround; trace angular to subang	arse grained sand,		
	120	195-200 5/2/2019		Topock -	coar	ser clasts composed of metadiorite; trace mid	ica; moist; very stiff to		
198_		12:37		Weathered Bedrock -	ML and	weak cementation; interbedded very fine to granule to very large pebble lenses	•		
-				conglomerate		5'); low plasticity; little granules to very large ngular; increase in silt, decrease in sand, no			
199); no plasticity; some granules to very large			
				1			,		
-					Sube	ngular; decrease in silt, increase in sand	İ		

AF	RCADIS	Design & Consultancy for natural and built assets		Boring Lo	g	SI	neet: 11 of	13
Date Start	ted: <u>04/25/</u>	/2019		Surface Elevation:	466.3 ft amsl	Boring No.	: RB-3 Pilo	ot .
	pleted: <u>05/07/</u>			Northing (NAD83):	2103172.5			<u></u>
Orilling Co		ade		Easting (NAD83):	7616213.0	Client: PG&E		
Orilling Me		Drilling		Total Depth:	245 ft bgs	•	<u> SW Remedy Ph</u>	
Orill Rig T	• •	sonic track me		Borehole Diameter:	6-12 inches	Location: PG&E	Topock, Topoc	k, California
Driller Nar)'Mara		Depth to First Water	_			
Orilling As				Sampling Method:		Project Number:	RC000753.005	51
_ogger:		<u>Jeffers</u>		Sampling Interval:	Continuous			
Editor:		Willford		Converted to Well:			ı	
Depth (ft) Recovery	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code USCS Class	Soil Description		Drilling Notes	Drilling Fluid
							(195.0 - 215.0') Rough drilling	
202	RB-3-SS- 200-205							
	0 200-205 5/2/2019 12:39							
_204								
205					(6)		(205 0!) Cample	
. 4							(205.0') Sample interval chosen	
206_			Topock - Weathered				based on lithology	
			Bedrock - conglomerate	ML				
_207	RB-3-SS-	RB-3-VAS-	conglomerate					
	RB-3-SS- 205-210 5/2/2019	205-210 (<0.17 U) 4/30/2019						
_208	12:41	15:15						
. 4								
209_					•			
_210 ₁₂₀	0							
_211								
_212	RB-3-SS-							
	210-215 5/2/2019				- 218.0') Topock - Weathered Bedrock - c			
_213	12:43			4/6); fi	vith gravel (SM); reddish brown (2.5YR 4/4 ne grained to very coarse grained, angular	to subangular; some		
					es to very large pebbles, angular to subant parser clasts composed of metadiorite; trad			
_214					ementation; interbeded silt and granules to			
			Topock -	Pepple	-			
_215			Weathered	SM				
			Bedrock - conglomerate	1 1/1/1/1/1				
_216								
.217	RB-3-SS-							
120	5/2/2019							
_218	12:44				- 227.0') Topock - Weathered Bedrock - c			
			Topock -	3/6); to	n gravel (ML); reddish brown (2.5YR 4/4) to w plasticity, no dilatency; some granules to	o very large pebbles,		
_219			Weathered Bedrock -	ML angula	r to subangular; some very fine to very coagular to subround; trace clay; coarser clast	arse grained sand,		
			conglomerate	metad	orite; trace mica; moist; very stiff; weak ce added sand very fine to very coarse sand a	mentation;		
220	11000	Limitian Cail (bgs = below ground surface, a		n and level O	A /

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	3		SI	neet: 12 of	13
	Started				Surface			466.3 ft am		Boring No.	.: <u>RB-3 Pilo</u>	ot
	-	ted: <u>05/07/2</u>			Northing			2103172.5				
Drilling	-	Cascac			Easting	•	83):	7616213.0		_ Client: PG&E		
Drilling	-		-		Total Do			245 ft bgs			GW Remedy Ph	
Drill Ri Driller			onic track mo							_ Location: <u>PG&E</u>	Тороск, Торос	ck, California
Drilling			llmantel / J.		-			11.35 ft bg		 Project Number:	PC000753 00	 51
Logge		Gantt J		<u>l acrieco</u>	Samplin	-		Continuous			<u>11C000733.00</u>	<u> </u>
Editor:			Willford		Convert	-		× Yes		_		
				0.5	1		T					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class			Soil Description		Drilling Notes	Drilling Fluid
							large pe	ebble lenses, we	athered pebbles			
221_												
222												
	120											
223	120											
_				Topock - Weathered	ML							
224				Bedrock - conglomerat								
225												
226												
_227							(227.0	245 0') Tapada	- Weathered Bedrock	conglomorato: Cilty		
							sand w	th gravel (SM);	reddish brown (2.5YR 4	4/4) trace red (2.5YR		
228							granule	s to very large p	ebbles, angular to suba	lar to subangular; some angular; some silt; trace		
							metadio	rite; trace mica;	race clay; coarser clas moist; weak cementati	its composed of on; interbeded silt and		
229							granule	s to pebbles				
230	120											
231							:					
232												
 233							:					
233				Topock - Weathered			(233');	dry to moist; son	ne dry lenses			
234				Bedrock - conglomerat	SIVI							
				Congiornerat			:					
236												
237							:					
	120											
238	120											
							:					
239												
<u> </u>]					
240	<u> </u>	11000	1 16 16 11				1					
Anhra	VIation	: USCS = 1	Initied Soil (iaeeiticati	nn Sveta	m tt =	= 1001	nae = helaw	Arching brillars	amsl = ahove me	an sea level 🤼	vv =

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 13 of	13
Date S	Started	: 04/25	/2019		Surface	Elevat	ion: <u>466.3 ft amsl</u>	Borin	a No .	RB-3 Pilo	nt .
Date 0	Comple	eted: <u>05/07</u>	/2019		Northing	g (NAD	83): <u>2103172.5</u>		9 110	TKD OT IIC	<u>^</u>
Drilling	g Co.:	Casca	<u>ade</u>		Easting	(NAD8	3): <u>7616213.0</u>	_ Client:	PG&E		
Drilling	g Meth	od: <u>Sonic</u>	Drilling		Total De	epth:	245 ft bgs	_ Project:	Final GV	N Remedy Ph	ase 1
	ig Type		sonic track mo	<u>ount</u>	Borehol	le Diam	eter: <u>6-12 inches</u>	_ Location:	PG&E T	opock, Topoc	ck, California
	Name		D'Mara				Water: <u>11.35 ft bgs</u>	_			
	g Asst:		ellmantel / J.					_ Project N	umber: <u>F</u>	<u> </u>	51
Logge			Jeffers		Samplin	-		_			
Editor	:	Grant	Willford		Convert	ied to V	Vell: ⊠ Yes □ No				Г
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	OSCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
241_ 			no sample (Interval did	Topock -			(241'); dry to moist; some dry lenses				
243	120		not produce.) 5/1/2019 14:00	Weathered Bedrock - conglomerate	Sivi			9			
244 											
_245				<u> </u>			End of Boring at 245.0 'bg	IS.			
 246											
 247							7 62,				
 248						(
 249					A (O				
 250							•				
 251											
 253											
254											
255											
256											
257											
258											
259											
260 Abbre	viation	 s: USCS =	: Unified Soil (Classificati	on Svst	 em, ft =	feet, bgs = below ground surface,	amsl = abo	ve mear	sea level. G'	W =

Temporary Backfill Log Sheet: Surface Elevation: 466.3 ft amsl 04/25/2019 Well ID: RB-3 Pilot Date Completed: <u>05/07/2019</u> Northing (NAD83): 2103172.5 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7616213.0 Client: PG&E Drilling Method: Sonic Drilling Total Depth: Project: Final GW Remedy Phase I 245 ft bgs Driller Name: Dan O'Mara Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California Drilling Asst: E. Huellmantel / J. Pacheco Depth to First Water: 11.35 ft bgs **Grant Willford** Project Number: RC000753.0051 Logger: **Gantt Jeffers** Editor: Geologic Formation USCS Class USCS Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed (0.0 - 4.0') 12"(0.0 - 4.5') Choker Borehole (0.0 - 4.5') 6 bags (-15%) (0.0 - 4.5') 7.1 bags Sand Seal Note: Wildcat Washed Plastering Topock - Fill SP NR (4.0 - 245.0') 6" (4.5 - 210.0') Cemex (4.5 - 210.0') 80.7 (4.5 - 210.0') 94 bags (16%) Borehole #3 MESH (8x10) Note: Lapis Lustre Sand baas Topock - Fill SP RB-3-VAS-15-(<0.033 U) 4/26/2019 18 NR Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =

ARCADIS Design & Consumor for natural and built assets **Temporary Backfill Log** Sheet: Surface Elevation: 466.3 ft amsl 04/25/2019 Well ID: RB-3 Pilot Date Completed: <u>05/07/2019</u> Northing (NAD83): 2103172.5 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7616213.0 Client: PG&E Drilling Method: Sonic Drilling Total Depth: Project: Final GW Remedy Phase I 245 ft bgs Driller Name: Dan O'Mara Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California E. Huellmantel / J. Pacheco Depth to First Water: 11.35 ft bgs Drilling Asst: **Gantt Jeffers Grant Willford** Project Number: RC000753.0051 Logger: Editor: Geologic Formation USCS Class USCS Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed .21. 22 23 25 26 Topock - Fill SP 28 29 (4.5 - 210.0') Cemex (4.0 - 245.0') 6" (4.5 - 210.0') 80.7 (4.5 - 210.0') 94 bags (16%) 30 #3 MESH (8x10) Borehole Note: Lapis Lustre Sand 32 33 NR 35 36 Topock - Fill 38 39 Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =

Temporary Backfill Log Sheet: Surface Elevation: 466.3 ft amsl 04/25/2019 Well ID: RB-3 Pilot Date Completed: <u>05/07/2019</u> Northing (NAD83): 2103172.5 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7616213.0 Client: PG&E Drilling Method: Sonic Drilling Total Depth: 245 ft bgs Project: Final GW Remedy Phase I Driller Name: Dan O'Mara Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California E. Huellmantel / J. Pacheco Depth to First Water: 11.35 ft bgs Drilling Asst: **Gantt Jeffers Grant Willford** Project Number: RC000753.0051 Logger: Editor: Geologic Formation USCS Class USCS Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed Topock -42 SW Fluvial Deposits 43 NR 45 Topock -Fluvial Deposits Topock -Fluvial Deposits (4.5 - 210.0') Cemex (4.0 - 245.0') 6" (4.5 - 210.0') 80.7 (4.5 - 210.0') 94 bags (16%) 50 #3 MESH (8x10) Borehole Note: Lapis Lustre Sand Topock -Fluvial SP Deposits 51 52 RB-3-VAS-50-55 (0.100 J) 4/27/2019 53 NR 55 Topock -56 Fluvial Deposits 57 58 Topock -Fluvial ML Deposits Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =

ARCA	DIS Design & Control of For natura built asset	Consultancy Land es		Temporary I	Backfill Log	S	Sheet: 4 of 13
Date Started:	04/25/2019			_ Surface Elevation:	466.3 ft amsl	Well ID: R	B-3 Pilot
Date Completed:				Northing (NAD83):	2103172.5		
Orilling Co.:	Cascade			_ Easting (NAD83):	7616213.0	Client: PG&E	
Orilling Method:	Sonic Drilling	-		_ Total Depth:	245 ft bgs	•	GW Remedy Phase I
oriller Name: Orilling Asst:	Dan O'Mara		Pacheco	_ Borehole Diameter: _ Depth to First Water		Location: <u>PG&E</u>	Topock, Needles, Californ
ogger:	Gantt Jeffers		r acricco	_ Editor:	Grant Willford	Proiect Number	:: RC000753.0051
					<u> </u>		
Groundwate Sample ID		Code	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed
- 61 — - 62 — - 63 — - 64 — - 65 — - 66 — - 66 — - 67 — - 68 — - 70 — - 71 — - 72 — - 73 — - 74 — - 75 — - 75 — - 76 — - 77 — - 78 — - 78 — - 79 — -	Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits	ML SM		(4.5 - 210.0') Cemex #3 MESH (8x10)	(4.0 - 245.0') 6" Borehole	(4.5 - 210.0') 80.7 bags	(4.5 - 210.0') 94 bags (16%) Note: Lapis Lustre Sand
80 Abbreviations:	· ·	l d Soil (lassifica	tion System ft = feet	<u>.∵∵∷∴.1</u> bgs = below ground surfa	ce_amsl = above me	ean sea level GW =
							= no recovery, blue water
							e excavated from the pilot
	Irilling for the				o micryal Note. Granule L	raomiii materiai Will D	o ovoasaren ironi nie hilor

ARCADIS Design & Consumor for natural and hullt assets **Temporary Backfill Log** Sheet: 13 Surface Elevation: 466.3 ft amsl 04/25/2019 Well ID: RB-3 Pilot Date Completed: <u>05/07/2019</u> Northing (NAD83): 2103172.5 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7616213.0 Client: PG&E Drilling Method: Sonic Drilling Total Depth: 245 ft bgs Project: Final GW Remedy Phase I Driller Name: Dan O'Mara Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California E. Huellmantel / J. Pacheco Depth to First Water: 11.35 ft bgs Drilling Asst: **Gantt Jeffers Grant Willford** Project Number: RC000753.0051 Logger: Editor: Geologic Formation USCS Class USCS Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed .81 RB-3-VAS-80-85 (0.132 J) 4/27/2019 83 15:18 84 Topock -Alluvium SM Deposits 85 86 87 88 89 Topock -(4.5 - 210.0') Cemex (4.0 - 245.0') 6" (4.5 - 210.0') 80.7 (4.5 - 210.0') 94 bags (16%) 90 ML Alluvium #3 MESH (8x10) Borehole Note: Lapis Lustre Sand Deposits 92 Topock -93 Alluvium SM Deposits 95 96 97 Topock -GM Alluvium Deposits 98 Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =

AR	CAI	DIS Design & for natura built asse	Consultancy al and its		Temporary I	Backfill Log	St	neet: 6 of 13
Date Starte Date Comp Drilling Co. Drilling Met Driller Nam Drilling Ass Logger:	oleted: : thod: ne: st:	04/25/2019 05/07/2019 Cascade Sonic Drilling Dan O'Mara E. Huellman Gantt Jeffers	tel / J.	Pacheco	Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water		Location: <u>PG&E</u>	
# _{1,7} Gro	oundwater ample ID	Geologic Formation	USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
101		Topock - Alluvium Deposits	GM					
		Topock - Alluvium Deposits	SM				9	
106 106 107		Topock - Alluvium Deposits	GM					
5108 5 7109		Topock - Alluvium Deposits	SM					
110		Topock - Alluvium Deposits	GM		(4.5 - 210.0') Cemex	(4.0 - 245.0') 6" Borehole	(4.5 - 210.0') 80.7 bags	(4.5 - 210.0') 94 bags (16%) Note: Lapis Lustre Sand
2	ons: US	Topock - Alluvium Deposits	SM d Soil (Classifica	tion System, ft = feet,	bgs = below ground surfa	ace, amsl = above mea	an sea level, GW =

ARCADIS Design & Consumor for natural and hullt assets **Temporary Backfill Log** Sheet: Surface Elevation: 466.3 ft amsl 04/25/2019 Well ID: RB-3 Pilot Date Completed: <u>05/07/2019</u> Northing (NAD83): 2103172.5 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7616213.0 Client: PG&E Drilling Method: Sonic Drilling Total Depth: 245 ft bgs Project: Final GW Remedy Phase I Driller Name: Dan O'Mara Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California E. Huellmantel / J. Pacheco Depth to First Water: 11.35 ft bgs Drilling Asst: **Gantt Jeffers Grant Willford** Project Number: RC000753.0051 Logger: Editor: Geologic Formation USCS Class USCS Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed _121. 122 RB-3-VAS-120-125 (<0.17 U) À/28/2019 123_ 11:29 124 125 _126_ 127 Topock -Alluvium SM Deposits 128 129 (4.5 - 210.0') Cemex (4.0 - 245.0') 6" (4.5 - 210.0') 80.7 (4.5 - 210.0') 94 bags (16%) 130 #3 MESH (8x10) Borehole Note: Lapis Lustre Sand 131 132 _135_ 136 137 Topock -Alluvium Deposits 138 _139_ Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =

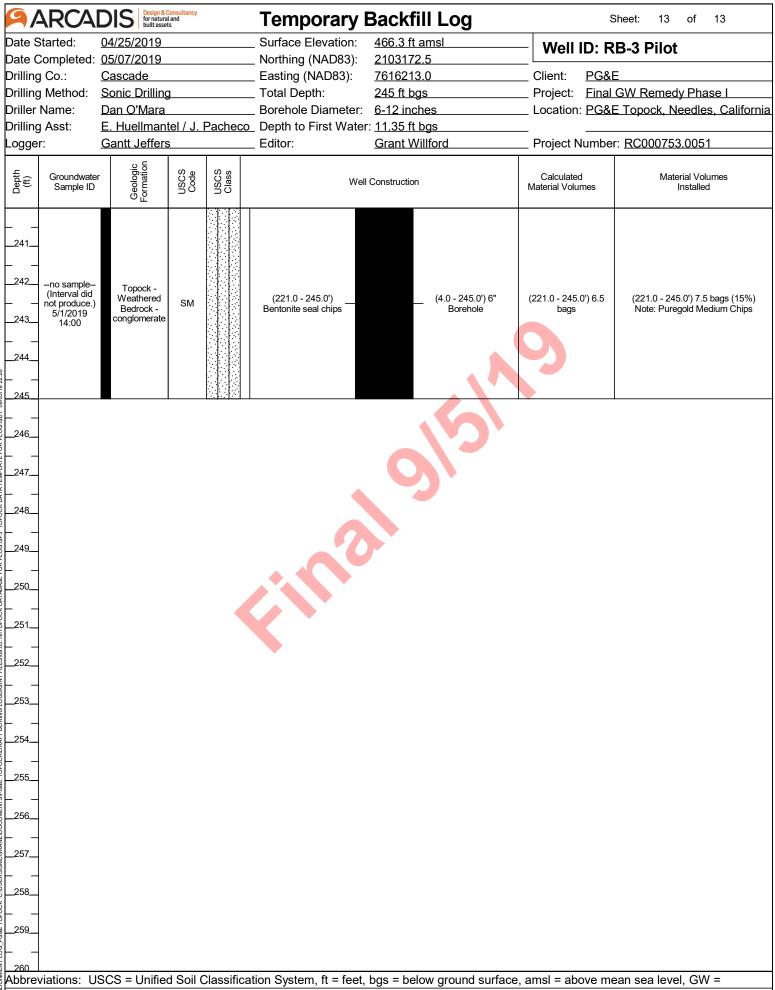
ARCADIS Design & Consumor for natural and hullt assets **Temporary Backfill Log** Sheet: 13 Surface Elevation: 466.3 ft amsl 04/25/2019 Well ID: RB-3 Pilot Date Completed: <u>05/07/2019</u> Northing (NAD83): 2103172.5 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7616213.0 Client: PG&E Drilling Method: Sonic Drilling Total Depth: 245 ft bgs Project: Final GW Remedy Phase I Driller Name: Dan O'Mara Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California E. Huellmantel / J. Pacheco Depth to First Water: 11.35 ft bgs Drilling Asst: **Gantt Jeffers Grant Willford** Project Number: RC000753.0051 Logger: Editor: Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed _141_ 142 Topock -Alluvium Deposits _143_ 144 145 _146_ Topock -Alluvium Deposits 149 (4.5 - 210.0') Cemex (4.0 - 245.0') 6" (4.5 - 210.0') 80.7 (4.5 - 210.0') 94 bags (16%) 150 #3 MESH (8x10) Borehole Note: Lapis Lustre Sand Topock -Alluvium GM Deposits _151 152 RB-3-VAS-150-155 (<0.17 U) 4/29/2019 153 Topock -SM Alluvium Deposits _155. 156 157 Topock -Weathered MLBedrock -158 conglomerate _159_ Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =

Date Completed: Drilling Co.: Drilling Method: Driller Name:	04/25/2019 05/07/2019 Cascade			Surface Elevation:	466.3 ft amsl	Well ID: RE	2 2 Dilot
Orilling Co.: Orilling Method: Oriller Name: I						AACII ID. ivi	2-3 F110L
Orilling Method: Solution Striller Name: Solution Stri	Cascade			Northing (NAD83):	2103172.5		
Oriller Name: [Easting (NAD83):	7616213.0	Client: PG&E	
	-			Total Depth:	245 ft bgs	•	GW Remedy Phase I
	Dan O'Mara			Borehole Diameter:		Location: <u>PG&E</u>	Topock, Needles, Califor
			<u> racheco</u>	Depth to First Water: Editor:		— Project North	DC0007E2 00E4
₋ogger: <u>(</u>	Gantt Jeffers	5		Editor:	Grant Willford	Project Number:	RC000753.0051
Groundwater Sample ID	Geologic Formation	USCS	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed
	Topock - Weathered Bedrock - conglomerate	ML	⊇assificat	(4.5 - 210.0) Cemex #3 MESH (8x10)	(4.0 - 245.0') 6" Borehole bgs = below ground surface	(4.5 - 210.0') 80.7 bags	(4.5 - 210.0') 94 bags (16%) Note: Lapis Lustre Sand

ARCADIS Design & Consultant of the Consultant of **Temporary Backfill Log** Sheet: 10 13 Surface Elevation: 466.3 ft amsl 04/25/2019 Well ID: RB-3 Pilot Date Completed: <u>05/07/2019</u> Northing (NAD83): 2103172.5 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7616213.0 Client: PG&E Drilling Method: Sonic Drilling Total Depth: Project: Final GW Remedy Phase I 245 ft bgs Driller Name: Dan O'Mara Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California E. Huellmantel / J. Pacheco Depth to First Water: 11.35 ft bgs Drilling Asst: **Gantt Jeffers Grant Willford** Project Number: RC000753.0051 Logger: Editor: Geologic Formation USCS Class USCS Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed _181_ RB-3-VAS-182 180-185 (<0.033 U <0.033 U) 4/29/2019 _183_ 15:38 184 185 Topock -Weathered ML_186_ Bedrock conglomerate 187. _188_ 189 (4.5 - 210.0') Cemex (4.0 - 245.0') 6" (4.5 - 210.0') 80.7 (4.5 - 210.0') 94 bags (16%) 190 #3 MESH (8x10) Borehole Note: Lapis Lustre Sand 191 192 193 Topock -Weathered Bedrock conglomerate _195_ 196 197 Topock -Weathered 198 Bedrock conalomerate _199_ Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =

Temporary Backfill Log Sheet: Surface Elevation: 466.3 ft amsl 04/25/2019 Well ID: RB-3 Pilot Date Completed: <u>05/07/2019</u> Northing (NAD83): 2103172.5 Drilling Co.: Cascade Easting (NAD83): 7616213.0 Client: PG&E Drilling Method: Sonic Drilling Total Depth: Project: Final GW Remedy Phase I 245 ft bgs Driller Name: Dan O'Mara Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California Drilling Asst: E. Huellmantel / J. Pacheco Depth to First Water: 11.35 ft bgs **Gantt Jeffers Grant Willford** Project Number: RC000753.0051 Logger: Editor: Geologic Formation USCS Class USCS Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed .201. 202 203 204 (4.5 - 210.0') Cemex (4.5 - 210.0') 80.7 (4.5 - 210.0') 94 bags (16%) 205 #3 MESH (8x10) bags Note: Lapis Lustre Sand Topock -_206_ . Weathered ML Bedrock conglomerate 207 RB-3-VAS-205-210 (<0.17 U) 4/30/2019 208 209 (4.0 - 245.0') 6" 210 Borehole 212 Topock -(210.0 - 221.0') (210.0 - 221.0') 4.3 (210.0 - 221.0') 5 bags (16%) 215 Weathered Indicator Sand Note: Wildcat Washed Plastering bags Bedrock conglomerate 216 217 218 Topock -Weathered 219 ML Bedrock conglomerate Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =

ARCA	DIS for natura built asset	Consultancy Land ts		Temporary E	Backfill Log	S	heet: 12 of 13
Date Started: Date Completed:	04/25/2019 05/07/2019			Surface Elevation: Northing (NAD83):	466.3 ft amsl 2103172.5	Well ID: R	B-3 Pilot
rilling Co.:	Cascade			Easting (NAD83):	7616213.0	 Client: <u>PG&E</u>	<u> </u>
rilling Method:		י		Total Depth:	245 ft bgs		- GW Remedy Phase I
riller Name:	Dan O'Mara	-		Borehole Diameter:	-	•	Topock, Needles, Californ
rilling Asst:			Pacheco	Depth to First Water			
ogger:	Gantt Jeffers			_ Editor:	Grant Willford	Project Number	: RC000753.0051
5 ⊕ Groundwate	ogic ation	S e e	SS	1A/ II	2	Calculated	Material Volumes
Groundwate Sample ID		Code	USCS	weil	Construction	Material Volumes	Installed
221_ - 222_ - 223_ - 224_ - 225_ - 226_	Topock - Weathered Bedrock - conglomerate	ML		(210.0 - 221.0') Indicator Sand		(210.0 - 221.0') 4.3 bags	(210.0 - 221.0') 5 bags (16%) Note: Wildcat Washed Plastering
	Topock - Weathered Bedrock - conglomerate	SM		(221.0 - 245.0') Bentonite seal chips	(4.0 - 245.0') 6" Borehole	(221.0 - 245.0') 6.5 bags	(221.0 - 245.0') 7.5 bags (15%) Note: Puregold Medium Chips
240		4 82:1 4	Nasaifias	tion System ft - fact	has = holow around surf-	co. amel = above re-	an soa loval CW =
woreviations: U					bgs = below ground surfa		
roundate :- !	1 = Name nor h	חחווונ	u = not de	erected above the labo	pratory reporting limit. J - (esumated value, NR :	– no recovery, piue water
roundwater, ppt							e excavated from the pilot



9/-	ARCA	DIS	Des for buil	i <mark>ign & Consultani</mark> natural and It assets	су	Drilling Log				Sheet:	1 of 12
	Started:	08/24/2019 d: 09/07/2019 Cascade				urface Elevation:	46	66.3 ft amsl	Borin	ıg No.: R	B-3
	-			19		orthing (NAD83):		103172.5			
Drilling						asting (NAD83):		616213.0	Client:	PG&E	
_	Method:	<u>Dual I</u>		-		otal Depth:		24 ft bgs	Project:		emedy Phase 1
	g Type:			DR-241		onductor Casing Diameter:			Location	PG&E Topo	ck, Needles, California
Driller I		Jon M				rill Casing Diameter:		3 inches			
Drilling				<u>mezguita</u>		rill Bit:		5.5 inch & 17.5 Tricone	Project N	lumber: RC0	00753.0051
Tool-P		Scott				epth to First Water:		1.35 ft bgs			
Rig Ge	eologist:	A. Ma	CK /	E. Redr	ner C	onverted to Well:	<u> ×</u>	Yes No			
Depth (ft)	Drilling Rui and Averag Penetration R	e lõ	SCS ode	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)		Drilling	Notes		Drilling Fluid
- 1 _ _ 1 _ 2 _ - 2 _ _ 3 _	(0.0 - 3.0) 968.21 mins/	ft			(0.0 - 3.0') 18.0" Steel Casing	(0.0 - 8.0') Topock - Fill; Poorly graded sand (SP)		(0.0 - 10.0') Drilled with water			(0.0 - 21.1') 3589.76 gallons of water used; 91.2 gallons of water recovered; 3498.56 gallons of water lost
- 4 — - 5 — - 6 — - 7 — - 8 —			- - -			(8.0 - 15.0') No recovery (NR)		(3.0') Drilling stopped due to	a clogged di	scharge hose.	
- 9	(3.0 - 21.1) 3.30 mins/ft	,	NR		(3.0 - 21.1') 18.0" Steel Casing		Ž	(10.0') Observed trace amout Lapis Luster Sand in drill cutt (10.0 - 21.1') Drilled with water	tings (see ph		
15 16 16 17			- - -			(15.0 - 18.0') Topock - Fill; Poorly graded sand (SP)	у				
18 19 		1	NR			(18.0 - 20.0') No recovery (NR)	_				

9/	ARCA	D	S S S S S S S S S S S S S S S S S S S	ign & Consultan natural and t assets	су	Drilling Log			Sheet:	2 of 12
	Started:	eted: 09/07/2019				Surface Elevation:	466.3 ft amsl	Borir	g No.: RB	3-3
	•			9		lorthing (NAD83):	2103172.5			
Drilling						Easting (NAD83):	7616213.0	Client:	PG&E	
_	Method:		ıal Rota	-		otal Depth:		Project:	Final GW Rer	•
	g Type: Name:		<u>remosi</u> n Martir	DR-241		Conductor Casing Diameter: Orill Casing Diameter:	16 inches	Location	PG&E TOPOC	k, Needles, California
Drilling				nezguit		Orill Bit:	15.5 inch & 17.5 Tricone	Project N	Lumber: RC00	0753 0051
_	usher:		ott Johi	_		Depth to First Water:	11.35 ft bgs	1 10,0001	14111501. <u>14000</u>	0100.0001
	eologist:			E. Redi		Converted to Well:	× Yes			
	D.III. D.					Description				
Depth (ft)	Drilling Ru and Averag Penetration F	ii Je Pate	USCS Code	USCS Class	Casing Diameter	(See Pilot boring log for	Drilling	Notes		Drilling Fluid
	renetiation	vale				full geologic descriptions)	1(00.01) 01	1 10	(IO NEOLI (O. 40)	
-	(3.0 - 21.1) 3.30 mins/ft				(3.0 - 21.1') 18.0" Steel	(20.0 - 33.0') Topock - Fill; Poorly graded sand (SP)	(20.0') Observed trace amount Lapis Luster Sand in drill cutt			
21	3.30 mms/it	4			Casing		(21.0 - 41.3') Drilled with water	er		(21.1 - 61.2') 6417.18
							(21.0 - 41.5) Diffied with water	GI.		gallons of water used;
22										3705.6 gallons of water recovered; 2711.58
-										gallons of water lost
23										
-										
24										
25										
					}					
26										
			SP							
27			0,							
_										
28										
29										
30	(04.4.44.0)				(21.1 - 41.3		(30.0') Drilled with water.			
	(21.1 - 41.3) 1.93 mins/ft				`18.0" Steel Casing					
31					James					
32										
33			L							
_				\setminus		(33.0 - 35.0') No recovery (NR)				
34			NR							
35			L			(35.0 - 39.5') Topock - Fill; Poorly	_			
						graded sand (SP)				
36										
<u> </u>										
37			SP							
38										
39										
			L							
40			SW			(39.5 - 44.0') Topock - Fluvial	(39.6 - 59.2') Drill rods chatte	ering.		
Abbro	diations: 119	200	2 – I In:	انحط فحوا	Classifies	tion System ft - fact has -	holow ground ourfood amo	l = abaya	moon oog lavel	CM - groundwater

9/	ARCA	DIS	Des for buil	sign & Consultan natural and It assets	су	Drilling Log			Sheet:	3 of 12
Date S		08/24				urface Elevation:	466.3 ft amsl	Borii	ng No.: RB	B-3
	completed:			9		orthing (NAD83):	2103172.5	_		
Drilling		Casc				asting (NAD83):	7616213.0	_ Client:	PG&E	
_	Method:	<u>Dual</u>		-		otal Depth:	224 ft bgs	_ Project:		•
Driller	g Type:	Jon N		DR-241		onductor Casing Diameter: rill Casing Diameter:	16 inches	_ Location	i: PG&E Topoc	k, Needles, California
Drilling				mezguit		rill Bit:	15.5 inch & 17.5 Tricone	– Project N	Number RC00	0753 0051
Tool-P		Scott		_		epth to First Water:	11.35 ft bgs	<u> </u>	144111501. <u>14555</u>	0100.0001
	eologist:			E. Redi		onverted to Well:	× Yes	_		
	D. 1111 D.					Description				
Depth (ft)	Drilling Ru	n le C	SCS Code	USCS Class	Casing Diameter	(See Pilot boring log for	Drillir	g Notes		Drilling Fluid
. ,	Penetration F	ate				full geologic descriptions)				
L _	(21.1 - 41.3)				(21.1 - 41.3')	Deposits; Well graded sand (SW	(40.0') Observed trace amo Lapis Luster Sand in drill cu			
41	1.93 mins/ft				`18.0" Steel´ Casing					
					,	<u> </u> 	(41.3 - 61.2') Drill rods chat	tering.		
42			SW		,					
43					,					

44		<u> </u>			. }	(44.0 - 45.0') No recovery (NR)	_			
			NR	\times		(44.0 - 40.0) NO 1000Very (NIV)				
45						(45.0 - 47.0') Topock - Fluvial				
						Deposits; Well graded sand (SW				
46		sw :::::								
-										
47						(47.0 - 50.0') Topock - Fluvial				
						Deposits; Well graded gravel with sand (GW)	n			
48										
		•	GW							
49						4.4				
50										
30					(41.3 - 61.2")	(50.0 - 51.0') Topock - Fluvial Deposits; Poorly graded sand (SF	(50.0') Observed trace amo			
51	(41.3 - 61.2) 3.34 mins/ft		SP		18.0" Steel Casing	Deposits, Poorly graded saild (Sr	Lapis Luster Sand in drill Ct	ittirigs (see p	rioto log).	
				7	Casing	(51.0 - 55.0') No recovery (NR)	_			
52				$ \rangle /$						
				$ \setminus $						
53			NR							
			NIX	$ \ \ $						
54				/ \						
L _				/ \						
55				<u> </u>	1		_			
_						(55.0 - 57.0') Topock - Fluvial Deposits; Well graded gravel with	n			
56			GW		!	sand (GW)				
57					d -	(57.0 - 59.5') Topock - Fluvial	_			
<u> </u>						Deposits; Silt with sand (ML)				
58										
-			ML							
59										
-		<u> </u>	 ML	 	 	(59.5 - 65.0') Topock - Alluvium				
60 Abbrox	iotiono: III			ind Sail	Clossificat	ion System ft - foot has -	holow ground ourfoce am	al = abaya	maan aaa layal	CW = groundwater

9/	ARCA	DI	S Designation	i <mark>gn & Consult</mark> natural and t assets	rancy	Drill	ing Log							Sheet	t: ·	4 of 12
Date S			/24/201			Surface Eleva			6.3 ft a		sl	Во	rin	g No.:	RB	-3
	completed:			9		Northing (NAD	•		03172			_				
Drilling			scade			Easting (NAD	83):		316213			_ Client		PG&E	_	
_	Method: g Type:		<u>al Rota</u> remost	•	1110	Total Depth:	sing Diameter:		24 ft bg			_ Proje				nedy Phase 1 k, Needles, California
Driller I			n Martir		+ П <i>D</i>	Drill Casing Di	-		inche			_ Lucai	uon.	FG&E IC	рос	k, Needles, California
Drilling			& H. Ar		ita	Drill Bit:	ameter.				k 17.5 Tricone	– e Proie	ct N	umber: R	C000	0753.0051
Tool-P			ott Johr	•		Depth to First	Water:		.35 ft k							
	eologist:		Mack /		dner	Converted to \			Yes	Ŏ	No					
	Daillin a Da					De	escription	Ī	-							
Depth (ft)	Drilling Rui and Averag Penetration R	е	USCS Code	USCS Class		er (See Pilo	t boring log for gic descriptions)				Drillir	g Notes				Drilling Fluid
	(41.3 - 61.2) 3.34 mins/ft				(41.3 - 61 18.0" Ste	· Z) / N A i \	dy silt with gravel				served trace amo er Sand in drill cu				x10)	
61	3.34 IIIII15/II				Casing				(0.1.0	011	ON B 311 1 311					(0.4.040.4.41) 0.4000 70
									(61.2 -	81.2	2') Drilled with wa	ater.				(61.2 - 101.1') 24063.76 gallons of water used;
62																25318.84 gallons of water recovered; 1255.08
			ML													gallons of water gained
63																
64																
 65																
03				17 4	<u>ז</u>	(65.0 - 66.0') T	opock - Alluvium gravel with sand									
			GM			(GM)	graver with sailu									
						(66.0 - 77.0') T Deposits: Silty	opock - Alluvium sand with gravel	7		1						
67						(SM)	4	ľ								
68																
69																
70					(61.001	40			(70.0')	Obs	served trace amo	unts of C	emex	(#3 MESH (8	x10)	
	(61.2 - 81.1) 8.77 mins/ft				∷ (61.2 - 81 18.0" Ste	el			Lapis L	uste	er Sand in drill cu	uttings (se	ee ph	oto log).		
71					Casing											
70			SM													
72																
73					ä											
74																
					3											
75																
76																
					싦											
77					<u> </u>	(77 N ₋ 70 N')	opock - Alluvium	_								
						Deposits; San	dy silt with gravel									
78			ML			(ML)										
-																
79							opock - Alluvium	\dashv								
<u> </u>			SM				sand with gravel									
80 Abbrev	iations: 119	SCS	S = Unif	ied So	::) il Classific	` '	ft = feet_bas =	 beld	ow are	una	d surface am	sl = abo	ove	mean sea	level	 . GW = groundwater

9/	ARCA	D	S Designation of the state of t	ign & Consultan natural and t assets	су	Drilling Log				Sheet:	5 of 12
Date S			/24/201		S	urface Elevation:	466.3 ft	amsl	Borin	g No.: RB	-3
	ompleted:			9		Iorthing (NAD83):	210317				<u> </u>
Drilling			scade			asting (NAD83):	761621		Client:	PG&E	
	Method:		ıal Rota	-		otal Depth:	224 ft bo	-	Project:	Final GW Rer	-
Driller 1	g Type:		<u>remost</u> n Martir	DR-241		Conductor Casing Diameter: Orill Casing Diameter:	16 inche		Location:	PG&E TOPOCI	k, Needles, California
Drilling				nezguita		orill Bit:		ch & 17.5 Tricone	Project N	umber: RC000	753 0051
Tool-P			ott Johr	_		epth to First Water:	11.35 ft			411.501. <u>1.000.</u>	37 00.000 1
	ologist:			E. Redr		converted to Well:	× Yes	No			
	Drilling Bu					Description					
Depth (ft)	Drilling Rui and Averag Penetration R	е	USCS Code	USCS Class	Casing Diameter	(See Pilot boring log for		Drilling	Notes		Drilling Fluid
. ,	Penetration R	tate				full geologic descriptions)					
	(61.2 - 81.1)				(61.2 - 81.1' 18.0" Steel		(80.0') Lapis) Observed trace amou Luster Sand in drill cutt	nts of Ceme tings (see ph	(#3 MESH (8x10) oto log).	
81	8.77 mins/ft				Casing						
							(81.2 -	- 101.1') Drilled with wa	ater.		
82											
83											
84											
			SM								
85											
86											
87											
88											
 89											
09						(89.0 - 91.0') Topock - Alluvium Deposits; Sandy silt with gravel					
90						(ML)					
	(81.1 - 101.5	,	ML		(81.1 - 101.5	7)		Observed trace amount Luster Sand in drill cutt			
91	3.91 mins/ft				18.0" Steel Casing				9- (3/-	
						(91.0 - 95.0') Topock - Alluvium Deposits; Silty sand with gravel					
92						(SM)					
93			SM								
94											
├ ┤											
95						(95.0 - 101.5') Topock - Alluvium	+				
				6 P.F.		Deposits; Silty gravel with sand (GM)					
96				3		()					
F											
97				3							
			GM								
98				3							
 99											
				36							
100				b P.C							
A bbros	iationa, III	200	- 11-:4	: 0-:	Cl:6:	tion Cyatom ft - foot has -			l — alaassa		C14/

9/	ARCA	DIS	S Design for no built	gn <mark>& Consultan</mark> atural and assets	су	Drilling Log						Shee	et:	6 of 12
Date S			4/201		Sı	urface Elevation:	466.3	ft a	msl		Borin	g No.:	RB	3-3
	completed:	09/0	7/201	9		orthing (NAD83):	21031			L				<u>, </u>
Drilling		Caso				asting (NAD83):	<u>76162</u>				lient:	PG&E		
_	Method:		Rota	-		otal Depth:	224 ft	_			roject:			medy Phase 1
	g Type:			DR-241		onductor Casing Diameter:				L	ocation:	PG&E To	opoc	k, Needles, California
Driller I Drilling			Martin ⊔ ^∽			rill Casing Diameter: rill Bit:	16 inc		& 17.5 Tricon	D	raigat N	Lumbor: D	<u></u>	0752 0051
Tool-P			t Johr	<u>nezguit</u> Neon		epth to First Water:	11.35			<u>IIE</u> F	roject iv	iuiiibei. <u>K</u>	.000	0755.0051
	eologist:			E. Redi		onverted to Well:	× Ye	_	No					
						Description	 							
Depth (ft)	Drilling Rui and Averag	e 7	JSCS Code	USCS Class	Casing Diameter	(See Pilot boring log for			Drill	lling No	otes			Drilling Fluid
(10)	Penetration R	ate	oodo	Oldoo	Biamotor	full geologic descriptions)								
					(81.1 - 101.5')				Observed trace ar apis Luster Sand i				g).	
101	(81.1 - 101.5 3.91 mins/ft		GM		18.0" Steel Casing			,					0 7	
					Odding									
102						(101.5 - 105.0') Topock - Alluviun Deposits; Silty sand with gravel	1 (10	1.5 -	116.6') Drilled wit	ith wate	er.			(101.5 - 110.6') 773.24 gallons of water used;
						(SM)								1258.92 gallons of water recovered; 485.68 gallons
103														of water gained
			SM											
104											•			
105				; 		(105.0 - 108.0') Topock - Alluviun	1							
					(101.5 -	Deposits; Silty gravel with sand (GM)								
106	(101.5 - 110.6 3.92 mins/ft	5)	ĺ		110.6') 18.0" Steel Casing									
			GM		Oleer Casing									
107			ĺ											
400				$^{\circ}$										
108						(108.0 - 109.0') Topock - Alluviun Deposits; Silty sand with gravel	n							
109			SM			(SM)								
			S			(109.0 - 115.0') Topock - Alluviun Deposits; Silty gravel with sand	1							
110						(GM)								
			Š				(8x	10) Ĺ:	Observed trace ar apis Luster Sand i	in drill	cuttings (see photo lo	g),	
111								oped ler rig	drilling to formation	ion coll	apse arou	and borehole	and	(110.6 - 120.8') 6010 gallons of water used;
			Š						120.8') Drilled wit	ith wate	er.			1802 gallons of water recovered; 4208 gallons of
112			GM											water lost
			Š											
113														
			Š											
114														
			Š											
115	(110.6 - 120.8				(110.6 - 120.8') 16.0"	(115.0 - 135.0') Topock - Alluviun	1							
	2.43 mins/ft				Steel Casing	Deposits; Silty sand with gravel (SM)								
116														
117							(11	6.6 -	124.8') Drilled wit	ith wate	er.			(116.6 - 124.8') 6010
117														gallons of water used; 1802 gallons of water
 118			SM											recovered; 4208 gallons of water lost
119														
120														
Abbrev	<i>i</i> iations: US	SCS =	= Unifi	ed Soil	Classificati	on System, ft = feet, bgs =	below g	grou	nd surface, ar	msl =	above	mean sea	level	, GW = groundwater

Remarks: NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval for RB-3 Pilot

9/	ARCA	DI:	S Des	ign & Consultano natural and t assets	су	Drilling Log			Sheet:	7	of 12
Date S	Started:	ted: 09/07/2019			S	urface Elevation:	466.3 ft amsl	Borin	g No.: <u>F</u>	RB-3	 B
	-	09/0	7/201	9	N	orthing (NAD83):	2103172.5	. ———			
Drilling		<u>Cas</u>	cade			asting (NAD83):	7616213.0	Client:	PG&E		
_	Method:		l Rota	-		otal Depth:	224 ft bgs	Project:			edy Phase 1
	g Type:			DR-24F		onductor Casing Diameter:		Location:	PG&E Top	ock,	Needles, California
Driller			Martir			rill Casing Diameter:	16 inches				
Drilling				<u>nezguita</u>		rill Bit:	15.5 inch & 17.5 Tricone	Project N	umber: RC	20007	53.0051
	usher:		tt Joh			epth to First Water:	11.35 ft bgs	•			
Rig Ge	eologist:	<u>A. IV</u>	nack /	E. Redr	ier C	onverted to Well:	Yes No			-	
Depth (ft)	Drilling Rui and Averag Penetration R	e	USCS Code	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling				Drilling Fluid
	(110.6 - 120.8 2.43 mins/ft						(120.0') Observed trace amo (8x10) Lapis Luster Sand in c).	
121						_	(120.8 - 140.5') Drilled with w	vater.			20.8 - 201.2') 16966
										ga 88	allons of water used; 368.8 gallons of water
122										re	368.8 gallons of water covered; 8097.2 gallons water lost
											Water leet
123											
124											
125							(124.8 - 144.8') Drilled with w	vater.			24.8 - 204.8') 17466
										12	allons of water used; 2871.6 gallons of water
126											covered; 4594.4 gallons water lost
127											
-			SM								
128											
129											
130	(120.8 - 140.5	5			(120.8 -		(130.0') Observed trace amo				
	2.49 mins/ft				140.5') 16.0" Steel Casing		(8x10) Lapis Luster Sand in o	drill cuttings (see photo log)).	
131							(131.0') Drill rods chattering.				
132											
133											
 134											
<u> </u>											
135						(405.0. 444.51) Taranala Allania					
<u> </u>						(135.0 - 144.5') Topock - Alluviun Deposits; Silty gravel with sand					
136						(GM)					
<u> </u>											
_137											
-			GM								
138				MALA							
139				PJON							
-											
140				D TYZ	01 10 1						

ARCA	DIS	esign & Consultancy or natural and uilt assets		Drilling Log						Sheet:	8 of 12			
Date Started: <u>08/24/2019</u>			Su	Surface Elevation:		6.3 ft a	ımsl		Boring No.: RB-3					
Date Completed:	ed: <u>09/07/2019</u>			orthing (NAD83):	2103172.5			Dom	ig 140 <u>140</u>					
Drilling Co.:	Cascade			Easting (NAD83):			7616213.0			PG&E				
Drilling Method:	d: <u>Dual Rotary</u>			_Total Depth:			224 ft bgs			Final GW Rer	nedy Phase 1			
Drill Rig Type:	rill Rig Type: Foremost DR-24HD			Conductor Casing Diameter: 18 inches			3		Location	: PG&E Topoc	k, Needles, California			
Driller Name: <u>Jon Martinez</u>			Dri	Drill Casing Diameter:			3							
Drilling Asst: <u>A. & H. Amezguita</u>			Dri	_Drill Bit:			15.5 inch & 17.5 Tricone Project Number: RC000753.0051							
Tool-Pusher: <u>Scott Johnson</u>		Depth to First Water:		11.35 ft bgs										
Rig Geologist:	A. Mack	/ E. Redner	Co	nverted to Well:	×	Yes	No							
Donth Drilling Ru	n			Description										
Depth and Average Penetration F	je OSCS		Casing iameter	(See Pilot boring log for		Drilling			J Notes		Drilling Fluid			
T Griotiation 1	tato			full geologic descriptions)	(140.0') Observed trace amounts of Cemex #3 MESH				#2 MECH					
						(8x10) ĺ	_apis Luster \$	Sand in d	rill cuttings	ex#3 MESH (see photo log).				
_141		PJON				(140.5	· 161.6') Drille	ed with w	ater.					
_142		Polon												
	GM													
_143														
_144		547												
		90												
_145				(144.5 - 149.0') Topock - Alluviur Deposits; Silty sand with gravel	١	(144.8.	· 164.8') Drille	ed with w	ater					
				(SM)		(144.0	104.0) Billio	Su With W	ator.					
146														
	SM													
149_														
				(149.0 - 15 <mark>2.0') Topock - Alluviur</mark> Deposits; Silty gravel with sand	1									
				(GM)										
(140.5 - 161.6 1.52 mins/ft	. 1	bΨ(\ 161	140.5 - .6') 16. 0 "				Observed tra			ex #3 MESH (see photo log).				
	GM	Stee	el Ćasing			(0×10)1	Lapis Lustei	Janu III u	iiii cuttiiigs	(see prioto log).				
		1000												
152		646												
				(152.0 - 155.0') Topock - Alluviur Deposits; Silty sand with gravel	1									
153				(SM)										
154	SM													
134														
155														
155				(155.0 - 191.5') Topock -	• •									
				Weathered Bedrock - conglomerate; Sandy silt with										
156			!	gravel (ML)										
├														
157														
├ .	ML													
158														
 														
159														
L_160	SCS = Un	ified Soil Cla	assificatio	on System, ft = feet, bgs =	 beld	ow aro	und surfac	e. ams	l = above	mean sea level	. GW = groundwater			

9/	ARCA	DIS	Design for nati built as	& Consultan ural and ssets	су	Drilling Lo	g				Sheet	: 9 of 12
	Started:	08/24/				urface Elevation:			6.3 ft amsl	Borin	g No.:	RB-3
Date Completed: 09/07/2019			_Northing (NAD83):		2103172.5							
Drilling Co.: <u>Cascade</u>			Easting (NAD83):				Client:	PG&E	Damady Dhaga 1			
_	Drilling Method: <u>Dual Rotary</u> Drill Rig Type: <u>Foremost DR-24HD</u>			Total Depth: Conductor Casing Diameter:			4 ft bgs	Project:		Remedy Phase 1 pock, Needles, California		
Driller Name: <u>Jon Martinez</u>			_ Drill Casing Diameter:			inches	Loodiion.	1 002 10	pook, Hoodios, Camorria			
Drilling Asst: A. & H. Amezguita			_ Drill Bit:		<u>15.</u>	.5 inch & 17.5 Tricone	Project N	umber: Ro	C000753.0051			
Tool-Pusher: Scott Johnson			_Depth to First Water:			.35 ft bgs						
Rig Geologist: A. Mack / E. Redner				ner Co	onverted to Well:		X	Yes No				
Depth (ft)	Drilling Run and Average Penetration Rate		USCS USCS Code Class		Casing Diameter				Drilling	j Notes		Drilling Fluid
 161		(140.5 - 161.6) 1.52 mins/ft			(140.5 - 161.6') 16.0" Steel Casing				(160.0') Observed trace amou (8x10) Lapis Luster Sand in d)).		
 162	-	1							(161.6 - 181.5') Drilled with w	rater.		
163									(163.0') Drill rods chattering.	3		
164		н										
165		L							(164.8 - 184.8') Drilled with w	ater.		
166		н	: : :					F				
167		L										
168		L				7						
169		L										
170	(161.6 - 181.8	M	L :		(161.6 - 181.8') 16.0"				(170.0') Observed trace amou (8x10) Lapis Luster Sand in d	unts of Ceme Irill cuttings (ex#3 MESH see photo log	1).
171	1.93 mins/ft	9)			181.8') 16.0" Steel Casing							
172		L										
173												
174		L										
175		н										
176		н										
177												
178												
179	†											
180												
												evel, GW = groundwater
Rema	rks: NK = r	io teco,	ery,	v evia	vater table	symbol represents dept	n to	wat	ter measured during the	IIIST VAS	interval for	KB-3 PIIOT

9/	ARCA	DIS	esign & Consultan or natural and uilt assets	псу	Drilling Log			Sheet:	10 of 12
Date S	Started:	08/24/20	19	S	Surface Elevation:	466.3 ft amsl	Borin	g No.: R	B-3
Date (ate Completed: 09/07/2019			N	lorthing (NAD83):	2103172.5	D 01111	9 110 <u>11.</u>	
_	illing Co.: <u>Cascade</u>			Easting (NAD83):	7616213.0	Client:	PG&E		
Drilling	Drilling Method: <u>Dual Rotary</u>			otal Depth:	224 ft bgs	Project:		emedy Phase 1	
	Drill Rig Type: <u>Foremost DR-24HD</u>			Conductor Casing Diameter:		PG&E Topo	ck, Needles, California		
	Driller Name: <u>Jon Martinez</u>				_ Drill Casing Diameter: <u>16 inches</u>				
_	Drilling Asst: A. & H. Amezguita				Orill Bit:	15.5 inch & 17.5 Tricone	Project N	umber: RC0	00753.0051
	Tool-Pusher: Scott Johnson				Depth to First Water:	11.35 ft bgs			
Rig G	eologist:	A. Mack	/ E. Redi	ner C	Converted to Well:	× Yes No			
Depth	Drilling Ru	n USCS	SUSCS	Casing	Description				
(ft)	and Average Penetration F	le Codo		Diameter	(See Pilot boring log for full geologic descriptions)	Drilling	Notes		Drilling Fluid
181	(161.6 - 181. 1.93 mins/ft			(161.6 - 181.8') 16.0 Steel Casing		(180.0') Observed trace amou (8x10) Lapis Luster Sand in d	rill cuttings (
EMPLATE FOR PLOG.GD.	-	ML							
188						(190.0') Observed trace amou (8x10) Lapis Luster Sand in d	unts of Ceme	ex #3 MESH see photo log).	
191	(181.8 - 201.: 1.34 mins/ft	2)		(181.8 - 201.2') 16.0 Steel Casin			0 .	1 0,	
192_ _192_	<u></u>				(191.5 - 196.0') Topock - Weathered Bedrock - conglomerate; Silty sand with				
					gravel (SM)				
		SM							
195_ 195	-								
196_		I			(196.0 - 212.5') Topock -				
RS/SWCGRANE/DOCUMEN - 197 - 198 - 198	-	ML			Weathered Bedrock - conglomerate; Sandy silt with gravel (ML)				
	_								
200				:					
	viations: U	SCS = Un	ified Soil	Classifica	tion System, ft = feet, bgs =	below ground surface, ams	l = above	mean sea lev	el, GW = groundwater
0					symbol represents depth to	_			-

9 A	RCA	DIS	esign & Consultar or natural and uilt assets	псу	Drilling Log		Sheet:	11 of 12
Date St	arted:	08/24/20	19	S	urface Elevation:	466.3 ft amsl	Boring No.: RE	3-3
	ompleted:				orthing (NAD83):	2103172.5		
Drilling (Cascade			asting (NAD83):	7616213.0	Client: PG&E	
_		Dual Rot	-		otal Depth:	224 ft bgs	•	medy Phase 1
Drill Rig		Foremos			onductor Casing Diameter:		Location: PG&E Topoc	k, Needles, California
Driller N		Jon Mart			rill Casing Diameter:	16 inches		
Drilling A		A. & H. A	-		rill Bit:	15.5 inch & 17.5 Tricone	Project Number: RC00	0753.0051
Tool-Pu		Scott Joh			epth to First Water: onverted to Well:	11.35 ft bgs		
Rig Ged	Jiogist.	A. Mack	/ E. Reu	Tiel C		× Yes No		I
Depth	Drilling Rur and Averag	USCS	USCS	Casing	Description	Drilling	Notos	Drilling Fluid
(ft) F	Penetration R	ate Code	Class	Diameter	(See Pilot boring log for full geologic descriptions)	Drilling	Notes	Drilling Fluid
				. (404.0	Tam granagas accompanie)	(200.0') Observed trace amo		
1 1	(181.8 - 201.2 1.34 mins/ft			(181.8 - 201.2') 16.0'	,	(8x10) Lapis Luster Sand in o	drill cuttings (see photo log).	
_201	1.54 111115/10			Steel Casing				
						(201.2 - 224.0') Drilled with w	vater.	(201.2 - 222.0') 10065 gallons of water used;
202]				8360.8 gallons of water recovered; 1704.2 gallons
├								of water lost
203]				
_204								
F - 1				<u> </u>				
_205				•				
				<u>;</u>				
_206		ML						
		III IVIL		<u> </u>				
_207								
				-				
_208				.]		(208.0') Hole plugged up.		_
				•				
_209								
				•				
				(201.2 -		(210.0') Observed trace amo		
211_	201.2 - 220.5 2.54 mins/ft	"		220.5') 16.0' Steel Casino		(8x10) Lapis Luster Sand in o	arili cuttings (see prioto log).	
				. Cloor Guoning				
212				•				
213_]	(212.5 - 218.0') Topock - Weathered Bedrock -			
					conglomerate; Silty sand with gravel (SM)			
214_					graver (Sivi)			
				1				
215				1				
		SM						
_216				1				
				1				
_217								
_218				<u>}</u>		_		
]	(218.0 - 224.0') Topock - Weathered Bedrock -			
219		ML			conglomerate; Sandy silt with gravel (ML)			
L]]	,			
220								
ı∆hhr⇔ <i>vi</i> i	ations: 119	SCS = Hn	itied Soil	Classificat	ion System ft = feet has =	helow around surface ame	ı = ahove mean sea leve	I (3W = aroundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwa Remarks: NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval for RB-3 Pilot

ARC	ADIS Design & Consultancy for natural and built assets	Drilling Log		;	Sheet: 12 of 12
Date Started:	08/24/2019	Surface Elevation:	466.3 ft amsl	Boring No	o.: RB-3
	ed: <u>09/07/2019</u>	Northing (NAD83):	2103172.5	_	
Drilling Co.:	<u>Cascade</u>	Easting (NAD83):		Client: PG&	
Drilling Method Drill Rig Type:		Total Depth: Conductor Casing Diameter:	_	-	GW Remedy Phase 1 E Topock, Needles, California
Driller Name:	Jon Martinez	Drill Casing Diameter:	16 inches	Location. I Ox	L TOPOCK, Necules, Calliottia
Drilling Asst:	A. & H. Amezguita	Drill Bit:	15.5 inch & 17.5 Tricone	Project Numbe	r: RC000753.0051
Tool-Pusher:	Scott Johnson	Depth to First Water:	11.35 ft bgs	•	
Rig Geologist:	A. Mack / E. Redner	Converted to Well:	× Yes No		
Depth Drilling	Run	Description			
Depth and Av (ft) Penetrati	erage Code Class F	Casing Diameter (See Pilot boring log for full geologic descriptions)	Drilling	Notes	Drilling Fluid
	<u> </u>	(220.5 - 4.0') 16.0"	(220.0') Observed trace amou sand in drill cuttings (see pho		tering
2.57 mi		pel Casing		3	
224		F (D : 10040)			
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		End of Boring at 224.0 'bgs.			
_225					
G.GDT					
2 <u>226</u>			A		
228_					
229					
230_ 230_					
232					
_233					
234_					
235_					
236_					
237_					
238					
239					
240					
		assification System, ft = feet, bgs = er table symbol represents depth to			

9/	4R (SIDA	Design & Consultancy for natural and built assets		Во	ring L	_og		Sh	neet: 1 of	9
	Started		1/2019			Elevation		Borin	na No.	: RB-4 Pilo	ot .
	•	eted: <u>04/24</u>			-	g (NAD83	•				
Drilling		<u>Casc</u>			_	(NAD83)		Client:	PG&E		4
_ ~	g Metho ig Type		Drilling sonic track mo		Total De	eptn: le Diamet	_	Project:		SW Remedy Ph Topock, Needle	
	Name:		Sonic track mc O'Mara				ater: 10.98 ft bgs	Location	. FGaE	ropock, needi	es, Calliottila
Drilling			<u>iellmantel / J. F</u>		-			Project N	 lumber:	RC000753.00	 51
Logge			aurer / G. Jeffe		-	ig Interva		,			-
Editor		<u>S. M</u>	Grane / G. Wi	illford (Convert	ted to We	ell: 🗵 Yes 🗌 No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
 1 	- -			Topock - Fill	SP		0.0 - 2.0') Topock - Fill; Poorly graded sand (S rained to medium grained; dry; trace amounts				(0.0 - 26.0') No water used
_ 2 3 3 4	- 240				NR	(2	2.0 - 6.0') No recovery (NR)	(2)		(2.0 - 6.0') Poor recovery, loose sands, no indication that core fell out of the core fell of core barrel, possibly pushing through loose sand	
- 7 - - 7 - - 8 -				Topock - Fill	SP	gı	5.0 - 8.0') Topock - Fill; Poorly graded sand (S rained to medium grained; dry; trace amounts 3.0 - 16.0') No recovery (NR)	SP); (10YR5 s of wood fra	i/3); fine agments	(8.0 - 16.0')	
- 9 _ - 9 _ - 10 _ _ 11 _	24						in the receivery (int)			Poor recovery, loose sands, possibly pushing through loose sand	
12					NR						
_ 15_ _ 15_ _ 16_							16.0 - 17.5') Topock - Fluvial Deposits; Poorly	uraded son	nd (SP).	(15.0') Sample screen was pulled up to collect sample	
17	- -	RB-4-SS-16-	RB-4-VAS- 15-20 (0.0556 J	Topock - Fluvial Deposits	SP	Ďı	rown (7.5YR 5/4); fine grained to medium grái	ined; moist	to wet	closer to the water table	
18	48	4/16/2019 11:15	ppb) 4/12/2019 09:20	Topock - Fluvial Deposits	SP-SM	si : : : : : : : : : : : : : : : : : : :	17.5 - 20.0') Topock - Fluvial Deposits; Poorly ilt (SP-SM); brown (7.5YR 4/2); very fine grain rained; little silt; wet 18') brown (7.5YR 4/3)				
		11000	11 .6 10 10			c		-		1 014/	

20	9/.	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	9		She	eet: 2 of	9
Date Completed: Galza/2019	Date S	Started	: 04/11/2	2019		Surface	Elevati	on:	466.0 ft amsl	Borir	na No.:	RB-4 Pilo	ot .
Dailling Method: Sonic Drilling Total Depth: 151 ft bgs Project: Final GW Remedy Phase 1 Drilling Nate: Dermannic track mount. Borehole Diameter 6.512 inches. Location: PG&E Topock, Needles, Cal Drilling Nate: Depth 10 First Water: 10.98 ft bgs. Drilling Asst. Cardinary 1.0.98 ft bgs. Depth 10 First Water: 10.98 ft bgs. E. Huellmantel J.J. Pacheco. Sampling Indivaries. Confunctionary Individual Confunctionary Confunctionary Individual Confunctionary I						_	- '	,		_			<u> </u>
Dail Rig Type: Deliler Name:	_					_		3):		_			
Dolliery Asset: Dan CMara Dan CMara Depth in First Water: 10.98 ft bgs Dolling Asset: Effective: Standard Jackson Dan Community Dan Community	_			•			-			-		•	
Dalling Asst: Leducinaries Confinence Co										Location	: PG&E	<u>і ороск, Needi</u>	es, California
Logger D. Maurer / G. Jeffers Sampling Interval: Continuous						-			~	- Project N	Jumber:	PC000753 00	 51
Editor: S. McGrane / G. Willford Converted to Well: Yes No Solid Description Drilling Notes	_					-	-			_ 1 10,0001	varriber.	10000733.00	<u> </u>
Silve Silve Silve Sample D						-	-			-			
20.0 - 26.0°) No recovery (NR)													
### A	Depth (ft)	Recover (in)			Geologi	Code	USCS Class		·				Drilling Fluid
27 - 27 - 28 - 28 - 28 - 28 - 28 - 28 -	22	48				NR		(20.0 -	26.0') No recovery (NR)	9		Poor recovery in loose sands. No indication of lost core. driller noted water at 24 feet. 26 to 24 feet was wet which indicated core recovered was 26 to 22	(0.0 - 26.0') No water used
	 27 28 29		30 4/16/2019					silt (SP grained	-SM); brown (7.5YR 4/2); very fine gra i; little silt; wet	ly graded sar ined to medi	nd with um		(26.0 - 36.0') 15 gallons of water used; gallons of water recovered; gallons of water lost
35	32	90	34 4/16/2019					wood o	bserved	es long piec	e of		
37	35					NR		(34.0 -	36.0') No recovery (NR)			No recovery, soft sands, no indication that core fell out of	
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = ground	37		40 4/16/2019 11:30		Fluvial Deposits			brown	(7.5YR 5/3); fine grained to medium gr	ained; wet			(36.0 - 46.0') No water used

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = ground surface,

9/	AR(CAD)IS	Design & Consultancy for natural and built assets		Во	ring	Log	S	heet: 3 of	9
Date S	Started	: <u>0</u>	4/11/2	2019		Surface	Elevati	on: 466.0 ft amsl	Boring No	.: RB-4 Pilo	ot .
Date C	Comple	eted: 0	4/24/2	2019		Northing	(NAD	83): 2102908.7	_	·-	<u>^</u>
Drilling			ascac			Easting	(NAD8	*	_ Client: PG&E		
Drilling	Meth	od: <u>S</u>	Sonic E	Drilling		Total De	-	161 ft bgs	-	GW Remedy Ph	
Drill Ri				onic track mou		Borehol			Location: PG&E	Topock, Needle	es, California
Driller			<u>)an O'l</u>			-		Vater: 10.98 ft bgs	- Duningt Number	- DC000752 001	Γ1
Drilling Logge				<u>llmantel / J. Pa</u> rer / G. Jeffer		Samplin Samplin	-		_ Project Number	. KC000755.003	01
Editor:				Grane / G. Will		Convert	-		_		
Laitor.			7. IVIOC	<u> </u>		1		100 - 110		T	
Depth (ft)	Recovery (in)	Sie ^s Samp		Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
					Topock - Fluvial Deposits	GW		(40.0 - 41.0') Topock - Fluvial Deposits; Well sand (GW); brown (7.5YR 5/4); small pebble pebbles, subround to round; some medium to	s to very large		(36.0 - 46.0') No water used
41 42 43 44 45 46	60			RB-4-VAS- 41-46 (<0.033 U ppb) 4/12/2019 12:05		NR		sand, subround to round; wet	9	(41.0 - 46.0') No recovery, loose sands, no indication that core fell out of core barrel	
4647484950515253545555	84	RB-4-SS 50 4/16/20 11:3: RB-4-SS 53 4/16/20 11:4:	019 5 S-50- 019		Topock - Fluvial Deposits Topock - Fluvial Deposits	SP-SM		(52.0 - 53.0') Topock - Fluvial Deposits; Poor gravel (SP); brown (7.5YR 5/3); medium grained, subround to round; little small to versubround to round; wet (52.0 - 53.0') Topock - Fluvial Deposits; Poor silt (SP-SM); brown (7.5YR 5/3); fine grained little silt; wet (53.0 - 56.0') No recovery (NR)	ly graded sand with	(53.0 - 56.0') No recovery, loose sands, no indication that core fell out of core barrel	(46.0 - 56.0') 20 gallons of water used; 0 gallons of water recovered; 20 gallons of water lost
565758	204	RB-4-SS 60 4/16/20 11:4!	019 5		Topock - Fluvial Deposits Topock - Fluvial Deposits	SP-SM		(56.0 - 58.0') Topock - Fluvial Deposits; Poor silt (SP-SM); brown (7.5YR 5/3); fine grained little silt; trace medium to large pebbles, subrection (58.0 - 60.0') Topock - Fluvial Deposits; Silty (SM); brown (7.5YR 5/3); very fine grained to little granules to very large pebbles; little silt;	to medium grained; ound to round; wet sand with gravel medium grained; little clay		(56.0 - 76.0') 20 gallons of water used; 0 gallons of water recovered; 20 gallons of water lost

	CADIS	Design & Consultancy for natural and built assets		Во	9	_09		heet: 4 of	9
ate Starte				Surface		•	Boring No	.: <u>RB-4 Pilo</u>	ot
	leted: 04/24/			Northing		•			
rilling Co.:				Easting	•	•	_ Client: <u>PG&E</u>		
rilling Meth		Drilling		Total De	epth:	<u>161 ft bgs</u>	•	<u>GW Remedy Ph</u>	
rill Rig Typ	oe: <u>Terras</u>	<u>onic track mo</u>	<u>unt</u>	Borehol	e Diam	eter: <u>6-12 inches</u>	_ Location: PG&E	Topock, Needl	<u>es, Californ</u>
riller Name						Vater: <u>10.98 ft bgs</u>			
rilling Asst	: <u>E. Hu</u> e	<u>ellmantel / J. P</u>	acheco_	Samplin	ig Meth	od: 4 inch x 10 ft. Core Barrel	_ Project Number	RC000753.00	51
ogger:	D. Mai	<u>urer / G. Jeffe</u>	rs	Samplin	ig Inter		_		
ditor:	S. Mc	Grane / G. Wi		Convert	ed to V	/ell: ⊠ Yes □ No			
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Flui
			Topock - Fluvial	SP SC		(60.0 - 60.1') Topock - Fluvial Deposits; Poo yellowish brown / moderate yellowish brown			(56.0 - 76.0') gallons of wa
61			Deposits Topock -	CL	<i>//////</i>	grained to coarse grained, subround to roun	d; wet		used; 0 gallo
			Fluvial	/	· ():	(60.1 - 60.4') Topock - Fluvial Deposits; Clay (7.5YR 4/4); very fine grained to medium gra			of water recovered; 2
			Deposits Topock -	1	D:	silt; wet			gallons of war
62			Fluvial		. φ C	(60.4 - 60.7') Topock - Fluvial Deposits; Lea brown (7.5YR 3/4); medium plasticity; little v			1001
+	RB-4-SS-61-		Deposits Topock -	' <u>-</u> .	۰.O	sand; little silt; wet			
63	65 4/16/2019		Fluvial Deposits	SP	∘ O.	(60.7 - 65.0') Topock - Fluvial Deposits; Poogravel (SP); brown (7.5YR 5/4); fine grained			
4	11:50		Pehosits) Ø	little small to very large pebbles, subround to			
64					, O				
					\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.				
65_									
						(65.0 - 67.0') Topock - Fluvial Deposits; Poo]	
<u>,</u>			Topock -			brown (7.5YR 5/4); fine grained to medium g medium pebbles, subround to round; trace s			
66			Fluvial Deposits	SP					
4	RB-4-SS-65-		Deposits						
7	69 4/16/2019					(67.0 - 69.0') Topock - Fluvial Deposits; Poo	rly graded aand with		
4	11:55				0	gravel (SP); brown (7.5YR 5/4); fine grained	to medium grained;		
8_ 204			Topock - Fluvial	SP	(°.U:	little medium to large pebbles, subround to r	ound; trace silt		
204			Deposits	J SF	Ø . O				
9_					• O				
9_		7	Topock -	GP	600 U	(69.0 - 69.5') Topock - Fluvial Deposits; Poo	rly graded gravel with	1	
			Fluvial Deposits		0.1. 60	sand (GP); brown (7.5YR 5/4); granules to n subround to round; some medium to coarse		/	
70			Topock - Fluvial	SP		subround to round; wet	,		
4			Deposits	01		(69.5 - 71.0') Topock - Fluvial Deposits; Poo brown (7.5YR 5/4); fine grained to medium of	rly graded sand (SP); rrained: trace small to		
′1				1	· · · · · · · · · · · · · · · · · · ·	medium pebbles, subround to round; trace s	ilt; wet		
	DD 4 CC 74					(71.0 - 73.0') Topock - Fluvial Deposits; Silt brown (7.5YR 3/3) little yellowish brown (10)	with sand (ML); dark /R 5/6): verv fine		
72	RB-4-SS-71- 73		Topock - Fluvial	ML		grained to medium grained; low plasticity; so			
	4/16/2019 12:00		Deposits	IVIL		grained sand; little clay; wet			
/3	.=								
				· ·	T	(73.0 - 76.0') No recovery (NR)		(73.0 - 76.0')	1
					\ /			No recovery, loose sands, no	
74					$ \setminus /$			indication that core fell out of	
-				NR	X			core barrel	
75					/ \				
4					/ \	(75 El), amall layer of retering the second	natad by!t		
76			L	.L	<u> </u>	(75.5'); small layer of potential charcoal colle archeologist	scied by on-site	J	(70.0
						(76.0 - 80.0') Topock - Fluvial Deposits; Poo			(76.0 - 86.0') gallons of wa
77_						brown (7.5YR 5/3); fine grained to medium g	rained; trace silt; wet		used; 0 gallo
· –									of water recovered; 1
+	RB-4-SS-76-		Topock -						gallons of wa
7884	80 4/16/2019		Fluvial	SP					lost
4	12:05		Deposits						
79									
80				·				1 1 014/	
						et, bgs = below ground surface, am			·
pb = parts	per billion, U		d above th	e labora	tory rep	orting limit, J - estimated value, NR			·

RB-4-SS-80-81-84 RB-4-VAS-81-84 RB-4-VAS-81-85 RB-4-VAS-85 RB-4	
Date Completed: 04/2/2019 Northing (NAD83): 2102908.7 Drilling Co. Cascade Esating (NAD83): 7616336-4 Client: PG&E Esating (NAD83): 7616336-4 Client: PG&E Drilling Method: Sonic Drilling Total Depth: 161 ft bgs Project: Final GW Remedy Phase. Drill Rig Type: Drill Rig Type: Drill Rig Type: Drilling Asst: Dan O'Mara Depth to First Water: 10.98 ft bgs Drilling Asst: E. Huelimantel/ J. Pacheco Sampling Method: S. McGrane / G. Willford Converted to Well: A inch x 10 ft. Core Barrel Continuous Sampling Interval: Continuous Sampling Interval: Converted to Well: No Drilling Notes Drilling N	
Dalling Method: Sonic Drilling Terrasonic track mount Drilling Asst: Dan O'Mara Dan O'Ma	
Drill Rig Type: Driller Name: Dan O'Mara Driller Asset: Dan Maurer / G. Jeffers Sampling Interval: Sampling Interval: Continuous Continuous Continuous Continuous Drilling Asset: Sampling Interval: Continuous Continuous Drilling Asset: Sampling Interval: Continuous Drilling Notes Drilling Asset: Sampling Interval: Continuous Drilling Notes Drilling No	
Driller Name: Drilling Asst: E. Huellmantel / J. Pacheco Ogger: Editor: S. McGrane / G. Willford Sample ID	
Drilling Asst: Logger: D. Maurer / G. Jeffers S. Sampling Method: D. Maurer / G. Jeffers S. McGrane / G. Willford Converted to Well: S. McGrane / G. Willf	<u> California</u>
Logger: D. Maurer / G. Jeffers S. McGrane / G. Willford Converted to Well: S. McGrane / G. Willford Converted to Well: S. McGrane / G. Willford Sample ID Groundwater Sample ID Groundwater Sample ID RB-4-SS-80- 83 A/16/2019 12:10 RB-4-SS-80- 85 86 RB-4-SS-80- 87 RB-4-SS-80- 88 RB-4-VAS- 88-86- 88	
Editor: S. McGrane / G. Willford Converted to Well: Yes No Soil Description Drilling Notes Dri R8-4-SS-80- 4/16/2019 12:10 R8-4-SS-86- 4/16/2019 12:15 R8-4-SS-81- 85- 86- 87- 88- 88- 88- 88- 88- 88- 88- 88- 88	
Sieve Sample ID Groundwater Sample ID Ground	
(80.0 - 83.0) Topock - Fluvial Deposits. Well graded gravel with and subround to round; some medium to very coarse grained sand, subround to round; some medium to very coarse grained sand, subround to round; some medium to very coarse grained sand, subround to round; some medium to very coarse grained sand, subround to round; some medium to very coarse grained sand, subround to round; some medium to very coarse grained sand, subround to round; some medium to very coarse grained sand, subround to round; trace slit; trace clay; wet 88	
81 - 81 - 82 - 83 - 84	illing Fluid
84 81-86 (<0.033 Uppb) 4/12/2019 15:45 NR	0 - 86.0') 15 ons of water d; 0 gallons of water overed; 15 ons of water lost
84 81-86 (<0.033 Uppb) 4/12/2019 15:45 NR	
RB-4-SS-91- 93 168 RB-4-SS-91- 95 4/16/2019 12:20	
RB-4-SS-86-88.5 A/16/2019 12:15 RB-4-SS-86-88.5 A/16/2019 12:15 RB-4-SS-86-88.5 A/16/2019 12:15 RB-4-SS-86-88.5 A/16/2019 12:15 RB-4-SS-86-88.5 A/16/2019 A/16/2019 A/16/2019 12:20 RB-4-SS-91-93 A/16/2019 12:20	
BB-4-SS-86-88-88-88-88-88-88-88-88-88-88-88-88-	
Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits (SP) (SP) (SP) (SP) (SP) (SP) (SP) (SP)	0 - 96.0') 15 ons of water d; 0 gallons of water overed; 15 ons of water lost
Topock - Fluvial Deposits; Poorly graded sand with gravel (SP); black (5Y 2.5/2); fine grained to coarse grained, subround to round; little granules to small pebbles, subround to round; trace silt; wet [90.3 - 90.7') Topock - Fluvial Deposits; Poorly graded sand with gravel (SP); yellowish brown (10YR 5/6); medium grained to very coarse grained, subround to round; some granules to medium pebbles, subround to round; trace silt; wet; iron oxide staining [90.7 - 100.0') Topock - Fluvial Deposits; Well graded gravel with silt and sand (GW-GM); brown (7.5YR 4/3); granules to small cobbles, subround to round; little very fine to medium grained sand; little silt; trace clay; wet	
Fluvial Deposits; Poorly graded sand with gravel (SP); yellowish brown (10YR 5/6); medium grained to very coarse grained, subround to round; some granules to medium pebbles, subround to round; trace silt; wet; iron oxide staining (90.7 - 100.0') Topock - Fluvial Deposits; Well graded gravel with silt and sand (GW-GM); brown (7.5YR 4/3); granules to small cobbles, subround to round; little very fine to medium grained sand; little silt; trace clay; wet	
\$\frac{168}{95}\$ \$\frac{1}{95}\$ \$\fr	
Fiuvial GW-GM • Deposits	.0 - 106.0')
	gallons of ter used; 0 ons of water overed; 15 ons of water lost
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = ground surface.	ndwat

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = ground surface,

Date Started: 04/11/2019 Northing (NADS); 21/202805.7 Boring No.: RB-4 Pilot Deling Method: 04/24/2019 Northing (NADS); 21/202805.7 Client: PGSE Deling Method: 05/2019 Total Depth Total Depth Deling Method: 05/2019 Total Social Client Deling Method: 05/2019 Total Core Barrel Deling Method: 05/2019 Tota	9/	١RC	ADIS	Design & Consultancy for natural and built assets		Bo	ring	Log	S	heet: 6 of	9
Differ Market Differ Market Differ Market Differ	Date S	started:	04/11/2	2019		Surface	Elevati	on: 466.0 ft amsl	Boring No	.: RB-4 Pilo	ot
Dalling Method: Dalling Asset Dalling As			ted: <u>04/24/2</u>	2019		_		•	_		<u> </u>
Delite Name Delit	_					_	•	*			
Deller Marine: Delling Asset: E. Huellmant (J. J. Bacheso. Sampling Method: D. Maurer / G. Jeffers S. M.Granz / G. Willford Converted to Welt: S. M.Granz	1 -			•			-		•	•	
Delling Asst: E. Huellmante/ J. Pacheso. Sampling Method: Configuration C		• • •							_ Location: <u>PG&E</u>	Topock, Needle	es, California
Logger: D. Maurer / G. Jeffers Sample In Converted to Well: ▼ Ves No Since Sample ID Converted to Well: ▼ Ves No 100.0 - 108.07 No recovery (NY) Converted to Well: ▼ Ves No 100.0 -									- Draigat Number	. DC000752 00	E 1
Editor: S. McGrane / G. Willford Converted to Well: Yes No	_								_ Project Number	. <u>RC000753.00</u>	O I
Simple D Condition Sample D						-	-		_		
100 108 100 108 108 100 108 108 100 108 100 108 100 108 100 108 100 108 100 100 108 100			<u>0. moo</u>			T				1	
No received	Depth (ft)	Recovery (in)			Geologic	Code	USCS Class	·			
106. 106. 107. 108. 1-18.00 109. 1-18.00 109. 1-18.00 109. 1-18.00 109. 1-18.00 109. 1-18.00 109. 1-18.00 109. 1-18.00 109. 1-18.00 109. 1-18.00 109. 1-18.00 109. 1-18.00 110. 1-18.00							$\left \right $	(100.0 - 106.0') No recovery (NR)		No recovery, loose sands, no indication that core fell out of	15 gallons of water used; 0 gallons of water recovered; 15 gallons of water
105	103	168				NR			(2)		
106	_104_						$ \ /\ \setminus\ $				
106							$ / \setminus $	110,			
107	<u> </u>						/ \				
107	_106				<u> </u>			(106.0 - 130.0') Topock - Alluvium Deposits:	Silty sand with gravel		(106.0 - 116.0')
RB-4-SS- 106-110 41/6/2019 12:30	107							(SM); dark brown (7.5YR 3/3); very fine grain grained, subround to round; some granules to	ed to very coarse		15 gallons of water used; 0
108	10/		DD 4.00					subround to round; little clay; trace silt; wet			recovered; 15
110	108		106-110								
110	100										
								(109'); decrease in granules and pebbles, in	crease in silt		
	_110										
	111										
113											
L113_ 240	_112_		110-115								
Some granules to medium pebbles, angular, decrease in granules and pebbles, increase in sand	_113_	240			Alluvium	SM		(113') fine grained to very coarse grained, ar	ngular to subangular;		
	114				Deposits				decrease in granules		
(116.0 - 126.0') 15 gallons of water used; 0 gallons of water recovered; 15 gallons of water recovered; 15 gallons of water lost 119	_115										
(116.0 - 126.0') 15 gallons of water used; 0 gallons of water recovered; 15 gallons of water recovered; 15 gallons of water lost 119	116										
											15 gallons of
	_117										gallons of water
	440		115-120 4/16/2019								gallons of water
	118_		12:40								1031
	119										
		iotis	v. 11600 = 11	Inified C-il Cl	oooifiasti -	Cu-t-		set bas = belevi ====================================	al = ab = : = : = :	nee level CM	aroun durete :

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = ground surface,

9/	ARCADIS Design & Consultancy for natural and built assets				Bo	ring	Log	Sheet: 7 of 9			
	Started				Surface			Bori	Boring No.: RB-4 Pilot		
	•	eted: <u>04/24/</u>			Northin		•	_			_
Drilling	-	<u>Casca</u>			Easting	•	•	_ Client:	PG&E		
_	g Metho ig Type		onic track mo		Total Do	-	161 ft bgs eter: 6-12 inches	_ Project:		W Remedy Ph Topock, Needle	
	Name:						Vater: 10.98 ft bgs	_ Locatioi	i. <u>FG&E</u>	TOPOCK, Needi	es, Calliottia
Drilling			ellmantel / J. F		-			- Proiect	Number:	RC000753.00	 51
Logge			urer / G. Jeffe		Samplir	-		- , -			
Editor		<u>S. McC</u>	<u> Grane / G. Wi</u>		Conver	-					
£	ery	C:		gic	ω _Φ	လှ လွ					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
121122123124125	- 240	RB-4-SS- 120-125 4/16/2019 12:45	RB-4-VAS- 121-126 (<0.033 U ppb) 4/13/2019 11:56	Topock - Alluvium Deposits	SM			9			(116.0 - 126.0') 15 gallons of water used; 0 gallons of water recovered; 15 gallons of water lost
126							(126') very fine grained to very coarse graine	d, angular to			(126.0 - 161.0')
127 128 129 130		RB-4-SS- 125-130 4/16/2019 12:50					subangular; some granules to medium pebble subangular; increase in granules and pebble		io		No water used
_ 131_ _ 132_				Topock - Alluvium Deposits	GM		(130.0 - 132.0') Topock - Alluvium Deposits; (GM); dark brown (7.5YR 3/3); granules to verangular; some very fine to very coarse graine subangular; little silt; trace clay; wet	ery large peb	bles,		
		RB-4-SS- 130-135 4/16/2019					(132.0 - 141.0') Topock - Alluvium Deposits; (SM); dark brown (7.5YR 3/3); fine grained to angular to subangular; little granules to very	coarse grai	neď,		
133	216	12:55					angular to subangular; little silt; little clay; we		5,		
134											
-	_										
135											
136]			Topock - Alluvium	SM						
				Deposits	SIVI						
_137	1	RB-4-SS-									
-	-	135-140 4/16/2019	RB-4-VAS- 136-141								
138	-	13:00	(<0.17 U								
- - -	-		ppb) 4/13/2019 17:18								
139	1										
140	L										
A 1 1											

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	neet: 8 of	9
Date S					Surface			Boring No.	.: RB-4 Pilo	ot
		ted: <u>04/24/2</u>			Northing	- '	•	_		_
Drilling		Cascac			Easting	•	3): <u>7616336.4</u> 161 ft bgs	Client: <u>PG&E</u> Project: <u>Final G</u>	: GW Remedy Ph	
Drilling Drill Ri			onic track mo		Total De Borehol	-	•	Location: <u>PG&E</u>		
Driller		<u>Dan O'</u>					Vater: 10.98 ft bgs	_ Location. I GaL	тороск, песия	es, California
Drilling			llmantel / J. P		-		-	Project Number:	RC000753.00!	 51
Logge			ırer / G. Jeffe		Samplin	-		-		
Editor:		S. McG	Brane / G. Wi	llford (Convert	ed to V	/ell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
141				Topock - Alluvium Deposits	SM					(126.0 - 161.0') No water used
142	216			Topock - Weathered Bedrock -	SM		(141.0 - 144.0') Topock - Weathered Bedrock Silty sand with gravel (SM); reddish brown (2. grained to medium grained; some granules to subangular to subround; some silt; trace sma subangular to subround; trace clay; moist to vementation	5YR 4/4); very fine o very large pebbles, all cobbles,		
143				conglomerate	e					
144							(144.0 - 146.0') No recovery (NR)		(144.0 - 146.0') Lost core in hopper during	
145					NR				sample collection	
146							(146.0 - 161.0') Topock - Weathered Bedrock Silty sand with gravel (SM); reddish brown (2. grained to medium grained; some silt; little gr	.5YR 4/4); very fine		
147	60						pebbles, subangular to subround; little clay; tr subangular to subround; moist to wet; weak c	race small cobbles,		
148										
_149										
150										
151										
152										
 153				Topock - Weathered Bedrock -	SM					
154				conglomerate	e					
155							(155'); trace large cobbles; trace boulders			
156	120						. , , , , , , , , , , , , , , , , , , ,			
 157			RB-4-VAS- 155-160							
158			(<0.17 U ppb) 4/17/2019 12:48							
159										
160										

9/	4RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 9 of	9
Date (Drilling Drilling Drill R Driller	g Co.: g Methodig Type Name: g Asst: er:	ted: 04/24/2	2019 le Drilling onic track mo	acheco		g (NAD (NAD8 epth: e Diam o First \ ag Meth	33): 2102908.7 3): 7616336.4 161 ft bgs eter: 6-12 inches Vater: 10.98 ft bgs od: 4 inch x 10 ft. C val: Continuous	Core Barrel	Boring No.: Client: PG&E Project: Final G Location: PG&E Project Number:	W Remedy Ph Гороск, Needl	ase 1 es, California
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	So	oil Description		Drilling Notes	Drilling Fluid
161_	120				SM		End of B	Boring at 161.0 'bgs.			(126.0 - 161.0') No water used
162	-						LIN OI B		0		
163_ _ 164_											
165_								0			
166_							0				
167											
168_	-										
169											
5 171_	-										
172_	-										
173											
174	-										
175											
177_											
178_											
179 											

ARCA	DIS for natural built asset	and s		Well Consti	ruction Log	\$	Sheet: 1 of 12
Date Started:	09/08/2019			_Surface Elevation:	466.3 ft amsl	Well ID: RE	3-3
Date Completed:				_Shallow Well Elevation:	N/A		
Drilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
Drilling Method:	Dual Rotary			_Northing (NAD83):	2103172.5	-	GW Remedy Phase 1
Driller Name:	Jon Martinez			_Easting (NAD83):	7616213.0	Location: <u>PG&</u> E	Topock, Needles, California
Drilling Asst:	A. & H. Amezo	-		_Borehole Diameter:	16-18 inches		D0000750 0054
Logger:	E. Redner / D.		<u> </u>	_Water Level Start:	11.35 ft bgs	Project Numbe	r: <u>RC000753.0051</u>
Editor:	Sean McGran	<u>e</u>		_Development End Date:			
Total Depth:	224 ft bgs			_Well Completion:		T	T
Groundwat Sample II		USCS	USCS	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
1	Topock - Fill	SP		(0.0 - 25.0') 8" Suregrip 17 Casing (0.0 - 3.8') Formation Collapse (3.8 - 11.9') Portland Cement 3% Bentonite (9.5 - 10.5') Centralizer	(0.0 - 3.0') 18.0" Borehole	(3.8 - 11.9') 86.9 gallons	(3.8 - 11.9') 120 gallons (38%) Note: Type I, II and V and Benseal, used >20% of the calculated volume due to potential grout migration and voids forming during drilling
12				(11.9 - 14.0') Bentonite seal pellets		(11.9 - 14.0') 4.8 buckets	(11.9 - 14.0') 5 buckets (4%) Note: Pel-Plug (TR30) 3/8"
15	Topock - Fill	SP		(14.0 - 17.1')		(14.0 - 17.1') 8.5 bags	(14.0 - 17.1') 8 bags (-6%) Note: Lapis Lustre Sand
(<0.033 U ppb)18 4/26/201919	SCS - 11	NR Soil Cl		(17.1 - 93.9') Cemex #0/30 MESH (30x70)		(17.1 - 93.9') 217.7 bags	(17.1 - 93.9') 204.5 bags (-6%) Note: Lapis Lustre Sand, swab filter pack for approximately 1.0 hour prior to installing chocker sand seal sea level. GW = groundwater.

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, ground water data was collected during drilling of the billiot hole

9/-	ARCA	DIS for natura built asse	l and ts		Well Const	ruction Log	;	Sheet: 2 of 12
Date S		09/08/2019			_Surface Elevation:	466.3 ft amsl	Well ID: RE	3-3
	•	09/28/2019			_Shallow Well Elevation:			
Drilling		Cascade			_ Deep Well Elevation:	N/A	Client: PG&I	
_		Dual Rotary			_Northing (NAD83):	2103172.5	Project: Final GW Remedy Phase 1	
Driller I Drilling		Jon Martinez A. & H. Amez	auita		_Easting (NAD83): _Borehole Diameter:	7616213.0 16-18 inches	Location: PG&E Topock, Needles, California	
Logge		E. Redner / D		 	Water Level Start: 11.35 ft bgs		Project Number: <u>RC000753.0051</u>	
Editor:		Sean McGrar		OII			1 10,000 11011100	1. 11. 11. 11. 11. 11. 11. 11. 11. 11.
Total D		224 ft bgs			 _Well Completion:			
		.º 5						
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
				8888	(0.0 - 25.0') 8"			
					Suregrip 17 Casing	(3.0 - 21.1') 18.0" Borehole		
21								
22								
23								
 24								
24								
					(25.0 - 53.0') 8" —			
26					Wire Wrap Screen			
		Topock - Fill	SP					
27								
28								
29								
					(17.1 - 93.9') Cemex		(47.4 02.01) 247.7	(17.1 - 93.9') 204.5 bags (-6%) Note: Lapis Lustre Sand, swab filter
30					#0/30 MESH (30x70)	(21.1 - 41.3') 18.0"	(17.1 - 93.9') 217.7 bags	pack for approximately 1.0 hour prior
					(300,70)	Borehole		to installing chocker sand seal
31								
32								
33								
<u> </u>				\setminus \land				
34			NR	$ \times $				
				/				
35				<u> </u>				
<u> </u>						A . A.		
36								
-						用 涂针		
37		Topock - Fill	SP					
F						用 涂针		
38								
						A		
39								
 40			SW			<u> </u>		
A I I	3-43 11	000 - 11-:6	0-:10	ı : c :	O			and level CW = groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, ground water data was collected during drilling of the pilot hole

9/	ARCA	DIS	Design & Consult for natural and built assets	tancy		Well Const	ruction Log	;	Sheet: 3 of 12
Date S		09/08/20				_Surface Elevation:	466.3 ft amsl	Well ID: RI	3-3
	ompleted:					_Shallow Well Elevation:	N/A		
Drilling		Cascade				_Deep Well Elevation:	N/A	_ Client: PG&I	
_		Dual Ro	•			_Northing (NAD83):	2103172.5		GW Remedy Phase 1
Driller I		Jon Mar				_Easting (NAD83):	7616213.0	_ Location: <u>PG&I</u>	E Topock, Needles, California
Drilling		A. & H. /				_Borehole Diameter:	16-18 inches		
Logger		E. Redn		orne		_Water Level Start:	11.35 ft bgs	_ Project Numbe	r: RC000753.0051
Editor:		Sean McGrane		_Development End Date:		_			
Total D	Deptn:	224 ft bg				_Well Completion:			1
Depth (ft)	Groundwat Sample II	er Geologic			Well C	onstruction	Calculated Material Volumes	Material Volumes Installed	
41 42 43 44		Topo Flu Depo	vial S	SW		(25.0 - 53.0') 8" ———————————————————————————————————	(21.1 - 41.3') 18.0" Borehole	9	
 45			1	NR	\times				
 46 47		Topo Flu Depo		SW					
48 48 49		Topo Flu Depo	vial 🤇	S W		(17.1 - 93.9') Cemex			(17.1 - 93.9') 204.5 bags (-6%)
50		Topo	vial S	SP		#0/30 MESH	(41.3 - 61.2') 18.0"	(17.1 - 93.9') 217.7 bags	Note: Lapis Lustre Sand, swab filter pack for approximately 1.0 hour prior to installing chocker sand seal
51		Depo	osits		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		Borehole		
525354	RB-3-VAS- 50-55 (0.100 J ppb 4/27/2019 11:10)	1	NR			(53.0 - 63.0') 8" Suregrip 17 Casing		
55 56 		Topo Flu Depo	vial 🤇	SW		(56.5 - 57.5')			
58 59		Topo Flu Depo	vial 1	ИL		Centralizer			
 60			1	ИL					
						 	· 		•

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, pbb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, ground water data was collected during drilling of the pilot hole

ARC	ADIS Design & for nature built asset	Consultancy ral and ets		Well Const	ruction Log	5	Sheet: 4 of 12
Date Started:	09/08/2019			_Surface Elevation:	466.3 ft amsl	Well ID: RE	3-3
Date Complete				_Shallow Well Elevation:	N/A		
Drilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
Drilling Method	•			_Northing (NAD83):	2103172.5	•	GW Remedy Phase 1
Driller Name:	Jon Martinez			_Easting (NAD83):	7616213.0	Location: <u>PG&E</u>	Topock, Needles, California
Drilling Asst:	A. & H. Amez			_Borehole Diameter:	<u>16-18 inches</u>		
Logger:	E. Redner / D			Water Level Start: <u>11.35 ft bgs</u>		Project Numbe	r: RC000753.0051
Editor:	Sean McGrar	ne		_Development End Date:			
Total Depth:	224 ft bgs			_Well Completion:			T
Groundw Sample		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
6162636465	Topock - Alluvium Deposits	ML			(53.0 - 63.0') 8" Suregrip 17 Casing (41.3 - 61.2') 18.0" Borehole — (63.0 - 91.0') 8" 10-Slot 316 SS Wire Wrap Screen		
66	Deposits						
67	Topock - Alluvium Deposits Topock - Alluvium Deposits	SM		(17.1 - 93.9') Cemex #0/30 MESH (30x70)		(17.1 - 93.9') 217.7 bags	(17.1 - 93.9') 204.5 bags (-6%) Note: Lapis Lustre Sand, swab filter pack for approximately 1.0 hour prior to installing chocker sand seal
79	Topock - Alluvium Deposits	SM					
80		<u> </u>	<u>. 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 </u>		·		

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, pbb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, ground water data was collected during drilling of the pilot hole

9/	ARCA	DIS Design & for natura built asset	Consultancy al and ts		Well Const	ruction Log	:	Sheet: 5 of 12
	Started:	09/08/2019			_Surface Elevation:	466.3 ft amsl	Well ID: RE	3-3
	•	09/28/2019			_Shallow Well Elevation:			
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&I	
_		Dual Rotary			_Northing (NAD83):	2103172.5	•	GW Remedy Phase 1
Drilling	Name:	Jon Martinez A. & H. Amez	auita		_Easting (NAD83): _Borehole Diameter:	7616213.0 16-18 inches	Location: PG&t	E Topock, Needles, California
Logge		E. Redner / D	-	ااح	_ Water Level Start:	11.35 ft bgs	— Project Numbe	r: RC000753.0051
Editor		Sean McGrar		ZII	_Development End Date:		1 10,000114011150	1. 11. 11. 11. 11. 11. 11. 11. 11. 11.
	Depth:	224 ft bgs			 _Well Completion:			
		. <u>2</u> 5		(0 -				
Depth (ft)	Groundwat Sample II		Code	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
81	RB-3-VAS- 80-85 (0.132 J ppb 4/27/2019 15:18	Topock - Alluvium Deposits Topock - Alluvium Deposits	SM SM		(17.1 - 93.9') Cemex #0/30 MESH (30x70)	(81.1 - 101.5') 18.0" (81.1 - 101.5') 18.0" Borehole (91.0 - 111.0') 8" Suregrip 17 Casing	(17.1 - 93.9') 217.7 bags	(17.1 - 93.9') 204.5 bags (-6%) Note: Lapis Lustre Sand, swab filter pack for approximately 1.0 hour prior to installing chocker sand seal
94 95					(93.9 - 94.9') Cemex		(93.9 - 94.9') 2.8 bags	(93.9 - 94.9') 2 bags (-29%) Note: Lapis Lustre Sand, used <20% of the calculated volume due to potential formation collapse when puling the casing
9697		Topock - Alluvium Deposits	GM		(94.9 - 100.5') Bentonite seal pellets		(94.9 - 100.5') 12.8 buckets	(94.9 - 100.5') 10 buckets (-22%) Note: Pel-Plug (TR30) 3/8", used <20% of the calculated volume due to potential formation collapse when puling the casing
100 ∆hhre	viations: II	SCS = Unified	l Soil Cl	lassificat	tion System ft = feet has	= below around surface a	msl = ahove mean	sea level. GW = groundwater.

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, ground water data was collected during drilling of the pilot hole

9/-	ARCA	DIS Design 8 for natural built ass	Consultancy ral and ets		Well Const	ructio	n Log		5	Sheet: 6 of 12
Date S		09/08/2019			_Surface Elevation:	466.3 ft a	amsl	Well	ID: RE	3-3
	-	09/28/2019			_Shallow Well Elevation:	N/A				
Drilling		<u>Cascade</u>			_Deep Well Elevation:	<u>N/A</u>	_	Client:	PG&E	
_		Dual Rotary			_Northing (NAD83):	2103172		-		GW Remedy Phase 1
Driller I Drilling		Jon Martinez			_Easting (NAD83): _Borehole Diameter:	7616213 16-18 inc		Location	1: <u>PG&E</u>	Topock, Needles, California
Logge		A. & H. Amez E. Redner / D		الد	_ Borenole Diameter. _Water Level Start:			— Project	 Numbai	r: <u>RC000753.0051</u>
Editor:		Sean McGra		JII	Water Level Start: <u>11.35 ft bgs</u>		1 10,000	Number	. 110000733.0031	
Total D		224 ft bgs			_Well Completion:		n∐ Stick-up			
	•				·		· · · · · · · · · · · · · · · · · · ·			
Depth (ft)	Groundwate Sample ID		USCS	USCS	Well C	onstruction	(04.0444.0)\ 0!!	Calculate Material Vol		Material Volumes Installed
 101		Topock - Alluvium Deposits	GM			.1 1.3 3 3.1	(91.0 - 111.0') 8" Suregrip 17 Casing 81.1 - 101.5') 18.0" Borehole			
102 103 104 105		Topock - Alluvium Deposits	SM					0		
106		Topock - Alluvium Deposits	GM		(105.5 - 106.5') Centralizer		(101.5 - 110.6') 18.0" Borehole			
108 109		Topock - Alluvium Deposits	SM							
110 111 112 113 114 115		Topock - Alluvium Deposits	GM		(100.5 - 224.0') Cemex #60 MESH — (40x70)		(111.0 - 216.0') 8" 3-Slot 316 SS Wire Wrap Screen	(100.5 - 224. bags		(100.5 - 224.0') 285 bags (8%) Note: Lapis Lustre Sand, swab filter pack for approximately 3.5 hours prior to installing bentonite seal
116 117 118 119 120_		Topock - Alluvium Deposits	SM				(110.6 - 120.8') 16.0" Borehole			

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, ground water data was collected during drilling of the pilot hole

ARCA	DIS Design & C for natura built asset	Consultancy Land ts		Well Const	ruction Log	S	Sheet: 7 of 12
Date Started:	09/08/2019			Surface Elevation:	466.3 ft amsl	Well ID: RE	3-3
Date Completed:	09/28/2019			Shallow Well Elevation:	N/A		
Drilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: <u>PG&E</u>	
_	Dual Rotary			Northing (NAD83):	2103172.5	•	GW Remedy Phase 1
Driller Name:	Jon Martinez			_Easting (NAD83):	7616213.0	Location: <u>PG&E</u>	Topock, Needles, California
Drilling Asst:	A. & H. Amez			Borehole Diameter:	16-18 inches		
Logger:	E. Redner / D			_Water Level Start:	11.35 ft bgs	Project Number	:: RC000753.0051
Editor:	Sean McGran	ie		Development End Date: N/A			
Total Depth:	224 ft bgs			_Well Completion:		T	
Groundwat Sample II		USCS	USCS	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
	Topock - Alluvium Deposits Topock - Alluvium Deposits	SM GM		(100.5 - 224.0°) Cemex #60 MESH — (40x70)	(111.0 - 216.0') 8" 8-Slot 316 SS Wire Wrap Screen (120.8 - 140.5') 16.0" Borehole	bags	(100.5 - 224.0') 285 bags (8%) Note: Lapis Lustre Sand, swab filter pack for approximately 3.5 hours prior to installing bentonite seal

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, ground water data was collected during drilling of the billiot hole

9/	ARCA	DIS Design for nat built as	& Consultancy ural and ssets		Well Const	ruction Log	5	Sheet: 8 of 12
Date S	Started:	09/08/2019			_Surface Elevation:	466.3 ft amsl	Well ID: RE	3-3
Date C	Completed:	09/28/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
_		Dual Rotary			_Northing (NAD83):	2103172.5		GW Remedy Phase 1
Driller		Jon Martinez			_Easting (NAD83):	7616213.0	Location: <u>PG&E</u>	Topock, Needles, California
Drilling		A. & H. Ame			_Borehole Diameter:	<u>16-18 inches</u>	<u> </u>	
Logge		E. Redner /		ell	_Water Level Start:	11.35 ft bgs	Project Numbe	r: <u>RC000753.0051</u>
Editor:		Sean McGra			Development End Date			
I otal L	otal Depth: 224 ft				_Well Completion:		1	T
Depth (ft)	Groundwat Sample II		USCS	USCS	Well Construction		Calculated Material Volumes	Material Volumes Installed
	RB-3-VAS- 150-155 (<0.17 U ppt 4/29/2019 10:13	Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits	GM GM		(100.5 - 224.0') Cemex #60 MESH (40x70)	(140.5 - 161.6') (140.5 - 161.6') 16.0" Borehole		(100.5 - 224.0') 285 bags (8%) Note: Lapis Lustre Sand, swab filter pack for approximately 3.5 hours prior to installing bentonite seal
155 156 156 157 158		Topock - Weathered Bedrock - conglomera	IVIL					
159 160	viations: U		od Scil C	lossifica	tion System ft – fact has	- below ground surface as	mel = above meen	sea level GW = groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, ground water data was collected during drilling of the billiot hole

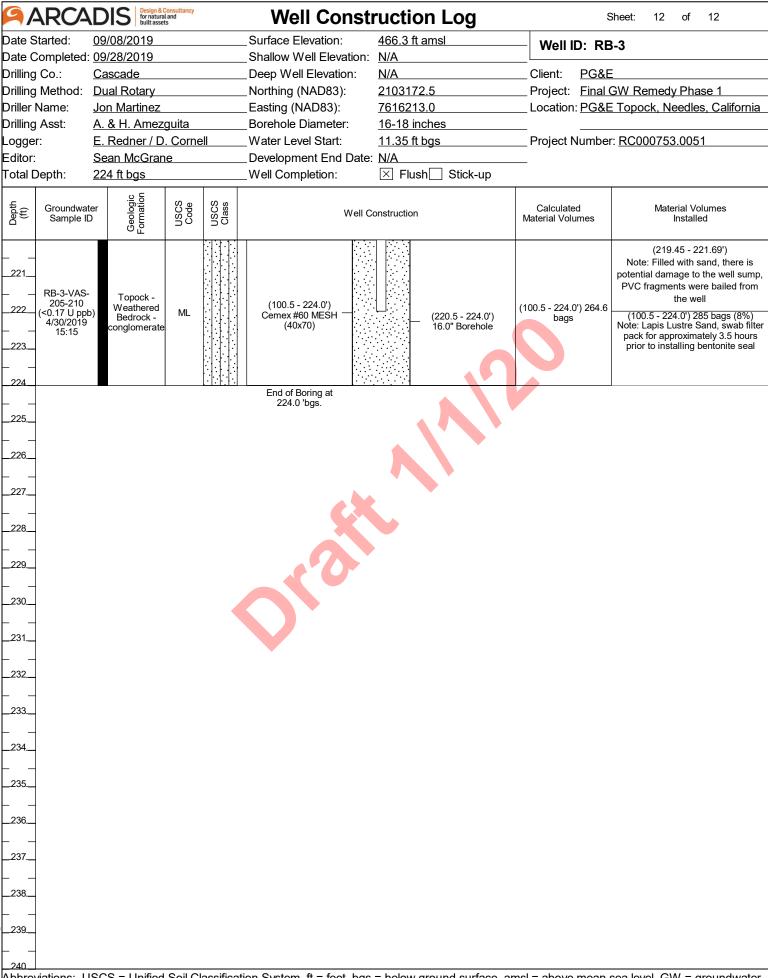
	DIS Design & C for natural built asset	ts		Well Consti	uction Log		Sheet: 9 of 12	
ate Started:	09/08/2019			Surface Elevation:	466.3 ft amsl	Well ID:	RB-3	
ate Completed:	09/28/2019			Shallow Well Elevation:	N/A			
rilling Co.:	Cascade			Deep Well Elevation:	N/A	Client: PC	3 <u>&E</u>	
•	Dual Rotary			Northing (NAD83):	2103172.5	•	Project: Final GW Remedy Phase 1	
riller Name:	Jon Martinez			Easting (NAD83):	7616213.0	Location: <u>PG&E Topock, Needles, Californ</u>		
rilling Asst:	A. & H. Amez	-		Borehole Diameter:	<u>16-18 inches</u>			
ogger:	E. Redner / D			Water Level Start:	11.35 ft bgs	Project Num	ber: RC000753.0051	
ditor:	Sean McGran	ie		Development End Date:				
otal Depth:	224 ft bgs		1	Well Completion:		1		
Groundwar Sample II		Code	USCS	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed	
	Topock - Weathered Bedrock - conglomerate			(100.5 - 224.0') Cemex #60 MESH (40x70)	(161.6 - 181.8') 16.0" Borehole	bags	(100.5 - 224.0') 285 bags (8% Note: Lapis Lustre Sand, swab f pack for approximately 3.5 hou prior to installing bentonite se	

9/	ARCA	DIS Design & for natura built asset	Consultancy al and its		Well Const	ruction Log	5	Sheet: 10 of 12
Date S		09/08/2019			_Surface Elevation:	466.3 ft amsl	Well ID: RE	B-3
	-	09/28/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
_		Dual Rotary			_Northing (NAD83):	2103172.5		GW Remedy Phase 1
Driller I		Jon Martinez			_Easting (NAD83):	7616213.0	Location: <u>PG&E</u>	Topock, Needles, California
Drilling		A. & H. Amez	-		_Borehole Diameter:	16-18 inches		D0000750 0054
Loggei		E. Redner / D		ell	_Water Level Start:	11.35 ft bgs	Project Number	:: RC000753.0051
Editor:		Sean McGrar	<u>1e</u>		_Development End Date:			
Total D	pepin:	224 ft bgs			_Well Completion:			
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
	RB-3-VAS- 180-185 (<0.033 U ppb) 4/29/2019 15:38	Topock - Weathered Bedrock - conglomerate Topock - Weathered Bedrock - conglomerate Topock - Weathered Bedrock -	SM		(100.5 - 224.0') Cemex #60 MESH — (40x70)	(111.0 - 216.0") 8" 8-Slot 316 SS Wire Wrap Screen (161.6 - 181.8") 16.0" Borehole (181.8 - 201.2") 16.0" Borehole	(100.5 - 224.0') 264.6 bags	(100.5 - 224.0') 285 bags (8%) Note: Lapis Lustre Sand, swab filter pack for approximately 3.5 hours prior to installing bentonite seal
199	. ,	conglomerate						(198.0 - 205.0') Note: Note: Well screen is damaged and twisted, repairs to the well are planned pending agency approval
Abbre۱	<i>r</i> iations: U	SCS = Unified	Soil C	lassifica	tion System, ft = feet, bgs	= below ground surface, ar	msl = above mean	sea level, GW = groundwater,

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, ground water data was collected during drilling of the billiot hole

9/-	ARCA	DIS Design & Of for natural built asset	Consultancy l and ts		Well Const	ruction Log	:	Sheet: 11 of 12
Date S	Started:	09/08/2019			_Surface Elevation:	466.3 ft amsl	Well ID: RE	3-3
	-	09/28/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&I	
_		<u>Dual Rotary</u>			_Northing (NAD83):	2103172.5	-	GW Remedy Phase 1
Driller		Jon Martinez			_Easting (NAD83):	7616213.0	Location: <u>PG&I</u>	E Topock, Needles, California
Drilling		A. & H. Amez	-	SII	_Borehole Diameter: _Water Level Start:	16-18 inches 11.35 ft bgs	— Project Numbe	r: RC000753.0051
Logge Editor:		Sean McGran		 	Development End Date: N/A		Project Numbe	1. <u>KC000755.0051</u>
Total D		224 ft bgs			Bevelopment End Bate. Well Completion:			
	•							
Depth (ft)	Groundwat Sample II		USCS	USCS	Well Construction		Calculated Material Volumes	Material Volumes Installed
201	RB-3-VAS-	Topock - Weathered Bedrock - conglomerate	ML		(100.5 - 224.0') Cemex #60 MESH (40x70)	(201.2 - 220.5') (111.0 - 216.0') 8" 8-Slot 316 SS Wire Wrap Screen (181.8 - 201.2') 16.0" Borehole	(100.5 - 224.0') 264.6 bags	(198.0 - 205.0') Note: Note: Well screen is damaged and twisted, repairs to the well are planned pending agency approval (100.5 - 224.0') 285 bags (8%) Note: Lapis Lustre Sand, swab filter pack for approximately 3.5 hours prior to installing bentonite seal
213 214 215 216 217 218 219	205-210 (<0.17 U ppt 4/30/2019 15:15	Topock - Weathered Bedrock - conglomerate Topock - Weathered Bedrock - conglomerate	ML		(218.0 - 219.0') Centralizer			
220	iotions: !!	SCS - 11-46-1	S ~ !! ^ !		tion Custom # - fact bare	= bolow ground surface =	mal = abaya =====	and level CM = are used used so
Appre	viations: U	SUS = Unified	SOII C	iassifica	tion System. It = feet, bas	= pelow ground surface, at	msi = above mean	sea level, GW = groundwater,

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, ground water data was collected during drilling of the pilot hole



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, ground water data was collected during drilling of the billot hole

ARCA	DIS Design & Control for natural built asset	Consultancy Land S	Temporary E	Backfill Log	S	heet: 1 of 9	
Date Started: Date Completed:			_ Surface Elevation: _ Northing (NAD83):	466.0 ft amsl 2102908.7	Well ID: RI		
Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	Cascade Sonic Drilling Dan O'Mara E. Huellmant D. Maurer / G	el / J. Pacheco	Easting (NAD83):Total Depth:Borehole Diameter:Depth to First Water:Editor:	7616336.4 161 ft bgs 6-12 inches 10.98 ft bgs S. McGrane / G. Willford	Project: Final (Location: PG&E		
			_ Luitor.	S. WICCIANC / G. WILLION			
Groundwate Sample ID		USCS Code USCS Class		Construction	Calculated Material Volumes	Material Volumes Installed	
_ 1	Topock - Fill	SP	(0.0 - 0.5') Steel Plate Plate (0.5 - 5.0') Plastering Sand	(0.0 - 3.5') 12" Borehole	(0.5 - 5.0') 6.1 bags	(0.5 - 5.0') 3 bags (-51%) Note: Wildcat Washed	
4 5 5 6		NR V					
7 — 5 — 7 — 6 — 7 — 6 — 7 — 6 — 7 — 6 — 7 — 6 — 7 — 7	Topock - Fill	SP					
12		NR	(5.0 - 136.0') Cemex #3 MESH (8x10)	(3.5 - 161.0') 6" Borehole	(5.0 - 136.0') 51.4 bags	(5.0 - 136.0') 69.5 bags (35%) Note: Lapis Lustre Sand	
RB-4-VAS- 15-20 (0.0556 J ppb) 4/12/2019	Topock - Fluvial Deposits	SP					
09:20 - -	Topock - Fluvial Deposits	SP-SM				ea level, GW = groundwater,	

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

ARC	DIS Design & for naturabuilt asset	Consultancy al and ets		Temporary I	Backfill Log	S	Sheet: 2 of 9	
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	Cascade Sonic Drilling Dan O'Mara	tel / J. F		Surface Elevation: 466.0 ft amsl Northing (NAD83): 2102908.7 Easting (NAD83): 7616336.4 Total Depth: 161 ft bgs Borehole Diameter: 6-12 inches Depth to First Water: 10.98 ft bgs Editor: S. McGrane / G. Willford		Client: PG&E Project: Final (
thd e Groundwa Sample II		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed	
21	Topock - Fluvial Deposits Topock - Fluvial Deposits	NR SP-SM SP-SM	assification	(5.0 - 136.0') Cemex #3 MESH (8x10)	(3.5 - 161.0') 6" Borehole s = below ground surface, a	(5.0 - 136.0') 51.4 bags	(5.0 - 136.0') 69.5 bags (35%) Note: Lapis Lustre Sand sea level, GW = groundwater,	

ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

ARCA	DIS Design & for nature built asso	Consultancy al and ets		Temporary E	Backfill Log	Sheet: 3 of 9		
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	e Started: 04/11/2019 e Completed: 04/24/2019 ing Co.: Cascade ing Method: Sonic Drilling er Name: Dan O'Mara ing Asst: E. Huellmantel / J. Pacheco		Surface Elevation: 466.0 ft amsl Northing (NAD83): 2102908.7 Easting (NAD83): 7616336.4 Total Depth: 161 ft bgs Borehole Diameter: 6-12 inches Depth to First Water: 10.98 ft bgs Editor: S. McGrane / G. Willford		Location: <u>PG&E</u> 			
Groundwate Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed	
41	Topock - Fluvial Deposits	GW						
		NR				9		
46	Topock - Fluvial Deposits	SP		(5.0 - 136.0') Cemex #3 MESH (8x10)	(3.5 - 161.0') 6" Borehole	(5.0 - 136.0') 51.4 bags	(5.0 - 136.0') 69.5 bags (35%) Note: Lapis Lustre Sand	
53 54 55 56	Topock - Fluvial Deposits	SP-SM						
57	Topock - Fluvial Deposits	SP-SM						
59 59 60	Topock - Fluvial Deposits	SM	assificati	on System ft = feet ha	s = below ground surface an	nsl = above means	sea level, GW = groundwater,	

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groun ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

PARCADIS Design & Consultancy for natural and built assets						Temporary I	Backfill Log		Sheet: 4 of 9		
Date S	Started:	04/11/2	2019			_ Surface Elevation:	466.0 ft amsl	Well ID:	RB-4 Pilot		
	Completed:		- ', ' '								
Drilling		Cascade Sonic Drilling Dan O'Mara				Easting (NAD83):	7616336.4	Client: PG			
Drilling Driller	Method:			_ Total Depth:			al GW Remedy Phase 1				
Drilling					acheco			Location. <u>PG</u>	Location: PG&E Topock, Needles, California		
Logge		D. Mau				Editor:	S. McGrane / G. Willford	Project Numb	per: RC000753.0051		
33-											
Depth (ft)	Groundwate Sample ID		Formation	USCS	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed		
		Flu	ock - ıvial	SP SC							
61		Dep	osits ock -	CL	V						
		Flu	ıvial osits		。 () ·						
62		Top	ock - ıvial		Ø 0						
		Dep	osits		0 ·						
63			ock - ıvial	SP	0. (`). 0						
_ 00 _		Dep	osits								
64					, 0						
04					· /\.						
65											
_ 00 _											
		Тор	ock -								
66			ıvial osits	SP							
l											
67					0						
		Ton	ock -		· ():4						
68		Flu	ıvial	SP							
<u> </u>) Бер	osits								
69		Top	ock -		NOT 1						
		Flu	ıvial osits	GP	٥٠٠٠						
70			ock -			(5.0 - 136.0') Cemex	(3.5 - 161.0') 6" Borehole	(5.0 - 136.0') 51.4 bags	(5.0 - 136.0') 69.5 bags (35%) Note: Lapis Lustre Sand		
		Flu	ıvial osits	SP		#3 WEST (0X10)	Solo	bays	Note. Lapis Lustre Gariu		
71											
72		Top	ock - ıvial	ML							
		Dep	osits	""							
73											
					Λ						
74					$ \setminus / $						
				NR	$ \vee $						
				INF	$ \wedge $						
,,,					/						
76					/ \						
76											
- -											
77											
F -		Ton	ock -								
78		Flu	ivial osits	SP							
<u> </u>		Deb	voito.								
79											
80 Abbrox	dotions: 11	200 = 1	loj£i - ·!	Call Ci	loosifi '	ion System for fact !	780789		n and layed CVM = suscernational		
Apprev	viations: U	505 = L	nilled	SOII CI	assificat	ion System, π = teet, bg	ıs – pelow ground surface,	amsi = above mea	n sea level, GW = groundwater,		

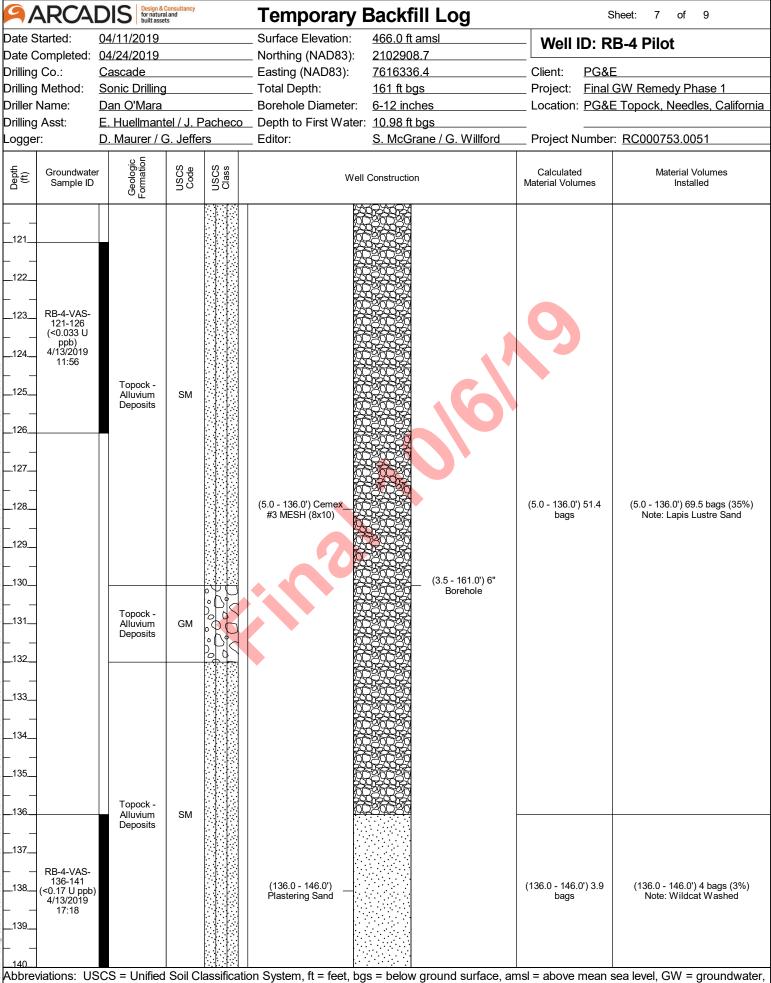
ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

PARCADIS Design & Consultancy for natural and built assets					Temporary Backfill Log Sheet: 5 of 9				
	Started: 04/11/2019 Completed: 04/24/2019				_ Surface Elevation:	466.0 ft amsl	Well ID: R	B-4 Pilot	
Drilling	-				_ Northing (NAD83):	2102908.7 7616336.4	_	-	
_	g Co g Method:			_ Easting (NAD83):					
_	•	Sonic Drilling	-		_ Total Depth: _ Borehole Diameter:	161 ft bgs	· · · · · · · · · · · · · · · · · · ·		
	Name:	Dan O'Mara			Borehole Diameter: <u>6-12 inches</u> Depth to First Water: <u>10.98 ft bgs</u>		Location: PG&E Topock, Needles, California		
Drilling		D. Maurer / 0			_ Deptit to First Water. _ Editor:	S. McGrane / G. Willford	— — — — — — — — — — — — — — — — — — —	: RC000753.0051	
Logge	1.		J. Jelle	7 T	Editor.	5. McGrane / G. Williotu	_ Froject Number	. <u>NC000733.0031</u>	
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed	
81 82 83	RB-4-VAS-	Topock - Fluvial Deposits	GW						
84 85	81-86 (<0.033 U ppb) 4/12/2019 15:45		NR				(3)		
86 87 88		Topock - Fluvial Deposits	SP						
		Topock - Fluvial Deposits	GM						
90					(5.0 - 136.0') Cemex	(3.5 - 161.0') 6"	(5.0 - 136.0') 51.4	(5.0 - 136.0') 69.5 bags (35%)	
DALA		Topock - Fluvial	SP		#3 MESH (8x10)	Borehole	bags	Note: Lapis Lustre Sand	
3	-	Deposits	SP	Ø:					
91	_	Topock - Fluvial							
9 —	-	Deposits	1						
92									
<u> </u>									
<u>93</u>]								
Salar Sala Sala									
27	1								
5									
95	-	Topock -	0						
<u> </u>		Fluvial Deposits	GW-GN						
96									
<u> </u>									
97									
- Signar						050000 20162014			
E	1					2000			
98 	1								
<u> </u>	-								
99									
3 -									
100				. • •					
Abbrev	viations: US	SCS = Unified	Soil C	lassificati	on System, ft = feet, bg	s = below ground surface, am	nsl = above mean s	sea level, GW = groundwater,	

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

ARCA	Design & for natura built asse	Consultancy al and its		Temporary Backf	ill Log	Sheet: 6 of 9		
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	ed: 04/11/2019 Deleted: 04/24/2019 Cascade Sonic Drilling Dan O'Mara		Total Depth: 161 ft bgs Borehole Diameter: 6-12 inches Depth to First Water: 10.98 ft bgs		Well ID: RB-4 Pilot Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, California Project Number: RC000753.0051			
Groundwat Sample II		USCS Code	USCS	Well Construction		Calculated terial Volumes	Material Volumes Installed	
	Topock - Alluvium Deposits	NR SM	assification	(5.0 - 136.0') Cemex #3 MESH (8x10)	Borehole	.0 - 136.0') 51.4 bags	(5.0 - 136.0') 69.5 bags (35%) Note: Lapis Lustre Sand ea level, GW = groundwater,	

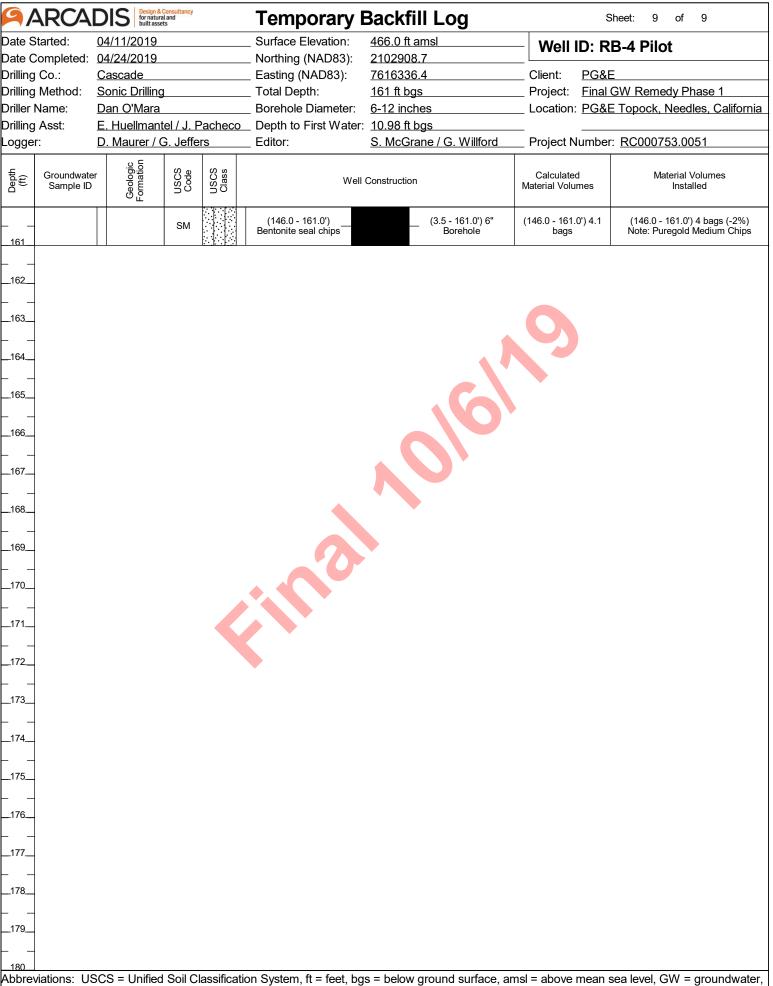
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during



ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

9/	ARCA	DIS Design & for natura built asse	Consultancy al and rts		Temporary I	Backfill Log	S	heet: 8 of 9
Date On Drilling Driller	Date Started: 04/11/2019 Date Completed: 04/24/2019 Drilling Co.: Cascade Drilling Method: Sonic Drilling Driller Name: Dan O'Mara Drilling Asst: E. Huellmantel / J. Pacheco D. Maurer / G. Jeffers		Surface Elevation: 466.0 ft amsl Northing (NAD83): 2102908.7 Easting (NAD83): 7616336.4 Total Depth: 161 ft bgs Borehole Diameter: 6-12 inches Depth to First Water: 10.98 ft bgs Editor: S. McGrane / G. Willford		Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, California Project Number: RC000753.0051			
Depth (ft)	Groundwate Sample ID	Geologic Formation	Code	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
141		Topock - Alluvium Deposits Topock - Weathered Bedrock - conglomerate	SM		(136.0 - 146.0') Plastering Sand		(136.0 - 146.0') 3.9 bags	(136.0 - 146.0') 4 bags (3%) Note: Wildcat Washed
			NR					
147		Topock - Weathered Bedrock - conglomerate	SM		(146.0 - 161.0') Bentonite seal chips	(3.5 - 161.0') 6" Borehole	(146.0 - 161.0') 4.1 bags	(146.0 - 161.0') 4 bags (-2%) Note: Puregold Medium Chips
157157	RB-4-VAS- 155-160 (<0.17 U ppb) 4/17/2019 12:48		Soil C	lassificati	on System, ft = feet_ha	s = below ground surface a	msl = above means	sea level, GW = groundwater,

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.



ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during

9/	ARCA	DIS	esign & Consultar r natural and ilt assets	icy	Drilling Log		Sheet: 1 of 8				
Date S	Started:	08/06/20	19	S	urface Elevation:	<u>N</u> /	Ά	Borin	g No.: RE	-4	
	Completed:	08/21/20	19	N	orthing (NAD83):	N/	Ά				
Drilling		Cascade			asting (NAD83):	<u>N/</u>		Client: PG&E			
Drilling	Method:	Dual Rota	ary	To	otal Depth:	<u>14</u>	l6 ft bgs	Project:	Final GW Re	<u>nedy Phase</u>	: 1
Drill Ri	g Type:	<u>Foremost</u>	t DR-241	HDC	onductor Casing Diameter:	<u>18</u>	3 inches	Location:	PG&E Topod	k, Needles,	California
Driller	Name:	Jon Marti	nez	D	rill Casing Diameter:	<u>16</u>	inches				
Drilling	Asst:	A. & H. A	mezguit	<u>a</u> D	rill Bit:	<u>15</u>	5.5 inch Tricone	Project N	umber: RC00	0753.0051	
Tool-P	usher:	Scott Joh	nson	D	epth to First Water:	<u>10</u>).98 ft bgs				
Rig Ge	eologist:	E. Nygaa	rd / A. N	<u>lack</u> C	onverted to Well:	×	Yes No				
Depth (ft)	Drilling Ru	ge USCS USCS Casir		Casing Diameter	Description g		Drilling	Drilling	Fluid		
()	Penetration F	ate	20.00.000		(See Pilot boring log for full geologic descriptions)		(0.0. 20.0!) Smooth drilling			(0.040.0!) 4:	176 gallana
 _ 1 _ _ 2 _		SP	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		(0.0 - 2.0') Topock - Fill; Poorly graded sand (SP); (10YR5/3) (2.0 - 6.0') No recovery (NR)	_	(0.0 - 20.0') Smooth drilling			(0.0 - 40.0') 4' of water used; gallons of wat recovered; 13' water lost	; 2800 er
- 3 _ - 3 _ - 4 _ - 5 _		NR							V.	•	
- 6 _ _ 6 _ - 7 _ _ 8 _		SP			(6.0 - 8.0') Topock - Fill; Poorly graded sand (SP); (10YR5/3)						
_ 9 10 11 12 13 14 15	(0.0 - 20.0) 2.25 mins/ft	NR		(0.0 - 20.0') 18.0" Steel Casing	(8.0 - 16.0°) No recovery (NR)		(10.0') Observed Cemex #3 No cuttings (see photo log)	MESH (8x10)	sand in drill		
16 17		SP			(16.0 - 17.5') Topock - Fluvial Deposits; Poorly graded sand (SP); brown (7.5YR 5/4)						
18 19 _20		SP-SM			(17.5 - 20.0') Topock - Fluvial Deposits; Poorly graded sand wit silt (SP-SM); brown (7.5YR 4/2) (18') brown (7.5YR 4/3)	h					
				O1 :C (O14/	

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater Remarks: NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval for RB-4 Pilot; Gallons Gained/Lost: (+) = water gained from the formation, (-) = water lost to the formation

ARCADIS Design & Consultancy for natural and built assets				су	Drilling Log				Sheet: 2 of 8		
Date S	tarted:	08/0	06/201	9	Sı	urface Elevation:	N/	A	Borin	g No.: RE	3-4
Date C	completed:	08/2	21/201	9	N	orthing (NAD83):	N/	/A			<u></u>
Drilling			cade			asting (NAD83):	<u>N/.</u>		Client: PG&E		
_	Method:		ıl Rota	-		otal Depth:	,			V Remedy Phase 1	
1	g Type:			DR-241		_Conductor Casing Diameter:			Location:	PG&E Topoc	k, Needles, California
Driller I			Martir			rill Casing Diameter:		3 inches			
Drilling				nezguit		rill Bit:			Project N	umber: RC00	0753.0051
Tool-P			<u>tt Johr</u>			epth to First Water:).98 ft bgs			
Rig Ge	eologist:	<u>E. N</u>	lygaar	<u>d / A. M</u>	lack C	onverted to Well:	X	Yes No		T	
Depth	Drilling Ru	n	USCS	USCS	Casing	Description		Deillie e	Nista		Daillin - Florid
/£i\	and Averag Penetration R	e i	Code	Class	Diameter			Drilling	Notes		Drilling Fluid
21	(20.0 - 40.0) 3.75 mins/ft		NR SP-SM		(20.0 - 40.0') 18.0" Steel Casing	(26.0 - 34.0') Topock - Fluvial Deposits; Poorly graded sand wit silt (SP-SM); brown (7.5YR 4/2) (34.0 - 36.0') No recovery (NR) (36.0 - 40.0') Topock - Fluvial Deposits; Poorly graded sand (SP); brown (7.5YR 5/3)	h	(20.0') Observed Cemex #3 M cuttings (see photo log) (20.1 - 40.0') Drilling became (21.0') Observed Cemex #3 M cuttings (see photo log)	a little rough	er sand in drill	(0.0 - 40.0') 4176 gallons of water used; 2800 gallons of water recovered; 1376 gallons of water lost
40 Abbrox	iations: 119	309	– I Inif	ied Soil	Classificati	on System ft = feet has =	hola	ow ground surface, amel	l = abovo r	mean soa lovo	CW = groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwarks: NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval for RB-4 Pilot; Gallons Gained/Lost: (+) = water gained from the formation, (-) = water lost to the formation

9/	ARCA	DIS Design & Consult for natural and built assets	ancy	Drilling Log		Sheet:	3 of 8
	Started:	08/06/2019			N/A	Boring No.: RI	B-4
	Completed:			,	N/A	_	
1	g Co.:	Cascade		0 \	N/A	Client: PG&E	1 DI 4
	g Method:	Dual Rotary			146 ft bgs	•	emedy Phase 1
	ig Type: Name:	Foremost DR-24		onductor Casing Diameter:		Location: PG&E Topo	ck, Needles, California
	name: g Asst:	Jon Martinez A. & H. Amezgu		rill Casing Diameter: rill Bit:	16 inches 15.5 inch Tricone	 _ Project Number: <u>RC0</u> 0	00753 0051
1	Pusher:	Scott Johnson		epth to First Water:	10.98 ft bgs	_ FTOJECT NUTIBEL. INCOM	007 00.000 1
	eologist:	E. Nygaard / A. I		onverted to Well:	× Yes No	_	
Depth (ft)	Drilling Ru and Averag Penetration F	ge USCS USCS		Description (See Pilot boring log for full geologic descriptions)	Drillin	g Notes	Drilling Fluid
41 42	-	GW S	k:	(40.0 - 41.0') Topock - Fluvial Deposits; Well graded gravel with sand (GW); brown (7.5YR 5/4) (41.0 - 46.0') No recovery (NR)	(40.0') Observed Cemex #3 cuttings (see photo log) (40.1 - 60.0') Rough drilling	MESH (8x10) sand in drill	(40.0 - 85.0') 21600 gallons of water used; 12960 gallons of water recovered; 8640 gallons of water lost
43		NR NR					
45 46 46 47 46 47 46 47 47 47 48 47 47 48 49				(46.0 - 52.0') Topock - Fluvial Deposits; Poorly graded sand with gravel (SP); brown (7.5YR 5/3)	9)	16/	
48	(40.0 - 60.0) 7.01 mins/ft	SP O	(40.0 - 60.0') 18.0" Steel Casing		(50.0') Observed Cemex #3 cuttings (see photo log)	MESH (8x10) sand in drill	
51	-	SP-SM		(52.0 - 53.0') Topock - Fluvial Deposits; Poorly graded sand with silt (SP-SM); brown (7.5YR 5/3) (53.0 - 56.0') No recovery (NR) (56.0 - 58.0') Topock - Fluvial Deposits; Poorly graded sand with silt (SP-SM); brown (7.5YR 5/3) (58.0 - 60.0') Topock - Fluvial Deposits; Silty sand with gravel (SM); brown (7.5YR 5/3)			
53	-	NIR NIR	<u>; </u>	(53.0 - 56.0') No recovery (NR)	-		
MENTSIPG&E 10POCNIL	- -			(56.0 - 58.0') Topock - Fluvial	_		
- 57 _ 58 _ 58 _ 58 _ 58 _ 58 _ 58 _ 58 _	-	SP-SM		silt (SP-SM); brown (7.5YR 5/3)			
- 60	-	SM		Deposits; Silty sand with gravel (SM); brown (7.5YR 5/3)			
Δhhre	viations: 119	SCS - Unified So	il Classificat	ion System ft - feet has - k	selow ground surface, amo	sl = above mean sea lev	ol GW = groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater Remarks: NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval for RB-4 Pilot; Gallons Gained/Lost: (+) = water gained from the formation, (-) = water lost to the formation

AR	CAD)IS Des	ign & Consultan natural and t assets	су	Drilling Log		Sheet:	4 of 8	
Date Started		8/06/201		Sı	urface Elevation:	N/A	Boring No.: RE	3-4	
Date Comple			9		orthing (NAD83):	N/A	-		
Drilling Co.:		ascade			asting (NAD83):	N/A	Client: PG&E		
Drilling Meth		-			otal Depth:	146 ft bgs	•	medy Phase 1	
Drill Rig Type		oremost			onductor Casing Diameter:		Location: PG&E Topod	k, Needles, California	
Driller Name		on Martir			rill Casing Diameter:	16 inches		0750 0054	
Drilling Asst: Tool-Pusher		& H. Ar	-		rill Bit:	15.5 inch Tricone	Project Number: RC00	0753.0051	
Rig Geologis		cott John Nygaar			epth to First Water: onverted to Well:	10.98 ft bgs	-		
B.10					Description				
ff) and	ing Run Average ation Rat	e USCS Code	USCS Class	Casing Diameter	(See Pilot boring log for full geologic descriptions)	Drilling	y Notes	Drilling Fluid	
5.90 i 71727373747576777879	- 80.0) mins/ft	SP SC CL SP			(60.0 - 60.1') Topock - Fluvial Deposits; Poorly graded sand (SP); yellowish brown / moderate yellowish brown(10YR 5/4) (60.1 - 60.4') Topock - Fluvial Deposits; Clayey sand (SC); brov (7.5YR 4/4) (60.4 - 60.7') Topock - Fluvial Deposits; Lean clay (CL); dark brown (7.5YR 3/4) (60.7 - 65.0') Topock - Fluvial Deposits; Poorly graded sand wit gravel (SP); brown (7.5YR 5/4) (65.0 - 67.0') Topock - Fluvial Deposits; Poorly graded sand (SP); brown (7.5YR 5/4) (69.0 - 69.0') Topock - Fluvial Deposits; Poorly graded sand wit gravel (SP); brown (7.5YR 5/4) (69.0 - 69.5') Topock - Fluvial Deposits; Poorly graded gravel with sand (GP); brown (7.5YR 5/4) (69.5 - 71.0') Topock - Fluvial Deposits; Poorly graded sand (SP); brown (7.5YR 5/4) (71.0 - 73.0') Topock - Fluvial Deposits; Silt with sand (ML); dar brown (7.5YR 3/3)	(70.0°) Observed Cemex #3 fourtings (see photo log)		(40.0 - 85.0') 21600 gallons of water used; 12960 gallons of water recovered; 8640 gallons of water lost	
80l Abbreviation	s: USC	S = Unif	ied Soil	Classificati	ion System, ft = feet, bas =	below ground surface, ams	sl = above mean sea leve	GW = groundwater	

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwate Remarks: NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval for RB-4 Pilot; Gallons Gained/Lost: (+) = water gained from the formation, (-) = water lost to the formation

ARC	DIS for buil	sign & Consultancy natural and It assets		Drilling Log				Sheet:	5 of 8
Date Started:	08/06/201	19	Su	ırface Elevation:	N/A		Borin	g No.: RE	R-4
Date Completed	08/21/201	19	No	orthing (NAD83):	N/A		Borni		/ 1
Drilling Co.:	Cascade		Ea	asting (NAD83):	N/A		Client:	PG&E	
Drilling Method:	Dual Rota	•		otal Depth:	146 ft bgs		Project:		medy Phase 1
Drill Rig Type:		DR-24HD		onductor Casing Diameter:			Location:	PG&E Topod	k, Needles, California
Driller Name:	Jon Martir			ill Casing Diameter:	16 inches				
Drilling Asst:	<u>A. & H. Aı</u>	•		ill Bit:	15.5 inch Tricone	<u>e</u>	Project N	umber: RC00	0753.0051
Tool-Pusher:	Scott Joh			epth to First Water:	10.98 ft bgs				
Rig Geologist:	E. Nygaar	rd / A. Mac	k Co	onverted to Well:	× Yes No				T
Depth (ft) Drilling R and Avera	ige USCS		Casing Diameter	Description (See Pilot boring log for		Drilling	Notes		Drilling Fluid
Tenetration	Itale	75. B 50		full geologic descriptions)	1(00 0l) Ob	0	AECH (0::40)		(40.0. 05.0) 24000
81 82 82 83 83 84		1	0.0 - 85.0') 8.0" Steel Casing	(80.0 - 83.0') Topock - Fluvial Deposits; Well graded gravel with sand (GW); brown (7.5YR 4/3)	(80.0') Observed cuttings (see pho (80.1 - 85.0') Rou	oto log)	MESH (8x10)	sand in drill	(40.0 - 85.0') 21600 gallons of water used; 12960 gallons of water recovered; 8640 gallons of water lost
85		1	5.0 - 91.0') 8.0" Steel Casing	(86.0 - 88.5') Topock - Fluvial Deposits; Poorly graded sand (SP); brown (7.5YR 5/4) (88.5 - 90.0') Topock - Fluvial Deposits; Silty gravel with sand (GM); brown (7.5YR 4/3) (90.0 - 90.3') Topock - Fluvial Deposits; Poorly graded sand wit gravel (SP); black (5Y 2.5/2) (90.3 - 90.7') Topock - Fluvial	not proceed past borehole and rig. (90.0 - 101.0') Ro	91 ft. Groun Have to swi	d surface su tch to 16-inc	h drill casing.	; gallons recovered; gallons lost
92	/ft		.0 - 101.0') 6.0" Steel Casing	Deposits; Póorly graded sand wit gravel (SP); yellowish brown (10YR 5/6) (90.7 - 100.0") Topock - Fluvial Deposits; Well graded gravel with sitt and sand (GW-GM); brown (7.5YR 4/3)	cuttings (see pho	oto log)			gallons of water used; 11375 gallons of water recovered; 3250 gallons of water lost

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwate Remarks: NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval for RB-4 Pilot; Gallons Gained/Lost: (+) = water gained from the formation, (-) = water lost to the formation

ARCA	DIS for buil	sign & Consultancy natural and It assets		Drilling Log		Sheet:	6 of 8
Date Started:	08/06/201		Su	ırface Elevation:	N/A	Boring No.: RB	3-4
Date Completed:				orthing (NAD83):	N/A		<u> </u>
Drilling Co.:	Cascade			asting (NAD83):	N/A	Client: PG&E	
Drilling Method:	Dual Rota	•		otal Depth:	146 ft bgs	-	medy Phase 1
Drill Rig Type:	Foremost			onductor Casing Diameter:		Location: PG&E Topoc	k, Needles, California
Driller Name:	Jon Marti			ill Casing Diameter:	16 inches		0750 0054
Drilling Asst:	A. & H. A			ill Bit:	15.5 inch Tricone	Project Number: RC00	0753.0051
Tool-Pusher: Rig Geologist:	Scott Joh E. Nygaai			epth to First Water: onverted to Well:	10.98 ft bgs	-	
Tig Geologist.	L. INygaai	TU / A. IVIE	<u> </u>		Tes INO		
Depth (ft) Drilling Ru	ie 0303	USCS Class	Casing Diameter	Description (See Pilot boring log for	Drilling	g Notes	Drilling Fluid
Penetration F	rate			full geologic descriptions)			
(91.0 - 101.0 11.69 mins/f) t		91.0 - 101.0') 16.0" Steel Casing	(100.0 - 106.0') No recovery (NR)	(90.0 - 101.0') Rough drilling (91.1 - 106.0') Rough drilling (91.1 - 106.0') Rough drilling		(91.0 - 106.0') 14625 gallons of water used; 11375 gallons of water
_101	1	\ /	Odding		(101.0') Observed Cemex #3 cuttings (see photo log)		recovered; 3250 gallons of water lost
102		$ \setminus / $					
	ND.	$ \ \ $					
(101.0 - 106.0 7.35 mins/ft			(101.0 - 106.0') 16.0"				
104			Steel Casing				
		/ \					
_							
_106	 -			(106.0 - 130.0') Topock - Alluviun	1	10	(106.0 - 146.0') 4875
 107				Deposits; Silty sand with gravel (SM); dark brown (7.5YR 3/3)			gallons of water used; 8125 gallons of water recovered; 3250 gallons of
				0		3 '	water gained
_108							
109							
110					(110.0') Observed Cemex #3	MESH (8x10) sand in drill	
111					3/		
			(106.0 -				
113 (106.0 - 120.0 3.59 mins/ft			120.0') 16.0" Steel Casing				
114							
115							
116							
117							
_118							
110							
119							
120	200 = 11 :		N===:0 0	on Cristons # = fr. 1.1	helow ground surface, ams	d = abaya 1	0.01

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwarks: NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval for RB-4 Pilot; Gallons Gained/Lost: (+) = water gained from the formation, (-) = water lost to the formation

9/	ARCA	DIS	Desi for n built	gn & Consultan latural and assets	су	Drilling Log				Sheet:	7 of	8
Date S	Started:	08/0	6/201	9	S	urface Elevation:	N/A	В	orin	g No.: RE	3-4	
	Completed:			9		orthing (NAD83):	N/A				<u> </u>	
Drilling		Caso	ade		E	asting (NAD83):	N/A	Clie		PG&E		
Drilling	Method:	<u>Dual</u>	Rota	ry	To	otal Depth:	146 ft bgs	Pro	ject:	Final GW Re	medy Ph	ase 1
Drill Ri	g Type:			DR-241	HDC	onductor Casing Diameter:	18 inches	Loc	ation:	PG&E Topod	<u>ck, Needl</u>	<u>es, California</u>
	Name:		Martin			rill Casing Diameter:	16 inches					
Drilling	Asst:	<u>A. &</u>	H. Ar	nezguita	<u>a</u> D	rill Bit:	15.5 inch Tricone	Pro	ject N	umber: RC00	0753.00	51
Tool-P	usher:	Scot	<u>t Johr</u>	nson	D	epth to First Water:	10.98 ft bgs					
Rig Ge	eologist:	<u>E. N</u>	ygaar	d / A. M	lack C	onverted to Well:	× Yes No					
Depth	Drilling Ru	n ,	JSCS	USCS	Casing	Description						
(ft)	and Averag Penetration F		Code	Class	Diameter	(See Pilot boring log for full geologic descriptions)		Drilling Note	S		Dr	illing Fluid
121							(120.0') Observed cuttings (see phot	d Cemex #3 MESI to log)	H (8x10)	sand in drill	gallons of 8125 gall	46.0') 4875 f water used; ons of water
'2'											water gai	d; 3250 gallons of ned
122		ı										
123		ı							U			
124		ı								A		
125		ı	SM									
 _126												
120												
127												
						0						
128												
129												
130	(120.0 - 140.0	0)			(120.0 -							
130	1.32 mins/ft				140.0') 16.0" Steel Casing	(130.0 - 132.0') Topock - Alluviun Deposits; Silty gravel with sand	(130.0') Observed		H (8x10)	sand in drill		
131			GM			(GM); dark brown (7.5YR 3/3)		37				
			···									
132				200		(132.0 - 141.0') Topock - Alluviun						
133		ı				Deposits; Silty sand with gravel (SM); dark brown (7.5YR 3/3)						
134		ı										
 135												
136			SM									
 137												
138												
 139												
_												
140					<u> </u>							

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater Remarks: NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval for RB-4 Pilot; Gallons Gained/Lost: (+) = water gained from the formation, (-) = water lost to the formation

9/	ARCA	DIS	lesign & Consultar or natural and uilt assets	псу	Drilling Log					Sheet	:: 8	of 8
	Started:	08/06/20			urface Elevation:	N/A			Borin	g No.:	RB-	4
	Completed:				orthing (NAD83):	N/A						<u>-</u>
Drilling		Cascade			asting (NAD83):	N/A			lient:	PG&E	_	
1	Method:	Dual Rot	-		otal Depth:	146 ft b	-		roject:			edy Phase 1
	ig Type:	Foremos			onductor Casing Diameter:			LC	ocation:	PG&E 10	роск.	, Needles, California
Drilling	Name:	Jon Mart A. & H. A			rill Casing Diameter: rill Bit:	16 inche	es ch Tricone		roioet N	umber: R0	2000	753 0051
_	usher:	Scott Jol			epth to First Water:	10.98 ft			iojeci iv	ullibel. <u>K</u>	<u> </u>	733.0031
	eologist:	E. Nygaa			onverted to Well:	× Yes	-					
			T			<u> </u>						
Depth (ft)	Drilling Rui and Averag Penetration R	e Codo		Casing Diameter	Description (See Pilot boring log for full geologic descriptions)			Orilling No				Drilling Fluid
141		SM			(141.0 - 144.0') Topock -	(140.0 photo	0') Observed plasto log)	tering sar	nd in drill	cuttings (see	ç 8 r	(106.0 - 146.0') 4875 gallons of water used; 3125 gallons of water recovered; 3250 gallons of
 142 143	(140.0 - 146.0 1.95 mins/ft	SM		(140.0 - 146.0') 15.5"	Weathered Bedrock - conglomerate; Silty sand with gravel (SM); reddish brown (2.5Y 4/4)	3			2		V	water gained
144	1.93 111115/10			Steel Casing	(144.0 - 146.0') No recovery (NR)							
 145		NR					X		C	// /		
146			\bot		End of Boring at 146.0 'bgs.							
147 148 149 150				24								
151				0								
152												
153					6							
154												
155												
156												
157												
158												
159												
160 Abbre	viations: US	SCS = Un	ified Soil	I Classificat	ion System, ft = feet, bgs =	below ard	ound surface.	amsl =	above	mean sea l	level.	GW = groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwate Remarks: NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval for RB-4 Pilot; Gallons Gained/Lost: (+) = water gained from the formation, (-) = water lost to the formation

9/	ARCAI	DIS Des	sign & Consultan natural and It assets	icy	Drilling Log		Sheet:	1 of 8
Date S	Started:	08/06/201	19	Sı	urface Elevation:	N/A	Boring No.: RE	3-4
	Completed:		19		orthing (NAD83):	N/A	_	-
Drilling	•	Cascade			asting (NAD83):	N/A	_ Client: <u>PG&E</u>	
		Dual Rota	-		otal Depth:	146 ft bgs		medy Phase 1
		<u>Foremost</u>			onductor Casing Diameter:		Location: PG&E Topod	ck, Needles, California
		Jon Martir			rill Casing Diameter:	16 inches		
1		A. & H. Ar	_		rill Bit:	15.5 inch Tricone	_ Project Number: RC00	00753.0051
		Scott John			epth to First Water:	10.98 ft bgs	-	
Rig G	eologist:	E. Nygaar	<u>a / A. IV</u>	Iack Co	onverted to Well:	× Yes No		1
Depth (ft)	Drilling Rur and Average Penetration R	e 0303	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling	g Notes	Drilling Fluid
_ 1 _ _ 1 _ _ 2 _		SP			(0.0 - 2.0') Topock - Fill; Poorly graded sand (SP); (10YR5/3)	(0.0 - 20.0') Smooth drilling		(0.0 - 40.0') 4176 gallons of water used; 2800 gallons of water recovered; 1376 gallons of water lost
3 4 5		NR			(2.0 - 6.0') No recovery (NR)			
6 7 8		SP		<	(6.0 - 8.0') Topock - Fill; Poorly graded sand (SP); (10YR5/3)	9/		
9101112131415	(0.0 - 20.0) 2.25 mins/ft	NR		(0.0 - 20.0') 18.0" Steel Casing		(10.0') Observed Cemex #3 cuttings (see photo log)	MESH (8x10) sand in drill	
16 17		SP			(16.0 - 17.5') Topock - Fluvial Deposits; Poorly graded sand (SP); brown (7.5YR 5/4)			
18 19 		SP-SM			(17.5 - 20.0') Topock - Fluvial Deposits; Poorly graded sand wit silt (SP-SM); brown (7.5YR 4/2) (18') brown (7.5YR 4/3)	th		
1			- · - 	01 10 41				

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater Remarks: NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval for RB-4 Pilot; Gallons Gained/Lost: (+) = water gained from the formation, (-) = water lost to the formation

9 A	RCA	DIS	Design for nat built as	& Consultant cural and ssets	су	Drilling Log				Sheet:	2 of 8
Date St	arted:	08/06	/2019)	Sı	urface Elevation:	N/	'A	Borin	g No.: RB	3-4
Date Co	ompleted:	08/21	/2019)	N	orthing (NAD83):	N/	/A			<u></u>
Drilling		Casca				asting (NAD83):	<u>N/</u>		Client:	PG&E	
_	Method:	<u>Dual F</u>	-			otal Depth:		16 ft bgs	Project:		medy Phase 1
Drill Rig	• •)R-24H		onductor Casing Diameter:			Location:	PG&E Topoc	k, Needles, California
Driller N		Jon M				rill Casing Diameter:		S inches			
Drilling .				ezguita		rill Bit:			Project N	umber: RC00	0753.0051
Tool-Pu		Scott				epth to First Water:).98 ft bgs			
Rig Ged	ologist:	E. Ny	gaard	/ A. M	ack C	onverted to Well:	<u>Ľ</u>	Yes No			T
Depth	Drilling Ru	n us	scs	uscs	Casing	Description		D. 311	N		D.111 El I
/£i\	and Averag Penetration R	e I 🦳		Class	Diameter	(See Pilot boring log for full geologic descriptions)		Drilling	Notes		Drilling Fluid
21	(20.0 - 40.0) 3.75 mins/ft	SP	-SM		(20.0 - 40.0') 18.0" Steel Casing	(20.0 - 26.0') No recovery (NR) (26.0 - 34.0') Topock - Fluvial Deposits; Poorly graded sand wit silt (SP-SM); brown (7.5YR 4/2) (36.0 - 40.0') Topock - Fluvial Deposits; Poorly graded sand (SP); brown (7.5YR 5/3)	h	(20.0') Observed Cemex #3 M cuttings (see photo log) (20.1 - 40.0') Drilling became (21.0') Observed Cemex #3 M cuttings (see photo log)	a little rough	ner sand in drill	(0.0 - 40.0') 4176 gallons of water used; 2800 gallons of water recovered; 1376 gallons of water lost
40 Abbrovi	iationa: 110	200 -	Linific	d Sail	Classificati	on System ft = feet has =	hak	aw ground ourfood amo	l – abaya i	moon oog lovo	CW = groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwarks: NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval for RB-4 Pilot; Gallons Gained/Lost: (+) = water gained from the formation, (-) = water lost to the formation

ARCA	DIS Design & Consultant for natural and built assets	Drilling Log	Sheet:	3 of 8
Date Started:	08/06/2019	Surface Elevation:	N/A Boring No.: R	B-4
Date Completed:		Northing (NAD83):	<u>N/A</u>	
Drilling Co.:	Cascade	Easting (NAD83):	N/A Client: PG&E	L DI 4
Drilling Method:	Dual Rotary	Total Depth:	,	emedy Phase 1
Drill Rig Type: Driller Name:	Foremost DR-24H	<u> </u>		ock, Needles, California
Drilling Asst:	Jon Martinez A. & H. Amezguita	Drill Casing Diameter: a Drill Bit:	16 inches 15.5 inch Tricone Project Number: RC0	00753 0051
Tool-Pusher:	Scott Johnson	Depth to First Water:	10.98 ft bgs	00733.0031
Rig Geologist:	E. Nygaard / A. M		× Yes No	
Depth (ft) Drilling Ru and Average Penetration F	ge OSCS OSCS	Casing Diameter (See Pilot boring log for full geologic descriptions)	Drilling Notes	Drilling Fluid
 41 42	GW S	(40.0 - 41.0') Topock - Fluvial Deposits; Well graded gravel wit sand (GW); brown (7.5YR 5/4) (41.0 - 46.0') No recovery (NR)	(40.0') Observed Cemex #3 MESH (8x10) sand in drill cuttings (see photo log) (40.1 - 60.0') Rough drilling	(40.0 - 85.0') 21600 gallons of water used; 12960 gallons of water recovered; 8640 gallons of water lost
43	NR			
46 46 47 48 48 49		(46.0 - 52.0') Topock - Fluvial Deposits; Poorly graded sand wi gravel (SP); brown (7.5YR 5/3)	th	
48	SP 0	(40.0 - 60.0') 18.0" Steel Casing	(50.0') Observed Cemex #3 MESH (8x10) sand in drill cuttings (see photo log)	
51	SP-SM	(52.0 - 53.0') Topock - Fluvial Deposits; Poorly graded sand wi silt (SP-SM); brown (7.5YR 5/3)	th	
54	NR NR	(53.0 - 56.0") No recovery (NR)		
56	SP-SM	(56.0 - 58.0') Topock - Fluvial Deposits; Poorly graded sand wi silt (SP-SM); brown (7.5YR 5/3)	th below ground surface, amsl = above mean sea lev	
59	SM	(58.0 - 60.0') Topock - Fluvial Deposits; Silty sand with gravel (SM); brown (7.5YR 5/3)		OW -

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater Remarks: NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval for RB-4 Pilot; Gallons Gained/Lost: (+) = water gained from the formation, (-) = water lost to the formation

ARCA	DIS for buil	ign & Consultan natural and t assets	су	Drilling Log		Sheet:	4 of 8
Date Started:	08/06/201		Sı	urface Elevation:	N/A	Boring No.: RB	3-4
Date Completed:		9		orthing (NAD83):	N/A		<u> </u>
Drilling Co.:	Cascade			asting (NAD83):	N/A	Client: PG&E	
Drilling Method:	Dual Rota	•		otal Depth:	146 ft bgs		medy Phase 1
Drill Rig Type:	Foremost			onductor Casing Diameter:		Location: PG&E Topoc	k, Needles, California
Driller Name:	Jon Martin			rill Casing Diameter:	16 inches		0750 0054
Drilling Asst:	A. & H. A	-		rill Bit:	15.5 inch Tricone	Project Number: RC00	0753.0051
Tool-Pusher: Rig Geologist:	Scott Joh E. Nygaar			epth to First Water: onverted to Well:	10.98 ft bgs		
Tig Geologist.	L. INYGaai	<u>u / A. IV</u>	IackC		Yes No		
Depth Drilling Ru	n USCS	USCS	Casing	Description	Drilling	Notos	Drilling Fluid
Penetration F		Class	Diameter	(See Pilot boring log for full geologic descriptions)	Drilling	Notes	Drilling Fluid
	SP SC CL SP	Class (Class (C	(60.0 - 80.0')	(See Pilot boring log for full geologic descriptions) (60.0 - 60.1') Topock - Fluvial Deposits; Poorly graded sand (SP); yellowish brown / moderate yellowish brown (10YR 5/4) (60.1 - 60.4') Topock - Fluvial Deposits; Clayey sand (SC); brov (7.5YR 4/4) (60.4 - 60.7') Topock - Fluvial Deposits; Lean clay (CL); dark brown (7.5YR 3/4) (60.7 - 65.0') Topock - Fluvial Deposits; Poorly graded sand wit gravel (SP); brown (7.5YR 5/4) (65.0 - 67.0') Topock - Fluvial Deposits; Poorly graded sand (SP); brown (7.5YR 5/4) (67.0 - 69.0') Topock - Fluvial Deposits; Poorly graded sand wit gravel (SP); brown (7.5YR 5/4) (69.0 - 69.5') Topock - Fluvial Deposits; Poorly graded gravel with sand (GP); brown (7.5YR 5/4) (69.5 - 71.0') Topock - Fluvial Deposits; Poorly graded sand (SP); brown (7.5YR 5/4) (71.0 - 73.0') Topock - Fluvial Deposits; Poorly graded sand (SP); brown (7.5YR 3/3)	(60.0') Observed Cemex #3 for cuttings (see photo log) (70.0') Observed Cemex #3 for cuttings (see photo log)	MESH (8x10) sand in drill	(40.0 - 85.0') 21600 gallons of water used; 12960 gallons of water recovered; 8640 gallons of water lost
 79 							
80	200 - 11-7	ind 0-"	Clossificati	ion System. ft = feet. bas =	holow ground surfers	l = above ===== !: "	C\\/ = =======
PODLEAISIONS, 113	っしつ = Unit	iea Soll	CIASSITICATI	iou sysiem II = teet bas =	DEIOW OLDUNG SUITACE, AMS	i – apove mean sea level	ı ıavv = arounawater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwate Remarks: NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval for RB-4 Pilot; Gallons Gained/Lost: (+) = water gained from the formation, (-) = water lost to the formation

9/	ARCA	DIS	Desig for na built	gn & Consultan atural and assets	су	Drilling Log				Sheet:	5 of 8
Date S	Started:	08/06/	2019	9	Sı	urface Elevation:	<u>N</u> /	Ά	Borir	g No.: R	B-4
	Completed:	08/21/	2019	9	N	orthing (NAD83):	N/	Ά			<u></u>
Drilling		<u>Casca</u>				asting (NAD83):		Α	Client:	PG&E	
_	Method:	<u>Dual F</u>		•		otal Depth:		6 ft bgs	Project:		lemedy Phase 1
	g Type:			DR-241		onductor Casing Diameter:			Location	PG&E Topo	ock, Needles, California
Driller I		Jon M				rill Casing Diameter:		inches			
Drilling				nezguit		rill Bit:		5.5 inch Tricone	Project N	lumber: RC0	000753.0051
	usher:	Scott				epth to First Water:		0.98 ft bgs	-		
Rig Ge	eologist:	E. Nyo	aard	d / A. M	lack Co	onverted to Well:	<u> ×</u>	Yes No			
Depth	Drilling Ru		cs	USCS	Casing	Description					
(ft)	and Averag Penetration F	e I 🔿	de	Class	Diameter	(See Pilot boring log for full geologic descriptions)		Drilling	Notes		Drilling Fluid
						(80.0 - 83.0') Topock - Fluvial		(80.0') Observed Cemex #3 I	MESH (8x10)	sand in drill	(40.0 - 85.0') 21600
						Deposits; Well graded gravel with sand (GW); brown (7.5YR 4/3)	ו	cuttings (see photo log) (80.1 - 85.0') Rough drilling	VIESH (8X10)	sand in driii	gallons of water used; 12960 gallons of water
81				•							recovered; 8640 gallons of water lost
-		G	W								Water reet
82					(80.0 - 85.0')						
	(80.0 - 85.0) 2.80 mins/ft				`18.0" Steel (
83		I			Casing	(83.0 - 86.0') No recovery (NR)					
				\ /		(66.6 66.6) 116 (666.6.) (11.5)		* • •			
84				\ /							
_		N N	R	X					•		
85				$/ \setminus$				(05.0, 00.01) P	1.20 . 2. 4	1. 1111	
								(85.0 - 90.0') Rough drilling, not proceed past 91 ft. Grour	nd surface su	ibsiding around	ild ; gallons recovered; gallons lost
86			4	<u></u>			_	borehole and rig. Have to sw	itch to 16-ind	ch drill casing.	
			ŀ			(86.0 - 88.5') Topock - Fluvial Deposits; Poorly graded sand					
87						(SP); brown (7.5YR 5/4)					
		s	Р								
_88	(85.0 - 91.0)		:		(85.0 - 91.0') 18.0" Steel						
	28.07 mins/f	t 📗	:		Casing						
89			į.			(88.5 - 90.0') Topock - Fluvial Deposits; Silty gravel with sand					
		G	м	216		(GM); brown (7.5YR 4/3)					
90			k	, ДД,							
30			Р			(90.0 - 90.3') Topock - Fluvial Deposits; Poorly graded sand wit					
		S	P			gravel (SP); black (5Y 2.5/2)					
91						(90.3 - 90.7') Topock - Fluvial Deposits; Poorly graded sand wit	h	(91.0 - 101.0') Rough drilling			(91.0 - 106.0') 14625
						gravel (SP); yellowish brown (10YR 5/6)		(8x10) sand in drill cuttings (see photo lo	3)	gallons of water used; 11375 gallons of water
92						(90.7 - 100.0') Topock - Fluvial					recovered; 3250 gallons of water lost
				风山		Deposits; Well graded gravel with silt and sand (GW-GM); brown	1				
93						(7.5YR 4/3)					
-											
94			•	· 7 (4)							
-											
95					(91.0 - 101.0')						
-	(91.0 - 101.0 11.69 mins/f		-GM		16.0" Steel						
96	50 . / / / / / / / / / / / / / / / / / /				Casing						
-											
97											
98											
<u> </u>											
99											
L _			ŀ								
100											
IΔhhra	viations: 119	SCS = 1	Inifi	ed Soil	Classificati	on System ft = feet has =	hal	ow around surface ame	el = ahove	maan saa lal	el GW = aroundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwate Remarks: NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval for RB-4 Pilot; Gallons Gained/Lost: (+) = water gained from the formation, (-) = water lost to the formation

9/	ARCA	DI	S Desi	ign & Consultar natural and t assets	псу	Drilling Log						Sheet:	6 of 8
	Started:		06/201			urface Elevation:	<u>N</u>				Borir	ng No.: RE	3-4
	Completed:			9		orthing (NAD83):		/A					
Drilling	g Co.: g Method:		scade al Rota			asting (NAD83): otal Depth:		/A 16 ft bg			Client: Project:	PG&E	medy Phase 1
_	ig Type:			DR-24		onductor Casing Diameter:		-			-		ck, Needles, California
	Name:		Martir			rill Casing Diameter:		3 inche			Location	. <u>I Gal Topot</u>	or, recuics, Camorna
	g Asst:			nezguit		rill Bit:				ricone	- Project N	lumber: RC00	00753.0051
_	Pusher:		tt Johr	•		epth to First Water:).98 ft I			- , -		
Rig G	eologist:	<u>E. N</u>	√ygaar	d / A. N	<u>lack</u> C	onverted to Well:	×	Yes		No			
Depth (ft)	Drilling Ru and Averag Penetration F	je	USCS Code	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)		_		Drilling	g Notes		Drilling Fluid
101	(91.0 - 101.0 11.69 mins/f) t			(91.0 - 101.0' 16.0" Steel Casing	(100.0 - 106.0') No recovery (NR		(8x10)	sanc	.0') Rough drilling d in drill cuttings (see photo lo	g) Cemex #3 MESH	(91.0 - 106.0') 14625 gallons of water used; 11375 gallons of water recovered; 3250 gallons of water lost
102		ı						(8x10)	sanc	d in drill cuttings (see photo lo	g)	
103	(101.0 - 106.0 7.35 mins/ft		NR		(101.0 - 106.0') 16.0" Steel Casing					.*.	10		
105		ı									•		
				/ \									
106					}	(106.0 - 130.0') Topock - Alluviur					14)	(106.0 - 146.0') 4875
107 108	-					Deposits; Silty sand with gravel (SM); dark brown (7.5YR 3/3)				, V	7/		gallons of water used; 8125 gallons of water recovered; 3250 gallons of water gained
100		ı							1				
110		ı						(110.0') Ob	os <mark>erv</mark> ed Cemex #3	3 MESH (8x1)	0) sand in drill	
111		ı			Q				, (00	эс ро.о 13g)			
112	(106.0 - 120.0	0)	014		(106.0 -								
114	` 3.59 mins/ft		SM		120.0') 16.0" Steel Casing	5							
115	-	ı											
116		ı											
117	_												
118	-												
119													
Abbre	viations: US	SCS	= Unif	ied Soil	Classificati	on System. ft = feet. bas =	bel	ow aro	unc	l surface, ams	sl = above	mean sea leve	el. GW = groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundward Remarks: NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval for RB-4 Pilot; Gallons Gained/Lost: (+) = water gained from the formation, (-) = water lost to the formation

ARCA	DIS of built	i <mark>gn & Consultanc</mark> natural and t assets	су	Drilling Log			Sheet: 7 of 8			
Date Started:	08/06/201			urface Elevation:	N/A		Borin	g No.: RB	B-4	
Date Completed:	08/21/201	9	N	lorthing (NAD83):	N/A		_		<u></u>	
Drilling Co.:	Cascade			asting (NAD83):	N/A		_ Client:	PG&E		
Drilling Method:	Dual Rota	ry	T	otal Depth:	146 ft bg	<u>IS</u>	_ Project:	Final GW Rer	medy Phase 1	
Drill Rig Type:	<u>Foremost</u>	DR-24H		Conductor Casing Diameter:			_ Location:	PG&E Topoc	k, Needles, California	
Driller Name:	Jon Martir			rill Casing Diameter:	16 inche		_			
Drilling Asst:	A. & H. Ar	-		rill Bit:		n Tricone	_ Project N	umber: RC00	0753.0051	
Tool-Pusher:	Scott John			epth to First Water:	10.98 ft		-			
Rig Geologist:	E. Nygaar	d / A. M	ack C	converted to Well:	× Yes	☐ No				
Depth (ft) Drilling Ru and Avera Penetration	un ge Rate USCS Code	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)			g Notes		Drilling Fluid	
	SM SM		(120.0 - 140.0') 16.0' Steel Casing	(130.0 - 132.0') Topock - Alluviun Deposits; Silty gravel with sand (GM); dark brown (7.5YR 3/3) (132.0 - 141.0') Topock - Alluviun Deposits; Silty sand with gravel (SM); dark brown (7.5YR 3/3)	n (130.0) cutting) Observed Cemex #3) Observed Cemex #3 s (see photo log)			(106.0 - 146.0') 4875 gallons of water used; 8125 gallons of water recovered; 3250 gallons of water gained	

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater Remarks: NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval for RB-4 Pilot; Gallons Gained/Lost: (+) = water gained from the formation, (-) = water lost to the formation

9/	ARCA	DIS	Design & Consultar or natural and ouilt assets	псу	Drilling Log					Shee	et: 8	3 of 8
	Started:	08/06/20			urface Elevation:	N/A			Borin	g No.:	RB	-4
	Completed:				orthing (NAD83):	N/A		L				<u> </u>
Drilling		Cascade			asting (NAD83):	N/A			Client:	PG&E		
1	Method:	Dual Rot	-		otal Depth:	146 ft b	-		roject:			nedy Phase 1
	ig Type:	Foremos			onductor Casing Diameter:			L	ocation:	PG&E TO	орось	k, Needles, California
Drilling	Name:	Jon Mart A. & H. A			rill Casing Diameter: rill Bit:	16 inche	es ch Tricone		Project N	umbor: D	COOC	0753.0051
_	usher:	Scott Jol			epth to First Water:	10.98 ft		F	TOJ e ct IV	ullibel. IX		77 33.003 1
	eologist:	E. Nygaa			onverted to Well:	× Yes	-					
			T			<u> </u>						
Depth (ft)	Drilling Rui and Averag Penetration R	e Codo		Casing Diameter	Description (See Pilot boring log for full geologic descriptions)			Orilling N				Drilling Fluid
141		SM			(141.0 - 144.0') Topock -	(140.0 photo	0') Observed plast log)	stering sa	nd in drill	cuttings (see		(106.0 - 146.0') 4875 gallons of water used; 8125 gallons of water recovered; 3250 gallons of
 142 143	(140.0 - 146.0	SM		(140.0 - 146.0') 15.5"	Weathered Bedrock - conglomerate; Silty sand with gravel (SM); reddish brown (2.5Y 4/4)	3			2			water gained
144	1.95 mins/ft			Steel Casing							Q	
145 1 =		NR					X		C	//		
_146					End of Boring at 146.0 'bgs.							
147 148 149				35	0, 01							
150												
151												
152												
153					6							
154	1											
155												
156												
157												
158												
159												
160 Abbre	iations: US	SCS = Un	ified Soil	l Classificat	ion System, ft = feet, bgs =	below gro	ound surface,	amsl =	above	mean sea	level.	. GW = groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwate Remarks: NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval for RB-4 Pilot; Gallons Gained/Lost: (+) = water gained from the formation, (-) = water lost to the formation

Orilling Co Orilling M	mpleted: o.:	04/03/2 04/10/2 Cascad	2019	1	Surface Northing			Borin	g No.	: RB-5 Pilo	<u>ot</u>	
Orilling Co Orilling M	o.:				Northing	ı (NAE	83). 2102420.7		3 · · ·	. <u> </u>	<u></u>	
rilling M		Cascac	1 -			,	00). 2102420.7	_				
•	g Method: Sonic Drilling				Easting	(NAD	3): 7616398.0	_ Client:	PG&E			
rill Dia 1	1ethod:	Sonic [<u> Drilling</u>		Total De	epth:	97 ft bgs	_ Project:	Final G	W Remedy Ph	ase 1	
III INIG I	Туре:	Terraso	onic track mo		3orehol			_ Location:	PG&E	Topock, Needle	es, Californi	
riller Na		<u>Dan O'</u>			•		Vater: <u>10.04 ft bgs</u>	_				
rilling As	.sst:		<u>llmantel / J. F</u>		•	•		_ Project N	umber:	RC000753.00	51	
ogger:			Grane / D. Ma		Samplin	•		_				
ditor:		S. McG	Grane / G. Jef		Convert	ed to \	Vell: ⊠ Yes □ No					
Depth (ft)	(in)	Sieve ample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid	
3	0	Topock			SP		(0.0 - 4.0') Topock - Fill; Poorly graded sand 5/4); very fine grained to medium grained, st trace silt; dry; logged from cuttings in hoppe casing clean out run.	ibround to rou	nd;	(0.0 - 4.0') During the clean out run to set the conductor casing, soil core was put into the hopper and not bagged	(0.0 - 17.0') N water used	
5 _	40			Topock - Fill	SP		(4.0 - 6.0') Topock - Fill; Poorly graded sanc 5/3); very fine grained to medium grained, st trace clay; trace organics; dry; trace silt nod (5'); moist	ıbangular to ro				
7 _	48			Topock - Fill	SC		(6.0 - 7.0') Topock - Fill; Clayey sand (SC); I very fine grained to fine grained, subangular trace silt; trace organics; moist	to round; little	clay;			
8				Topock - Fill	SP		(7.0 - 8.0') Topock - Fill; Poorly graded sanc 5/4); very fine grained to fine grained, subrottrace clay; moist	(SP); brown (und to round; to	7.5YR race silt;			
9	7. 4/1	i-5-SS- 0-12.0 0/2019 4:10		Topock - Fill	SP-SM		(8.0 - 10.5') Topock - Fill; Poorly graded sar brown (7.5YR 5/3); very fine grained to med subangular to round; little silt; trace clay; tra	um grained,	,	(8.0 - 17.0') Poor recovery, core fell out of core barrel, 5 ft recovered and 2 ft retrieved with second run, actual		
- 11 -				Topock - Fluvial Deposits	SP		(10.5 - 11.8') Topock - Fluvial Deposits; Poc brown (7.5YR 5/4); very fine grained to fine ground; trace silt; moist to wet	rly graded san grained, subro	d (SP); und to	depths of contacts unclear due to loss of core (10.0')		
12 8	12	-5-SS- 0-14.0		Topock - I Fluvial Deposits / Topock - Fill	SP-SM		(11.8 - 12.0') Topock - Fluvial Deposits; Silty (7.5YR 4/1) with brown (7.5YR 5/3); very find grained, subround to round; little silt; trace of lorganic odor (12.0 - 13.0') Topock - Fill; Poorly graded sa	e grained to fin lay; moist to w	e ret;	Approximate depth to water table		
14		0/2019 0:00	RB-5-VAS-	Topock - Fluvial Deposits	SM		brown (7.5YR 5/3); very fine grained to medi subangular to round; little silt; trace clay; tra slough from having to retrieve lost core	um grained, ce organics; m	ioist;			
_ 15 - 16			12.0-17.0 (0.125 J ppb) 4/4/2019 10:49		NR		(13.0 - 14.0') Topock - Fluvial Deposits; Silty (7.5YR 4/1) with brown (7.5YR 5/3); very find grained, subround to round; little silt; trace of lorganic odor (14.0 - 17.0') No recovery (NR); poor recover retrieved	e grained to fin lay; moist to w	e et; 			
17 - 18 - 6 19	60 4/1	5_17.0- 19.5 0/2019 0:05		Topock - Fluvial Deposits	SM	<u>/</u>	(17.0 - 19.5') Topock - Fluvial Deposits; Silty 5/3) with dark gray (7.5YR 4/1); very fine grasubround to round; little silt; little clay; trace subangular to subround; wet; organic odor (18'); trace clay; increase in sand	ined to fine gra	ained,	(17.0 - 22.0') Drilled with water had heaving sands	(17.0 - 22.0') gallons of wa used; 5 gallo of water recovered; gallons of wa lost	
20					SP-SM		(19.5 - 21.0') Topock - Fluvial Deposits; Poc	rly graded san	d with			

9/	ARC	CADIS	for natural and built assets		Во	ring	Log		She	eet: 2 of	5
Date S	Started	04/03/2	2019		Surface	Elevati	ion: <u>464.7 ft amsl</u>	Borin	a No.:	RB-5 Pilo	ot
	•	eted: <u>04/10/</u>			Northing		•				
Drilling		Casca			Easting	•	•	Client:	PG&E		
Drilling					Total De	-	97 ft bgs	Project:		W Remedy Ph	
Drill Ri	• • •		onic track mo		Borehol			Location:	PG&E	Topock, Needl	es, California
Driller Drilling			llmantel / J. P		Samplin		Water: 10.04 ft bgs lod: 4 inch x 10 ft. Core Barrel	Project N	umber:	RC000753.00	 51
Logge			Grane / D. Ma		Samplin	-		i iojectiv	umber.	10000733.00	01
Editor:			Grane / G. Jef		Convert	-					
	>			υ <u>Ε</u>							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
 21	60	RB-5_19.5- 22.0		Topock - Fluvial Deposits	SP-SM		silt (SP-SM); brown (7.5YR 4/2) with dark gray fine grained to fine grained, subround to round organic odor; laminated	d; little silt; w	et;	(17.0 - 22.0') Drilled with water had heaving sands	(17.0 - 22.0') 10 gallons of water used; 5 gallons of water
 22		4/10/2019 10:10		Topock - Fluvial Deposits	SP		(21.0 - 22.0') Topock - Fluvial Deposits; Poorly dark gray (7.5YR 4/1) with brown (7.5YR 5/3); medium grained, subround to round; trace silt organic odor	very fine gra	ined to		recovered; 5 gallons of water lost
						\setminus /	(22.0 - 24.0') No recovery (NR)	UN		(22.0') Change in logging	(22.0 - 77.0') No water used
23					NR		, A			geologist to D. Maurer	
24				<u> </u>			(24.0 - 47.0') Topock - Fluvial Deposits; Poorly	y graded san	d (SP);		
							brown (7.5YR 4/2) with dark gray (7.5YR 4/1); fine grained, subround to round; trace silt; wet		ined to		
25											
 26											
20											
27											
		RB-5_25.0- 30.0									
28		4/10/2019 10:15									
L _											
29											
-	138				4						
30											
31											
32				Topock -							
32		RB-5_30.0- 35.0		Fluvial Deposits	SP						
33		4/10/2019 10:20									
34											
L -							(34') very fine grained to medium grained, sub	pround to rou	nd		
35											
-											
36											
-											
37		RB-5_35.0-								(37.0 - 47.0')	-
		40.0 4/10/2019								Soft drilling	
38	, -	10:25									
39	120										
40											
1 . 1 . 1	3-43		I : C I O - : I O I	: c: 1:	- 0 4		set has - helew ground surface amo			1 1 0 1 1	1 1

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sh	eet: 3 of	5
Date S					Surface	Elevation:	464.7 ft amsl	Borii	na No.:	: RB-5 Pilo	ot
l l	•	ted: <u>04/10/</u>			-	g (NAD83):	2102420.7			- 112 0 1 110	
Drilling		<u>Casca</u>			_	(NAD83):	7616398.0	_ Client:	PG&E		
Drilling			•		Total De	•	97 ft bgs	_ Project:		W Remedy Ph	
Drill Ri			onic track mo			e Diameter:	6-12 inches	_ Location	: PG&E	Topock, Needle	es, California
Driller I Drilling			iviara Ilmantel / J. P				10.04 ft bgs 4 inch x 10 ft. Core Barrel	- Project N	Jumber:	RC000753.00	 51
Logge			Grane / D. Ma		•	ig Interval:	Continuous	_ 1 10]6011	Number.	10000733.00	<u> </u>
Editor:			Grane / G. Jef		-	ed to Well:		_			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
41 42 43 44 45 46	120	RB-5_40.0- 45.0 4/10/2019 10:30 RB-5_45.0- 47.0 4/10/2019 10:35	RB-5-VAS- 42-47 (<0.033U ppb) 4/9/2019 10:15	Topock - Fluvial Deposits	SP			9		(37.0 - 47.0') Soft drilling	(22.0 - 77.0') No water used
47 48 49		RB-5 48.0- 50.0 4/10/2019 10:40		Topock - Fluvial Deposits Topock - Fluvial Deposits	GW SP	sand (subrous small) (48.0 brown	48.0') Topock - Fluvial Deposits; Well GW); brown (7.5YR 5/4); granules to vund to round; and very fine to medium cobbles, subround to round; wet -50.0') Topock - Fluvial Deposits; Poor (7.5YR 5/4); very fine grained to mediud; trace granules to small, subround to	ery large pet grained sand ly graded sa um grained, s	obles, ; trace nd (SP); subround	(47.0') Change of rig geologist to D. Maurer	
5051525354555556	36				NR	(50.0	57.0') No recovery (NR)			(50.0 - 57.0') No recovery, drilled through loose sands, no indication of core loss out of core barrel	
57 58 59 60	156	RB-5_57.0- 60.0 4/10/2019 10:45	Inified Call O	Topock - Fluvial Deposits	SP	brown granul	64.0') Topock - Fluvial Deposits; Poor (7.5YR 5/4); very fine grained to coars es to medium pebbles, subround to rou ittle granules to large pebbles, subrour	e grained; tra und; wet	ace	(57.0 - 62.0') Drilled through loose sands, no indication of core loss from the core barrel	groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = ground ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	eet: 4 of	5
Date S	started:	04/03/2	2019		Surface	Elevation:	464.7 ft amsl	Borin	na No.:	RB-5 Pilo	ot .
Date C	Comple	ted: <u>04/10/2</u>	2019		Northing	g (NAD83):	2102420.7				<u> </u>
Drilling		Cascac			_	(NAD83):	7616398.0	_ Client:	PG&E		
Drilling			•		Total De	epth:	97 ft bgs	_ Project:		W Remedy Ph	
Drill Ri	• • •		onic track mo			e Diameter:	6-12 inches	_ Location	: <u>PG&E</u>	Topock, Needle	es, California
Driller					-		r: 10.04 ft bgs	_			
Drilling			<u>llmantel / J. P</u>		-	-	4 inch x 10 ft. Core Barrel	_ Project N	lumber:	RC000753.005	51
Logge			<u> Brane / D. Ma</u>		-	g Interval:	Continuous	_			
Editor:		S. McG	Grane / G. Jef	fers	Convert	ed to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
61 62 63		RB-5_60.0- 64.0 4/10/2019 10:50		Topock - Fluvial Deposits	SP			9		(57.0 - 62.0') Drilled through loose sands, no indication of core loss from the core barrel	(22.0 - 77.0') No water used
64 65 66					NR		- 66.0') No recovery (NR)			(64.0 - 66.0') Lost 2 feet of core in hopper during core collection	
67 68 69	156	RB-5_66.0- 69.0 4/10/2019 10:55		Topock - Fluvial Deposits	SP	brow	- 69.0') Topock - Fluvial Deposits; Poor n (7.5YR 5/4); very fine grained to coars ales to large pebbles, subround to round	e grained; litt	nd (SP); le		
70 71 72				<	NR	(69.0	- 73.0') No recovery (NR)			(69.0 - 73.0') Loss of core during collection	
73 74 75		RB-5_73.0- 76.0 4/10/2019 11:05		Topock - Fluvial Deposits	SP	grave	- 75.0') Topock - Fluvial Deposits; Poor el (SP); brown (7.5YR 5/4); very fine grai ed; little small to very large pebbles, sub	ned to mediu	m	(73.0 - 77.0') Drilling through loose sands, no indication of core loss from the core barrel, CL at 76.0 to	
 				Topock - Fluvial Deposits	SP	brow clay;		ım grained; tı	race	77.0 not collected per direction of on-site	
				Topock - Fluvial Deposits	CL		 - 77.0') Topock - Fluvial Deposits; Lean R 4/2); medium plasticity; trace very fine wet 			archaelogist	
78 79 80	96			Topock - Fluvial Deposits	SP	brow wet	- 84.0') Topock - Fluvial Deposits; Poor n (7.5YR 5/4); very fine grained to mediu	um grained; ti	race silt;		(77.0 - 87.0') 10 gallons of water used; 0 gallons of water recovered; 10 gallons of water lost

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = ground ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval

9/	4R (CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sh	eet: 5 of	5
Date S					Surface	Elevati	on: 464.7 ft amsl	Borin	a No.:	: RB-5 Pilo	ot
	•	eted: <u>04/10/2</u>			Northin			_			
Drilling		Cascad			Easting			_ Client:	PG&E		
Drilling					Total D	•	97 ft bgs	_ Project:		W Remedy Ph	
Drill Ri Driller			onic track mo		Boreho		· · · · · · · · · · · · · · · · · · ·	_ Location:	PG&E	Topock, Needl	es, California
Drilling			llmantel / J. F		•		Vater: 10.04 ft bgs od: 4 inch x 10 ft. Core Barrel	- Project N	lumber	RC000753.00	 51
Logge			Grane / D. Ma		Samplir	-		_ 1 10,00011	idilibel.	110000700.00	01
Editor:			Grane / G. Jet		Conver	-		_			
	>			.º 5							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	SOSO	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
81 82 83 83	. 96	RB-5 80.0- 85.0 4/10/2019 11:10	RB-5-VAS-	Topock - Fluvial Deposits	SP			9			(77.0 - 87.0') 10 gallons of water used; 0 gallons of water recovered; 10 gallons of water lost
 85			82-87 (0.127 J ppb) 4/9/2019	Topock - Fluvial Deposits	GW	X	(84.0 - 85.0') Topock - Fluvial Deposits; Well brown (7.5YR 5/4); granules to very large pet round; trace very fine to very coarse grained subround; wet	obles, subang	ular to		
 86 87			14:05		NR		(85.0 - 87.0) No recovery (NR)		1	(85.0 - 87.0') Drilled through loose sands, no indication of core loss from the core barrel	
 88 		RB-5-SS- 87.0-89.0 4/10/2019 11:15		Topock - Weathered Bedrock - conglomerat	GM		(87.0 - 89.0') Topock - Weathered Bedrock - gravel with sand (GM); dusky red (2.5YR 3/2) large pebbles, angular to subround; some ve grained sand; little silt; trace clay; wet; weak); granules to ry fine to med	very		(87.0 - 97.0') No water used
 90 91 							(89.0 - 97.0') Topock - Competent Bedrock - red (2.5YR 3/2); moist; friable	conglomerate	e; dusky		
92 93 94 95	120			Topock - Competent Bedrock - conglomerat						(92.0 - 97.0') Rough drilling	
96 _97_											
				•	<u>'</u>	13////	End of Boring at 97.0 'bg	S.			
98 99 100 Abbrev	viation	s: IISCS = II	Inified Soil C	lassification	n Sveten	n ft = fe	eet, bgs = below ground surface, am	sl = ahove	mean se	ea level GW =	groundwater
		5555 - 0		comoadol		, 10	, .go solow ground surface, ann	GD0VC			J. 5 G. 1G TT GLOI,

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = ground ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval

ARCA	DIS Design & Of for natura built asset	Consultancy Land ts		Temporary E	Backfill Log	S	heet: 1 of 5		
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	Cascade			Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	464.7 ft amsl 2102420.7 7616398.0 97 ft bgs 6-12 inches 10.04 ft bgs S. McGrane / G. Jeffers	Client: PG&E Project: Final 0 Location: PG&E	Well ID: RB-5 Pilot Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, California Project Number: RC000753.0051		
Groundwate Sample ID		USCS	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed		
	Topock - Fill	SP		(0.0 - 0.5') Steal plate with BMPs (0.5 - 5.0') Washed Plastering Sand	(0.0 - 4.0') 12" Borehole	(0.5 - 5.0') 6.7 bags	(0.5 - 5.0') 5.5 bags (-18%) Note: Wildcat Washed		
5 5 6 6	Topock - Fill	SP	777						
	Topock - Fill	sc /							
8	Topock - Fill	SP							
9	Topock - Fill	SP-SM	<u> </u>						
30 11	Topock - Fluvial Deposits	SP							
12	Topock - Fluvial Deposits Topock - Fill	SM ::		(5.0 - 86.0') Pea Gravel	(4.0 - 97.0') 6" Borehole	(5.0 - 86.0') 31.8 bags	(5.0 - 86.0') 33 bags (4%) Note: Cal-Silica 3/8"x1/4"		
14 — RB-5-VAS-	Topock - Fluvial Deposits	SM :							
12.0-17.0 12.0-17.0 (0.125 J ppb 4/4/2019 15 — 10:49 16 — —		NR /							
18	Topock - Fluvial Deposits	SM SP-SM					sea level, GW = groundwater,		

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, Abbreviations: USCS = Unified Soil Classification System, it = feet, bgs = below ground surface, amsl = above mean sea level, GW = groung ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during

Date Started: 04/03/2019 Surface Elevation: 464.7 ft amsl Date Completed: 04/10/2019 Northing (NAD83): 2102420.7 Drilling Co.: Cascade Easting (NAD83): 7616398.0 Client: PG&E Drilling Method: Sonic Drilling Total Depth: 97 ft bgs Project: Final GW Remedy Phase 1 Driller Name: Dan O'Mara Borehole Diameter: 6-12 inches Drilling Asst: E. Huellmantel / J. Pacheco Logger: S. McGrane / D. Maurer Editor: S. McGrane / G. Jeffers Groundwater Sample ID Groundwater Sample ID Groundwater Sample ID Filivial Deposits NR NR Well ID: RB-5 Pilot Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, Cali Depth to First Water: 10.04 ft bgs Editor: S. McGrane / G. Jeffers Well Construction Calculated Material Volumes Installed Material Volumes Installed	
Drilling Method: Sonic Drilling Driller Name: Dan O'Mara Driller Name: Dan O'Mara Drilling Asst: E. Huellmantel / J. Pacheco Logger: S. McGrane / D. Maurer Editor: S. McGrane / G. Jeffers Droject Number: RC000753.0051 Editor: S. McGrane / G. Jeffers Project Number: RC000753.0051 Editor: S. McGrane / G. Jeffers Project Number: RC000753.0051 Editor: S. McGrane / G. Jeffers Project Number: RC000753.0051 Editor: S. McGrane / G. Jeffers Project Number: RC000753.0051 Material Volumes Installed Material Volumes Installed NR NR NR NR	
Driller Name: Dan O'Mara Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, Cali Drilling Asst: E. Huellmantel / J. Pacheco S. McGrane / D. Maurer Editor: S. McGrane / G. Jeffers Project Number: RC000753.0051 ☐ Groundwater Sample ID ☐ Groundwater Sample ID ☐ Groundwater Sample ID ☐ Topock - Fluvial Deposits ☐ Topock - Fluv	
Depth to First Water: 10.04 ft bgs S. McGrane / D. Maurer Editor: S. McGrane / G. Jeffers Project Number: RC000753.0051 Editor: S. McGrane / G. Jeffers Project Number: RC000753.0051 Calculated Material Volumes Installed Material Volumes I Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits NR NR NR	
Logger: S. McGrane / D. Maurer Editor: S. McGrane / G. Jeffers Project Number: RC000753.0051 S. McGrane / D. Maurer Editor: S. McGrane / G. Jeffers Project Number: RC000753.0051 Calculated Material Volumes Installed Material Volumes Material Volumes	tornia
Groundwater Sample ID Topock - Fluvial Deposits SP-SM Deposits NR Well Construction Calculated Material Volumes Installed Material Volumes Installed	
Topock - Fluvial Deposits	
Fluvial Deposits SP-SM Topock - Fluvial Deposits SP SP SP SP SP SP SP S	
	0(1)
30 (5.0 - 86.0') Pea (4.0 - 97.0') 6" (5.0 - 86.0') 31.8 (5.0 - 86.0') 33 bags (4.0 - 97.0') 6" bags Note: Cal-Silica 3/8"x1/	%) /4"
Topock - Fluvial SP	
Fluvial SP Deposits	
40	water

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during

AR	CAI	DIS Design & for natura built asse	Consultancy Il and ts		Temporary I	Backfill Log	S	sheet: 3 of 5
Date Starte Date Comp Drilling Co.:	leted:	04/03/2019 04/10/2019 Cascade			Surface Elevation: Northing (NAD83): Easting (NAD83):	464.7 ft amsl 2102420.7 7616398.0	Well ID: R Client: PG&E	
Orilling Meth		Sonic Drilling			_ Total Depth:	97 ft bgs		- GW Remedy Phase 1
Driller Name		Dan O'Mara			_ Borehole Diameter:	6-12 inches	•	Topock, Needles, California
Orilling Asst			el / J. F	Pacheco	_ _ Depth to First Water:			• ,
_ogger:		S. McGrane			_ ' _ Editor:	S. McGrane / G. Jeffers	Project Number	: RC000753.0051
		ν 5						
	undwater mple ID	Geologic Formation	Code	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed
42 (<0. 10 p	5-VAS- 2-47 -033U pb) /2019 D:15	Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits	SP GW				(5.0 - 86.0') 31.8	(5.000.01) 22 k (40)
50		Topock - Fluvial Deposits	NR SP		(5.0 - 86.0') Pea	(4.0 - 97.0') 6" Borehole	(3.0 - 30.0) 31.6 bags	(5.0 - 86.0') 33 bags (4%) Note: Cal-Silica 3/8"x1/4"

ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

9/	ARCA	DIS Design & for natura built asset	Consultancy al and ets		Temporary E	Backfill Log	Sheet: 4 of 5			
Drilling	ompleted: Co.: Method: Name: Asst:	04/03/2019 04/10/2019 Cascade Sonic Drilling Dan O'Mara E. Huellman S. McGrane	tel / J. F		Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	464.7 ft amsl 2102420.7 7616398.0 97 ft bgs 6-12 inches 10.04 ft bgs S. McGrane / G. Jeffers	Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, California Project Number: RC000753.0051			
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed		
61 62 63 64		Topock - Fluvial Deposits	SP				9			
6566			NR							
68		Topock - Fluvial Deposits	SP							
70 70 71 72 73			NR		(5.0 - 86.0') Pea Gravel	(4.0 - 97.0') 6" Borehole	(5.0 - 86.0') 31.8 bags	(5.0 - 86.0') 33 bags (4%) Note: Cal-Silica 3/8"x1/4"		
74		Topock - Fluvial Deposits	SP							
76_		Topock - Fluvial Deposits Topock - Fluvial	SP CL							
77	riations: 115	Topock - Fluvial Deposits	SP	assification	on System ft = feet box	s = below ground surface and	nsl = ahove means	sea level, GW = groundwater,		

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during

AR	RCA[DIS Design & Control for natura built asset	Consultancy Land		Temporary I	Backfill Log	Sł	heet: 5 of 5	
Date Starte Date Comp Drilling Co. Drilling Met Driller Nam Drilling Ass Logger:	pleted: : :: thod: ne: st:	Dan O'Mara E. Huellmantel / J. Pacheco S. McGrane / D. Maurer			Surface Elevation: 464.7 ft amsl Northing (NAD83): 2102420.7 Easting (NAD83): 7616398.0 Total Depth: 97 ft bgs Borehole Diameter: 6-12 inches Depth to First Water: 10.04 ft bgs Editor: S. McGrane / G. Jeffers		Well ID: RB-5 Pilot Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, California Project Number: RC000753.0051		
	oundwater ample ID	Geologic	USCS	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed	
81 82 83 8488	5.140	Topock - Fluvial Deposits	SP		(5.0 - 86.0') Pea Gravel		(5.0 - 86.0') 31.8 bags	(5.0 - 86.0') 33 bags (4%) Note: Cal-Silica 3/8"x1/4"	
(0.12 4/9	-5-VAS- 82-87 27 J ppb) 9/2019 14:05	Topock - Fluvial Deposits	GW						
86			NR						
87									
88		Topock - Weathered Bedrock - conglomerate	GM			(4.0 - 97.0') 6" Borehole			
89					2				
90									
91									
 92					(86.0 - 97.0') Cemex #3 MESH (8x10)		(86.0 - 97.0') 4.3 bags	(86.0 - 97.0') 4 bags (-7%) Note: Lapis Lustre Sand	
93		Topock - Competent Bedrock - conglomerate							
94_		conglomerate							
 95									
 96									
97									
98									
99									
_ ₁₀₀ Abbreviatio	ons: US	CS = Unified	Soil C	assificatio	on System, ft = feet, bg	s = below ground surface, am	nsl = above mean s	ea level, GW = groundwater,	

pb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

9/	ARCA	DIS	Design & Consultar for natural and built assets	псу	Drilling Log		Sheet:	1 of 5
-	Started:	07/11/2		S	urface Elevation:	N/A	Boring No.: RE	S-5
Date 0	Completed:	07/28/2	019		orthing (NAD83):	N/A	_	,
Drilling	g Co.:	Cascad	е	E	asting (NAD83):	N/A	_ Client: <u>PG&E</u>	
Drilling	g Method:	Dual Ro	otary	T	otal Depth:	99.25 ft bgs	Project: Final GW Re	medy Phase 1
	ig Type:		st DR-24		onductor Casing Diameter:		Location: PG&E Topod	k, Needles, California
	Name:	Jon Ma			rill Casing Diameter:	18 inches		
_	g Asst:		Amezquit		rill Bit:	17 inch tricone	_ Project Number: RC00	0753.0051
	Pusher:	Arnold			epth to First Water:	10.04 ft bgs	_	
Rig G	eologist:	<u>Drew M</u>	lartzolf	C	onverted to Well:	× Yes No		
Depth	Drilling Ru	ın USC	s USCS	Casing	Description			
(ft)	and Average Penetration F	ge I 👝 🖫		Diameter	(See Pilot boring log for	Drilling	g Notes	Drilling Fluid
	Tonocracion	tato			full geologic descriptions)			(0.000.01) 007.0
					(0.0 - 4.0') Topock - Fill; Poorly graded sand (SP); brown (7.5YR			(0.0 - 20.0') 237.9 gallons of water used; 70 gallons
1				1	5/4)			of water recovered; 167.9 gallons of water lost
				1				galloris of water lost
_ 2 _								
		SP		;				
_ 3 _								
. -				-				
_ 4 _				1	(4.0 - 6.0') Topock - Fill; Poorly			
1912:				1	graded sand (SP); brown (10YR 5/3)			
5 _	1	SP						
	-							
일 6	_		/////		(6.0 - 7.0') Topock - Fill; Clayey	-		
Ë	-	sc			sand (SC); brown (7.5YR 5/4)			
₫ 7	4		_/////	4	(7.0 - 8.0') Topock - Fill; Poorly			
발 - -	_	SP			graded sand (SP); brown (7.5YR			
월 8			1.10		5/4) (8.0 - 10.5') Topock - Fill; Poorly			
- 1					graded sand with silt (SP-SM);			
9					brown (7.5YR 5/3)			
PLC -		SP-S	M					
ម្លី10_	(0.0 - 20.0)			(0.0 - 20.0') 24.0" Steel				
ATAB/	2.10 mins/f	t		Casing		(10.0') Observed pea gravel	in drill cuttings (see photo log).	
ğ 11					(10.5 - 11.8') Topock - Fluvial Deposits; Poorly graded sand			
MOT/6		SP			(SP); brown (7.5YR 5/4)			
12_ 12		SM			(11.8 - 12.0') Topock - Fluvial	_		
LES/1					Deposits; Silty sand (SM); dark			
5 13 <u>-</u>		SP-S	M	1	gray (7.5YR 4/1) (12.0 - 13.0') Topock - Fill; Poorly	,-		
/spo-					graded sand with silt (SP-SM); brown (7.5YR 5/3)			
- 10 P		SM		1	(13.0 - 14.0') Topock - Fluvial			
ត្ត 14 គ			_ + + + + + + + + + + + + + + + + + + +	7	Deposits; Silty sand (SM); dark gray (7.5YR 4/1)			
- ARD	1		$ \rangle /$		(14.0 - 17.0') No recovery (NR)	_		
일15						(15.0') Water generated by f	formation after reaching water	
B	1	NF	: X			table approximate 15 feet bo	gs.	
<u>16_</u>	1							
	_		/ \					
<u>17_</u>	1		– 	4	(17.0 - 19.5') Topock - Fluvial	_		
- CGRA					Deposits; Silty sand (SM); (7.5R			
18				.]	5/3)			
:VUSEF		SM		1				
້ວ່ ວັ 19				1				
TOPC]				
30 -	1	SP-S	м		(19.5 - 21.0') Topock - Fluvial			
0 A bbro	viatione: II	909 - 11	nified Soi	L Classificat	ion System ft - feet has -	helow ground surface, ams	sl – ahove mean sea leve	I GW = groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundw |
Remarks: NR = no recovery, blue water table symbol represents approximate depth to water during the first VAS sample collected from |
RB-5 Pilot

9/	ARCA	DIS	Design & Consultar or natural and puilt assets	псу	Drilling Log		Sheet:	2 of 5
Date S	Started:	07/11/20)19	Sı	urface Elevation:	N/A	Boring No.: RE	3-5
	Completed:	07/28/20)19	N	orthing (NAD83):	N/A		<u> </u>
Drilling	•	Cascade)	E	asting (NAD83):	N/A	_ Client: <u>PG&E</u>	
_	g Method:	Dual Ro	-		otal Depth:	99.25 ft bgs		medy Phase 1
	ig Type:	Foremos			onductor Casing Diameter:		_ Location: <u>PG&E Topoc</u>	k, Needles, California
	Name:	Jon Mar			rill Casing Diameter:	18 inches		
	g Asst:	H. & A. A			rill Bit:	17 inch tricone	_ Project Number: RC00	0753.0051
	Pusher:	Arnold L			epth to First Water:	10.04 ft bgs	_	
Rig G	eologist:	Drew Ma	artzolf	C	onverted to Well:	× Yes No		
Depth	Drilling Ru	uscs	USCS	Casing	Description			
(ft)	and Average Penetration F	1e		Diameter	(See Pilot boring log for	Drillin	ng Notes	Drilling Fluid
			** ** 1. 101		full geologic descriptions)	1 1/00 00 11	6 11 - 6 H - 2 - 2 - 1 H - C	(00.0.44.51) 4700.74
		SP-SM	, [:::] }	[Deposits; Poorly graded sand wit silt (SP-SM); brown (7.5YR 4/2)	18-inch casing to 41,46 fts,		gallons of water used;
21						41.5-61.5 ft., observed pea	gravel in drill cuttings (see	1683.5 gallons of water recovered; 106.24 gallons
L _		SP		-	(21.0 - 22.0') Topock - Fluvial Deposits; Poorly graded sand			of water lost
22]	(SP); dark gray (7.5YR 4/1)			
					(22.0 - 24.0') No recovery (NR)			
23		NR.						
		INIX						
24]							
				1	(24.0 - 47.0') Topock - Fluvial Deposits; Poorly graded sand			
25					(SP); brown (7.5YR 4/2)			
	1							
	1			}				
± 20 5	1			1	XV			
<u>-</u>	1							
27	1							
<u></u>								
<u>28</u>								
= -	1					The state of the s		
29	-							
-	(00.0 44.5			(20.0 - 41.5')				
30	(20.0 - 41.5 2.13 mins/fi) :		24.0" Steel Casing		(30.0') Observed pea gravel	I in drill cuttings (see photo log).	
	_			Casing				
31_								
<u></u>	-							
32	1	SP						
	-			}				
33	-							
L	-			}				
34								
	-			1				
35	_							
2 ∦				<u> </u>				
36				}				
Jen				ł				
37				1				
¥]			1				
38]							
1]			1				
5 –				ł				
]]				
# - 40_	1			1				
	viations: U	SCS = Ur	ified Soil	Classificati	ion System, ft = feet, bgs =	below ground surface. am	sl = above mean sea leve	l, GW = groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundv | Remarks: NR = no recovery, blue water table symbol represents approximate depth to water during the first VAS sample collected from | RB-5 Pilot

9/	ARCA	DI	S Des	sign & Consultar natural and It assets	псу	Drilling Log		Sheet:	3 of 5
Date S	Started:	07/	11/201	19	Sı	urface Elevation:	N/A	Boring No.: R	B-5
Date 0	Completed:	07/	28/201	19	N	orthing (NAD83):	N/A		
Drilling			scade			asting (NAD83):	N/A	_ Client: PG&E	
1	g Method:			ary		otal Depth:	99.25 ft bgs	_ ,	emedy Phase 1
	ig Type:			DR-24		onductor Casing Diameter:		ck, Needles, California	
II.	Name:		<u>Martir</u>			rill Casing Diameter:	18 inches		
	g Asst:			<u>mezquit</u>		rill Bit:	17 inch tricone	_ Project Number: RC0	00753.0051
	Pusher:		old La			epth to First Water:	10.04 ft bgs	_	
Rig G	eologist:	Dre	w Mar	tzolt	C	onverted to Well:	× Yes No		
Depth	Drilling Ru		USCS	USCS	Casing	Description			
(ft)	and Average Penetration F	ge Rate	Code	Class	Diameter	(See Pilot boring log for	Drillin	g Notes	Drilling Fluid
				12 No. 10 No.		full geologic descriptions)	(40.0!) Observed non-gravel	in drill cuttings (see photo log). (20.0 - 41.5') 1789.74
41	(20.0 - 41.5 2.13 mins/f				(20.0 - 41.5') 24.0" Steel Casing		(40.0) Observed pea graver	in drill cuttings (see photo log	gallons of water used; 1683.5 gallons of water recovered; 106.24 gallons of water lost
- 40								of 18-inch casing to 41.46 fee	
42					1		casing. Approximately 1207.	at 20 feet bgs inside the drill .8 gallons of water was injecte	gallons of water used; d 3399.66 gallons of water
]		into the drill casing in an atte sands. Injecting water was u	unsuccessful at removing the	recovered; 427.74 gallons of water gained
43					1		sand. The drill pipe was rem	nove from the drill casing and reverse flow configuration. The	e
			SP				reverse flow configuration us	sed apprioximately 347.7 sfully removed the sand from	
44	1				1		the casing. The 1207.8 gall	ons and 347.7 gallons were	
	-				}		recovered in the soil bin.		
45	1				}				
	_				}			1601	
를 46					1			140'	
	_								
<u>47_</u>						(47.0 - 48.0') Topock - Fluvial			
<u> </u>			GW	. 6.		Deposits; Well graded gravel with sand (GW); brown (7.5YR 5/4)			
48						(48.0 - 50.0') Topock - Fluvial			
<u></u>						Deposits: Poorly graded sand			
49	_		SP			(SP); brown (7.5YR 5/4)			
H									
· 50_					1	(50.0 - 57.0') No recovery (NR)	(50 01) Bough Drilling shoot	mund non around in drill outtings	
	(41.5 - 61.5			1	(41.5 - 61.5')	(50.0 - 57.0) No recovery (NR)	(see photo log).	rved pea gravel in drill cuttings	
51	2.75 mins/f			\ /	`18.0" Steel Casing				
5				\ /	Jasing				
52				$ \ \ $					
				$ \ \ $					
53				\ /					
5001			ND	1 V					
54			NR	1 A					
<u> </u>				/\					
5555	_			/ \					
5 33									
E									
56				1/ \					
				/ \					
57	1				}	(57.0 - 64.0') Topock - Fluvial	-		
	-				1	Deposits; Poorly graded sand (SP); brown (7.5YR 5/4)			
58	-]	,			
- CSO	4		SP		1				
59	-				1				
	_				1				
60_			- 11 ''	[:::::	01:	0		al — als aver as	-1 014/ 1 1
- µaddre	eviations: U	ಶಧ೪	= Unit	nea Soll	∪ lassificati	on System, It = feet, bgs =	below ground surface, ams	sı = apove mean sea lev	ei, Gvv = groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = grounds | Remarks: NR = no recovery, blue water table symbol represents approximate depth to water during the first VAS sample collected from | RB-5 Pilot

Gallons of water us 3399.66 gallons of vater gained (61.5 - 80.0') 5565 gallons of water us 5656.11 gallons of vater us 3399.66 gallons of vat	ARCA		Design & Consultant or natural and ouilt assets		Drilling Log		Sheet:	4 of 5
All							─ Boring No.: RE	B-5
Project Final GW Remety Phase 1	•				- '			
Foremost DR-24 HD Conductor Casing Diameter: 24 inches Location: PG&E Topcok. Needles. California Asst. John Martinez Drill Bit 10 First Water: 15 inches Tringh Asst. 14.8 A. Amerguita Drill Bit 10 Converted to Well: 10 Out Bigs. [9] Drilling Rays and Drilling Ray	-				- '			
Inflier Name: John Martiniza	-		•		•			
Fig.					_		Location: <u>PG&E Topoc</u>	k, Needles, Califori
Code Code Code Content Con								0750 0054
Comparison Com	-						Project Number: RC00	0/53.0051
Description					•		_	
Drilling Notes Drilling Fixed Perintation Rate Code Cod	ig Geologist:	Drew Ma	artzoli	0	onverted to vveii:	Yes No		T
Continue			SUSCS	Casing	Description			
1.5 - 81.5 2.75 minsht 2.75 minsht 2.81 minsht 2	(fi) and Averag	je Code				Drill	Drilling Fluid	
SP Sp Sp Sp Sp Sp Sp Sp	`~			`18.0" Steel	,	(60.0') Observed pea grav	_	
G64.0 - 66.0*) No recovery (NR) G64.0 - 66.0*) No recovery (NR) G65.0 - 66.0*) No recovery (NR) G65.0 - 66.0*) NR G65.0 - 66.0*) NR G65.0 - 73.0*) No recovery (NR) G65.0 - 73.0*) No recovery	_	SP				2	2	gallons of water used 5656.11 gallons of wa recovered; 90.519999999995
.65					(64.0 - 66.0') No recovery (NP)			ganono oi water game
(66.0 - 580.0) Topock - Fluvial Deposits; Poorly graded sand (SP), brown (7.5YR 5/4) (61.5 - 80.0) 70	.65	NR			(INK)			
(69) Frown (7.5YR 5/4) SP (69) Frown (7.5YR 5/4) (61.5 - 80.0) (71.9) Triccone drill bit was ahead of the 18° casing, sands heaved into the outer casing above the tri-cone bit and locked it up the bit in the casing. (71.9) Triccone drill bit was ahead of the 18° casing, sands heaved into the outer casing above the tri-cone bit and locked it up the bit in the casing. (75.0 - 76.0) Topock - Fluvial Deposits; Poorly graded sand (SP); brown (7.5 NR 5/4) (75.0 - 77.0) Topock - Fluvial Deposits; Lean clay (CL); brown (7.5 NR 5/4) (77.0 - 84.0) Topock - Fluvial Deposits; Poorly graded sand (SP); brown (7.5 NR 5/4) (77.0 - 84.0) Topock - Fluvial Deposits; Poorly graded sand (SP); brown (7.5 NR 5/4)	.66			:	(66.0 - 69.0') Topock - Fluvial		10,	
69	.67	SP			(SP); brown (7.5YR 5/4)		7 /	
To	_				(69.0 - 73.0) No recovery (NR)			
The control of the co	.70	ш		(04.5 00.01)		(70.0') Observed pea grav	rel in drill cuttings (see photo log).	
73.0 - 75.0) Topock - Fluvial Deposits; Poorly graded sand with gravel (SP): brown (7.5YR 5/4) SP (75.0 - 76.0) Topock - Fluvial Deposits; Poorly graded sand (SP): brown (7.5YR 5/4) (76.0 - 77.0) Topock - Fluvial Deposits; Poorly graded sand (SP): brown (7.5YR 5/4) (76.0 - 77.0) Topock - Fluvial Deposits; Poorly graded sand (SP): brown (7.5YR 4/2) (77.0 - 84.0) Topock - Fluvial Deposits; Poorly graded sand (SP): brown (7.5YR 5/4)	.71 5.25 mins/f			18.0" Steel		heaved into the outer casi	ng above the tri-cone bit and	
CT	_							
SP (75.0 - 76.0') Topock - Fluvial Deposits; Poorly graded sand (SP); brown (7.5YR 5/4) (76.0 - 77.0') Topock - Fluvial Deposits; Lean clay (CL); brown (7.5YR 4/2) (77.0 - 84.0') Topock - Fluvial Deposits; Poorly graded sand (SP); brown (7.5YR 5/4)	-	SP			Deposits; Poorly graded sand wit	h		
SP Deposits; Poorly graded sand (SP); brown (7.5YR 5/4)	.75		\$ O ((75.0 - 76.0') Topock - Fluvial			
CL Deposits; Lean clay (CL); brown (7.5YR 4/2) (77.0 - 84.0') Topock - Fluvial Deposits; Poorly graded sand (SP); brown (7.5YR 5/4) SP SP SP	.76	SP	7777777		Deposits; Poorly graded sand (SP); brown (7.5YR 5/4)			
Deposits; Poorly graded sand (SP); brown (7.5YR 5/4) SP SP SP	_ .77	CL			Deposits; Lean clay (CL); brown (7.5YR 4/2)			
	.78				Deposits; Poorly graded sand			
	_	SP						
assissandione. October - Orimica con Ciaconication Cycloti, it - Icct, bys - bolow ground surface, affisi - above filealt sea icvei, GW - ground		SCS = Ur	ified Soil	Classificati	on System ft = feet has -	helow around surface as	msl = ahove mean sea leve	LGW = groundws
Remarks: NR = no recovery, blue water table symbol represents approximate depth to water during the first VAS sample collected from								

9/	ARCA	DIS	esign & Consultar or natural and uilt assets	псу	Drilling Log			Sheet:	5 of 5
	Started:	07/11/20			urface Elevation:	N/A	Boring N	No.: RB	-5
	Completed:				orthing (NAD83):	N/A			
Drilling	-	Cascade			asting (NAD83):	N/A		3 <u>&E</u>	I DI 4
1	g Method:	Dual Rot Foremos	-		otal Depth:	99.25 ft bgs 24 inches	•		nedy Phase 1 k, Needles, California
	ig Type: Name:	Jon Mart			rill Casing Diameter:	18 inches	Location. PG	ioc Topoci	k, Needles, California
	g Asst:	H. & A. A			rill Bit:	17 inch tricone	Proiect Numb	ber: RC000	0753.0051
1	Pusher:	Arnold La	-		epth to First Water:	10.04 ft bgs			
	eologist:	Drew Ma			onverted to Well:	× Yes			
	Drilling Ru	n			Description				
Depth (ft)	and Average Penetration F	je USCS		Casing Diameter	(See Pilot boring log for full geologic descriptions)	Drilling	g Notes		Drilling Fluid
81 82 83	(80.0 - 84.0) 2.50 mins/ft	SP		(80.0 - 84.0') 18.0" Steel Casing		(80.0 - 90.0') Observed Cem Luster Sand and pea gravel i Approximately 2100 gallons gallons were recovered to re	in drill cuttings (se of water was used	eé photo log). I and 2130	(80.0 - 84.0') 5400 gallons of water used; 5590 gallons of water recovered; 190 gallons of water gained
84		1			(04.0, 05.0)) Target Florid	(0.4.01) On 7/45/0040	in tale 0705 lla		(04.0 . 07.01) 2007.00
85		GW			(84.0 - 85.0') Topock - Fluvial Deposits; Well graded gravel (GW); brown (7.5YR 5/4) (85.0 - 87.0') No recovery (NR)	(84.0') On 7/15/2019, approx was used and 2775 gallons of heaving sands in drill casing approximately 350 gallons of	were recovered to at 84 feet bgs. Or f water was used a	remove n 7/16/19, and 7703.59	(84.0 - 87.0') 3267.68 gallons of water used; 11380.33 gallons of water recovered; 8112.65
86	(84.0 - 87.0) 22.67 mins/f			(84.0 - 87.0') 18.0" Steel Casing	(85.0 - 87.0°) No recovery (NR)	gailons were recovered to re casing at 84 feet bgs. Volum inculded in the Drilling Fluid	es uses and recov	ds in drill /ered are	gallons of water gained
87 88	-	GM			(87.0 - 89.0') Topock - Weathere Bedrock - conglomerate; Silty gravel with sand (GM); dusky red (2.5YR 3/2)		3 ,		(87.0 - 99.3') 5939.8 gallons of water used; 6148.42 gallons of water recovered; 208.62 gallons of water gained
89	- - -				(89.0 - 99.3') Topock - Competer Bedrock - conglomerate; dusky r (2.5YR 3/2)		MESH (8x10) Lapi	s Luster	
91 91	- - -	L			0	Sand in drill cuttings (see ph	oto log)		
92	1								
93				(87 0 - 99 3')					
93	- (87.0 - 99.3) 13.96 mins/f			(87.0 - 99.3') 18.0" Steel Casing					
95	_								
96_									
97									
98 99	- -								
-	_		<u> </u>	4	End of Boring at 99.3 'bgs.				<u> </u>
100 Abbre	⊥ eviations: U\$	SCS = Un	ified Soil	Classificati	on System, ft = feet, bgs =	below ground surface, ams	sl = above mea	n sea level	, GW = groundwater
: 					, , ,	,			

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater Remarks: NR = no recovery, blue water table symbol represents approximate depth to water during the first VAS sample collected from RB-5 Pilot

9/-	ARCA	DIS Design & for natura built asse	Consultancy I and ts		Well Consti	ruction Log	S	Sheet: 1 of 5		
Date S	tarted:	07/11/2019			_Surface Elevation:	N/A	Well ID: F	RB-5		
Date C	ompleted:	07/28/2019			_Shallow Well Elevation:	N/A				
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: <u>PG&E</u>			
Drilling	Method:	Dual Rotary			_Northing (NAD83):	N/A	Project: <u>Final (</u>	GW Remedy Phase 1		
Driller I		Jon Martinez			_Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, California		
Drilling		H. & A. Amez Drew Martzolf	-		_Borehole Diameter:	18-24 inches	— — — — — — — — — — — — — — — — — — —	- DC000752 0051		
Loggeı Editor:		Sean McGran			_Water Level Start: _Development End Date:	10.04 ft bgs	Project Number	: RC000753.0051		
Total D		99.25 ft bgs			_Well Completion:					
_		on G	(0, a)	(0, (0						
Depth (ft)	Groundwat Sample ID		USCS	USCS	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed		
				7. S. S. S. S.	(0.0 - 24.0') 8" — ***					
					Suregrip 17 Casing					
_ 1 _					\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\					
					(0.0 - 3.9') Cemex			(0.0 3.0!) 26 hage (40!/)		
_ 2 _		Topock - Fill	SP		#60 Mesh (40/70) and Cemex #0/30		(0.0 - 3.9') 21.8 bags	(0.0 - 3.9') 26 bags (19%) Note: Lapis Lustre Sand		
					Mesh (30x50)					
_ 3 _										
_ 4 _										
_ 5 _		Topock - Fill	SP							
							460			
6										
_		Topock - Fill	SC							
_ / _				77777						
_ 8 _		Topock - Fill	SP		(3.9 - 12.0') Portland		(3.9 - 12.0') 168.1	(3.9 - 12.0') 153 gallons (-9%) Note: Type I, II, and V Portland		
_ 0 _					cement and up to 3% Bentonite		gallons	Cement and Hydrogel		
_										
		Topock - Fill	SP-SM							
 10						(0.0 - 20.0') 24.0"				
				· ·		Borehole				
 11		Topock -								
		Fluvial Deposits	SP							
12		Topock -	SM							
		Fluvial Deposits	SP-SM		(12.0 - 1 <mark>3.2'</mark>)		(12.0 - 13.2') 2.4	(12.0 - 13.2') 5 bags (108%)		
13		Topock - Fill	0. 0		Bentonite seal chips		bags	Note: Puregold Medium Chips		
		Topock - Fluvial	SM		\$\chi_0					
14	RB-5-VAS-	Deposits	J							
	12.0-17.0 (0.125 J ppb)		\ /	(13.2 - 16.1') Cemex		(13.2 - 16.1') 8.2	(13.2 - 16.1') 16 bags (95%)		
15	` 4/4/2019 10:49			$ \setminus / $	#60 (40x70) Mesh		` bags ´	Note: Lapis Lustre Sand		
			NR		% % % % % % % % % % % % % % % % % % %	. 688				
16				$ / \rangle $	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\					
				/ \						
17				10.40.100						
								(16.1 - 47.1') 121 bags (38%)		
18		Topock -			(16.1 - 47.1') Cemex		(16.1 - 47.1') 87.9	Note: Lapis Lustre Sand, swabbed filter pack for 74 minutes prior to		
_		Fluvial Deposits	SM		#0/30 Mesh (30x50)		bags	installation of transition sand		
19										
			SP-SM							
20 Abbrox	iations: II	SCS - Unified		assificati	ion System ft - feet has	= bolow ground surface, as	mel = above mean s	sea level GW = groundwater		

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = ground ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents approximate depth to water during the first VAS sample collected from RB-5 Pilot

9/	ARCA	DIS	Design & Consultancy or natural and ouilt assets		Well Const	ruction Log	S	Sheet: 2 of 5
Date S	tarted:	07/11/201	19		_Surface Elevation:	N/A	Well ID: F	?B-5
Date C	ompleted:	07/28/201	19		_Shallow Well Elevation:	N/A		
Drilling	Co.:	Cascade			_Deep Well Elevation:	N/A	_ Client: PG&E	
Drilling	Method:	Dual Rota	ary		_Northing (NAD83):	N/A	_ Project: <u>Final (</u>	GW Remedy Phase 1
Driller N		Jon Marti	nez		_Easting (NAD83):	N/A	_ Location: <u>PG&E</u>	Topock, Needles, California
Drilling			mezquita		_Borehole Diameter:	18-24 inches		
Logger		Drew Mar			_Water Level Start:	10.04 ft bgs	_ Project Number	:: RC000753.0051
Editor:		Sean Mc			Development End Date:		_	
Total D	epth:	99.25 ft b			_Well Completion:			
Depth (ft)	Groundwate Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
 21		Topod Fluvi Depos	al SP-SM		(0.0 - 24.0') 8" —			
		Topod Fluvi Depos	al SP					
22				<u> </u>				
23			NR	$ \vee $				
				$ / \setminus $				
24					(24.0 - 44.0') 8" Stainless Steel 316	H		
					Stainless Steel 316 (10-slot) Screen			
25								Y
							100	
26						H : A		
27				4				
 28								
20						.T.:::		
 29								
25								
					(16.1 - 47.1') Cemex	(20.0 - 41.5') 24.0"	(16.1 - 47.1') 87.9	(16.1 - 47.1') 121 bags (38%) Note: Lapis Lustre Sand, swabbed
30					#0/30 Mesh (30x50)	Borehole	bags	filter pack for 74 minutes prior to installation of transition sand
 31								Installation of transition sailu
31								
		Topod	ck -					
32		Fluvi Depos						
33								
34								
35								
36						H::::		
37								
\vdash \dashv								
38								
├ ┤								
39						\mathbb{H}^{\times}		
\vdash \dashv								
40		000 11		<u>10.000000</u>		لـــــــــــــــــــــــــــــــــــــ		L

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents approximate depth to water during the first VAS sample collected from RB-5 Pilot

ARCADIS Design & Consultancy for natural and built assets					Well Const	ruction Log	Sheet: 3 of 5		
Date S	tarted:	07/11/2019			_Surface Elevation:	N/A	Well ID: F	RB-5	
		07/28/2019			_Shallow Well Elevation:	N/A		<u></u>	
Drilling	Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E		
Drilling	Method:	Dual Rotary			_Northing (NAD83):	N/A	Project: <u>Final (</u>	GW Remedy Phase 1	
Driller I	Name:	Jon Martinez			_Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, California	
Drilling	Asst:	H. & A. Amez	-		_Borehole Diameter:	18-24 inches			
Loggei					_Water Level Start:	10.04 ft bgs	Project Number	r: RC000753.0051	
Editor:		Sean McGrane			_Development End Date:		<u> </u>		
Total D	epth:	99.25 ft bgs	T		_Well Completion:	区 Flush Stick-up	T	T	
Depth (ft)	Groundwat Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed	
41	RB-5-VAS- 42-47 (<0.033U ppb) 4/9/2019 10:15	Topock - Fluvial Deposits	SP		(24.0 - 44.0') 8" Stainless Steel 316 (10-slot) Screen (16.1 - 47.1') Cemex_#0/30 Mesh (30x50) (44.0 - 64.0') 8" Suregrip 17 Casing	(20.0 - 41.5') 24.0" Borehole	(16.147.1') 87.9 bags	(16.1 - 47.1') 121 bags (38%) Note: Lapis Lustre Sand, swabbed filter pack for 74 minutes prior to installation of transition sand	
		Topock - Fluvial	GW		(47.1 - 47.7') Cemex		(47.1 - 47.7') 1.6 bags	(47.1 - 47.7') 2 bags (25%) Note: Lapis Lustre Sand	
48 49 50 51 52 53 54 55		Deposits Topock - Fluvial Deposits	SP		#60 (40x70) Mesh (47.7 - 55.2') Bentonite seal chips	(41.5 - 61.5') 18.0" Borehole	(47.7 - 55.2') 14.9 bags	(47.7 - 55.2') 8 bags (-46%) Note: Puregold Medium Chips, difference in calculated volume compared to actual volume is <80% of design volume due to coarse loose formation displacing chips during installation	
 56					(55.2 - 56.2') Cemex #0/30 Mesh (30x50)		(55.2 - 56.2') 2.7 bags	(55.2 - 56.2') 2 bags (-26%) Note: Lapis Lustre Sand	
57 58 59 60		Topock - Fluvial Deposits	SP		(56.2 - 99.3') Cemex 2/12 Mesh (12x20)		(56.2 - 99.3') 125.2 bags	(56.2 - 99.3') 114 bags (-9%) Note: Lapis Lustre Sand, swabbed filter pack for ~98 minutes prior to installation of transition sand	

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = ground ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents approximate depth to water during the first VAS sample collected from RB-5 Pilot

9/	ARCA	DIS Design & Of for natura built asset	Consultancy Il and ts		Well Const	ruction Log	5	Sheet: 4 of 5
Date S	tarted:	07/11/2019			_Surface Elevation:	N/A	Well ID: F	RB-5
Date C	ompleted:	07/28/2019			_Shallow Well Elevation:	N/A		
Drilling	Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	<u> </u>
Drilling	Method:	Dual Rotary			_Northing (NAD83):	N/A	Project: Final (GW Remedy Phase 1
Driller N	Name:	Jon Martinez			_Easting (NAD83):	N/A	Location: PG&E	Topock, Needles, California
Drilling	Asst:	H. & A. Amez	quita		Borehole Diameter: <u>18-24 inches</u>			
Logger	r:	Drew Martzolf	•		_Water Level Start:	10.04 ft bgs	Project Number	r: RC000753.0051
Editor:	itor: <u>Sean McGrane</u>			Development End Date:	N/A			
Total D	al Depth: 99.25 ft bgs			_Well Completion:				
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
6162636465665665666677071727172737475775775775776778	Sample IL	Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits	SP SP CL		(44.0 - 64.0') 8" ———————————————————————————————————	(41.5 - 61.5') 18.0" Borehole	(56.2 - 99.3') 125.2 bags	(56.2 - 99.3') 114 bags (-9%) Note: Lapis Lustre Sand, swabbed filter pack for ~98 minutes prior to installation of transition sand
79 79 80		Topock - Fluvial Deposits	SP					

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents approximate depth to water during the first VAS sample collected from RB-5 Pilot

ARC	ADIS Design & for natura built asse	Consultancy al and ets		Well Consti	ruction Log	Sheet: 5 of 5		
Date Started:	07/11/2019			_Surface Elevation:	N/A	Well ID: F	RB-5	
Date Completed	d: <u>07/28/2019</u>			_Shallow Well Elevation:	N/A			
Drilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	<u> </u>	
Drilling Method:	Dual Rotary			_Northing (NAD83):	N/A	Project: <u>Final (</u>	GW Remedy Phase 1	
Driller Name:	Jon Martinez			_Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, California	
Drilling Asst:	H. & A. Amez			_Borehole Diameter:	18-24 inches			
Logger:	Drew Martzol			_Water Level Start:	10.04 ft bgs	Project Number	r: RC000753.0051	
Editor:			_Development End Date:		_			
Total Depth:	99.25 ft bgs			_Well Completion:				
Groundw. Sample		Code	USCS		construction	Calculated Material Volumes	Material Volumes Installed	
81	Topock - Fluvial Deposits	SP		(64.0 - 89.0') 8" ———————————————————————————————————	(80.0 - 84.0') 18.0" Borehole			
82-87 (0.127 J pr 4/9/2019 14:05	Topock -	GW						
86 87		NR			(84.0 - 87.0') 18.0" Borehole	10,		
88 89	Topock - Weathered Bedrock - conglomerate	GM				5		
90 91 92				(56.2 - 99.3') Cemex		(56.2 - 99.3') 125.2 bags	(56.2 - 99.3') 114 bags (-9%) Note: Lapis Lustre Sand, swabbed filter pack for ~98 minutes prior to installation of transition sand	
93 94 95 96 97 98 99	Topock - Competent Bedrock - conglomerate				(87.0 - 99.3') 18.0" Borehole			
			Y //>	End of Boring at				
100	11000 - 11	1 0 = 11 01	:e:-: (99.3 'bgs.	= b aloug granned surface	nol = ob = : :	sea level GW = groundwater	

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundw ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents approximate depth to water during the first VAS sample collected from RB-5 Pilot

9 _A	RCA	DIS Design & C for natural built asset	Consultancy l and es		Well Construction Log	;	Sheet: 1 of 8	
Date St	arted:	05/08/2019			Surface Elevation: N/A	Well ID: N	MW-O-120, MW-O-140	
	-	05/12/2019			_Shallow Well Elevation: N/A		3 120, 3 140	
Drilling	Co.:	Cascade			Deep Well Elevation: N/A	Client: PG&E	Ξ	
Drilling	Method:	Sonic Drilling			Northing (NAD83): N/A	Project: <u>Final</u>	GW Remedy Phase 1	
Driller N	lame:	Dan O'Mara			Easting (NAD83): N/A	Location: <u>PG&</u>	Topock, Needles, California	
Drilling .	Asst:	<u>E. Huellmante</u>	l / J. Pa	<u>acheco</u>	Borehole Diameter: 6-12 inches			
Logger:	: !	<u> Grant Willford</u>			Water Level Start: <u>12.4 ft bgs</u>	Project Numbe	r: RC000753.0051	
Editor:		<u>Sean McGran</u>	e		Development End Date: 7/23/2019			
Total D	otal Depth: 146 ft bgs				Well Completion:		T	
Depth (ft)	Groundwate Sample ID	Geologic Formation	USCS Code USCS Class		Well Construction	Calculated Material Volumes	Material Volumes Installed	
0					(+2.0 - 100.0') 2" Casing (+3.0 - 0.0') Casing Monument		Note: 12x12-inch Lockable Steel Monument	
<u> </u>				Λ				
_ 1 _				$ \setminus / $				
2			NR		(0.0 - 4.0') 12.0" Borehole		(0.9 - 5.0') 35 bags (%) Note: 24-inch Diameter Concrete Well Pad, King Kon-Crete 4000 PSI, Grout Removed to install	
- 5		Topock - Fill	SP		(5.0 - 14.0') Bentonite seal chips	(5.0 - 14.0') 6.3 bags	(5.0 - 14.0') 9 bags (43%) Note: Puregold Medium Chips	
11			NR		(11.5 - 12.5') Centralizer			
15(16 16	MW-O-VAS- 12.5-17 (0.163 J ppb) 5/8/2019 14:20	Topock - Fluvial Deposits	SP-SM		(14.0 - 85.0') High Solids Grout ation System, ft = feet, bgs = below ground surface, an	(14.0 - 85.0') 266.4 gallons	(14.0 - 85.0') 350 gallons (31%) Note: Type I, II and V and Benseal	

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = grounds ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = No Recovery, blue water table symbol represents depth to water measured during first VAS interval

ARC	DIS Design & for nature built asset	Consultancy al and ets		Well Const	ruction Log	5	Sheet: 2 of 8		
Date Started:	05/08/2019			Surface Elevation:	N/A	Well ID: N	MW-O-120, MW-O-140		
Date Completed Drilling Co.:	Cascade			Shallow Well Elevation: Deep Well Elevation:	N/A N/A	 Client: <u>PG&</u> E			
Drilling Method:	Sonic Drilling			Northing (NAD83):	N/A		- GW Remedy Phase 1		
Driller Name:	Dan O'Mara			Easting (NAD83):	N/A	•	Topock, Needles, California		
Drilling Asst:		el / J. Pa	acheco	Borehole Diameter:	6-12 inches		• '		
Logger:	Grant Willford	t		_Water Level Start:	12.4 ft bgs	Project Numbe	r: RC000753.0051		
Editor:	Sean McGrar	ne		Development End Date:					
Total Depth:	146 ft bgs	I		Well Completion:	☐ Flush☐ Stick-up	T	T		
Groundwa Sample II		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed		
18	Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits	SP-SM SP-SM		(+2.0 - 100.0') 2" ———————————————————————————————————	(4.0 - 143.0') 10" Borehole	(14.0 - 85.0') 266.4 gallons	(14.0 - 85.0') 350 gallons (31%) Note: Type I, II and V and Benseal		

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = No Recovery, blue water table symbol represents depth to water measured during first VAS interval

9/	ARCA	DIS Design & for natura built asset	Consultancy al and ets		Well Const	ruction Log	5	Sheet: 3 of 8	
Date S		05/08/2019 05/12/2019			Surface Elevation: Shallow Well Elevation:	N/A N/A	Well ID: N	MW-O-120, MW-O-140	
Drilling	-	Cascade			Deep Well Elevation:	N/A	Client: <u>PG&E</u>		
_		Sonic Drilling			Northing (NAD83):	N/A		GW Remedy Phase 1	
Driller I		Dan O'Mara			Easting (NAD83):	N/A	-	Topock, Needles, California	
Drilling			el / J. Pa	acheco	Borehole Diameter:	6-12 inches		•	
Loggei		Grant Willford			 Water Level Start:	12.4 ft bgs	Project Number	r: RC000753.0051	
Editor:		Sean McGrar	ne		Development End Date:	-			
Total D	Depth:	146 ft bgs			Well Completion:	☐ Flush☐ Stick-up	1		
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well C	construction	Calculated Material Volumes	Material Volumes Installed	
38 39 40 41 42 43 44 45		Topock - Fluvial Deposits	SP-SM		(+2.0 - 100.0') 2" ———————————————————————————————————	(+1.8 - 130.0') 2" PVC Sch 40 Casing	9		
46 47 48 49 50 51		Topock - Fluvial Deposits Topock - Fluvial Deposits	sw		(14.0 - 85.0°) High — Solids Grout	(4.0 - 143.0') 10" Borehole	(14.0 - 85.0') 266.4 gallons	(14.0 - 85.0') 350 gallons (31%) Note: Type I, II and V and Benseal	
		Topock - Fluvial	SP-SM						
52		Deposits	Si -Sivi						
53 54 55 	MW-O-VAS- 51-56 (<0.033 U ppb) 5/9/2019 09:18	Topock - Fluvial Deposits	SM						
56		Topock - Alluvium Deposits	CL						

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = No Recovery, blue water table symbol represents depth to water measured during first VAS interval

9/-	ARCA	DIS Design for nat built a	n & Consultancy tural and ssets		Well Const	ruction Log	5	Sheet: 4 of 8
Date C Drilling Drilling	Co.: Method: Name: Asst: r:	05/08/2019 05/12/2019 Cascade Sonic Drilling Dan O'Mara E. Huellmantel / J. Pacheco Grant Willford Sean McGrane 146 ft bgs			Surface Elevation: Shallow Well Elevation: Deep Well Elevation: Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Date: Well Completion:	N/A N/A N/A N/A N/A N/A 6-12 inches 12.4 ft bgs 7/23/2019 ☐ Flush ☐ Stick-up	Client: PG&E Project: Final (Location: PG&E	GW Remedy Phase 1 Topock, Needles, California
Depth (ft)	Groundwat Sample II		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
58 59 60		Topock - Alluvium Deposits	CL		(+2.0 - 100.0') 2" ———————————————————————————————————	(+1.8 - 130.0') 2" PVC Sch 40 Casing	0	
61 62 63 64 65		Topock - Alluvium Deposits	SC		(61.5 - 62.5') Centralizer			
6768697071727374757677	MW-O-VAS 66-71 (0.178 J ppb 5/9/2019 14:30	Topock - Alluvium Deposits	SC		(14.0 - 85.0') High — Solids Grout	(4.0 - 143.0') 10" Borehole	(14.0 - 85.0') 266.4 gallons	(14.0 - 85.0') 350 gallons (31%) Note: Type I, II and V and Benseal

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = No Recovery, blue water table symbol represents depth to water measured during first VAS interval

9/	ARCA	DIS Design & for natura built asset	Consultancy al and ets		Well Const	ruction Log	Ş	Sheet: 5 of 8
	Started:	05/08/2019			_Surface Elevation:	N/A	Well ID: N	MW-O-120, MW-O-140
		05/12/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
_		Sonic Drilling			_Northing (NAD83):	N/A	•	GW Remedy Phase 1
Driller I		Dan O'Mara	-1 / 1 D		_Easting (NAD83):	N/A	Location: <u>PG&E</u>	E Topock, Needles, California
Drilling				<u>acneco</u>	_Borehole Diameter:	6-12 inches		D0000750 0054
Logge Editor:		Grant Willford Sean McGran			_Water Level Start: _Development End Date:	12.4 ft bgs	Project Numbe	r: RC000753.0051
Total D		146 ft bgs	<u>ie</u>		_Development End Date. _Well Completion:	Flush Stick-up		
Depth (ft)	Groundwat Sample ID		Code	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
		Topock - Alluvium Deposits	sc		(+2.0 - 100.0') 2" ———————————————————————————————————	(+1.8 - 130.0') 2" PVC Sch 40 Casing	(14.0 - 85.0') 266.4 gallons	(14.0 - 85.0') 350 gallons (31%) Note: Type I, Il and V and Benseal
83 84 85 86		Topock - Alluvium Deposits	CL					
87 88 89 90		Topock - Alluvium Deposits	sc			(4.0 - 143.0') 10" Borehole		
91 92 93 94 95 96		Topock - Alluvium Deposits	CL		(85.0 - 98.0') Bentonite seal pellets		(85.0 - 98.0') 11.9 buckets	(85.0 - 98.0') 12 buckets (1%) Note: Pel-Plug (TR30) 3/8"
 _ 97		Topock - Alluvium Deposits	sc					

9/	ARCA	DIS Design & for nature built asse	Consultancy al and its		Well Consti	ruction Log	5	Sheet: 6 of 8
Drilling	completed: Co.: Method: Name: Asst:	05/08/2019 05/12/2019 Cascade Sonic Drilling Dan O'Mara E. Huellmante Grant Willford Sean McGran 146 ft bgs		acheco	Surface Elevation:Shallow Well Elevation:Deep Well Elevation:Northing (NAD83):Easting (NAD83):Borehole Diameter:Water Level Start:Development End Date:Well Completion:	N/A N/A N/A N/A N/A N/A 6-12 inches 12.4 ft bgs 7/23/2019 ☐ Flush ☐ Stick-up	Client: PG&E Project: Final (GW Remedy Phase 1 Topock, Needles, California RC000753.0051
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
98 99 100 101 102 103 104 105 106	MW-O-VAS 101-107 (<0.033 U ppb) 5/10/2019 12:32	Topock - Alluvium Deposits	sc		(+2.0 - 100.0') 2" Casing (100.0 - 120.0') 2" Sch 40 PVC (20-slot) Screen	— (+1.8 - 130.0') 2" PVC Sch 40 Casing	(85.0 - 98.0') 11.9 buckets	(85.0 - 98.0') 12 buckets (1%) Note: Pel-Plug (TR30) 3/8"
	MW-O-VAS 106-111 (<0.17 U) 5/11/2019 08:25	Topock - Alluvium Deposits	SM		(98.0 - 124.0') Cemex #3 MESH (8x10)	(4.0 - 143.0') 10" Borehole	(98.0 - 124.0') 25.2 bags	(98.0 - 124.0') 36 bags (43%) Note: Lapis Lustre Sand
113 114 115 116		Topock - Alluvium Deposits	SM					
 117		Topock - Alluvium Deposits	SM					

9/	ARCA	DIS	Design & Cor for natural ar built assets	nsultancy nd		Well Const	ruction Log		Sheet: 7 of 8
Date S		05/08/20				_Surface Elevation:	N/A	Well ID:	MW-O-120, MW-O-140
	completed:					_Shallow Well Elevation:	N/A		•
Drilling		<u>Cascade</u>				_Deep Well Elevation:	N/A	Client: <u>PG&</u>	
		Sonic Dri				_Northing (NAD83):	N/A	•	GW Remedy Phase 1
Driller I		Dan O'M		/		_Easting (NAD83):	N/A	Location: <u>PG&</u>	E Topock, Needles, California
Drilling				/ J. Pa	acheco	_Borehole Diameter:	6-12 inches		D0000750 0054
Loggeı Editor:		Grant Wi				_Water Level Start: _Development End Date:	12.4 ft bgs	Project Numbe	er: RC000753.0051
Total D		Sean Mc 146 ft bg		;		_Development End Date. _Well Completion:	Flush Stick-up	_	
Total L	ерии.						r id3ri Otlon-up		
Depth (ft)	Groundwate Sample ID		Formation	USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
118 119 120 121 121 122 123 124		Topo Alluvi Depo	ium	SM		(98.0 - 124.0')	— (+1.8 - 130.0') 2" PVC Sch 40 Casing	(98.0 - 124.0') 25.2 bags	(98.0 - 124.0') 36 bags (43%) Note: Lapis Lustre Sand
125 126 127 						(124.0 - 128.0') Bentonite seal pellets	(4.0 - 143.0') 10" Borehole	(124.0 - 128.0') 3.8 buckets	(124.0 - 128.0') 5 buckets (32%) Note: Pel-Plug (TR30) 3/8"
		Topo	ck -						
129		Alluvi	ium	ML					
\vdash \dashv									
130							(130.0 - 140.0') 2"		
131 132 133 134 135 136		Topo Alluvi Depo	ium	SM		(128.0 - 143.0') Cemex #3 MESH —: (8x10)	PVC Sch 40 Screen	(128.0 - 143.0') 15.8 bags	(128.0 - 143.0') 19.5 bags (23%) Note: Lapis Lustre Sand
		Topo Alluvi	ium	SM					
137		Depo	sits		<u> : : : </u>				

9/	ARCA	DIS Design & Control for natura built asset	Consultancy Il and ts		Well Construction Log	8	Sheet: 8 of 8
	-	05/08/2019 05/12/2019 Cascade			Surface Elevation: N/A Shallow Well Elevation: N/A Deep Well Elevation: N/A	Well ID: N	MW-O-120, MW-O-140
Drilling Driller	Method: Name:	Sonic Drilling Dan O'Mara			_Northing (NAD83): N/A _Easting (NAD83): N/A	Project: Final 0	GW Remedy Phase 1 Topock, Needles, California
Drilling Logge Editor:	r: :	Grant Willford Sean McGran		acheco_	_ Borehole Diameter: 6-12 inches _ Water Level Start: 12.4 ft bgs _ Development End Date: 7/23/2019	Project Number	r: RC000753.0051
Depth (ft)	Depth: Groundwat Sample ID		USCS	USCS Class	_Well Completion: Flush Stick-up Well Construction	Calculated Material Volumes	Material Volumes Installed
138 139 140	- MW-O-VAS- 136-141 (<0.17 U ppb 5/11/2019 14:26	Topock - Alluvium Denosits	SM		(128.0 - 143.0') Cemex #3 MESH (8x10) (130.0 - 140.0') 2" PVC Sch 40 Screen	(128.0 - 143.0') 15.8 bags	(128.0 - 143.0') 19.5 bags (23%) Note: Lapis Lustre Sand
141		Topock - Competent Bedrock - conglomerate			(140.5 - 141.5')		
144145146					(143.0 - 146.0')	(143.0 - 146.0') 0.8 bags	(143.0 - 146.0') 1 bags (25%) Note: Enviroplug Medium Chips, installed to 142 ft. bgs, 1.5 ft removed during reaming
 147 148				•	End of Boring at 146.0 'bgs.		
149							
150 151							
152							
153 154							
155 156							
157		CCC - Unified	l Sail C	laggificat	ion System ft = feet has = below around surface an	and = above mean	oog lovel CW – groundwater

ARC	ADIS	Design & Consultancy for natural and built assets		Bo	ring Lo	og			She	eet: 1 of	8
Date Started:	05/08/		(Surface	Elevation:	N/A		Borir	na No.:	: MW-Od	
Date Complete					j (NAD83):	N/A					
Drilling Co.:	<u>Casca</u>			_	(NAD83):	N/A		_ Client:	PG&E		
Drilling Method		•		Γotal De	-	146 ft bgs		_ Project:		W Remedy Ph	
Drill Rig Type:		onic track mo			e Diameter			_ Location	: PG&E	Topock, Needle	es, California
Driller Name:	Dan O			-		er: <u>12.4 ft bgs</u>		 		D0000750 000	- 4
Drilling Asst:		ellmantel / J. F		•	•) ft Core Barrel	_ Project N	number:	RC000753.00	01
Logger: Editor:		Willford McGrane			g Interval: ed to Well:	Continuou	S No	_			
	Seann	VICGIAIIE		JOHVER	eu lo vveii.		NO				
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS		Soil Description			Drilling Notes	Drilling Fluid
1				NR		- 4.0') No recover		d (SD): links of		(0.0 - 4.0') No recovery due to loose dredge sands.	(0.0 - 96.0') 1930 gallons of water used; 1500 gallons of water recovered; 430 gallons of water lost
- 5 - 24 - 6			Topock - Fill	SP	brov subi hom	n (10YR 6/4); veround; trace small ogeneous; some	Fill; Poorly graded san ry fine grained to fine g I pebbles, subround to organics present 4-6 ft	rained, suban round; trace s	gular to		
11 48 12					(10.) - 16.0') No reco	very (NK)			(10.0 - 16.0') No recovery due to loose dredge sands.	
13 14 15 16		MW-O-VAS- 12.5-17 (0.163 J ppb) 5/8/2019 14:20		NR						(12.5') Sampler dropped 0.5 due to lose sands	
17 18	11000 -	Initiad Call C	Topock - Fluvial Deposits	SP-SM	silt (SP-SM); very dari le grained, suban	- Fluvial Deposits; Pook grayish brown (10YR gular to subround; little	3/2); very fine e silt; wet	grained	(16.0 - 36.0') Soft drilling	rroundwater-

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	eet: 2 of	8
Date S			8/2019			Elevation:	N/A	Borin	ng No.:	MW-Od	
		ted: <u>05/1</u>			-	g (NAD83):	N/A	_			
Drilling		Caso				(NAD83):	N/A	_ Client:	PG&E		
Drilling			c Drilling		Total De	· = '	146 ft bgs	_ Project:		N Remedy Ph	
Drill Ri Driller I		-	asonic track mo O'Mara	ount		e Diameter: o First Water	6-12 inches	_ Location:	PG&E	Fopock, Needl	es, California
Drilling			uellmantel / J. F	Pacheco	-	g Method:	4 inch x 10 ft Core Barrel	- Project N	Lumher: I	RC000753.00	 51
Logge			nt Willford	doncoo	-	g Interval:	Continuous	_ 1 10,00011	idilibei. <u>i</u>	110000700.00	01
Editor:					-	ed to Well:		_			
		<u> </u>		٥٤							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
212223242526272830313132333334353636	222 222	Sample IC	Sample ID	Topock - Fluvial Deposits Topock - Fluvial Deposits	SP-SM	(26.8 grayis little s very s (27.8 silttle s silttle s silt (Si fine gr	27.8') Topock - Fluvial Deposits; Fat on brown / dark yellowish brown(10YR 2 lt; trace very fine grained sand, subrout fit to soft; homogeneous 36.0') Topock - Fluvial Deposits; Poor >SM); dark grayish brown / dark yellowery fine grained to fine grained, subang	flygraded sand); regreter to substitute the round; regreter to subround the regreter to subround	iticity; noist; id with DYR und;	(16.0 - 36.0') Soft drilling (36.0 - 56.0') Soft drilling	(0.0 - 96.0') 1930 gallons of water used; 1500 gallons of water recovered; 430 gallons of water lost
37 38 39 40	240			Topock - Fluvial Deposits	SP-SM	moist		, adoc oldy, '			
A l- l		. 11000	Linitia d Cail C	:6:+:-	0	. ft f t l	s = bolow ground surface am			- 11 014/	

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring L	_og		Sh	eet: 3 of	8
	started:		/2019		Surface	Elevation	: <u>N/A</u>	Borin	na No.:	: MW-Od	
		ted: <u>05/12</u>				g (NAD83				<u> </u>	
Drilling		Casca			_	(NAD83)		_ Client:	PG&E		
Drilling			Drilling		Total De	•	146 ft bgs	Project:		W Remedy Ph	
Drill Ri			sonic track mo			e Diamet		_ Location:	PG&E	Topock, Needle	es, California
Driller			O'Mara		•		ater: 12.4 ft bgs	- Duningt N		DC0007E2 00	-1
Drilling			ellmantel / J. F : Willford		-	g ivietnoo g Interval		_ Project iN	iumber:	RC000753.00	<u> </u>
Logge Editor:			McGrane			ed to We		_			
Laitor.		<u>ocan</u>	Woording				103 - 140				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
				Topock - Fluvial Deposits	SP-SM					(36.0 - 56.0') Soft drilling	(0.0 - 96.0') 1930 gallons of water used; 1500 gallons of water recovered; 430 gallons of water lost
	240			Topock - Fluvial Deposits	sw	lìo	5.0 - 50.0') Topock - Fluvial Deposits; Well tht yellowish brown (10YR 6/4); very fine gra ained, subangular to subround; trace granu abround to round; trace silt; wet	ained to coars	se		
50 51				Topock - Fluvial Deposits	sw	liç	0.0 - 51.0') Topock - Fluvial Deposits; Well ht yellowish brown (10YR 6/4); very fine gra ained, subangular to round; little granules to	ained to coars o large pebbl	se es,		
				Topock - Fluvial	SP-SM	[::: \lit	ıbangular to round; trace silt; wet; gravel co holgy	<u>'</u>	/		
52				Deposits	OI -OIVI	si	1.0 - 52.0') Topock - Fluvial Deposits; Poorl t (SP-SM); light yellowish brown (10YR 6/4)); very fine gra	ained to		
53 54 55 55			MW-O-VAS- 51-56 (<0.033 U ppb) 5/9/2019 09:18	Topock - Fluvial Deposits	SM	m (5 (5 sı sı	ne grained, subangular to subround; little sil oist 2.0 - 56.0') Topock - Fluvial Deposits; Silty: M); brown (10YR 4/3); very fine grained to dibangular to subround; little granules to largubangular to round; little silt; wet; gravel conholgy	sand with gra coarse graine ge pebbles,	avel ed,		
57 58 58 59 _ 60	120	v. LISOS	Initiad Sall O	Topock - Alluvium Deposits	CL	gg cc m st	6.0 - 60.0") Topock - Alluvium Deposits; Sa avel (CL); brown (7.5YR 5/3); low plasticity; arse grained sand, angular to subround; little edium pebbles, angular to subround; little siff; moderate cementation; gravel composed	and very fine tle granules t ilt; moist; me d of mixed lith	e to very o dium nolgy	(56.0 - 66.0') Rough drilling	yroundusts:

AR	CAI	DIS	for natural and built assets		Во	ring l	Log			She	et: 4 of	8
Date Started		05/08/2				Elevatio		N/A	Borin	a No.:	MW-Od	
Date Compl					-) (NAD8	,	N/A				
Drilling Co.:		Cascac			_	(NAD83):	N/A	Client:	PG&E		
Drilling Meth					Total De	•	.	146 ft bgs	-		V Remedy Ph	
Drill Rig Typ Driller Name		Dan O'	onic track mo Mara			e Diamet		6-12 inches 12.4 ft bgs	Location:	PG&E I	opock, Needle	es, Calliornia
Drilling Asst:			llmantel / J. P		-				Project N	umber F	RC000753.00	 51
Logger:			Willford		-	ig Interva		Continuous	1 10,00011	umbor. <u>1</u>	10000100.000	J 1
Editor:					•	ed to We						
	1			ο =				_				
Depth (ft) Recovery (in)	S San	ieve nple ID	Groundwater Sample ID	Geologic Formation	USCS	USCS		Soil Description			Drilling Notes	Drilling Fluid
61 62 63 120 64 65 66 67				Topock - Alluvium Deposits	SC	() () () () () () () () () () () () () (SC); b sngular subangular subangular si subang si subang si subang si subang si subangular o subangular o suba	76.0') Topock - Alluvium Deposits; Clayrown (7.5YR 5/3); very fine grained to vote subround; little granules to medium ular; little silt; little clay; moist; strong canning 76.0') Topock - Alluvium Deposits; Clayrown (7.5YR 5/3); very fine grained to vote subround; some granules to medium gular; little silt; little clay; moist to wet ation; iron oxide staining	yey sand with very coarse g pebbles, and very sand with very coarse g m pebbles, a	rained, gular to iron	(56.0 - 66.0') Rough drilling (66.0 - 76.0') Rough drilling	(0.0 - 96.0') 1930 gallons of water used; 1500 gallons of water recovered; 430 gallons of water lost
68697071 120727374757676			MW-O-VAS- 66-71 (0.178 J ppb) 5/9/2019 14:30	Topock - Alluvium Deposits	SC		69'); tc	71.0' slightly saturated 71.0' Slightly saturated 92.0') Topock - Alluvium Deposits; Clayrown (7.5YR 5/4); very fine grained to come	oarse graine		(76.0 - 86.0') Rough drilling	
				Topock - Alluvium Deposits	sc	p p	angúlai pebbles cement noist-c	to subround; some clay; little granules s, angular to subangular; little silt; mois ation; gravel composed of mixed litholo	to međium t; strong gy, borderline	•	J J	

ARC	ADIS	for natural and built assets		Во	ring	Log			She	et: 5 of	8
Date Started:	05/08/2	2019		Surface	Elevatio	n:	N/A	Borir	na No.:	MW-Od	
Date Completed	l: <u>05/12/2</u>	2019		-	g (NAD8	,	N/A			<u> </u>	
Drilling Co.:	Cascac			_	(NAD83	B):	<u>N/A</u>	Client:	PG&E		
Drilling Method:	Sonic [•		Total De	•		146 ft bgs	Project:		V Remedy Ph	
Drill Rig Type:		onic track mou	<u>unt</u>		e Diame			Location	: <u>PG&E T</u>	opock, Needle	es, California
Driller Name:	Dan O'			-			12.4 ft bgs	D!4 N		20000750 000	F.4
Drilling Asst:		llmantel / J. P.		•	g Metho			Project r	Number: <u>F</u>	RC000753.00	51
Logger: Editor:		Willford ∕IcGrane		-	ig Interva ed to We		Continuous				
	<u>Sean N</u>	licGrane		Tonven	ed to vvi	eli.	△ res ☐ No				I
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
81			Topock - Alluvium Deposits	sc						(76.0 - 86.0') Rough drilling	(0.0 - 96.0') 1930 gallons of water used; 1500 gallons of water recovered; 430 gallons of water
83 ₁₂₀ 84 85 86			Topock - Alluvium Deposits	CL		sand (0 granule to very	86.0') Topock - Alluvium Deposits; Gra CL); brown (7.5YR 4/3); medium plastic is to medium pebbles, angular to subar coarse grained sand, angular to subrot cementation	ity; some si ngular; little	lt; little very fine		lost
87 88 89 90			Topock - Alluvium Deposits	SC		(SC); b angular subrou mixed l	90.0') Topock - Alluvium Deposits; Clayrown (7.5YR 4/3); very fine grained to cross to subround; little granules to medium nd; little silt; little clay; moist to wet; graitholgy o 89.5' saturated	oarse grain pebbles, a	ed, ngular to	(86.0 - 96.0') Rough drilling	
91 120 92 93 94 95			Topock - Alluvium Deposits	CL		gravel (6/3); m pebble: grained very sti litholgy	96.0') Topock - Alluvium Deposits; San (CL); brown (7.5YR 4/3) trace light redd edium plasticity; some silt; little granule s, angular to subangular; little very fine I sand, angular to subround; moist to dr ff; moderate cementation; gravel compo, low to medium plasticity	lish brown(2 es to mediur to very coar y; medium	2.5YR n se stiff to		
96	1808 - 1	Initial Sci Cl	Topock - Alluvium Deposits	SC		gravel (angular subrou	106.0') Topock - Alluvium Deposits; Cla (SC); (7.5YR 4/); very fine grained to ver to subround; little granules to medium and; little silt; little clay; moist to dry; modes to the silt; little clay; moist to dry; modes are below ground surface, amsilts.	ry coarse gi pebbles, ai derate ceme	rained, ngular to entation	(96.0 - 106.0') Rough drilling	groundwater

Date Started: DS.0826/2019 DS.0826/2019 Northing (NADS): NA	9/	ARC	ADIS	for natural and built assets		Во	ring	Log		Shee	et: 6 of	8
Northing (No.Date)					_				Borii	na No.:	MW-Od	
Dalling Methods Sonic Diffilling Total Depth 146.8 hbgs		•						•	_			
Dail Rig Type: Terrasonic frack mount Borehole Diameter: 6-12 inChess Location: PG&E Topock, Needles, California Dielling Asst: E. Huellmantef, J. Pacheco. Sampling Method: Sampling Interval: Continuous Sampling Interval: Continuous Sampling Interval: Sampli	_											
Daller Namer Dan O'Mara	1 -			•	4		-	•	-		•	
Dalling Asset: E. Huellmantel / J. Pacheco. Sampling Method: Copyrethed to Walt: Sean McGrane Converted to Walt: Yes No Dalling Roles Deling Fluid MM-G-Vac. 103, 120 MM-G-Vac. 103, 103, 103, 103, 103, 103, 103, 103,					ount				_ Location	i: PG&E I	ороск, мееак	es, Calliornia
Logger: Sam McGrant Sam Median Converted to Welt: Solid Description Drilling Notes Solid Description Drilling Notes Drilling Notes Drilling Notes Drilling Notes Drilling Notes Solid Description Record of Mining (88.3 - 106.0) Record of Mining Solid Belling Sample of Solid Belling Solid Bell					Pacheco	-		-	- Project N	Vumber B	C000753 00!	 51
Editor: Sean McGrane	_				donoco	-	-		_ 1 10,0001	turibor. <u>I</u>		J 1
101_ 102_ 103_ 120 MW-O-VAS_ 101-107 (-0.000) 104_ 105_00						-	-		_			
101_ 102_ 103_ 120 MW-O-VAS_ 101-107 (-0.000) 104_ 105_00		2			.º 5							
100	Depth (ft)	Recove (in)			Geolog Formati	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
102												
103 120 MN/-C-VAS- 105-107 (20033 U 2009) 106 12332 (105.3): to 105.8' dry 106 12332 (105.3): to 105.8' dry 106 12332 (105.3): to 105.8' dry 107 108 12332 (105.3): to 105.8' dry 108 108 108 108 108 108 108 108 108 108	101	-										
103 120 MN/-C-VAS- 105-107 (20033 U 2009) 106 12332 (105.3): to 105.8' dry 106 12332 (105.3): to 105.8' dry 106 12332 (105.3): to 105.8' dry 107 108 12332 (105.3): to 105.8' dry 108 108 108 108 108 108 108 108 108 108	102	-										
106 108	102			i I								
Deposits 104	103	400			Topock -	00						
105_ 106_ 107_ 108_ 107_ 108_ 109_ 109_ 109_ 110_ 110_ 110_ 111_ 120 111_ 120 111_ 120 115_ 116_ 116_ 117_ 117_ 1200 118_ 118_ 118_ 118_ 118_ 118_ 118_ 1		120		(<0.033 U		SC						
105. 106. 107. 108. 107. 108. 109.	104			ppb) 5/10/2019								
106. 1.10. 1	_			12:32								
106 (30h) brown (7.5/R 50); very fine grained to very coarse grained, angular to subround, some granules to very large pebbles, angular to subround, some granules to very large pebbles, angular to subround, some granules to very large pebbles, angular to subround, some granules to very large pebbles, angular to subround, some granules to very large pebbles, angular to subround, sittle silt, trace clay, wet, weak cementation, gravel composed of mixed titholgy mostly metadionte 110	_105_							40-1				
106	-							(105.3'); to 105.8' dry				
Soft drilling, some grained to eye coarse grained, some grained, some grained to eye coarse grained, angular to subround; little grained to very coarse grained, angular to subround; little grained to very coarse grained, angular to subround; little grained to very coarse grained, angular to subround; little grained to eye coarse grained, angular to subround; little grained to eye coarse grained, angular to subround; little grained to eye coarse grained, angular to subround; little grained to eye coarse grained, angular to subround; little grained to eye coarse grained, angular to subround; little grained to eye coarse grained, angular to subround; little grained to eye coarse grained, angular to subround; little grained to eye coarse grained, angular to subround; little grained to eye coarse grained, angular to subround; little grained to eye coarse grained, angular to subround; little clay, wet wet were grained to eye coarse grained, angular to subround; little grained to eye coarse grained, angular to subround; little clay, wet wether grained to eye coarse grained, angular to subround; little clay, wet wether grained to eye coarse grained, angular to subround; little clay, wet wether grained to eye coarse grained, angular to subround; little clay, wet wether grained to eye coarse grained to eye coarse grained, angular to subround; little clay, wet wether grained to eye coarse grained to ey	106			<u> </u>				(106.0 - 112.0') Topock - Alluvium Denosits:	Silty sand wi	th gravel	(106.0 - 116.0')	
108. MW-C-VAS- 106-111 (<0.17 tu) 109. MW-G-VAS- 106-111 (<0.17 tu) 110. MW-G-VAS- 106-111 (<0.17 tu) 1112. Molecular SM Deposits 110. MW-G-VAS- 106-111 (<0.17 tu) 1112. Molecular SM Deposits 1113. Molecular SM Deposits 1120. Molecular SM Deposits 113. Molecular SM Deposits 114. Molecular SM Deposits 115. Molecular SM Deposits 116. Molecular SM Deposits 117. Molecular SM Deposits 118. Molecular SM Deposits 119. Molecular SM Deposits 119. Molecular SM Deposits 110. Molecular SM Deposits 110. Molecular SM Deposits 1110. Molecular SM Deposits 1111. Molecular SM Deposits 1120. Molecular Molecular SM Deposits 1120. Molecular Molecular Molecular SM Deposits 1120. Molecular Molecu	-			i I				(SM); brown (7.5YR 5/3); very fine grained to	very coarse	grained,	`Soft drilling, '	
MW-O-VAS- 109-111 (-01.71 u) 1109	107			i I				to subround; little silt; trace clay; wet; weak c	ementation;	gravel	106 to 111 was	
110	-	-		i I				composed of mixed litrolgy mostly metadion	ie		low yleiding	
110	108	1										
110	400			(<0.17 U) 5/11/2019	Topock -							
112	109			08:25		SM						
112	110											
112												
112		120										
		120										
	112			1								
subround; little clay; wet Topock - Alluvium Deposits SM 115								brown (7.5YR 5/3); very fine grained to very c	coarse graine	ed,		
Alluvium Deposits SM Characteristics Alluvium Deposits Characteristics Alluvium Deposits Characteristics Characteristics Alluvium Deposits Characteristics Characteristics Alluvium Deposits Characteristics Characteristics Characteristics Alluvium Deposits Characteristics Charact	113							angular to subround; little granules to mediur subround; little silt; little clay; wet	m pebbles, a	ngular to		
Alluvium Deposits SM Characteristics Alluvium Deposits Characteristics Alluvium Deposits Characteristics Characteristics Alluvium Deposits Characteristics Characteristics Alluvium Deposits Characteristics Characteristics Characteristics Alluvium Deposits Characteristics Charact					Tanaak							
	114				Alluvium	SM						
116	F	_			Deposits							
117	115											
117	116	-										
to very coarse grained, angular to subround; little granules to large pebbles, angular to subround; little clay; wet; weak cementation; iron oxide staining; gravel composed of mixed litholgy mostly metadiorite, some red staining on pebbles Topock - Alluvium Deposits SM SM 120 Topock - Alluvium Deposits SM 120 Topock - Alluvium Deposits SM Topock - Alluvium Deposits Topock - Alluvium Deposits SM Topock - Alluvium Deposits Topock - Alluvium Deposits SM Topock - Alluvium Deposits SM Topock - Alluvium Deposits SM Topock - Alluvium Deposits	110											
cementation; iron oxide staining; gravel composed of mixed litholgy mostly metadiorite, some red staining on pebbles 120 SM Deposits SM SIM Deposits SIM Deposit	117							to very coarse grained, angular to subround;	little granule	s to large	oon unining	water used; 0
L118 120 Topock - Alluvium Deposits SM SM Iost I	L _							cementation; iron oxide staining; gravel comp	posed of mix	ed		recovered; 40
	118	120				SM		nunorgy mostry metadronte, some red staining	a ou bennies			
	L -											
	119											
	-											
		viations	o: 11808 - 1	Inified Sail C	laccification	n Svoton	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	et has = helow around surface are	el = abova	mean and	level CM - a	aroundwater

9/	4RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 7 of	8
Date S					Surface	Elevati	•	Bori	na No.:	MW-Od	
	•	ted: <u>05/12/</u>			Northing			_			
Drilling		<u>Casca</u>			Easting	•	•	_ Client:	PG&E		
Drilling			<u>Drilling</u>		Total De	•	146 ft bgs	_ Project:		W Remedy Ph	
Drill Ri Driller			onic track mo	ount	Borehol		eter: <u>6-12 inches</u> Vater: <u>12.4 ft bgs</u>	Location	1: <u>PG&E</u>	Topock, Needle	es, Calitornia
Drilling		· · · · · · · · · · · · · · · · · · ·	ellmantel / J. F	Pacheco	•		<u> </u>	— Project	Number	RC000753 004	 51
Logge			Willford	donedo	Samplin	-		_ 1 10,000	rvamber.	110000700.00	<i>J</i> 1
Editor:			McGrane		Convert	-		_			
	>			o 5							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
	120			Topock - Alluvium	SM			9		(116.0 - 126.0') Soft drilling	(116.0 - 126.0') 40 gallons of water used; 0 gallons of water recovered; 40 gallons of water lost
125				Deposits	J. J		.0			(125.0')	
126										Artesian flow occured during the removal of 6	(126.0 - 143.0')
 127							(X			inch casing (126.0 - 132.0') Soft drilling	640 gallons of water used; 290 gallons of water recovered; 350 gallons of water
128 129				Topock - Alluvium Deposits	ML		(127.8 - 130.0') Topock - Alluvium Deposits (ML); reddish brown / moderate brown(5YR and very fine to very coarse grained sand, a little granules to medium pebbles, angular t stiff; moderate cementation; iron oxide stair of mixed litholgy mostly metadiorite, some i	4/4); low plan ingular to sub to subangular ning; gravel co	sticity; round; ; moist; omposed	(128.0') to 146' cleared borehole with water	lost
130							pebbles (130.0 - 136.0') Topock - Alluvium Deposits (SM); reddish brown (5YR 5/4) little red (2.5	5YR 5/8); very	fine		
131	120						grained to very coarse grained, angular to s little granules to very large pebbles, angular clay; moist; moderate cementation; iron oxi	r to subround;	ne silt; ; little		
132	<u></u>			Topock -						(132.0 - 136.0') Rough drilling	
133				Alluvium Deposits	SM						
134 135											
136											
137	120		MW-O-VAS- 136-141 (<0.17 U	Topock - Alluvium	SM		(136.0 - 140.0') Topock - Alluvium Deposits reddish brown / moderate brown(5YR 4/4) s very fine grained to very coarse grained, an some silt; little granules to large pebbles, a trace clay; wet to moist; weak cementation;	some red (2.5 gular to subro ngular to subr	YR 4/8); bund; bund;	(136.0 - 140.0') Rough drilling,	
	120		` ppb) 5/11/2019	Deposits	SIVI						
139			14:26								
_											
140											
Abbre	viations	s: USCS = I	Jnified Soil Cl	lassificatio	n System	ո, ft = fe	et, bgs = below ground surface, an	nsl = above	e mean se	a level. GW = o	aroundwater.

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log			She	et: 8 of	8
	Started:					Elevation			Borin	g No.:	MW-Od	
l l	-	ted: <u>05/12/2</u>				(NAD8						
Drilling Drilling		Cascad od: Sonic D			Easting Total D∈	(NAD83	3): <u>N/A</u> 146 ft bgs		Client: Project:	PG&E	N Remedy Ph	200 1
Drill Ri			onic track mo			շրու. e Diame			-		<u>Fopock, Needle</u>	
Driller		Dan O'l					/ater: 12.4 ft bgs		Location.	I OUL	ropook, rioodk	oo, Oamorria
Drilling		·	lmantel / J. P		-		-	Core Barrel	Project N	umber: <u>l</u>	RC000753.005	51
Logge	r:	Grant V	Villford		Samplin	g Interv	al: <u>Continuous</u>		•			
Editor:		Sean M	<u>lcGrane</u>		Convert	ed to W	ell: X Yes	No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS		Soil Description			Drilling Notes	Drilling Fluid
 141 _142_ 				Topock -			(140.0 - 146.0') Topock - reddish brown (2.5YR 4/4 strong cementation; friabl dry through out some slig	l) little red (2.5YR 4/6 le, heavily fractured-p	6); moist to d oulverized, m	ry;	(140.0 - 146.0') Rough drilling, encountered bedrock much shallower than expected, independent QA inspector obsevered core and agreed that	(126.0 - 143.0') 640 gallons of water used; 290 gallons of water recovered; 350 gallons of water lost
_143	120			Competent Bedrock - conglomerate	Э						core was bedrock, sample interval from 141 to 146	
144								_ // _ /			ft. bgs was low yielding	
145											, ,	
5								70)				
146								f Boring at 146.0 'bgs				
147_ 148_ 149_ 150_ 151_ 152_ 153_ 154_												
155												
157												
158												
[[159												
Ahhre	viations	· USCS = H	nified Soil Cl	assification	System	n ft = fe	et. bas = below arou	nd surface ams	I = above	mean se	a level GW = d	rroundwater

Date Starter Date	9/	ARCA	DIS for buil	sign & Consultancy natural and ilt assets		Well Const	ruction Log	S	Sheet: 1 of 7
Salaw Sala								Well ID: N	MW-X-45. MW-X-120
Dilling Mathbook Sonic Dilling Nathing (NADB3); NA		-		9					
Diller Name State Vasquez	_								
Dolling Ask Congress Lampy Borehole Diameter 10-12 inches Dolling Ask Congress Lampy Dolling Ask Congress Dolling Ask D	_			-				-	
Anthony Mack						- '		Location: <u>PG&E</u>	Topock, Needles, California
Serior S	_								
Total Depth: 127 ft bgs			-					Project Numbe	r: RC000753.0051
Section Sect									
(0.7-32/2* PVC Sent 40 Classing -0.0-96 8) 2*	I otal L	peptn:			1	vveil Completion:	☐ Flusn☐ Stick-up		
Sch 40 Casing Sch 40	Depth (ft)		Geologic Formation	USCS	USCS Class				
2 - 2 - 3 - 3 - 4 - 4 - 5 - 5 - 6 - 6 - 7 - 7 - 8 - 8 - 9 - 100 -						Sch 40 Casing	(0.0 - 99.8') 2" PVC Sch 40 Casing		
3 - 4 - 4 - 5 - 5 - 6 - 6 - 7 - 7 - 8 - 8 - 7 - 9 - 10 - 10 - 10 - 10 - 10 - 10 - 10	_ 1 _								
3 - 4 - 4 - 5 - 5 - 6 - 6 - 7 - 7 - 8 - 8 - 7 - 9 - 10 - 10 - 10 - 10 - 10 - 10 - 10					1				
A - 4 - 5 - 6 - 7 - 7 - 8 - 8 - 7 - 7 - 8 - 8 - 7 - 7	_ 2 _								
A - 4 - 5 - 6 - 7 - 7 - 8 - 8 - 7 - 7 - 8 - 8 - 7 - 7					11				
5 - 6 - 7 - 7 - 8 - 8 - 7 - 8 - 9 - 9 - 10 - 10 - 10 - 10 - 10 - 10 -	_ 3 _								
5 - 6 - 7 - 7 - 8 - 8 - 7 - 8 - 9 - 9 - 10 - 10 - 10 - 10 - 10 - 10 -									
Sentorite Sent	_ 4 _								
Sentorite Sent									
Sentorite Sent	5								
NR									
NR	$\begin{bmatrix} 6 \end{bmatrix}$								
8 - 8 - 9 - 9 - 10 - 10 - 10 - 10 - 10 - 10 -									
8 - 8 - 9 - 9 - 10 - 10 - 10 - 10 - 10 - 10 -	7								
Cement 6% Bentorite NR 10									
Cement 6% Bentorite NR 10	_ 8 _					(3 2 - 17 1') Portland			
Borehole Settlement						Cement 6%	(0.0 - 17.0') 12.0"		
10				NR		Bentonite	Borehole		
Centralizer — (3.2 - 17.1) 60.7 (3.2 - 17.1) 100 gallons (65%) Note: Type I, II and V and Benseal 11 — 12 — 13 — (17.0 - 127.0) 10.0° (17.1 - 22.0) 4 bags (17%) Note: Purregold Medium Chips NR									
						(9.5 - 10.5')			
11	10					Centralizer —			(3.2 - 17.1') 100 gallons (65%) Note: Type I. II and V and Benseal
12	۲. ۱								,
	12								
					Π				
12-17 (<0.033 U ppb) 6/25/2019 15:10 16	13								
12-17 (<0.033 U ppb) 6/25/2019 15:10 16					$\parallel \parallel \parallel$				
	14	12-17							
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	15								
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	17				\				
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	18				$ \setminus $				
19 	- -			NR	X	(17.1 - 22.0')			(17.1 - 22.0') 4 bags (17%)
	19				/\	Bentonite seal chips	Bololiolo	pags	Note. Puregola iviedium Unips
	├				/ \				
		. ,	1		<u> </u>			L	1 1 0 11

9/	ARCA	DIS Design & C for natural built asset	Consultancy Land S		Well Const	ruction Log	Sheet: 2 of 7			
		08/10/2019			_Surface Elevation:	N/A	Well ID: N	MW-X-45, MW-X-120		
	-	08/12/2019			_Shallow Well Elevation:					
Drilling		Cascade			_ Deep Well Elevation:	N/A	Client: PG&E			
_		Stave Veggue			_Northing (NAD83):	N/A N/A		GW Remedy Phase 1 Topock, Needles, California		
Drilling		Steve Vasque O. Flores / L. /		1	_Easting (NAD83): _Borehole Diameter:	10-12 inches	Location. <u>PG&E</u>	Topock, Needles, California		
Logge		Anthony Mack			Water Level Start:	9.6 ft bgs	Project Numbe	r: RC000753.0051		
Editor:		Grant Wilford			Development End Date:	•		11.110000100.0001		
Total [127 ft bgs			Well Completion:	☐ Flush☐ Stick-up				
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed		
 21 22					(0.0 - 24.2') 2" PVC — Sch 40 Casing (17.1 - 22.0') — Bentonite seal chips	— (0.0 - 99.8') 2" PVC Sch 40 Casing	(17.1 - 22.0') 3.41 bags	(17.1 - 22.0') 4 bags (17%) Note: Puregold Medium Chips		
22	MW-X-VAS- 32-37 (<0.033 U ppb) 6/26/2019 11:45	Topock - Fill Topock - Fluvial Deposits	NR SP		(24.2 - 44.2') 2" Sch—40 PVC (20-slot) Screen (22.0 - 48.5') Cemex—#3 MESH (8x10)		(22.0 - 48.5') 26.5 bags	(22.0 - 48.5') 31 bags (17%) Note: Lapis Lustre Sand		

9/-	ARCA	DIS Design & for natura built asset	Consultancy al and ts		Well Consti	ruction Log	S	Sheet: 3 of 7		
Date Completed: 08/12 Drilling Co.: Casca Drilling Method: Sonic Driller Name: Steve Drilling Asst: O. Flo Logger: Antho Editor: Grant		08/10/2019 08/12/2019 Cascade Sonic Drilling Steve Vasque O. Flores / L. Anthony Mac Grant Wilford	ez Amaya k		Surface Elevation: N/A Shallow Well Elevation: N/A Deep Well Elevation: N/A Northing (NAD83): N/A Easting (NAD83): N/A Borehole Diameter: 10-12 inches Water Level Start: 9.6 ft bgs Development End Date: N/A Well Completion: Flush Stick-up		Client: PG&E Project: Final (Well ID: MW-X-45, MW-X-120 Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, California Project Number: RC000753.0051		
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed		
41		Topock - Fluvial Deposits Topock - Fluvial Deposits	SW		(22.0 - 48.5') Cemex	(0.0 - 99.8') 2" PVC Sch 40 Casing	(22.0 - 48.5') 26.5 bags	(22.0 - 48.5') 31 bags (17%) Note: Lapis Lustre Sand		
495051525354555657585960			NR		(48.5 - 96.4') Bentonite seal chips	(17.0 - 127.0') 10.0" Borehole	(48.5 - 96.4') 34.9 bags	(48.5 - 96.4') 37 bags (6%) Note: Puregold Medium Chips		

9/	4RC4	DIS Design for natural built ass	& Consultancy ral and sets		Well Const	ruction Log	;	Sheet: 4 of 7
Date (Drilling Driller Drilling Logge Editor	g Co.: g Method: Name: g Asst: er:	08/10/2019 08/12/2019 Cascade Sonic Drilling Steve Vasquez O. Flores / L. Amaya Anthony Mack Grant Wilford 127 ft bgs			Surface Elevation:Shallow Well Elevation:Deep Well Elevation:Northing (NAD83):Easting (NAD83):Borehole Diameter:Water Level Start:Development End Date:Well Completion:	N/A N/A N/A 10-12 inches 9.6 ft bgs	Client: PG&I Project: Final Location: PG&I	MW-X-45, MW-X-120 E GW Remedy Phase 1 E Topock, Needles, California er: RC000753.0051
#dd ##################################	MW-X-VAS 71-76 (<0.033 U ppb) 6/27/2019 08:52	Geologic	SDSU SOSU NR	USCS	·	(0.0 - 99.8') 2" PVC Sch 40 Casing (17.0 - 127.0') 10.0" Borehole	Calculated Material Volumes (48.5 - 96.4') 34.9 bags	Material Volumes Installed (48.5 - 96.4') 37 bags (6%) Note: Puregold Medium Chips
_	1							

9/	ARCA	DIS Design & C for natura built asset	Consultancy Il and ts		Well Const	ruction Log	5	Sheet: 5 of 7
Date S		08/10/2019			_Surface Elevation:	N/A	Well ID: N	//W-X-45, MW-X-120
	-	08/12/2019			_Shallow Well Elevation:	N/A		
Drilling	Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
Drilling	Method:	Sonic Drilling			_Northing (NAD83):	N/A	•	GW Remedy Phase 1
Driller I	Name:	Steve Vasque	Z		_Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, California
Drilling		O. Flores / L.			_Borehole Diameter:	<u>10-12 inches</u>		
Logger	:	Anthony Macl	<		_Water Level Start:	9.6 ft bgs	Project Number	r: RC000753.0051
Editor:		Grant Wilford			_Development End Date:			
Total D	epth:	127 ft bgs			_Well Completion:	☐ Flush☐ Stick-up	ı	I
Depth (ft)	Groundwate Sample ID			USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
81			NR		(84.5 - 85.5') — Centralizer (48.5 - 96.4') Bentonite seal chips	(0.0 - 99.8') 2" PVC Sch 40 Casing	(48.5 - 96.4') 34.9 bags	(48.5 - 96.4') 37 bags (6%) Note: Puregold Medium Chips
97 98 99 100		Topock - Fluvial Deposits	sw		(96.4 - 124.0') Cemex #3 MESH — (8x10)		(96.4 - 124.0') 28.4 bags	(96.4 - 124.0') 35 bags (23%) Note: Lapis Lustre Sand

9/	ARCA	DIS Design & for natura built asset	Consultancy al and ets		Well Const	ruction Log	Sheet: 6 of 7			
Date S	tarted:	08/10/2019			_Surface Elevation:	N/A	Well ID: N	//W-X-45, MW-X-120		
Date C	completed:	08/12/2019			_Shallow Well Elevation:	N/A		7 40, MIV X 120		
Drilling	Co.:	Cascade			_Deep Well Elevation:	N/A	_ Client: PG&E			
Drilling	Method:	Sonic Drilling			_Northing (NAD83):	N/A	_ Project: Final 0	GW Remedy Phase 1		
Driller I	Name:	Steve Vasque	ez		_Easting (NAD83):	N/A	_ Location: <u>PG&E</u>	Topock, Needles, California		
Drilling	Asst:	O. Flores / L.	Amaya		_Borehole Diameter:	10-12 inches				
Loggei	r:	Anthony Mac	k		_Water Level Start: 9.6 ft bgs		_ Project Number	:: RC000753.0051		
Editor:		Grant Wilford			_Development End Date:	N/A	_			
Total D	epth:	127 ft bgs			_Well Completion:	☐ Flush☐ Stick-up				
Depth (ft)	Groundwat Sample ID		USCS	USCS	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed		
101 102 103 104 105 106 107		Topock - Fluvial Deposits	SW			(99.8 - 119.8') 2" PVC Sch 40 Screen				
		Topock - Fluvial Deposits	GW							
108 109 110 111 111	MW-X-VAS- 107-112 (<0.033 U ppb) 6/27/2019 15:04		SM		(96.4 - 124.0') Cemex #3 MESH (8x10)	(17.0 - 127.0') 10.0" Borehole	(96.4 - 124.0') 28.4 bags	(96.4 - 124.0') 35 bags (23%) Note: Lapis Lustre Sand		
113 114 115 116	MW-X-VAS- 112-117 (<0.031 U ppb) 6/28/2019 09:56	Deposits	GW							
		Topock - Alluvium Deposits	GW-GN							
117 118 119 		Topock - Alluvium Deposits	SM							

9/	4RC4	DIS Design & for natura built asse	Consultancy al and ts		Well Construction Log	;	Sheet: 7 of 7
Date S	Started:	08/10/2019			Surface Elevation: N/A	Well ID: N	MW-X-45, MW-X-120
Date 0	Completed:	08/12/2019			_Shallow Well Elevation: N/A		77 70, MIVI X 120
Drilling	g Co.:	Cascade			_Deep Well Elevation: <u>N/A</u>	Client: PG&E	Ξ
Drilling	Method:	Sonic Drilling			_Northing (NAD83): N/A	Project: <u>Final</u>	GW Remedy Phase 1
Driller	Name:	Steve Vasque	Z		_Easting (NAD83): N/A	Location: <u>PG&E</u>	Topock, Needles, California
Drilling	y Asst:	O. Flores / L.	<u>Amaya</u>		_Borehole Diameter: <u>10-12 inches</u>		
Logge		Anthony Macl			_Water Level Start: 9.6 ft bgs	Project Numbe	r: RC000753.0051
Editor:		Grant Wilford			_Development End Date: N/A		
Total [Depth:	127 ft bgs	1		_Well Completion:		T
Depth (ft)	Groundwat Sample II		USCS	USCS	Well Construction	Calculated Material Volumes	Material Volumes Installed
121 122 123		Topock - Alluvium Deposits	SM		(120.5 - 121.5') ————————————————————————————————————	(96.4 - 124.0') 28.4 bags	(96.4 - 124.0') 35 bags (23%) Note: Lapis Lustre Sand
				4.:1.:	(124.0 - 125.0') Bentonite seal chips	(124.0 - 125.0') 0.8 bags	(124.0 - 125.0') 1 bags (25%) Note: Puregold Medium Chips
125				$ \setminus $	0.00		
126	-		NR		(405.0.407.0)		
126	•			$ / \setminus $	(125.0 - 127.0') (125.0 - 127.0') (125.0 - 127.0') (125.0 - 127.0')		Note: Formation material that settled from the water column in the casing
127	-			/ \	0.000		
					127.0 'bgs.		
5138 5138 7139 6140							

9/	ARCA	DIS Design & C for natura built asset	Consultancy l and ts		Well Const	ruction Log	5	Sheet: 1 of 21
Date S	tarted:	06/20/2019			_Surface Elevation:	N/A	Well ID: N	//W-X-170, MW-X-320
		07/31/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
		Sonic Drilling			_Northing (NAD83):	N/A		GW Remedy Phase 1
Driller N		E. Ramos / S.	-		_Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, California
Drilling		O. Flores / L.	-	1	_Borehole Diameter:	6-12 inches	<u> </u>	
Logger					_Water Level Start:	9.6 ft bgs	Project Numbei	:: RC000753.0051
Editor:					_Development End Date:			
Total D	epth:	417 ft bgs			_Well Completion:	☐ Flush☐ Stick-up	1	
Depth (ft)	Groundwat Sample ID		epoo Sosn	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
_ 1					(3.0 - 5.0') Bentoniteseal chips	(0.0 - 300.8') 2" PVC Sch 80 Casing	(3.0 - 5.0') 2.06	(3.0 - 5.0') 7 (240%) Note: Puregold Medium Chips, installed due to void and heat of
_ 5 6 7		Topock - Fill	SP		(5.0 - 17.0') Portland Cement 6% Bentonite	(0.0 - 42.0') 12.0" Borehole	(5.0 - 17.0') 66.5 gallons	hydration concerns (5.0 - 17.0') 100 gallons (50%) Note: Type I, II and V and Benseal
13	MW-X-VAS- 12-17 (<0.033 U ppb) 6/25/2019 15:10		NR					
18 18 19		Topock - Fill	SW	* * * * * * * * * * * * * * * * * * *	(17.0 - 118.2') — Bentonite seal chips Centralizer		(17.0 - 118.2') 78.82 bags	(17.0 - 118.2') 77 bags (-2%) Note: Puregold Medium Chips
20	intinun. II	SCS - Unified		```````	(19.5 - 20.5')	- h alayy amayyad ayyafi i i i i		pool lovel CW = groundwater

9/	ARCA	DIS	Design & C for natura built asset	Consultancy Il and ts		Well Const	ruction Log	5	Sheet: 2 of 21
Date C Drilling Drilling Driller I Drilling Loggel Editor:					_ Surface Elevation: _ Shallow Well Elevation: _ Deep Well Elevation: _ Northing (NAD83): _ Easting (NAD83): _ Borehole Diameter: _ Water Level Start: _ Development End Date: _ Well Completion:	N/A N/A N/A N/A N/A N/A 6-12 inches 9.6 ft bgs N/A Flush Stick-up	Client: PG&E Project: Final (Location: PG&E	GW Remedy Phase 1 E Topock, Needles, California r: RC000753.0051	
Depth (ft)	Groundwat Sample ID	er)	Geologic Formation	USCS Code	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
21	MW-X-VAS 32-37 (<0.033 U ppb) 6/26/2019 11:45	Тор	opock - Fluvial leposits	sw		(19.5 - 20.5') Centralizer (0.0 - 150.8') 2" PVC Sch 80 Casing (17.0 - 118.2') Bentonite seal chips	— (0.0 - 300.8') 2" PVC Sch 80 Casing — (0.0 - 42.0') 12.0" Borehole	(17.0 - 118.2') 78.82 bags	(17.0 - 118.2') 77 bags (-2%) Note: Puregold Medium Chips

ARCA	DIS Design & C for natural built asset	Consultancy l and s		Well Const	ruction Log	5	oject: Final GW Remedy Phase 1 potation: PG&E Topock, Needles, California oject Number: RC000753.0051 Salculated rial Volumes Installed		
Drilling Co.:	Orilling Co.: Cascade Orilling Method: Sonic Drilling Orilling Name: E. Ramos / S. Vasquez Orilling Asst: O. Flores / L. Amaya Origger: GJ / SM / CS Grant Willford			Surface Elevation:Shallow Well Elevation:Deep Well Elevation:Northing (NAD83):Easting (NAD83):Borehole Diameter:Water Level Start:Development End Date:Well Completion:	N/A N/A Client: PG&E N/A Project: Final GW Remedy Phase 1 N/A Location: PG&E Topock, Needles, Califo 6-12 inches 9.6 ft bgs Project Number: RC000753.0051				
Groundwat Sample IE		NSCS Code	USCS Class	Well C	onstruction	Calculated Material Volumes			
41	Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits	NR SW SP		(17.0 - 118.2') — Bentonite seal chips	— (0.0 - 300.8') 2" PVC Sch 80 Casing _ (0.0 - 42.0') 12.0" Borehole _ (42.0 - 324.0') 10.0" Borehole	(17.0 - 118.2') 78.82 bags	(17.0 - 118.2') 77 bags (-2%) Note: Puregold Medium Chips		

9/	RCA	DIS Designation in the built	n & Consultancy itural and assets		Well Const	ruction Log	;	17.0 - 118.2') 78.82 (17.0 - 118.2') 77 bags (-2%)		
Date St		06/20/2019			_Surface Elevation:	N/A	Well ID: I	WW-X-170. MW-X-320		
	-	07/31/2019			_Shallow Well Elevation:	N/A				
Drilling		Cascade			Deep Well Elevation:	N/A				
_		Sonic Drillin	-		Northing (NAD83):	N/A		-		
Driller N		E. Ramos /	-		Easting (NAD83):	N/A	Location: <u>PG&I</u>	<u> – Lopock, Needles, California</u>		
Drilling		O. Flores / I		1	Borehole Diameter:	6-12 inches	Dund not Novele	D0000750 0054		
Logger Editor:	•	GJ / SM / C			Water Level Start: Development End Date:	9.6 ft bgs	Project Numbe	r: RC000753.0051		
Editor. Total D	epth:	417 ft bgs	iru		Development End Date. Well Completion:	☐ Flush☐ Stick-up				
ے		igic	(O, n)	(O, m)						
Depth (ft)	Groundwat Sample ID		USCS	USCS		onstruction	Calculated Material Volumes			
61 62		Topock · Fluvial Deposits	SW		(0.0 - 150.8') 2" — PVC Sch 80 Casing	— (0.0 - 300.8') 2" PVC Sch 80 Casing				
_ 63 _ _ 63 _		Topock Fluvial Deposits	SP	0 0 0 0 0			9			
64	MW-X-VAS- 71-76 (<0.033 U ppb) 6/27/2019 08:52	Topock Fluvial Deposits	SW		(69.5 - 70.5') — Centralizer (17.0 - 118.2') Bentonite seal chips	(42.0 - 324.0') 10.0" Borehole	(17.0 - 118.2') 78.82 bags	(17.0 - 118.2') 77 bags (-2%) Note: Puregold Medium Chips		
77 78 79		Topock Fluvial Deposits	. sw							
80										

PARCADIS Design & Consultancy for natural and built assets						Well Const	ruction Log		Well ID: MW-X-170, MW-X-320 Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, California Project Number: RC000753.0051 Calculated Material Volumes Installed Material Volumes (17.0 - 118.2') 78.82 bags (17.0 - 118.2') 77 bags (-2%) Note: Puregold Medium Chips		
	Date Started: 06/20/2019					_Surface Elevation:	N/A	Well ID:	MW-X-170. MW-X-320		
	ompleted:		19			_Shallow Well Elevation:	N/A				
Drilling		Cascade				_Deep Well Elevation:	N/A				
_	Method:		-			_Northing (NAD83):	N/A	•	-		
Driller N		E. Ramos		-	ez	_Easting (NAD83):	N/A	Location: <u>PG</u>	S&E Topock, Needles, California		
Drilling		O. Flores		naya		_Borehole Diameter:	6-12 inches				
Logger		GJ/SM				_Water Level Start:	9.6 ft bgs	Project Num	ber: RC000753.0051		
Editor:		Grant Wil				_Development End Date:					
Total D	eptn:	417 ft bgs				_Well Completion:	☐ Flush☐ Stick-up				
Depth (ft)	Groundwat Sample ID			Code	USCS Class		onstruction	Calculated Material Volumes			
81 82 83		Topoc Fluvi Depos	al S	SW		(0.0 - 150.8') 2" — PVC Sch 80 Casing	— (0.0 - 300.8') 2" PVC Sch 80 Casing	9			
84 85 86 87		Topoc Fluvi Depos	al S	SW			38				
88 89 90 91 91		Topoc Fluvi Depos	al SV	√-SM		(17.0 - 118.2') — Bentonite seal chips	(42.0 - 324.0') 10.0" Borehole				
93											
-		Topod	al GV	√-GM							
94		Depos									
-		Topod Fluvi	al 📗	SP							
95		Depos			• • •						
		Topod	ck- al {	SW							
96		Depos	sits								
L				NR	$ \setminus $						
97											
98											
		Topod		SW							
99		Depos		J V V							
100					* * * * * * * * * * * * * * * * * * * *						

9/	ARCA	DIS Designation of the built	gn & Consultancy atural and assets		Well Const	ruction Log	S	Sheet: 6 of 21		
Date S		06/20/2019			_Surface Elevation:	N/A	Well ID: N	//W-X-170, MW-X-320		
		07/31/2019)		_Shallow Well Elevation:	N/A				
Drilling	Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E			
Drilling	Method:	Sonic Drilling	ng		_Northing (NAD83):	N/A	Project: Final 0	GW Remedy Phase 1		
Driller N	Name:	E. Ramos /	S. Vasqı	uez	_Easting (NAD83):	N/A	Location: PG&E	Topock, Needles, California		
Drilling	Asst:	O. Flores /	L. Amaya	1	_Borehole Diameter:	6-12 inches				
Logger		GJ/SM/	CS		_Water Level Start:	9.6 ft bgs	Project Number	r: RC000753.0051		
Editor:	itor: Grant Willford			_Development End Date:	N/A					
Total D	epth:	417 ft bgs			_Well Completion:	☐ Flush☐ Stick-up				
Depth (ft)	Groundwat Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed		
101 102 103 		Topock Fluvial Deposit	SW		(0.0 - 150.8') 2" — PVC Sch 80 Casing	— (0.0 - 300.8') 2" PVC Sch 80 Casing	9			
 105		Topock Fluvial Deposit	SW			.0				
106 107		Topock Fluvial Deposit	SW							
108		Topock Fluvial Deposit	GW							
109 110 111 112	MW-X-VAS- 107-112 (<0.033 U ppb) 6/27/2019 15:04	Topock Fluvial Deposit	SM		(17.0 - 118.2') Bentonite seal chips (103.0 - 118.2') Bentonite seal chips	(42.0 - 324.0') 10.0" Borehole	(17.0 - 118.2') 78.82 bags (103.0 - 118.2') 10.59 bags	(17.0 - 118.2') 77 bags (-2%) Note: Puregold Medium Chips (103.0 - 118.2') 12 bags (13%) Note: Puregold Medium Chips		
 113 114	MW-X-VAS-	Topock Fluvial Deposit	GW			II				
115 115 116	112-117 (<0.033 U ppb) 6/28/2019 09:56	Topock Fluvial Deposit	SM							
117 118 119 120_		Topock Alluviun Deposit	n SM		(118.2 - 146.8') Bentonite seal pellets Centralizer (119.5 - 120.5')		(118.2 - 146.8') 22.9 buckets	(118.2 - 146.8') 25 buckets (9%) Note: Pel-Plug (TR30) 3/8"		

9/	ARCA	DIS Desi for n built	n & Consultancy atural and assets		Well Const	ruction Log	;	Sheet: 7 of 21
Date S Date C Drilling	ompleted:	06/20/2019 07/31/2019 Cascade			_Surface Elevation: _Shallow Well Elevation: _Deep Well Elevation:	N/A	Well ID: I	MW-X-170, MW-X-320
_					•			
-		Sonic Drilling		107	_Northing (NAD83):	N/A N/A		GW Remedy Phase 1 Topock, Needles, California
Driller N Drilling		E. Ramos / O. Flores /	-		_Easting (NAD83): _Borehole Diameter:	6-12 inches	Location. PG&	<u> Topock, Needles, California</u>
_		GJ/SM/			_Borenole Diameter. Water Level Start:	9.6 ft bgs	— Project Numbe	r: RC000753.0051
Logger Editor:	•	Grant Willfo			_ vvater Lever Start. _Development End Date:		r roject Numbe	1. 1.00007 93.0031
Total D	epth:	417 ft bgs				☐ Flush☐ Stick-up		
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
		Topock Alluvium Deposit:	SM		(119.5 - 120.5')		(118.2 - 146.8') 22.9 buckets	(118.2 - 146.8') 25 buckets (9%) Note: Pel-Plug (TR30) 3/8"

9/	ARCA	DIS Design & for natura built asse	Consultancy al and its		Well Consti	ruction Log	S	Sheet: 8 of 21
Date S		06/20/2019			_Surface Elevation:	N/A	Well ID: N	/W-X-170, MW-X-320
	•	07/31/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: <u>PG&E</u>	
		Sonic Drilling			_Northing (NAD83):	N/A	•	GW Remedy Phase 1
Driller N		E. Ramos / S	-		Easting (NAD83): N/A		Location: <u>PG&E</u>	Topock, Needles, California
Drilling		O. Flores / L.	-		_Borehole Diameter:	6-12 inches		D
Logger		GJ/SM/CS			_Water Level Start:	9.6 ft bgs	Project Number	:: RC000753.0051
Editor: Total D		Grant Willford 417 ft bgs			_Development End Date: _Well Completion:	N/A Stick-up	<u> </u>	
Total D	ериі.				_ weii Completion.			
Depth (ft)	Groundwate Sample ID		Code	USCS		onstruction	Calculated Material Volumes	Material Volumes Installed
141					(0.0 - 150.8') 2" — PVC Sch 80 Casing (118.2 - 146.8') Bentonite seal pellets	— (0.0 - 300.8') 2" PVC Sch 80 Casing	(118.2 - 146.8') 22.9 buckets	(118.2 - 146.8') 25 buckets (9%) Note: Pel-Plug (TR30) 3/8"
147	MW-X-VAS- 152-157 (<0.17 U ppb 6/29/2019 09:19		SM		(150.8 - 170.8') 2" ———————————————————————————————————	(42.0 - 324.0') 10.0" Borehole	(146.8 - 174.0') 26.6 bags	(146.8 - 174.0') 34 bags (28%) Note: Lapis Lustre Sand
157 158 159 			NR					pool lovel. CW = groundwater

9/	4RC4	DIS Design 8 for natur built ass	Consultancy ral and ets		Well Const	ruction Log	5	Sheet: 9 of 21
Date S	Started:	06/20/2019			_Surface Elevation:	N/A	Well ID: N	MW-X-170, MW-X-320
	-	07/31/2019			_Shallow Well Elevation:	N/A		
Drilling	-	Cascade			_Deep Well Elevation:	N/A	Client: <u>PG&E</u>	
_		Sonic Drilling			_Northing (NAD83):	N/A		GW Remedy Phase 1
	Name:	E. Ramos / S	-		_Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, California
_	g Asst:	O. Flores / L.			_Borehole Diameter:	6-12 inches		
Logge		GJ/SM/CS			_Water Level Start:	9.6 ft bgs	Project Number	r: RC000753.0051
Editor	: Depth:	Grant Willford 417 ft bgs	1		_Development End Date: _Well Completion:	☐ Flush☐ Stick-up		
I Otal I	Берин. Т		I		_ Well Completion.			
Depth (ft)	Groundwa Sample II		USCS	USCS		onstruction	Calculated Material Volumes	Material Volumes Installed
		Topock - Alluvium Deposits Topock - Alluvium Deposits	NR CL		(150.8 - 170.8') 2" — Sch 80 PVC (20-slot) Screen (146.8 - 174.0') Cemex #3 MESH (8x10) (170.5 - 172.0') Centralizer (170.8 - 173.2') Sump and End Cap	(42.0 - 324.0') 10.0" Borehole	(146.8 - 174.0') 26.6 bags	(146.8 - 174.0') 34 bags (28%) Note: Lapis Lustre Sand
175 176 177 178 179		Topock - Alluvium Deposits Topock - Alluvium Deposits	SM GP		(174.0 - 297.4') Bentonite seal pellets		(174.0 - 297.4') 103.3 buckets	(174.0 - 297.4') 119 buckets (15%) Note: Pel-Plug (TR30) 3/8"
180	<u></u>			<u>/ \</u>				

9	4RC4	DIS for buil	i <mark>ign & Consultancy</mark> natural and It assets		Well Const	ruction Log	;	Sheet: 10 of 21
	Started:	06/20/2019			_Surface Elevation:	N/A	Well ID: N	MW-X-170, MW-X-320
	-	07/31/2019	9		_Shallow Well Elevation:	N/A		
Drilling	-	Cascade			_Deep Well Elevation:	N/A	Client: <u>PG&E</u>	
	-	Sonic Drilli	-		Northing (NAD83):	N/A	•	GW Remedy Phase 1
	Name:	E. Ramos	-		_Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, California
	g Asst:	O. Flores /		3	_Borehole Diameter: Water Level Start:	6-12 inches	— — — — — — — — — — — — — — — — — — —	D0000750 0054
Logge Editor		GJ / SM / Grant Willf			vvaler Level Start: Development End Date:	9.6 ft bgs	Project Numbe	r: RC000753.0051
	Depth:	417 ft bgs	oru		Development End Date. Well Completion:	☐ Flush☐ Stick-up		
Total	 		1		_ Well Completion.	raon otox ap	1	
Depth (ft)	Groundwat Sample II		USCS	USCS	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
			NR			— (0.0 - 300.8') 2" PVC Sch 80 Casing		
181	MW-X-VAS 182-187 (<0.17 U ppl 6/29/2019 15:28	Воросі	n SM			PVC 3cli ou Cashig	9	
188 189	-	Topock Alluviur Deposi Topock Alluviur Deposi	m SC		40			
190		Alluviur	n Sivi	V/////	(174.0 - 297.4') Bentonite seal	(42.0 - 324.0') 10.0" Borehole	(174.0 - 297.4') 103.3	(174.0 - 297.4') 119 buckets (15%) Note: Pel-Plug (TR30) 3/8"
 191_		Deposi Topock Alluviur Deposi	n CL		pellets	Bolchole	buckets	Note. Per-Flug (1 Not) 3/6
 192_	-	Topock Alluviur Deposi	m MH		·			
<u>.</u> -	1	Ворозі	-					
193 194 195 196 197		Topock Alluviur Deposi	m ML					
198_ 	_	Topock Alluviur Deposi	n ML					
L		Topock Alluviur						
200		Deposi	is CL					

9/	ARCA	DIS Design for nat built as	& Consultancy ural and ssets		Well Const	ruction Log	;	Sheet: 11 of 21
	Started:	06/20/2019			_Surface Elevation:	N/A	Well ID: N	MW-X-170, MW-X-320
		07/31/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
_		Sonic Drilling			_Northing (NAD83):	N/A	•	GW Remedy Phase 1
	Name:	E. Ramos / S	-		_Easting (NAD83):	N/A	Location: <u>PG&</u> E	Topock, Needles, California
Drilling		O. Flores / L		1	_Borehole Diameter:	6-12 inches		D0000750 0054
Logge		GJ/SM/C			_Water Level Start:	9.6 ft bgs	Project Numbe	r: RC000753.0051
Editor: Total [Grant Willfor 417 ft bgs	a		_Development End Date: _Well Completion:	☐ Flush☐ Stick-up		
Total	Јерин.		1					
Depth (ft)	Groundwat Sample ID		nscs Code	USCS	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
 201		Topock - Alluvium Deposits	CL			— (0.0 - 300.8') 2" PVC Sch 80 Casing		
203 _								
_204								
205						40		
_206								
_207								
_208								
209	MW-X-VAS-							
210	207-212 (<0.17 U ppb 6/30/2019)			(174.0 - 297.4')	(42.0 - 324.0') 10.0"	(174 0 - 297 4') 103 3	(174.0 - 297.4') 119 buckets (15%)
_210	13:28				Bentonite seal pellets	Borehole	buckets	Note: Pel-Plug (TR30) 3/8"
_211		Topock - Alluvium	SM					
		Deposits			•			
212								
213								
 214								
_215								
_ 217								
218								
_219								
220								

9/	ARCA	DIS Design & for natura built asset	Consultancy al and ets		Well Const	ruction Log		Sheet: 12 of 21
I .		06/20/2019			_Surface Elevation:	N/A	Well ID: I	MW-X-170, MW-X-320
		07/31/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: <u>PG&</u> l	
		Sonic Drilling			_Northing (NAD83):	N/A	•	GW Remedy Phase 1
Driller I		E. Ramos / S	-		_Easting (NAD83):	N/A	Location: <u>PG&</u> l	E Topock, Needles, California
Drilling		O. Flores / L.			_Borehole Diameter:	6-12 inches		D0000750 0054
Logge		GJ/SM/CS			_Water Level Start:	9.6 ft bgs	Project Numbe	er: RC000753.0051
Editor:		Grant Willford	1		_Development End Date:		<u> </u>	
Total D	Jepin:	417 ft bgs			_Well Completion:	☐ Flush☐ Stick-up	T	T
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
		Topock - Alluvium Deposits Topock - Alluvium Deposits	SM		(229.5 - 230.5') — Centralizer (174.0 - 297.4') Bentonite seal pellets	— (0.0 - 300.8') 2" PVC Sch 80 Casing — (42.0 - 324.0') 10.0" Borehole	(174.0 - 297.4') 103.3 buckets	(174.0 - 297.4') 119 buckets (15%) Note: Pel-Plug (TR30) 3/8"

9/	ARC4	DIS Design for na built a	n & Consultancy stural and assets		Well Consti	ruction Log	:	Sheet: 13 of 21
Driller Name: Drilling Asst: Logger: Editor:		Cascade Sonic Drilling E. Ramos / S. Vasquez O. Flores / L. Amaya GJ / SM / CS Grant Willford 417 ft bgs			Surface Elevation: Shallow Well Elevation: Deep Well Elevation: Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Date: Well Completion:	N/A N/A N/A N/A N/A N/A 6-12 inches 9.6 ft bgs N/A Flush Stick-up	Client: PG&I Project: Final Location: PG&I	WW-X-170, MW-X-320 E GW Remedy Phase 1 E Topock, Needles, California r: RC000753.0051
Depth (ft)			USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
241242243	MW-X-VAS	Topock - Alluvium Deposits	SM			— (0.0 - 300.8') 2" PVC Sch 80 Casing		
248 249 250 251 252 253 254	245-255 (<0.033 U ppb) 7/1/2019 13:35	Topock - Alluvium Deposits	SM		(174.0 - 297.4') Bentonite seal pellets	(42.0 - 324.0') 10.0" Borehole	(174.0 - 297.4') 103.3 buckets	(174.0 - 297.4') 119 buckets (15%) Note: Pel-Plug (TR30) 3/8"
255 256 257 258 259		Topock - Alluvium Deposits	SM					
			SM					

9/-	ARCA	DIS Design & for natura built asset	Consultancy al and ets		Well Const	ruction Log	:	Sheet: 14 of 21
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger: Editor:		06/20/2019 07/31/2019 Cascade Sonic Drilling E. Ramos / S. Vasquez O. Flores / L. Amaya GJ / SM / CS Grant Willford 417 ft bgs			Well Consti _Surface Elevation: _Shallow Well Elevation: _Deep Well Elevation: _Northing (NAD83): _Easting (NAD83): _Borehole Diameter: _Water Level Start: _Development End Date: _Well Completion:	N/A N/A N/A N/A N/A N/A 6-12 inches 9.6 ft bgs	Client: PG&i Project: Final Location: PG&i	MW-X-170, MW-X-320
Depth (ft)			USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
		Topock - Alluvium Deposits	SM			— (0.0 - 300.8') 2" PVC Sch 80 Casing		
270271272273273274275276277278279280		Topock - Alluvium Deposits	SM		(269.5 - 270.5') — Centralizer (174.0 - 297.4') Bentonite seal — pellets	(42.0 - 324.0') 10.0" Borehole	(174.0 - 297.4') 103.3 buckets	(174.0 - 297.4') 119 buckets (15%) Note: Pel-Plug (TR30) 3/8"

ARCADIS Design & Consultancy for natural and built assets				Well Consti	ruction Log	S	Sheet: 15 of 21		
Pate Started: Pate Complete Prilling Co.: Prilling Method: Prilling Name: Prilling Asst: Prillin	Cascade Sonic Drilling E. Ramos / S O. Flores / L. GJ / SM / CS	07/31/2019 Cascade Sonic Drilling E. Ramos / S. Vasquez O. Flores / L. Amaya GJ / SM / CS Grant Willford 417 ft bgs		Surface Elevation: Shallow Well Elevation: Deep Well Elevation: Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Date: Well Completion:	N/A N/A N/A N/A N/A N/A 6-12 inches 9.6 ft bgs N/A ☐ Flush ☐ Stick-up	Client: PG&E Project: Final (Well ID: MW-X-170, MW-X-32 Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, Californ Project Number: RC000753.0051		
Groundw Sample		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed		
281	•	SM		(174.0 - 297.4') Bentonite seal pellets (297.4 - 324.0') Cemex #3 MESH	— (0.0 - 300.8') 2" PVC Sch 80 Casing — (42.0 - 324.0') 10.0" Borehole	(174.0 - 297.4') 103.3 buckets	(174.0 - 297.4') 119 buckets (1. Note: Pel-Plug (TR30) 3/8" (297.4 - 324.0') 33 bags (18% Note: Lapis Lustre Sand		

AF	RCAE	DIS Design & C for natural built asset	Consultancy l and es		Well Constr	uction Log	5	Sheet: 16 of 21
Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger: Editor:		06/20/2019 07/31/2019 Cascade Sonic Drilling E. Ramos / S. Vasquez O. Flores / L. Amaya GJ / SM / CS Grant Willford 417 ft bgs		_Surface Elevation: _Shallow Well Elevation: _Deep Well Elevation: _Northing (NAD83): _Easting (NAD83): _Borehole Diameter: _Water Level Start: _Development End Date: _Well Completion:	N/A N/A N/A N/A N/A N/A 6-12 inches 9.6 ft bgs N/A Flush Stick-up	Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, California Project Number: RC000753.0051		
	roundwater Sample ID	Geologic Formation	USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
		Topock - Alluvium Deposits	SM		(297.4 - 324.0°) Cemex #3 MESH (8x10)	(42.0 - 324.0') 10.0" Borehole	(297.4 - 324.0') 28 bags	(297.4 - 324.0') 33 bags (18%) Note: Lapis Lustre Sand

9/	ARCA	DIS	esign & Consultan or natural and uilt assets	су	Well Const	ruction Log	S	Sheet: 17 of 21		
Date S		06/20/201			Surface Elevation:	N/A	Well ID: N	//W-X-170, MW-X-320		
	ompleted:		9		Shallow Well Elevation:	·				
Drilling		Cascade			Deep Well Elevation:	N/A	Client: PG&E			
_	Method:		-		Northing (NAD83):	N/A	-	Project: Final GW Remedy Phase 1		
Driller I Drilling		E. Ramos O. Flores		-	Easting (NAD83): Borehole Diameter:	N/A 6-12 inches	Location: PG&E	Topock, Needles, California		
Logge		GJ / SM /		ya	Water Level Start:	9.6 ft bgs	— Project Number	r: RC000753.0051		
Editor:		Grant Will			Development End Date		r roject ramber	. 110000700.0001		
Total D		417 ft bgs			Well Completion:	☐ Flush☐ Stick-up				
Depth (ft)	Groundwat Sample II		SOSA	USCS	Well C	construction	Calculated Material Volumes	Material Volumes Installed		
		Topoc Alluvi Depos	ım SN	1	(320.5 - 321.5') ————————————————————————————————————	(300.8 - 320.8') 2" PVC Sch 80 Screen (42.0 - 324.0') 10.0" Borehole (320.8 - 323.2') Sump and End Cap	(297.4 - 324.0') 28 bags	(297.4 - 324.0') 33 bags (18%) Note: Lapis Lustre Sand		
325 326 327						18/				
328		Topoc Alluviu Depos	ım MH	1						
329 		Topoc Alluviu Depos	ım SN	1	40					
331 332 333 334		Topoc Alluviu Depos	ım MH	1	(324.0 - 417.0') — Bentonite seal chips	(324.0 - 417.0') 6.0" Borehole	(324.0 - 417.0') 25.3 bags	(324.0 - 417.0') 34 bags (34%) Note: Puregold Medium Chips		
335		Topoc Alluviu Depos	ım MH	4						
338	MW-X-VAS-	Topoc Alluviu	ım Livil	- 0.0.0						
339 	337-342 (<0.17 U ppt 7/11/2019 11:30	Depos	its_/ k - ım ML							

9/	ARC4	DIS Design & for nature built ass	Consultancy ral and ets		Well Const	ruction Log	5	Sheet: 18 of 21
Date C Drilling Drilling	y Co.: y Method: Name: y Asst: r:	06/20/2019 07/31/2019 Cascade Sonic Drilling E. Ramos / S O. Flores / L. GJ / SM / CS Grant Willford	s. Vasqu Amaya S		Surface Elevation:Shallow Well Elevation:Deep Well Elevation:Northing (NAD83):Easting (NAD83):Borehole Diameter:Water Level Start:Development End Date:Well Completion:	N/A N/A N/A 6-12 inches 9.6 ft bgs	Client: PG&E Project: Final (GW Remedy Phase 1 Topock, Needles, California TRC000753.0051
Depth (ft)	Groundwat Sample II		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
341 	MW-X-VAS 337-342 (<0.17 U ppb 7/11/2019 11:30	Denocite	ML GM					
343 344 		Topock - Alluvium Deposits	SM			.01		
346 347 348		Topock - Alluvium Deposits	ML					
349 350 351		Topock - Older Alluvium Deposits Topock - Older Alluvium Deposits	MH		(324.0 - 417.0') — Bentonite seal chips	(324.0 - 417.0') 6.0" Borehole	(324.0 - 417.0') 25.3 bags	(324.0 - 417.0') 34 bags (34%) Note: Puregold Medium Chips
352 353 354 355		Topock - Older Alluvium Deposits	SW-SM					
356 		Topock - Weathered Bedrock - conglomerate	MH e					
358 		Topock - Weathered Bedrock - conglomerate	ML e					
		Weathered Bedrock -	ML					

ARC/	ADIS Design & for natura built asse	Consultancy all and ts		Well Const	ruction Log	S	Sheet: 19 of 21
Date Started:	06/20/2019			Surface Elevation:	N/A	Well ID: N	MW-X-170, MW-X-320
Date Completed				Shallow Well Elevation:	N/A		·
Drilling Co.: Drilling Method:	Cascade Sonic Drilling			Deep Well Elevation: Northing (NAD83):	N/A N/A	Client: PG&E	GW Remedy Phase 1
Driller Name:	E. Ramos / S.	. Vasqu	ıez	Rasting (NAD83):	N/A	•	Topock, Needles, California
Drilling Asst:	O. Flores / L.	-		Borehole Diameter:	6-12 inches		
Logger:	GJ/SM/CS			Water Level Start:	9.6 ft bgs	Project Number	: RC000753.0051
Editor:	Grant Willford			Development End Date:			
Total Depth:	417 ft bgs			Well Completion:	☐ Flush☐ Stick-up		
Groundwa Sample	Geol Form	USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
	Topock - Weathered Bedrock - conglomerate SM GW-GM		(324.0 - 417.0') Bentonite seal chips	(324.0 - 417.0') 6.0" Borehole	(324.0 - 417.0') 25.3 bags	(324.0 - 417.0') 34 bags (34%) Note: Puregold Medium Chips	

9/-	ARCA	DIS Design & for nature built ass	Consultancy ral and ets		Well Const	ruction Log	5	Sheet: 20 of 21
Date C Drilling Drilling	Completed: Co.: Method: Mame: Asst: r:	06/20/2019 07/31/2019 Cascade Sonic Drilling E. Ramos / S O. Flores / L. GJ / SM / Cs Grant Willford	S. Vasqı Amaya S		Surface Elevation:Shallow Well Elevation:Deep Well Elevation:Northing (NAD83):Easting (NAD83):Borehole Diameter:Water Level Start:Development End Date:Well Completion:	N/A N/A N/A 6-12 inches 9.6 ft bgs	Client: PG&E Project: Final (GW Remedy Phase 1 Topock, Needles, California T: RC000753.0051
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
	MW-X-VAS- 382-387 (<0.17 U ppb 7/13/2019 14:43	Topock - Weathered Bedrock - conglomerate	GM e		(324.0 - 417.0') — Bentonite seal chips	(324.0 - 417.0') 6.0" Borehole	(324.0 - 417.0') 25.3 bags	(324.0 - 417.0') 34 bags (34%) Note: Puregold Medium Chips
394 395 396 397 398 399 400		Topock - Weathered Bedrock - conglomerati	CL e					

9/	ARCA	DIS Design & for natura built asset	Consultancy al and ets		Well Const	ruction Log	S	Sheet: 21 of 21
Date S	tarted:	06/20/2019			_Surface Elevation:	N/A	Well ID: N	//W-X-170, MW-X-320
	-	07/31/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: <u>PG&E</u>	
_		Sonic Drilling			_Northing (NAD83):	N/A		GW Remedy Phase 1
Driller I		E. Ramos / S	-		_Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, California
Drilling		O. Flores / L.	-	<u> </u>	_Borehole Diameter:	6-12 inches		D0000750 0054
Logge		GJ/SM/CS			_Water Level Start:	9.6 ft bgs	Project Number	r: RC000753.0051
Editor: Total D		Grant Willford	1		_Development End Date:	N/A Stick-up		
Total L	ерит.	417 ft bgs			_Well Completion:	Flush Stick-up		
Depth (ft)	Groundwat Sample ID		USCS	USCS	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
 401		Weathered Bedrock -	CL					
		conglomerate Topock - Weathered Bedrock -	GC					
402 		conglomerate Topock -						
_403 		Weathered Bedrock - conglomerate	ML				9	
_404		Topock - Weathered Bedrock -	GC					
405		conglomerate Topock -	SM			40		
		Weathered Bedrock -						
_406		conglomerate	*					
		Topock - Weathered	CL					
_407		Bedrock - conglomerate						
		Topock - Weathered	SM					
408		Bedrock -						
		conglomerate	3		(324.0 - 417.0')	(324.0 - 417.0') 6.0" Borehole	(324.0 - 417.0') 25.3 bags	(324.0 - 417.0') 34 bags (34%) Note: Puregold Medium Chips
_409		Topock -			Bentonite se <mark>al chips</mark>	Botonolo	bags	Note: 1 dregord Medium Omps
		Weathered Bedrock -	GC					
_410		conglomerate						
_411								
412								
		Topock -						
_413		Weathered Bedrock -	SM					
		conglomerate	•					
414	MW-X-VAS-							
	412-417 (<0.17 U ppb)						
415	7/15/2019 12:43			TY D				
		Topock -						
416		Weathered Bedrock -	GM	12 P				
		conglomerate	•	SHI				
_417				エカト	End of Boring at			
 					417.0 'bgs.			
418								
\vdash \dashv								
419								
\vdash \dashv								
420	dations, II	000 - H=:::	10-110	laaaific -	tion Cristons # - foct less	- holow ground ourfood or		

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring L	.og			Sh	eet: 1 of	21
Date S	Started:	06/20/	/2019	;	Surface	Elevation			Borin	na No.	: MW-Xd	
	-	ted: <u>07/31/</u>				g (NAD83			_			
Drilling		<u>Casca</u>			_	(NAD83)			Client:	PG&E		
_	Metho		Drilling		Total De	-	417 ft bgs		Project:		SW Remedy Ph	
	ig Type Name:		<u>nic Truck Mou</u> mos / S. Vasq			e Diamete	er: <u>6-12 inches</u> iter: <u>9.6 ft bgs</u>		Location	PG&E	Topock, Needl	es, California
Drilling			res / L. Amaya		-	g Method		ore Barrel	Project N	lumber	RC000753 00	 51
Logge			SM / CS		•	ig Interval		JIO DUITOI	_ 1 10,00011	idilibol.	110000100.00	01
Editor			Willford		-	ed to We)	-			
	>			υ 5								
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS		I Description			Drilling Notes	Drilling Fluid
1	96	No Sieve Samples Collected	MW-X-VAS- 12-17 (<0.033 U ppb) 6/25/2019 15:10	Topock - Fill	SP	5/ m (8 cl	.0 - 12.0') Topock - Fill; Po 3); fine grained to medium ca; trace wood; dry; no ode '); trace clay; trace organic ay @ 8.0' bgs (5Y 4/1) 0'); moist; no clay 1'); wet	grained, angular or	to subround	trace	(8.0 - 17.0') Soft drilling. No recovery 12 to 17 ft bgs due to compaction of dredge sands (11.0') Approximate Depth to Water Depth to Water (17.0 - 19.0') Casing pushed through dredge sand from weight of core barrel and	(0.0 - 177.0') 5100 gallons of water used; 1600 gallons of water recovered; 3500 gallons of water lost
19						,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	9.0 - 36.5') Topock - Fill; W	Vell graded sand	(SW); yellow		casing. No recovery. (19.0 - 27.0')	
20	96			Topock - Fill	SW	CC	own / moderate yellowish b arse grained, subangular t	io subround; little	, inte grained mica; trace	iO	Soft drilling	
	viotions	·· IISCS - I	Unified Soil C	laccification	Sycton	ft - feet	has = helow around	curface amo	d - above	mean co	aa level CW -	aroundwater

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g			Sh	eet: 2 of	21
Date S				;	Surface	Elevation:	N/A		Borin	a No.	: MW-Xd	
	-	ted: <u>07/31/</u>				g (NAD83):	N/A		_			
Drilling		Casca			_	(NAD83):	<u>N/A</u>		_ Client:	PG&E		
Drilling			•		Total De	-	417 ft bgs		-		W Remedy Ph	
Drill Ri Driller	• • •		nic Truck Moi nos / S. Vasq			e Diameter: o First Water	6-12 inche	<u>S</u>	_ Location:	PG&E	Topock, Needl	es, California
Drilling			res / L. Amay			ig Method:	-	0 ft Core Barrel	- Project N	umber	RC000753.00	 51
Logge			SM / CS		-	ig Interval:	Continuou		_ 1 10,00111	arribor.	1.0000100.00	01
Editor:			Willford		-	ed to Well:		No	_			
	2			is c	l							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS		Soil Description			Drilling Notes	Drilling Fluid
21	96					organ	ics; wet; no odo	r; increase organics at	36.2-36.5' bgs		(19.0 - 27.0') Soft drilling	(0.0 - 177.0') 5100 gallons of water used; 1600 gallons of water recovered; 3500 gallons of water lost
28	120	No Sieve Samples Collected	MW-X-VAS- 32-37 (<0.033 U ppb) 6/26/2019 11:45	Topock - Fill	SW	(36.5	- 40.0°) Topock	- Fluvial Deposits; Wel	graded sand	(SW);	(32.0 - 37.0') Heaving sands	
37 38 39 40	36	w HOOG -	history Co. 10	Topock - Fluvial Deposits	SW	grayis subar trace wet; c (37');	th brown (10YR igular to round; round; little mica rganic odor no granules and); trace granules	5/2); fine grained to ver ittle granules to very la a; coarser clast consist	y coarse grain rge pebbles, ro s of quartz and subround to ro	ed, pund; I basalt; pund		

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 3 of	21
Date S	tarted:	06/20	/2019		Surface	Elevat	on: <u>N/A</u>	Borin	a No .	MW-Xd	
Date C	omple	ted: <u>07/31</u>	<u>/2019</u>		Northing	g (NAD	33): <u>N/A</u>		9	11111 744	
Drilling	Co.:	Casca	ıde		Easting	(NAD8	3): <u>N/A</u>	Client:	PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	417 ft bgs	Project:	Final G\	N Remedy Ph	ase 1
Drill Ri	д Туре	: <u>Proso</u>	nic Truck Mou	ınt	Borehol	le Diam	eter: <u>6-12 inches</u>	Location:	<u>PG&E 1</u>	Topock, Needl	es, California
Driller I	Name:	E. Rai	mos / S. Vasq	uez	Depth to	o First \	Vater: <u>9.6 ft bgs</u>				
Drilling	Asst:	<u>O. Flo</u>	res / L. Amaya	a	Samplin	ng Meth	od: 4 Inch X 10 ft Core Barrel	Project N	umber: <u>I</u>	RC000753.00	51
Logge	r:	_GJ / S	SM / CS		Samplin	ng Inter	ral: <u>Continuous</u>				
Editor:		<u>Grant</u>	Willford		Convert	ted to V	/ell: Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	OSCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
41 42 43 44 45 46 47	36				NR		(40.0 - 47.0') No recovery (NR)				(0.0 - 177.0') 5100 gallons of water used; 1600 gallons of water recovered; 3500 gallons of water lost
47 48				Topock - Fluvial Deposits	SW		(47.0 - 48.2') Topock - Fluvial Deposits; Well grayish brown (10YR 5/2); fine grained to very subangular to round; trace granules to large pmica; coarser clast composed of quartz; wet	coarse grair ebbles, roun	ned, d; trace		
 49 _50_		No Sieve Samples Collected		Topock - Fluvial Deposits	GW		(48.2 - 50.5') Topock - Fluvial Deposits; Well, sand (GW); grayish brown (10YR 5/2); granul subangular to round; some fine to coarse grai subangular to round; trace mica; coarser clas granite and basalt; wet	es to small c ned sand,	obbles,		
515253	120			Topock - Fluvial Deposits	sw		(50.5 - 53.8') Topock - Fluvial Deposits; Well gravel (SW); grayish brown (10YR 5/2); fine g grained, subangular to subround; little granule pebbles, subangular to subround; trace round clasts composed of granite and basalt; wet	rained to very es to very larg	/ coarse		
545556				Topock - Fluvial Deposits	SP	*****	(53.8 - 57.0') Topock - Fluvial Deposits; Poorlbrown (10YR 5/3); very fine grained to fine graround; trace granules to very large pebbles, suwet	ained, subrou	nd to		
57 58 59 60	120			Topock - Fluvial Deposits	SW		(57.0 - 62.2') Topock - Fluvial Deposits; Well brown (10YR 5/3); very fine grained to coarse trace mica; wet				

9/	ARC	ADI	S	Design & Consultancy for natural and built assets		Во	ring	Log	9				Sh	neet: 4 of	21
Date S				2019		Surface	Elevati	on:	N/A			Borii	na No.	: MW-Xd	
	-	ted: <u>07/</u>				Northin			N/A		[<u> </u>	
Drilling			scac			Easting	•	3):	<u>N/A</u>			Client:	PG&E		
Drilling				<u> Drilling</u>		Total D	•		417 ft bgs			Project:		W Remedy Ph	
Drill Ri				ic Truck Mou		Boreho			6-12 inche	es		Location	: <u>PG&E</u>	Topock, Needl	es, California
Driller I				ios / S. Vasqı		-			9.6 ft bgs	0 " O D		- · · ·	. —	D0000750.00	F.4
Drilling				es / L. Amaya	1	Samplin	•			0 ft Core Barre)	Project i	number:	RC000753.00	51
Logge Editor:				M / CS		Samplir Conver	-		Continuou	IS No					
Editor.		Gla	IIIL V	Villford		Conver	led to v	veii.	res [NO					1
Depth (ft)	Recovery (in)	Sieve Sample		Groundwater Sample ID	Geologic Formation	USCS	USCS Class			Soil Descriptio	on			Drilling Notes	Drilling Fluid
61 62					Topock - Fluvial Deposits	SW									(0.0 - 177.0') 5100 gallons of water used; 1600 gallons of water recovered; 3500 gallons of water lost
 63	120				Topock - Fluvial Deposits	SP		brown mica; v	(10YŔ 5/3); ve vet	- Fluvial Deposits; ery fine grained to fi	ine gráir	ned, round	; tràce ″		
64 65 66 67 68 70 71 72 73 74 75	120	No Sieve Samples Collected		MW-X-VAS- 71-76 (<0.033 U ppb) 6/27/2019 08:52	Topock - Fluvial Deposits	SW		gravel grained subang	(SW); brown (d, subangular i gular to round;	- Fluvial Deposits; 10YR 5/3); very fine to round; little grant trace subangular to sed of basalt, granit	e graine ules to to subro	ed to very overy large of the very large of the	coarse pebbles, mica;		
76 76 77					Topock - Fluvial Deposits	SP		brown	77.0') Topock (7.5YR 5/3); w trace mica; w	- Fluvial Deposits; ery fine grained to fi et	; Poorly fine grai	graded sa ned, suba	nd (SP); ngular to	(76.0 - 77.0') Heaving sands	
78 79 80	120				Topock - Fluvial Deposits	SW		brown	(10YŔ 5/3); ve	- Fluvial Deposits; ery fine grained to ve und; trace mica; wet	ery coa				

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 5 of	21
Date S			0/2019	_	Surface			Borin	a No.:	MW-Xd	
	•	ted: <u>07/3</u>			Northing		•	_			
Drilling		Caso			Easting	•	•	_ Client:	PG&E		
Drilling						•	417 ft bgs	_ Project:		W Remedy Ph	
Drill Ri Driller l			onic Truck Mou amos / S. Vasq		Borehol		eter: <u>6-12 inches</u> Vater: <u>9.6 ft bgs</u>	_ Location:	PG&E	Topock, Needl	es, California
Drilling			ores / L. Amaya		Samplin			- Project N	umher.	RC000753.00	 51
Logge			SM / CS	<u>a</u>	Samplin	-		_ 1 10,00011	umber.	110000733.00	01
Editor:			t Willford		Convert	-		_			
				0.5							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
	120			Topock - Fluvial Deposits Topock -	sw		(83.5 - 87.0') Topock - Fluvial Deposits; Well gravel (SW); brown (10YR 5/3); very fine graingrained; little granules to very large pebbles, trace subround to round; trace mica; coarse of granite, basalt, and quartz; wet; granules and with depth	ined to very co subangular to clasts compo	oarse o round; sed of		(0.0 - 177.0') 5100 gallons of water used; 1600 gallons of water recovered; 3500 gallons of water lost
86 87 88				Fluvial Deposits	SW		(87.0 - 93.0') Topock - Fluvial Deposits; Well (SW-SM); brown (10YR 5/3); very fine graine grained, subangular to round; little granules t subround to round; little silt; trace mica; coar	d to very coar to large pebbl	se es,		
 89 90 91 92 93	108	No Sieve Samples Collected		Topock - Fluvial Deposits	SW-SM		of metadiorite; wet				
				Topock - Fluvial	GW-GM		(93.0 - 94.0') Topock - Fluvial Deposits; Well silt and sand (GW-GM); brown (10YR 5/3); g	ranules to sm	all		
94				Deposits	JOW		cobbles, subangular to round; and very fine to sand, subangular to subround; little silt; trace	o very coarse	grained		
				Topock - Fluvial	SP		composed of metadiorite; wet		/		
95				Deposits	ļ	8 0 0 0 10 0	(94.0 - 95.0') Topock - Fluvial Deposits; Poor strong brown (7.5YR 4/6); very fine grained to		a (SP);		
				Topock - Fluvial	sw		subround to round; trace silt; trace mica; wet (95.0 - 96.0') Topock - Fluvial Deposits; Well		with		
96				Deposits		6,000	gravel (SW); brown (10YR 5/3); very fine grained, subangular to round; some granules	ined to mediu	m		
					NR		pebbles, subround to round; trace subround to	to round; trace	esilt;		
97				L			trace mica; coarser clasts composed of meta cobble/boulder fragments within formation	- — — — — -	actured		
98 99 	96			Topock - Fluvial Deposits	sw		\(\(\frac{196.0}{96.0} - \frac{97.0'}\) No recovery (NR) \((\frac{97.0}{97.0} - \frac{104.0'}\) Topock - Fluvial Deposits; We brown (10YR 5/3); very fine grained to very cosubangular to subround; trace granules to sn subround to round; trace mica; wet	oarse grained			
100	.i4i	. 11000	Haifiari O-il O		- 0.7-4-	· · · · · · · · · · · · · · · · · · ·	pot has - holow ground surface am	al = al		a lavel OW	

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	;	Sheet: 6 of	21
Date S	tarted:	06/20/	2019		Surface	Elevati	ion: N/A	Boring No	o.: <u>MW-Xd</u>	
Date C	omple	ted: <u>07/31</u>	2019		Northing	g (NAD	83): <u>N/A</u>) <u>IVIVI-XU</u>	
Drilling	Co.:	<u>Casca</u>			Easting	(NAD8	33): <u>N/A</u>			
_	Metho				Total De	•	417 ft bgs	•	GW Remedy Ph	
	g Type		<u>nic Truck Mou</u>		Borehol			Location: <u>PG&</u>	E Topock, Needle	es, California
	Name:		mos / S. Vasqı		•		Water: 9.6 ft bgs	<u> </u>		
Drilling			res / L. Amaya		Samplin	-		Project Numbe	r: <u>RC000753.00</u>	51
Logge			SM / CS		Samplin	-				
Editor:	-	Grant	Willford		Convert	ed to V	Vell:			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
	96			Topock - Fluvial Deposits	SW		(104.0 - 105.0') Topock - Fluvial Deposits;		(102.0 - 105.0') Tight formation	(0.0 - 177.0') 5100 gallons of water used; 1600 gallons of water recovered; 3500 gallons of water lost
				Fluvial Deposits	SW		gravel (SW); dark grayish brown / dark yell 4/2); very fine grained to very coarse graine			
105				Верозна			and granules to very large pebbles, subant subround to round; trace silt; trace mica; c	gular to round; trace	.	
106				Topock - Fluvial Deposits	SW		of metadiorite; wet; fractured cobbles/ bou formation (105.0 - 107.0') Topock - Fluvial Deposits; (SW); brown (10YR 5/3); very fine grained	lder fragments within Well graded sand		
107							subangular to subround; little granules to s to round; trace silt; trace mica; wet			
 108				Topock - Fluvial Deposits	GW		(107.0 - 108.0') Topock - Fluvial Deposits; sand (GW); brown (10YR 4/3); granules to subround to round; some very fine to very	very large pebbles, coarse grained sand,		
	84	No Sieve Samples Collected	MW-X-VAS- 107-112 (<0.033 U ppb) 6/27/2019 15:04	Topock - Fluvial Deposits	SM		subangular to round; trace silt; trace mica; composed of metadiorite, granite, basalt, (108.0 - 112.0') Topock - Fluvial Deposits; (SM); dark grayish brown / dark yellowish fine grained to coarse grained, subangular granules to very large pebbles, subround to subround to round; trace mica; trace orgar coarser clasts composed of metadiorite ar cobble/boulder fragments observed (109') brown (10YR 5/3); little silt; no orgal fine to very coarse grained sand	quartz; wet Silty sand with gravel brown(10YR 4/2); very r to round; some o round; some silt; little nics; wet; organic odor; nd granite, pulverized nics; increase in very		
113			MW-X-VAS-	Topock - Fluvial Deposits	GW		(112.0 - 114.0') Topock - Fluvial Deposits; sand (GW); dark gray (10YR 4/1); very fine cobbles, subangular to round; little very fin sand, subangular to round; trace silt; trace coarser clasts composed of metadiorite; w	e grained to small le to very coarse grained clay; trace organics;	Rough drilling	
114 115 	60		112-117 (<0.033 U ppb) 6/28/2019 09:56	Topock - Fluvial Deposits	SM		(114.0 - 116.0') Topock - Fluvial Deposits; (SM); brown (10YR 4/3); very fine grained subangular to round; some granules to ver subangular to round; little silt; trace subroumica; trace organics; wet; organic odor; conf	to very coarse grained, ry large pebbles, und to round; trace		
116 117 118 119	120			Topock - Alluvium Deposits	SM		(116.0 - 157.0') Topock - Alluvium Deposit (SM); brown (7.5YR 4/4) trace red / moder 4/6); very fine grained to very coarse grainsome granules to very large pebbles, angusitt, trace subangular; trace mica; coarser metadiorite; wet; mottled (117') reddish brown / moderate brown(5Y moderate reddish brown(10R 4/6); some sto very large pebbles, no cobbles (118'); little silt; increase in very fine to very weathered granules to very large pebbles	rate reddish brown (10R ed, angular to subround ular to subangular; little clasts composed of (R 4/4) little red / silt; decrease in granules		
120										

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 7 of	21
l l	Started:				Surface			Borir	ng No.:	MW-Xd	
	•	ted: <u>07/31/2</u>			Northin						
Drilling		Cascad			Easting			Client:	PG&E		
	Metho		_		Total De Borehol		417 ft bgs	Project:		W Remedy Ph	
Driller	g Type		<u>ic Truck Mou</u> los / S. Vasq				ter: <u>6-12 inches</u> /ater: <u>9.6 ft bgs</u>	Location	PG&E	Fopock, Needl	es, Calliornia
Drilling			es / L. Amaya		Samplin		_	- Proiect N	Jumber	RC000753.00	51
Logge		<u>GJ / SI</u>			Samplin						•
Editor		Grant V			Convert	-					
	2			.º 6	T						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
 121 _122_											(0.0 - 177.0') 5100 gallons of water used; 1600 gallons of water recovered; 3500 gallons of water lost
123	120							7)			
124											
							,0	•			
126_											
128							(128'); some silt; little granules to very large p subangular; decrease in very fine to very coar		ular to		
129_							busingdian, decrease in very line to very soan	oo oana			
<u> </u>											
130		No Sieve Samples		Topock - Alluvium	SM						
		Collected		Deposits							
131											
132	120										
133											
134											
							(134'); little silt; increase in very fine to very co granules to very large pebbles	oarse, increa	se in		
135											
136											
137											
I3/											
138											
	120						(138'); some granules to very large pebbles, a subangular; slight decrease in silt	angular to			
139							-				
<u> </u>											
140 Abbro	viations	·· IISCS - II	Inified Soil Cl	assification	Syston	<u> </u>	et. bas = below ground surface. ams	al = abovo	mean co	a level GW =	groundwater

Date Strated: 08/20/20/19 Surface Elevation: NA Boring No.: MW-Xd	9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring L	og	5	Sheet: 8 of	21
Date Completed: U7.51219 Northing (NADS): NNA Client: PG&E Cascade Cas	Date S	Started:	06/20/2	2019					Boring No	.: MW-Xd	
Delling Method: Delling A mane Project Final GW Remety Phase Project Project Final GW Remety Phase Project Proj	l l	-							_		
Dire Top Proposition Cruck Mount Proposition Cruck Mount Proposition	1					_	. ,				
Delier Marie: E. Ramos / S. Vasquez Depth to First Water: 9.6 it bg. Deling Assist Cager: Caltor: Grant Wilfrord. Converted to Well: Sampling Method: Sampling Method: Sampling Method: Confirmations E. B. Sieve Grant Wilfrord. Converted to Well: Sampling Method: Sampling Method	_			•	4		-	•	•	-	
Dalling Asset C. Flores / L. Annaya Sampling Intervals (Continuous Section of Continuous									_ Location: PG&I	<u>= 1 ороск, ічееаі</u>	es, Calitornia
Continuous Co				-		-		_	Project Number	RC000753.00	 51
Editor Grant Willford Converted to Welt Yes No	_				•	-	-		_ 1 10,000 140111001	. 110000100.00	01
141						-	-		_		
141		>			υ <u>Ε</u>						
141	Depth (ft)	Recover (in)			Geologi Formatic	USCS	USCS	Soil Description		Drilling Notes	
144	 _142_ 	120							9		5100 gallons of water used; 1600 gallons of water recovered; 3500 gallons of
148	_144										
149. 149. 149. 150. No Sieve Samples Collected 151. 152. 153. 154. 155. 155. 156. 157. 158. 157. 158. 172. 159. 160. No Sieve Samples Collected 157. 158. 172. 173. 174. 175.											
148	145							4051			
148											
148.	146										
148.	<u> </u>										
Topock-Alluvium Deposits SM Deposits Deposits SM Deposits SM Deposits Deposits SM Deposits Depos	147										
Topock-Alluvium Deposits SM Deposits Deposits SM Deposits SM Deposits Deposits SM Deposits Depos	440										
	140_								ry fine to very coarse		
	149					SM	sa sa	lu .			
150											
	150		No Sieve								
152 120 153			Collected								
153. 154. 155. 155. 156. 157. 158. 158. 172. 180. NR MW-X-VAS- 152-157 (<0.17 U ppb) 8/29/2019 09:19 (155); some granules to very large pebbles, angular to subangular; little silt; wet; increase in very fine to very coarse sand (157.0 - 167.0') Loose sands fell out of core barrel into hopper when bagging core, 165 to 167 drilling got hard	151										
153. 154. 155. 155. 156. 157. 158. 158. 172. 180. NR MW-X-VAS- 152-157 (<0.17 U ppb) 8/29/2019 09:19 (155); some granules to very large pebbles, angular to subangular; little silt; wet; increase in very fine to very coarse sand (157.0 - 167.0') Loose sands fell out of core barrel into hopper when bagging core, 165 to 167 drilling got hard											
154	_152_	120									
154											
152-157 (<0.17 U ppb) 6/29/2019 09:19 (155'); some granules to very large pebbles, angular to subangular; little silt; wet; increase in very fine to very coarse sand (157.0 - 167.0') Loose sands fell out of core barrel into hopper when bagging core, 165 to 167 drlling got hard	153										
152-157 (<0.17 U ppb) 6/29/2019 09:19 (155'); some granules to very large pebbles, angular to subangular; little silt; wet; increase in very fine to very coarse sand (157.0 - 167.0') Loose sands fell out of core barrel into hopper when bagging core, 165 to 167 drlling got hard				N 10 A / A / A / A / A							
	154			152-157							
09:19 (155'); some granules to very large pebbles, angular to subangular; little silt; wet; increase in very fine to very coarse sand (157.0 - 161.0') No recovery (NR) (157.0 - 161.0') No recovery (NR) (157.0 - 167.0') Loose sands fell out of core barrel into hopper when bagging core, 165 to 167 drlling got hard	155			(<0.17 U ppb)							
	155_			0/29/2019 09:19			(1	5'); some granules to very large pebbles,	angular to		
157 (157.0 - 161.0') No recovery (NR) (157.0 - 167.0') Loose sands fell out of core barrel into hopper when bagging core, 165 to 167 drlling got hard	156						su	angular; little silt; wet; increase in very fil	ne to very coarse sand		
NR (157.0 - 161.0') No recovery (NR) (157.0 - 167.0') Losse sands fell out of core barrel into hopper when bagging core, 165 to 167 drlling got hard											
NR (157.0 - 161.0') No recovery (NR) (157.0 - 167.0') Losse sands fell out of core barrel into hopper when bagging core, 165 to 167 drlling got hard	157										
fell out of core barrel into hopper when bagging core, 165 to 167 drlling got hard							(1	7.0 - 161.0') No recovery (NR)			
hopper when bagging core, 165 to 167 drlling got hard	158						$ \setminus / $			fell out of core	
159 165 to 167 drlling got hard		72				NR	$ \vee $			hopper when	
	159					"	$ \wedge $			165 to 167	
	<u> </u>						/ \			uning got nard	
COMPANYON OF THE LIGHT OF THE PROPERTY OF THE		·	. 11000	I:E 1 O " O'	:c		<u> </u>	hara - halan	-11-		

9/	ARC	ADIS	for natural and built assets		Во	ring	Log			She	et: 9 of	21
	Started				Surface			N/A	Borii	na No.:	MW-Xd	
		ted: <u>07/31/2</u>			Northin	- '	,	N/A	_			
Drilling		Cascad			Easting	•	33):	N/A	_ Client:	PG&E	W.D. DI	4
1 -	Metho		<u>Drilling</u> nic Truck Mou		Total Do	-	otori	417 ft bgs 6-12 inches	_ Project:		V Remedy Ph opock, Needl	
Driller	ig Type Name		nos / S. Vasqu					6-12 inches 9.6 ft bgs	_ Location	I. FGAE I	ороск, мееці	es, Calliottia
Drilling			es / L. Amaya		Samplin			4 Inch X 10 ft Core Barrel	Proiect I	Number: F	RC000753.00	 51
Logge			M/CS		Samplir	-		Continuous	_ , _	_		
Editor:		Grant V	Willford		Conver							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
 	_				NR	X					(157.0 - 167.0') Loose sands fell out of core barrel into	(0.0 - 177.0') 5100 gallons of water used; 1600 gallons of
 162							gravel (to very to very	 - 174.5') Topock - Alluvium Deposits; (CL); brown (7.5YR 4/4); medium placoarse grained sand, angular to subalarge pebbles, angular to subangular 	sticity; some s angular; little (; little silt; coa	very fine granules arser	hopper when bagging core, 165 to 167 drlling got hard	water recovered; 3500 gallons of water lost
								composed of metadiorite; moist; hard iorite clasts are weathered	; blocky; som	е		
163	72											
164												
165												
165								190				
166												
167							(167.0	- 174.5') Topock - Alluvium Deposits;	Sandy lean o	clay with	(167.0 - 177.0')	
	_			Topock - Alluvium	CL		gravel	(CL); reddish brown / moderate brown ty; some very fine to very coarse grain	n(5YR 4/4); m	nedium	Smooth drilling	
168	1			Deposits			subang	ul <mark>ar; lit</mark> tle granules to very large pebb ular; little silt; coarser clasts compos	ed of metadio			
169							moist;	some meta-diorite clasts are weather	red			
		No Sieve										
170		Samples Collected										
 171	-	000000		Topock - Alluvium	CL							
				Deposits								
172	120											
173												
174	_						(173.5); moist to wet				
174												
175							(174.5 reddish	- 177.0') Topock - Alluvium Deposits; brown / moderate brown(5YR 4/4); v	Silty sand (S ery fine grain	SM); ned to		
				Topock -			very co to med	arse grained, angular to subround; so ium pebbles, angular to subangular; l	ome silt; little ittle clay; trac	granules		
176				Alluvium Deposits	SM			large pebbles, angular to subangular				
177				Topock -	GP			- 177.5') Topock - Alluvium Deposits;	Poorly grade	ed gravel	(177.0 - 187.0')	(177.0 - 327.0')
470	-			Alluvium Deposits	_ 	100	(GP); b	oulders; wet			Normal drilling	5395 gallons of water used;
178	1					$ \setminus $		- , · · · · · · · · · · · · · · · · · ·				4465 gallons of water
179	84				NR	X						recovered; 930 gallons of water
						/						lost
180						/ \						
Abbre	viations	s: USCS = L	Jnified Soil Cla	assificatior	n Systen	n, ft = fe	eet, bg:	s = below ground surface, am	ısl = above	mean sea	a level, GW =	groundwater,

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	9		She	eet: 10 of	21
Date S	tarted:	06/20	/2019		Surface	Elevat	ion:	N/A	Borin	a No.:	: MW-Xd	
		ted: <u>07/31</u>	/2019		Northing	g (NAD	83):	N/A			11111 710	
Drilling		Casca			Easting	•	3):	N/A	Client:	PG&E		
Drilling			•			•		417 ft bgs	Project:		W Remedy Ph	
Drill Ri			nic Truck Mou		Borehol				Location:	PG&E	Topock, Needle	es, California
Driller I			mos / S. Vasq		•			9.6 ft bgs	5		D0000750 000	- 4
Drilling			ores / L. Amaya	<u>a</u>	Samplin	•			Project N	umber:	RC000753.005	01
Loggeı Editor:			SM / CS : Willford		Samplin Convert	-		Continuous				
Euitoi.		Giaili	VVIIIIOIU		Conven	Eu io v	V CII.					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
				L	NR						(177.0 - 187.0') Normal drilling	(177.0 - 327.0') 5395 gallons of
181	84		MW-X-VAS- 182-187 (<0.17 U ppb) 6/29/2019 15:28	Topock - Alluvium Deposits	SM		(SM); r to very mediur subang subang (183.5' subang	- 187.0') Topock - Alluvium Deposits; Seddish brown / moderate brown(5YR 4); coarse grained, angular to subround; little pebbles, subangular to subround; little granules; trace clay; trace large to very largular; wet); little granules to very large pebbles, a gular; little clay); little granules to large pebbles, angulary	/4); very fine ttle granules e silt; trace e pebbles	grained to		water used; 4465 gallons of water recovered; 930 gallons of water lost
187 188				Topock - Alluvium Deposits	sc		gravel coarse large p	- 188.0') Topock - Alluvium Deposits; C (SC); reddish brown (2.5YR 4/4); very fi grained, angular to subround; some cla ebbles, angular to subangular; little silt sed of metadiorite; iron oxide staining c	ine grained to ay; little gran ; coarser cla	o very ules to sts	(187.0 - 197.0') Normal drilling	
189		No Sieve		Alluvium Deposits	ML		(188.0 (ML); re coarse	-, 189.5') Topock - Alluvium Deposits; Sed (2.5YR 4/6); medium plasticity; som- grained sand, angular to subround; littl s, angular to subangular; little clay; coa	e very fine to le granules to	very		
190 191		Samples Collected		Alluvium Deposits Topock - Alluvium Deposits	CL		(189.5 (SM); re 3/4); ve some s	sed of metadiorite; moist to wet; very st - 190.0') Topock - Alluvium Deposits; S eddish brown (2.5YR 4/4) to dark reddi- bry fine grained to very carse grained, silt; little granules to very large pebbles, nd; little clay; coarser clasts composed	tiff Silty sand with sh brown (2. angular to su angular to	5ŸR ibround;		
192	120			Topock - Alluvium Deposits	МН		moist to (190.0 gravel	o wet - 191.5') Topock - Alluvium Deposits; S (CL); reddish brown (2.5YR 4/4); mediu	Sandy lean cl um plasticity;	ay with some		
193 194 195 196 197				Topock - Alluvium Deposits	ML		granule very sti (191.5 gravel of fine to granule coarse (192.5 (ML); li very co mediur compo	- 192.5') Topock - Alluvium Deposits; S (MH); reddish brown (2.5YR 4/4); high I very coarse grained sand, angular to substo medium pebbles, angular to subror clasts composed of metadiorite; mois - 197.0') Topock - Alluvium Deposits; S ght red(2.5YR 7/6); medium plasticity; arse grained sand, angular to subround in pebbles, angular to subangular; little sed of metadiorite; moist; green stainin	id; little silt; n Sandy elastic plasticity; sor ubround; little bund; little cla t; very stiff sandy silt witl some very fir d; little granu clay; coarser g	silt with me very ay; ay; n gravel ne to les to r clasts		
198 199	120			Topock - Alluvium Deposits	ML	<i>y</i> ,,,,,,,	(ML); re mediur mediur very co	- 199.0') Topock - Alluvium Deposits; Seddish brown (2.5YR 4/4); low plasticity in grained sand, angular to subround; lift in pebbles, angular to subangular; little arse grained sand angular to subangul.	y; some very ttle granules clay; trace co ar; moist; ve	fine to to parse to ry stiff		
200	dation-	. 11000	Haifford Call Cl	Topock - Alluvium Deposits	CL		gravel very fin	- 202.0') Topock - Alluvium Deposits; S (CL); reddish brown (2.5YR 4/4); mediu e to very coarse grained sand, angular	um plasticity; to subround	some ; little	a laval CVV	

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	S	sheet: 11 of	21
Date S					Surface			Boring No	.: MW-Xd	
		ted: <u>07/31/</u>			Northing				<u> </u>	
Drilling		<u>Casca</u>			Easting Total De	•	•	Client: <u>PG&E</u> Project: <u>Final (</u>	<u>=</u> GW Remedy Ph	
Drilling Drill Ri			<u>Drilling</u> nic Truck Mou		Borehol	•	eter: 6-12 inches	-	-	
Driller			mos / S. Vasqı				Vater: 9.6 ft bgs		_	oo, oamorna
Drilling			res / L. Amaya		Samplin		_	Project Number	: RC000753.00	51
Logge	r:	_GJ / S	SM / CS		Samplin	-				
Editor:		<u>Grant</u>	Willford		Convert	ted to V	Vell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
 _201 _202_				Topock - Alluvium Deposits	CL		granules to large pebbles, angular to subroun clasts composed of metadiorite; moist; very st			(177.0 - 327.0') 5395 gallons of water used; 4465 gallons of water recovered; 930 gallons of water
	120						(202.0 - 227.0') Topock - Alluvium Deposits; S (SM); red (2.5YR 4/6); very fine grained to ver angular to subround; some silt; little granules angular to subround; little clay; coarser clasts metadiorite; moist (204'); little silt; trace clay; moist to wet (204.5'); some silt; trace very large pebbles, s subangular; moist to wet (206.3'); little silt; no cobbles, increase in sand	y coarse grained, to large pebbles, composed of		lost
_207		No Sieve Samples	MW-X-VAS- 207-212 (<0.17 U ppb) 6/30/2019 13:28				(209'); some silt; no clay, weathered granules pebbles		(207.0 - 217.0') Normal drilling, approximately 6 inchs of sample fell out of core barrel at ~208.5 during bagging, material was the same as in the core	
211 212 213 214	108	Collected		Topock - Alluvium Deposits	SM		(210.5'); little clay; moist to wet; decrease in s	silt, decrease in sand		
214										
215										
216										
L _										
_217										<u> </u>
<u> </u>										
218										
	114									
219										
				<u> </u>		<u></u>				·

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 12 of	21
Date S					Surface			Borii	na No.:	MW-Xd	
	-	ted: <u>07/31/2</u>			Northing			. ———			
Drilling		<u>Casca</u>			Easting	•		Client:	PG&E		1
Drilling Drill Ri			Drilling nic Truck Mou		Total De Borehol	-	417 ft bgs eter: 6-12 inches	Project:		<u>W Remedy Ph</u> Topock, Needle	
Driller			nos / S. Vasqı				Vater: 9.6 ft bgs	Location	. FGaE	тороск, мееці	25, Calliottia
Drilling			res / L. Amaya		Samplin		_	Project N	Number:	RC000753.00	 51
Logge			SM / CS		Samplin	-					
Editor		Grant \	Willford		Convert	ed to W	/ell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
	114			Topock - Alluvium Deposits	SM						(177.0 - 327.0') 5395 gallons of water used; 4465 gallons of water recovered; 930 gallons of water lost
		No Sieve Samples Collected		Topock - Alluvium Deposits	SM		(227.0 - 230.0') Topock - Alluvium Deposits; S reddish brown (2.5YR 4/4); very fine grained t grained, angular to subround; some silt; little pebbles, angular to subangular; trace clay, co composed of metadiorite; moist; iron oxide stagranules to very large pebbles (230'); increase in silt, decrease in very fine to	o very coars granules to arser clasts aining; weat	e arge hered	(227.0 - 232.0') Normal drilling	
232	111.6									(000 0 000 000	
<u> </u>										(232.0 - 237.0') Rough drilling	
233											
234											
235											
236											
_237											
ļ -							(237'); and silt; little clay; decrease in very fine	e to very coa	rse sand	(237.0 - 245.0') Normal drilling	
238											
	114										
239											
-											
240											<u> </u>

Date	9/-	ARC	ADIS	for natural and built assets		Во	ring	Log			She	eet: 13 of	21
Conting Cross Conting (NADS) NA						Surface	Elevation	on:		Borin	a No.:	MW-Xd	
Some Colling Collin						-		,					
Dollar Name Enamos IS Nasquez Dollar Name Sampling Method: Sampling Meth	_					_	•	3):					
Driller Name: E. Ramos (S. Vasquez Orgonic Assistance) Orgonic Assistance Gard Walford Converted to Welt: Sampling Interval: Continuous Organic Name Sampling Interval: Converted to Welt: Sampling Interval: Converted to Welt: Sampling Interval: Continuous Sampling Interval: Converted to Welt: Sampling Interval: Converted to Welt: Sampling Interval: Converted to Welt: Sampling Interval: Sampling Interval: Converted to Welt: Sampling Interval: Sampling Interval: Sampling Interval: Converted to Welt: Sampling Interval: Sampling Interval: Converted to Welt: Sampling Interval: Sampling Interval: Sampling Interval: Converted to Welt: Sampling Interval: Sampling Interval: Sampling Interval: Converted to Welt: Sampling Interval: Sampling Interval: Sampling Interval: Converted to Welt: Sampling Interval: Sampling Interval: Converted to Welt: Sampling Interval: Sampling Interval: Converted to Welt: Sampling Interval: Sampling Interval: Sampling Interval: Converted to Welt: Sampling Interval: Sampling Interval: Sampling Interval: Converted to Welt: Sampling Interval: Sampling Interv	_			•					_	-		-	
Sample S		• • •								Location:	PG&E	<u> Гороск, Needl</u>	es, California
Garl Willford Converted to Well: Ves No Sample ID Show Sample ID Converted to Well: Ves No Service ID Converted to Well: Ves No Service ID Converted to Well: Ves No Defining Notes				-		-			_	Project N	umber:	PC000753 00	 51
Editor: Grant Wilford Converted to Well: Yes No Simple ID Sample ID Sample ID Sample ID Speed S	_			-		•	•			. I TOJCCETV	umber.	10000733.00	01
Simple ID Groundstater Sample							•			-			
241					0.5								
241 241 242 243 244 245 245 245 244 245 245 245 245 245	Depth (ft)	Recover (in)			Geologi	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
245_255 (c) 0.33 U ppb) 248_ 249_ 240_ 240_ 250_ 250_ 251_ 252_ 253_ 254_ 255_ 256_ 256_ 256_ 256_ 256_ 256_ 256		114			Alluvium	SM		(SM); regrained large procomposition pebbles	eddish brown (2.5YR 4/4); very fine gra I, angular to subround; some silt; little ebbles, angular to subangular; trace cl sed of metadiorite; moist; weathered g s, dry 243.5'-244' bgs	ained to very of granules to g	coarse ery lasts ry large	Normal drilling	5395 gallons of water used; 4465 gallons of water recovered; 930 gallons of water
Topock - Alluvium Deposits SM SM SM (259.5 - 269.0') Topock - Alluvium Deposits; Silty sand (SM);	248 249 250 251 252 253 254	120	Samples	245-255 (<0.033 U ppb) 7/1/2019	Alluvium	SM		reddish grained large pu coarsei granule	brown (2.5YR 4/4); very fine grained to subround; some silt; little ebbles, angular to subround; some silt; little clar clasts composed of metadiorite; moises to very large pebble - 259.5') Topock - Alluvium Deposits; Seddish brown (2.5YR 4/4) little (7.5R 4, coarse grained, angular to subround;	to very coarse granules to very coarse granules to very, trace micast; weathered Silty sand with (6); very fine; some silt; little	n gravel grained		
		56 57 58 120 59			Alluvium Deposits	SM		granule moist; I granule	es to very large pebbles, angular to submottled; iron oxide staining; wet at 256 es to very large pebbles - 269.0') Topock - Alluvium Deposits; S	engular; trac ' bgs, weathe	e clay; rred	Normal drilling	

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Date S					Surface			N/A		Bori	ng No.:	: MW-Xd	
		ted: <u>07/31/2</u>			Northing			N/A					
Drilling		Cascac			Easting	•	3):	N/A		Client:	PG&E	W. Domody Dh	
Drilling Drill Ri			nic Truck Mou		Total De Borehol	-	otor.	417 ft bgs 6-12 inche		Project:		W Remedy Ph Topock, Needl	
Driller I			nos / S. Vasqı					9.6 ft bgs	<u> </u>		i. <u>i Oul</u>	Topook, Necun	oo, Odillorriid
Drilling			es / L. Amaya		Samplin			-	0 ft Core Barrel	 Project l	Number:	RC000753.00	51
Logge	r:	GJ/S	M/CS		Samplin	ig Inter	val:	Continuou	<u>s</u>				
Editor:		Grant V	<u> Willford</u>		Convert	ed to V	Vell:	× Yes	No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class			Soil Description			Drilling Notes	Drilling Fluid
	120			Topock - Alluvium Deposits	SM		very co dilaten to suba	arse grained, a cy; some silt; li angular; little cl	R 4/4) little (7.5R 4/6); angular to subround; ittle granules to very li- ay; coarser clasts co- lered gravel granules	medium plastic large pebbles, imposed of me	city, no angular adiorite;	(257.0 - 267.0') Normal drilling	(177.0 - 327.0') 5395 gallons of water used; 4465 gallons of water recovered; 930 gallons of water lost
	120	No Sieve Samples Collected			S		(SM); r grained granule little cla	eddish brown (d to very coarse es to very large ay; trace angul	ck - Alluvium Deposit (2.5YR 4/4) some (7.9 e grained, angular to a pebbles, angular to a ar; coarser clasts cor ered granules to sma	5R 4/6); very fir subround; som subangular; so mposed of met	ne ie me silt;	Normal drilling	
273 274 275 276 277 278	120			Topock - Alluvium Deposits	SM		trace a	ngular to suba	to very large pebbles, ngular; increase in sil dry from 283-285' bgs	ilt, increase in	pround; very fine		
279													

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sh	eet: 15 of	21
Date S					Surface			Borii	na No.:	: MW-Xd	
	•	ted: <u>07/31/</u>			Northin	- '	•				
Drilling		Casca			Easting	•	•	Client:	PG&E		
Drilling			-		Total D	-	417 ft bgs	Project:		W Remedy Ph	
Drill Ri Driller			<u>nic Truck Mou</u> nos / S. Vasqı		Boreho		eter: <u>6-12 inches</u> Vater: <u>9.6 ft bgs</u>	Location	: PG&E	Topock, Needle	es, Calliornia
Drilling			res / L. Amaya		Samplin		_	—— I Proiect N	Jumber	RC000753.00	 51
Logge			SM / CS		Samplir	•					<u> </u>
Editor:			Willford		Conver	-					
_	ح			. <u>5</u> E							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Descriptio	n		Drilling Notes	Drilling Fluid
											(177.0 - 327.0') 5395 gallons of
_281										(281.0 - 287.0')	water used; 4465 gallons of
-										Rough drilling	water recovered; 930
_282											gallons of water lost
-											
283											
	120										
_284	•										
							.0-\				
							190				
_286											
_											
_287							(2071) rad / madarata raddiah hraum(400	2 1/G) and raddish	brown	(287.0 - 297.0')	
							(287') red / moderate reddish brown(10F (2.5YR 4/4); trace clay; dry to moist; dec very fine to very coarse sand			Rough drilling	
_288							very line to very coarse sand				
289											
290		No Sieve		Topock -							
		Samples Collected		Alluvium Deposits	SM						
							(291'); decrease in silt, increase in very	fine to very coarse	e sand		
292	120										
293							(293'); moist to wet				
							(200), moiet to mot				
_294			MW-X-VAS- 292-297								
			(<0.17 U ppb)								
295			7/2/2019 14:45								
_										(297.0 - 307.0') Rough drilling	
298											
-	120										
299											
<u></u>							(299.5') reddish brown (2.5YR 4/4) some	e red / moderate :	eddish		
300 Abbres	viations	: USCS - I	Inified Soil CI	assification	n Sveten	1. (1. (1. (1. (1. (1. (1. (1. (1. (1. (eet. bas = below ground surface.				aroundwater

9/	ARC	ADIS	for natural and built assets		Во	ring	Log	3			She	eet: 16 of	21
Date S					Surface			N/A		Borin	ng No.:	MW-Xd	
		ted: <u>07/31/2</u>			Northing	- '		N/A		_			
Drilling		<u>Cascad</u>			Easting	•	3):	N/A		_ Client:	PG&E	// D D -	1
Drilling Drill Ri			ווווח <u>ט ביווווחט</u> nic Truck Mou		Total De Borehol	-	otor:	417 ft bgs 6-12 inches		_ Project:		W Remedy Ph Γοροςk, Needle	
Driller			nos / S. Vasqu					9.6 ft bgs		_ LUCALIOI1.	. FGAL I	ороск, пееці	55, Calliottia
Drilling			es / L. Amaya		Samplin			4 Inch X 10 ft Co	ore Barrel	− Proiect N	lumber: I	RC000753.00	 51
Logge			M/CS		Samplin	-		Continuous		_ , _	-		
Editor:		Grant V	<u> Willford</u>		Convert	ed to V	Vell:)				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class		Soil	I Description			Drilling Notes	Drilling Fluid
301	120						subang (303'); little sil	10R 4/6); some granu gular; decrease in very little granules to very l t; increase in very fine	y fine to very coal	ngular to subasand	angular;	(297.0 - 307.0') Rough drilling	(177.0 - 327.0') 5395 gallons of water used; 4465 gallons of water recovered; 930 gallons of water lost
	120	No Sieve Samples Collected		Topock - Alluvium Deposits	SM		subanç very fin	dark reddish brown (2. h brown(10R 4/6); som very coarse sand	subangular; dry	red / moderate	3	Rough drilling	
317	120							a – bolow ground				(317.0 - 323.0') Normal drilling	

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	Started:				Surface			Borin	a No.:	: MW-Xd	
	•	ted: <u>07/31/</u>			Northing	• `	•				
Drilling		<u>Casca</u>			Easting	`	•	Client:	PG&E	W.D. I. D.	
Drilling Drill Ri			•	unt .		•	417 ft bgs eter: 6-12 inches	Project:		W Remedy Ph Topock, Needle	
Driller			<u>nic Truck Mou</u> mos / S. Vasg		Borehol		eter: <u>6-12 inches</u> Vater: <u>9.6 ft bgs</u>	Location.	PG&E	тороск, мееак	es, Calliornia
Drilling			res / L. Amay		Samplin			Proiect N	umber:	RC000753.00	 51
Logge			SM / CS		Samplin	-					-
Editor:		<u>Grant</u>	Willford		Convert	ed to V	Vell: ⊠ Yes ☐ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
	120			Topock - Alluvium Deposits	SM		(321'); little silt; dry to moist; iron oxide stainin fine to very coarse sand	ıg; increase iı	n very	(317.0 - 323.0') Normal drilling (323.0 - 326.0') Rough drilling	(177.0 - 327.0') 5395 gallons of water used; 4465 gallons of water recovered; 930 gallons of water lost
_325 326 327				Topock - Alluvium	MH		(327.0 - 328.2') Topock - Alluvium Deposits; (with sand (MH); reddish brown (2.5YR 4/4); m some granules to very large pebbles, angular	nedium plasti	city;	(326.0 - 327.0') Normal drilling (327.0 - 337.0') Normal Drilling	
328				Deposits Topock -			very fine to very coarse grained sand, subang little clay; some coarser clasts composed of nedium stiff; moderate cementation	ular to subrou netadiorite; m	und; noist;		
329		No Sieve		Alluvium Deposits	SM		(328.2 - 329.9') Topock - Alluvium Deposits; S (SM); reddish brown (2.5YR 4/4); very fine gra- cobbles, subangular to subround; low plastici granules to large pebbles, angular to subroun	ined to small tv: some silt:	l little		
330 _331_ _332_	4200	Samples Collected		Topock - Alluvium	МН		weak cementation (329.9 - 334.0') Topock - Alluvium Deposits; (with sand (MH); reddish brown (2.5YR 4/4); rr some granules to large pebbles, angular to su fine to very coarse grained sand, subangular t clay; moist; medium stiff; weak cementation (331'); trace clay; increase in granules and pe	nedium plasti ubangular; litt o subround;	city; le very little		
333	1200			Deposits	IVIII		silt and clay				
335 336 337				Topock - Alluvium Deposits	МН		(334.0 - 337.5') Topock - Alluvium Deposits; S gravel (MH); reddish brown (2.5YR 4/4); medi fine to very coarse grained sand, subangular t granules to very large pebbles, angular to sub moist; medium stiff; weak cementation	um plasticity o subround;	; some little		
										(337.0 - 345.0') Normal drilling,	
338			MW-X-VAS-	Topock - Alluvium	ML	9.7.0	(337.5 - 338.0') Topock - Alluvium Deposits; (ML); reddish brown (2.5YR 4/4); low plasticit			drilled 8 ft due	
339	96		337-342 (<0.17 U ppb) 7/11/2019 11:30	Deposits Topock - Alluvium Deposits	ML		very large pebbles, angular to subangular; littl coarse grained sand, subangular to subround medium stiff; weak cementation (338.0 - 341.0¹) Topock - Alluvium Deposits; (ML); reddish brown (2.5YR 4/4); medium plagranules to very large pebbles, angular to sub	e very fine to ; trace clay; r Gravelly silt w sticity; some	very moist; vith sand	to sidil	
340 Abbrev	viations	·· 11808 -	Unified Soil C	lassification	System	<u> [d b]</u>	eet. bas = below ground surface. ams		,	la laval GW = 4	groundwator

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Date S	Started:	06/20/	2019		Surface	Elevat	ion: <u>N/A</u>	Boring No.:	MW-Xd	
Date C	Comple	ted: <u>07/31/</u>	2019		Northing) (NAC	983): <u>N/A</u>	Borning ito	inter Au	
Drilling	Co.:	<u>Casca</u>	de		Easting	(NAD	33): <u>N/A</u>	Client: PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	417 ft bgs	Project: Final G	W Remedy Pha	ase 1
Drill Ri	ід Туре	: <u>Proso</u> i	nic Truck Mou	ınt	Borehol	e Diam	eter: 6-12 inches	Location: PG&E	Topock, Needle	es, California
Driller	Name:	E. Rar	nos / S. Vasq	uez	Depth to	First '	Water: 9.6 ft bgs			
Drilling	Asst:	O. Flo	res / L. Amaya	<u>a</u>	Samplin	g Meth	nod: 4 Inch X 10 ft Core Barrel	Project Number:	RC000753.005	51
Logge	r:	<u>GJ / S</u>	SM / CS		Samplin	g Inter	val: <u>Continuous</u>			
Editor:		<u>Grant</u>	Willford		Convert	ed to V	Vell: ⊠ Yes ☐ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
 341			MW-X-VAS- 337-342 (<0.17 U ppb)	Topock - Alluvium Deposits	ML		fine to very coarse grained sand, subangular to clay; moist; stiff; moderate cementation (339'); wet to moist; weak cementation; decreasebles, increase in silt (341.0 - 342.5') Topock - Alluvium Deposits; S	ase in granules and	(337.0 - 345.0') Normal drilling, drilled 8 ft due to sluff	
 342 	96		7/11/2019 11:30	Topock - Alluvium Deposits	GM		(GM); reddish brown (2.5YR 4/4); granules to angular to subround; some fine to very coarse subangular to subround; little silt; trace clay; n	very large pebbles, grained sand, noist		
343				Topock - Alluvium	SM		(342.5 - 345.0') Topock - Alluvium Deposits; S (SM); reddish brown (2.5YR 4/4); medium gra grained, angular to subround; some granules pebbles, angular to subround; little silt; trace of cementation	ined to very coarse to very large		
344 _345_				Deposits						
346 					ML		(345.0 - 348.0') Topock - Alluvium Deposits; G (ML); reddish brown (2.5YR 4/4); low plasticity large pebbles, angular to subround; little fine t sand, subangular to subround; moist to dry; so cementation (347'); moist to dry; soft; weak cementation; in and pebbles, increase in sand, decrease in sil	y; some small to o coarse grained off; weak	(345.0 - 352.0') Normal drilling	
_348				Topock - Older Alluvium Deposits	MH		(348.0 - 348.3') Topock - Older Alluvium Depo silt with sand (MH); light brown (7.5YR 6/4); m some clay; little granules to medium pebbles, subround; trace very fine to fine grained sand, tround; dry; soft; weak cementation	osits; Gravelly elastic nedium plasticity; angular to		
350 351 	144	No Sieve Samples Collected		Topock - Older Alluvium Deposits	ML		(348.3 - 352.0') Topock - Older Alluvium Depo with sand (ML); reddish brown (2.5YR 4/4); lo small to large pebbles, angular to subround; li grained sand, subangular to subround; moist to cementation	w plasticity; some ttle fine to coarse		
_352 353 _354				Topock - Older Alluvium Deposits	SW-SM		(352.0 - 355.0') Topock - Older Alluvium Depo sand with silt and gravel (SW-SM); reddish brv very fine grained to medium grained, subangu granules to very large pebbles, angular to subi clay; trace small cobbles, subangular; moist to cementation	own (2.5YR 4/4); lar to subround; little round; little silt; little	(352.0 - 357.0') Rough drilling	
_355 _ 356 _ 357				Topock - Weathered Bedrock - conglomerat	IVIH		(355.0 - 357.0') Topock - Weathered Bedrock Gravelly elastic silt with sand (MH); reddish br medium plasticity; some granules to very large subround; little very fine to fine grained sand, s subround; little clay; little coarser clasts comp dry to moist; stiff; moderate cementation	rown (2.5YR 4/4); e pebbles, angular to subangular to		
358 358 359	60			Topock - Weathered Bedrock - conglomerat	IVIL		(357.0 - 359.0') Topock - Weathered Bedrock Sandy silt with gravel (ML); reddish brown (2.5 plasticity; some very fine to medium grained s. subround; little granules to very large pebbles, subround; little clay; moist; medium stiff; weak	5YR 4/4); low and, subangular to , angular to c cementation	(357.0 - 362.0') Rough drilling and sluff encountered	
				Topock - Weathered Bedrock -	ML		(359.0 - 374.0') Topock - Weathered Bedrock Sandy silt with gravel (ML); reddish brown (2.5 plasticity; some very fine to very coarse graine	5YR 4/4); low		

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Date S	started:	06/20/2	2019		Surface	Elevati	on: <u>N/A</u>	В	Rorino	ı No ·	MW-Xd	
Date C	Comple	ted: <u>07/31/</u> 2	2019		Northing	g (NAD	83): <u>N/A</u>				IIII Ad	
Drilling		Cascad			Easting	•	3): <u>N/A</u>	Clie		PG&E		
Drilling			•		Total De	•	417 ft bgs	•	-		V Remedy Pha	
Drill Ri			ic Truck Mou		Borehol			Loc	ation: <u>l</u>	PG&E T	opock, Needle	es, California
Driller			nos / S. Vasq		•		Vater: 9.6 ft bgs					
Drilling			es / L. Amaya		Samplin	-		ore Barrel Proj	ject Nu	ımber: <u>F</u>	RC000753.005	<u> </u>
Logge Editor:			M / CS		Samplin	-						
Editor:		<u>Grant v</u>	Nillford		Convert	ea to v	/ell: ⊠ Yes □ No	<u> </u>				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic	USCS	USCS Class		oil Description			Drilling Notes	Drilling Fluid
361	60			conglomerat	e		to subround; little granules t subround; little clay; trace of metadiorite; dry to moist; so (361'); moist to wet	oarser clasts composed ft	d of		(357.0 - 362.0') Rough drilling and sluff encountered	
_362 _363_							(361.5'); moist to wet; soft; v and decrease in silt	weak cementation; incre	ease in sa	and .	(362.0 - 372.0') Soft drilling	
364							(363'); dry to moist	11.				
365 							19	8				
_366 _367				Topock - Weathered			0)					
368	120			Bedrock - conglomerat	ML							
369							(369'); dry to moist; soft; we decrease in silt	ak cementation; increas	se in san	d and		
_370		No Sieve Samples Collected										
_371											(272.0277.01)	
373											(372.0 - 377.0') Normal drilling	
374	60						(374.0 - 377.0') Topock - W Silty sand with gravel (SM);	eathered Bedrock - concredish brown (2.5YR 4	glomerat l/4); fine	e;		
375	33			Topock - Weathered Bedrock -	SM		grained to very coarse grain granules to very large pebbl moist; medium dense; mode	ed, subangular to subro es, angular to subround	ound; son	ne ay;		
376 _377				conglomerat	e							
378				Topock - Weathered Bedrock - conglomerat			(377.0 - 377.5') Topock - W Well graded gravel with silt (2.5YR 4/4); granules to bou very fine to very coarse grain little silt; dry to moist; weak	and sand (GW-GM); red ulders, subangular to sul ned sand, subangular to	ďdish bro ibround; l	own ittle	(377.0 - 382.0') Normal drilling	
379 	60			Topock - Weathered Bedrock - conglomerat	GIVI	0000	(377.5 - 382.0') Topock - W Silty gravel with sand (GM); to very large pebbles, angul- coarse grained sand, suban	eathered Bedrock - con reddish brown (2.5YR 4 ar to subround; little ver gular to subround; little	4/4); gran y fine to v silt; trace	ules very		
380						6X7	trace coarser clasts compos					
Abbrev	viations	: USCS = L	Jnified Soil CI	assification	System	ft = fe	et, bgs = below ground	d surface, amsl = al	bove m	nean sea	level. $GW = c$	roundwater.

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Date S				;	Surface	Elevati		Boring No.	: MW-Xd	
	•	ted: <u>07/31/</u>				g (NAD				
Drilling		Casca			_	(NAD8	,	Client: PG&E	NA/ D D	
Drilling			Drilling nic Truck Mou		Total D	•	<u> </u>	Project: Final G Location: PG&E	SW Remedy Pha	
Drill Ri Driller			nic Truck Mot nos / S. Vasq			le Diam o First \	eter: <u>6-12 inches</u> Vater: <u>9.6 ft bgs</u>	Location. PG&E	Topock, Needle	es, Calliornia
Drilling			res / L. Amay		•	ng Meth		Project Number:	RC000753.005	 51
Logge			SM / CS		•	ng Inter				
Editor:			Willford		-	ted to V				
t) ct	very (r	Sieve	Groundwater	ogic	de CS	CS	Cail Danarintian		Deillie - Net-	Daillia a Florid
Depth (ft)	Recovery (in)	Sample ID	Sample ID	Geologic Formation	Code	USCS	Soil Description		Drilling Notes	Drilling Fluid
 _381				Topock - Weathered			moderate cementation		(377.0 - 382.0') Normal drilling	
	60			Bedrock - conglomerate	GM	000				
382							(382.0 - 390.0') Topock - Weathered Bedrock	- conglomerate;	(382.0 - 390.0')	
_ 383_							Gravelly lean clay with sand (CL); reddish brov medium plasticity; some granules to very large subround; little fine to coarse grained sand, su subround; little silt; moist to wet; soft; weak cei	vn (2.5YR 4/4); e pebbles, angular to bangular to	Normal drilling	
384			MW-X-VAS- 382-387							
_ 385_			(<0.17 U ppb) 7/13/2019 14:43				.0.			
			14.40	Topock - Weathered	CL					
207	132			Bedrock - conglomerate			(386'); moist to wet; soft; weak cementation; do and pebbles and sand, increase in silt and clay			
387										
388										
389										
390_		No Sieve Samples					(390.0 - 400.0') Topock - Weathered Bedrock -	oonglomorato:	(390.0 - 393.0')	
		Collected					Gravelly lean clay with sand (CL); reddish brow medium plasticity; some silt; little granules to la	vn (2.5YR 4/4);	Rough drilling	
_391							angular to subround; little fine to very coarse grandles to subround; moist; soft; weak cem	rained sand,		
392							(392'); moist; soft; weak cementation; increase pebbles, and decrease in clay	e in granules and		
393							(392.7'); moist; soft; weak cementation (393'); moist; soft; weak cementation; increase	e in granules and	(393.0 - 403.0') Normal drilling	
394							pebbles, decrease in sand and clay		Normal drilling	
_ 395_				Topock - Weathered						
-				Bedrock - conglomerate	CL					
396										
_ 397	162						(396.5'); moist; soft; weak cementation; decrea pebbles, increase in silt and clay	ase in granules and		
_ 398_										
-							(398.5'); moist; soft to medium stiff; weak ceme	entation: increase in		
399							granules and pebbles, decrease in silt	,		
400										
	viations	: LISCS = I	Unified Soil C	lassification	Systen	o ft = fc	et has = helow around surface amsl	= ahove mean se	a level GW = c	aroundwater

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Date S	tarted:	06/20/	2019	;	Surface	Elevati	on:	N/A		Borir	na No.:	MW-Xd	
		ted: <u>07/31</u>	2019		Northing	g (NAD	83):	N/A				MITT AG	
Drilling		<u>Casca</u>	de		Easting	•	3):	N/A		Client:	PG&E		
Drilling					Total De	•		417 ft bgs		Project:		W Remedy Ph	
Drill Ri			nic Truck Mou		Borehol			6-12 inches		Location	: <u>PG&E T</u>	opock, Needle	es, California
Driller I			mos / S. Vasq		•			9.6 ft bgs		5	. —	2000250	- 4
Drilling			res / L. Amaya		Samplin	•		4 Inch X 10 ft Core Barr	rrel	Project N	lumber: <u>I</u>	RC000753.009	01
Logge			SM / CS		Samplin Canvort	•		Continuous No.					
Editor:		Grant	Willford		Convert	ed to v	veii:						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Descrip	otion			Drilling Notes	Drilling Fluid
 _401				Topock - Weathered Bedrock - conglomerate	6		Gravell mediur	 401.0') Topock - Weathered It y lean clay with sand (CL); redent n plasticity; some silt; little grant to subround; little fine to very 	ddish brov anules to l	vn (2.5YR 4 arge pebble	/4); es,	(393.0 - 403.0') Normal drilling	
 402				Topock - Weathered Bedrock - conglomerate			soft to (401.0	ular to subround; trace small c nedium stiff; weak cementation · 402.2') Topock - Weathered I gravel with sand (GC); reddish	on Bedrock -	- conglome			
 403				Topock - Weathered Bedrock - conglomerate	ML		granule very co	s to very large pebbles, angula arse grained sand, subangular le coarser clasts composed of	ar to subr ir to subro	ound; little f und; little si	It; little	(403.0 - 407.0')	
404	162			Topock - Weathered Bedrock -	GC	Ø // //	Gravell plastici	· 403.6') Topock - Weathered I y silt with sand (ML); re <mark>dd</mark> ish b ty; some granules to very large nd; little medium to very coarse	brown (2.5 e pebbles	5YR 4/4); lo , angular to	w	Soft drilling	
405				Topock - Weathered Bedrock -	SM		to subr (403.6 Clayey	ound; little clay; moist; soft; we · 404.0') Topock - Weathered I gravel with sand (GC); reddish s to small cobbles, angular to	eak ceme Bedrock - h brown (2	ntation - conglome 2.5YR 4/4);	rate;		
_406				Topock - Weathered			very co clay; lit cemen	arse <mark>grained sand,</mark> subangular le coarser clasts composed of ation	r to subro of metadio	und; little si rite; moist;	lt; little weak		
_407				Bedrock - conglomerate Topock - Weathered Bedrock -	1		Silty sa grained granule	 406.1') Topock - Weathered Ind with gravel (SM); reddish broto very coarse grained, subants to very large pebbles, angulate coarse. 	orown (2.5 ngular to s lar to subr	YR 4/̈4); fin subround; s ound; little :	e ome silt; little	(407.0 - 417.0') Soft drilling	
408 _409_		No Sieve Samples Collected		conglomerate Topock -	g		(406.1 Sandy mediun	407.0') Topock - Weathered I ean clay with gravel (CL); redd n plasticity; some silt; little grar	Bedrock - dish brow anules to la	- conglomei n (2.5YR 4/ arge pebble	rate; 4); es,		
410				Weathered Bedrock - conglomerate	GC		subang (407.0 Silty sa	ular to subround; little fine to v ular to subround; moist; soft; w · 408.0') Topock - Weathered f nd with gravel (SM); reddish br to very coarse grained, suban	weak cem Bedrock - brown (2.5	nentation - conglome YR 4/4); fin	rate;		
411							plastici subrou (408.0	ty; some granules to very large nd; little silt; little clay; moist; w · 411.0') Topock - Weathered I gravel with sand (GC); reddish	e pebbles weak cem Bedrock -	, angular to entation - conglomei			
412	120			Topock - Weathered			granule coarse moist;	graver with said (GG), redustring s to small cobbles, angular to grained sand, subangular to so veak cementation - 414.8') Topock - Weathered I	subround;	d; some fine little silt; litt	le clay;	(412.0 - 417.0') Cleared bottom of borehole with	(412.0 - 417.0') 375 gallons of water used; 0
413 _414_			MW-X-VAS- 412-417 (<0.17 U	Bedrock - conglomerate	SM e		Silty sa grained plastici subrou (413.3)	nd with gravel (SM); reddish br to very coarse grained, suban ky; some granules to very large nd; some silt; little clay; moist; ; moist; weak cementation; inc	orown (2.5 ngular to s e pebbles ; weak cer ocrease in	YR 4/4); fin subround; lo , angular to mentation	e ow	water	gallons of water recovered; 375 gallons of water lost
415 _			ppb) 7/15/2019 12:43	Topock -			(414.8 Silty grato very	s and sand, decrease in silt and 417.0') Topock - Weathered I avel with sand (GM); reddish bi arge pebbles, angular to subro	Bedrock - prown (2.5 round; sor	SYR 4/4); gr ne fine to ve	anules ery		
416 417				Weathered Bedrock - conglomerate	GM			grained sand, subangular to so oarser clasts composed of me ation					
					•			End of Boring at 4	417.0 'bgs				-
418													
419													
420	/iations	: 118C8 -	Unified Sail C	lassification	Svetor	ft – fc	at ha	s = below ground surface	a amal	= ahovo	mean cor	a level CM - r	aroundwater
Unnie/	nauons	. USUS =	oriiii c a 3011 Cl	เลออเมนิสเเปก	System	ι, ιι – ιε	er, ng	s – p e low ground sunace	رح, aiiisi	- above	mean sea	a 15v5l, 5vv = (groundwater,

9/	ARC	ADIS	for natural and built assets		Borin	g Lo	9		Sh	eet: 1 of	7
	Started				face Elev		N/A	Borin	a No.	: MW-Xs	
		ted: <u>08/12/2</u>			thing (N		N/A	_	_		
Drilling		Cascac			ting (NA		N/A	_ Client:	PG&E	W D D	4
	g Metho ig Type		<u> Drilling</u> ic Truck Mou		al Depth: ehole Dia		127 ft bgs 10-12 inches	Project:		W Remedy Pha Topock, Needle	
	Name:		/asquez				9.6 ft bgs	_ Location.	FGAL	тороск, пееце	55, Calliottia
Drilling			es / L. Amaya		npling M		4 inch x 10 ft. Core Barrel	- Project N	lumber:	RC000753.005	51
Logge			y Mack		npling In		Screen Intervals	- , -			
Editor		Grant V	Vilford	Cor	overted to	Well:					
£ (very	Sieve	Groundwater	ation	S a S	8					
Depth (ft)	Recovery (in)	Sample ID	Sample ID	Geologic	Code Code		Soil Description			Drilling Notes	Drilling Fluid
						(0.0 - 1 MW-X	7.0') No recovery (NR); did not collect d for lithology	or log core, s	see	(0.0 - 17.0') Soft drilling	
- 1 -											
_ 2 _	_										
_ 3 _											
_ 4 _											
-	_										
5							100				
6											
7 _											
- - - 8 _											
	0			1	NR						
_ 9 _							•				
10		No Sieve Samples							2	<u>.</u>	
- - - - - - - - -		Collected									
12	-										
13											
14	_		MW-X-VAS- 12-17								
15			(<0.033 U ppb) 6/25/2019								
			15:10								
16											
17						(17.0 -	27.0') No recovery (NR)			(17.0 - 27.0')	
18						/				Loose fine grained sands did not stay in	
	0			1	NR X					core barrel.	
19	-										
	1				/						
\ <u>\ \</u>		11000		.c. 1. 0	· · ·	<u>, , , , , , , , , , , , , , , , , , , </u>	a - balaw ground aurfage ame			1 1 0)4/	

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sh	eet: 2 of	7
	Started:					Elevation:	N/A	Bori	na No.:	: MW-Xs	
	-	ted: <u>08/12/2</u>				g (NAD83):	N/A			<u></u>	
Drilling		<u>Cascac</u>			_	(NAD83):	N/A	_ Client:	PG&E		
_	Metho		•		Total De	-	127 ft bgs	_ Project:		W Remedy Pha	
	ig Type		ic Truck Mou			e Diameter:	10-12 inches	_ Location	1: <u>PG&E</u>	Topock, Needle	es, California
Drilling	Name:		/asquez es / L. Amaya		-	o First Water: g Method:	4 inch x 10 ft. Core Barrel	- Project I	Mumber:	RC000753.005	51
Logge			y Mack			g Interval:	Screen Intervals	_ 1 10,0001	Number.	10000733.000	71
Editor		Grant V	-		-	ed to Well:	∀es	_			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
21	0				NR		0/8/			(17.0 - 27.0') Loose fine grained sands did not stay in core barrel.	
	- 1440	No Sieve Samples Collected	MW-X-VAS- 32-37 (<0.033 U ppb) 6/26/2019 11:45	Topock - Fil	SP	yellowi	36.0') Topock - Fill; Poorly graded sar sh brown (10YR 4/4); very fine grained gular to round; trace silt; wet; no odor	nd (SP); dark	grained,	(27.0 - 40.0') Soft drilling	
36_ 37_ 38_ 38_ 40_	1440			Topock - Fluvial Deposits	SW	gravel	46.5') Topock - Fluvial Deposits; Well (SW); grayish brown (10YR 5/2); fine of d, subangular to subround; little granul gular to subround; trace silt; wet; no od	grained to ve es to small p	ry coarse		

9/	ARC	ADIS	for natural and built assets		Во	ring Lo	g		She	eet: 3 of	7
	Started:					Elevation:	N/A	Borir	ng No.:	MW-Xs	
	-	ted: <u>08/12/2</u>			-	g (NAD83):	N/A	_			
Drilling	-	Cascac			_	(NAD83):	N/A	_ Client:	PG&E	A/ Domody/Dh	
	g Metho ig Type		ic Truck Mou	unt	Total De	epın: e Diameter:	127 ft bgs 10-12 inches	_ Project:		N Remedy Ph Γοροςk, Needl	
	Name:		/asquez			o First Water		_ Location	. I Gal	гороск, песси	55, Calliottia
Drilling			es / L. Amaya		-	g Method:	4 inch x 10 ft. Core Barrel	- Project N	lumber: I	RC000753.00	 51
Logge			y Mack		-	g Interval:	Screen Intervals	_ ,			
Editor	:	Grant V	Vilford		Convert	ed to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
41424344454647	1440			Topock - Fluvial Deposits	SW	(46.5); little granules to <mark>large pebbles;</mark> increa	graded grav	el with	(40.0 - 127.0') rough drilling began at approx 95 ft. between 110-117, too much torque on drill, casing was pulled to approx 40 ft to use water to assist reaming 10" borehole	(40.0 - 127.0') 4960.4 gallons of water used; 2031.68 gallons of water recovered; 2928.72 gallons of water lost
4748495051525354555657585960	0	No Sieve Samples Collected		Fluvial Deposits	NR	sand angul subar (47.0	GW); dark grayish brown / dark yellow ar to subangular; some fine to coarse gualer to subround; trace silt; no odor 97.0') No recovery (NR); did not collected for lithology	ish brown(10 rained sand,	YR 4/2);		

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g			Sh	eet: 4 of	7
Date S						Elevation:	N/A		Borii	na No.	: MW-Xs	
	•	ted: <u>08/12/2</u>				g (NAD83):	<u>N/A</u>		_			
Drilling		<u>Cascac</u>				(NAD83):	N/A		_ Client:	PG&E)	4
Drilling Drill Ri			<u> Irilling</u> ic Truck Mou	nt	Total De	eptn: e Diameter:	127 ft bgs 10-12 incl		Project:		W Remedy Ph Topock, Needle	
Driller			/asquez	111		e Diameter. o First Water:		165	_ LUCALION	i. FG&E	тороск, мееці	es, Calilottila
Drilling			es / L. Amaya	l	-	g Method:	_	0 ft. Core Barrel	- Project N	Number:	RC000753.00	51
Logge			y Mack			ig Interval:	Screen In		- ,			
Editor:		Grant V	Vilford		Convert	ed to Well:	× Yes	No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
	0	No Sieve Samples Collected	MW-X-VAS- 71-76 (<0.033 U ppb) 6/27/2019 08:52	9 31	NR						(40.0 - 127.0') rough drilling began at approx 95 ft. between 110-117, too much torque on drill, casing was pulled to approx 40 ft to use water to assist reaming 10" borehole	(40.0 - 127.0') 4960.4 gallons of water used; 2031.68 gallons of water recovered; 2928.72 gallons of water lost
<u> </u>			l :c 0 :l 0l			 						

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log			She	eet: 5 of	7
	Started:					Elevation			Borin	a No.:	MW-Xs	
	-	ted: <u>08/12/2</u>	2019			g (NAD8						
Drilling	g Co.:	<u>Cascac</u>	<u>le</u>		Easting	(NAD83	3): <u>N/A</u>		Client:	PG&E		
Drilling	Metho	od: <u>Sonic E</u>	Drilling		Total De	epth:	127 ft bgs		Project:	Final G\	N Remedy Ph	ase 1
Drill R	ig Type	: <u>Proson</u>	ic Truck Mou	<u>ınt</u>	Borehol	e Diame	eter: 10-12 inches		Location:	<u>PG&E 1</u>	Topock, Needle	es, California
Driller	Name:	Steve \	/asquez		Depth to	First W	/ater: <u>9.6 ft bgs</u>					
Drilling	Asst:	O. Flore	es / L. Amaya	<u> </u>	Samplin	g Metho	od: 4 inch x 10 ft. Core Ba	arrel	Project N	lumber: <u>I</u>	RC000753.00	51
Logge	r:	<u>Anthon</u>	y Mack		Samplin	g Interva	al: <u>Screen Intervals</u>					
Editor	•	Grant V	Vilford		Convert	ed to W	ell: 🗵 Yes 🗌 No					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Descri	iption			Drilling Notes	Drilling Fluid
	0 1440	No Sieve Samples Collected		Topock - Fluvial Deposits	NR SW		(97.0 - 107.0") Topock - Fluvial Depoter of the grained to ve to subround; trace granules, subang	ery coarse	grained, sub	angular	(40.0 - 127.0') rough drilling began at approx 95 ft. between 110-117, too much torque on drill, casing was pulled to approx 40 ft to use water to assist reaming 10" borehole	(40.0 - 127.0') 4960.4 gallons of water used; 2031.68 gallons of water recovered; 2928.72 gallons of water lost
100												

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	;	Sheet: 6 of	7
Date S	tarted:	08/10	/2019		Surface	Elevat	on: <u>N/A</u>	Boring No	o.: MW-Xs	
Date C	omple	ted: <u>08/12</u>	/2019		Northing	g (NAD	83): <u>N/A</u>	Borning Itt) <u>IVIV 73</u>	
Drilling	Co.:	<u>Casca</u>	ade		Easting	(NAD8	3): <u>N/A</u>	Client: PG&	<u>E</u>	
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	<u>127 ft bgs</u>	Project: Final	GW Remedy Ph	ase 1
Drill Ri	д Туре	: <u>Prosc</u>	nic Truck Mou	<u>int</u>	Borehol	e Diam	eter: 10-12 inches	Location: PG&	E Topock, Needl	es, California
Driller I	Name:	Steve	Vasquez		Depth to	First \	Vater: 9.6 ft bgs			
Drilling	Asst:	<u>O. Flo</u>	ores / L. Amaya	<u> </u>	Samplin	g Meth	od: 4 inch x 10 ft. Core Barrel	Project Numbe	r: RC000753.00	51
Logge		<u>Antho</u>	ny Mack		Samplin	•				
Editor:		<u>Grant</u>	Wilford		Convert	ed to V	/ell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
101 102 103 104 105 106 107	1440			Topock - Fluvial Deposits	SW				(40.0 - 127.0') rough drilling began at approx 95 ft. between 110-117, too much torque on drill, casing was pulled to approx 40 ft to use water to assist reaming 10" borehole	(40.0 - 127.0') 4960.4 gallons of water used; 2031.68 gallons of water recovered; 2928.72 gallons of water lost
				Topock - Fluvial Deposits	GW		(107.0 - 108.0') Topock - Fluvial Deposits; We sand (GW); brown (10YR 4/3); granules to ver angular to subround; some very fine to mediun	ry large pebbles.		
109 109 110 111 112	1440	No Sieve Samples Collected	MW-X-VAS- 107-112 (<0.033 U ppb) 6/27/2019 15:04	Topock - Fluvial Deposits	SM		subangular to subround; trace silt; no odor (108.0 - 112.0') Topock - Fluvial Deposits; Silty (SM); dark grayish brown / dark yellowish brow fine grained to medium grained, subangular to granules to large pebbles, angular to subround angular to subround; wet; no odor	vn(10YR 4/2); very o subround; some d; some silt; trace		
 113 _114_ _115_ _116_			MW-X-VAS- 112-117 (<0.033 U ppb) 6/28/2019 09:56	Topock - Fluvial Deposits	GW		(112.0 - 116.0") Topock - Fluvial Deposits; We sand (GW); dark grayish brown / dark yellowis granules to large cobbles, subangular to round coarse grained sand, subangular to subround; cobbles; wet; no odor	sh brown(10YR 4/2); d; some fine to very ; trace small		
117				Topock - Alluvium Deposits	GW-GM		(116.0 - 117.0') Topock - Alluvium Deposits; W with silt and sand (GW-GM); brown (7.5YR 4/4 pale reddish brown(10R 5/4); granules to small to round; some very fine to medium grained satisfaction.	4) trace weak red / Ill cobbles, angular		
118 119 120	1008			Topock - Alluvium Deposits	SM		round; little silt; wet; no odor (117.0 - 124.0') Topock - Alluvium Deposits; S (SM); reddish brown (5YR 4/3) trace red (10R grained to medium grained, subangular to sub granules to large pebbles, angular to subround angular to subround; wet; no odor (118'); increase in granules and pebbles	5/6); very fine bround; some d; some silt; trace		

9/	٩RC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sh	neet: 7 of	7
	Started:					Elevation:	N/A	Borir	ng No.	: MW-Xs	
		ted: <u>08/12/2</u>				g (NAD83):	N/A				
Drilling		Cascad				(NAD83):	N/A	_ Client:	PG&E	SW Remedy Ph	
Drilling Drill Ri			ic Truck Mou		Total De	eptri. le Diameter:	127 ft bgs 10-12 inches	_ Project:		Topock, Needle	
Driller			/asquez			o First Water		_ Location	. <u>1 Oal</u>	TOPOOK, TYCCOK	os, odiliornia
Drilling		·	es / L. Amaya		-	ng Method:	4 inch x 10 ft. Core Barrel	- _ Project N	Number:	RC000753.005	51
Logge	r:	<u>Anthon</u>	ıy Mack		Samplin	ng Interval:	Screen Intervals	_			
Editor:		Grant V	Vilford		Convert	ted to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
	1008			Topock - Alluvium Deposits	SM					(40.0 - 127.0') rough drilling began at approx 95 ft. between 110-117, too much torque on drill, casing was pulled to approx 40 ft to use water to assist reaming	(40.0 - 127.0') 4960.4 gallons of water used; 2031.68 gallons of water recovered; 2928.72 gallons of water lost
123										10" borehole	
 125							0 - 127.0') No recovery (NR); Did not co kd for lithology	lect or log co	ore, see		
126	0				NR						
127							End of Boring at 127.0 'bo				
128							Elid of boiling at 127.0 bg	ys.			
129						0					
130											
131											
132											
133											
134 135											
136											
137											
 138											
139											
140 Abbrev	viations	: USCS = I	Inified Soil Cl	assification	n Sveten	n ff = feet h	as = below ground surface, am	gl = ahove	mean se	ea level GW =	aroundwater

AP	RCA	DIS Design for natural built as	& Consultancy ural and sets		Well Consti	ruction Log	5	Sheet: 1 of 5
Date Sta		05/13/2019			_Surface Elevation:	N/A	Well ID: N	/W-M-57, MW-M-95
	•	07/30/2019			_Shallow Well Elevation:	N/A		
Drilling C		Cascade Sonic Drilling			_ Deep Well Elevation:	N/A N/A	Client: PG&E	SW Remedy Phase 1
Drilling M Driller Na		Tyler Alymer	•		_Northing (NAD83): _Easting (NAD83):	N/A	•	E Topock, Needles, California
Drilling A		C. Winland/J		laria	Borehole Diameter:	10-12 inches	Location. <u>r Odl</u>	- Topock, Necdics, California
Logger:		M. Andrews/			_Water Level Start:	44.23 ft bgs	Proiect Numbe	r: RC000753.0051
Editor:		Sean McGra			_ _Development End Date:	_	, 	
Total De	pth:	99 ft bgs			_Well Completion:	⊠ Flush Stick-up		
Depth (ft)	Groundwate Sample ID		SOSO	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
			NR		(0.0 - 2.0') Concrete Pad (0.5 - 42.0') 2" PVC Sch 80 Casing	(0.6 - 75.0') 2" PVC Sch 80 Casing		(0.0 - 2.0') 9 bags Note: 2.5 x 2.5 ft concrete pad with 18 diameter lockable vault, King Kon-Crete 4000 PSI
3 4 5					(2.0 - 6.0') Portland Cement 6% Bentonite	(0.0 - 8.0°) 12.0° Borehole	(2.0 - 6.0') 22.2 gallons	(2.0 - 6.0') 50 gallons (125%) Note: Type I, II and V with 6% Bentonite
_ 7 _ _ 7 _ _ 8 _					(6.0 - 8.5') Bentonite_seal chips		(6.0 - 8.5') 2.57 bags	(6.0 - 8.5') 8 bags (211%) Note: Puregold Medium Chips, use to fill void
9 10 11 12 13			NR		Cement 6% Bentonite (10.5 - 11.5') Centralizer (8.8 - 13.5') Bentonite seal chips		(8.5 - 8.8') 1.2 gallons (8.8 - 13.5') 3.45 bags	(8.5 - 8.8') 50 gallons (4067%) Note: Type I, II and V with 6 % Bentonite, void took grout (8.8 - 13.5') 8 bags (132%) Note: Halliburton Uniform Granular, boudler fell into borehole about 10' bgs, during casing pull, no apparent damage to well casing
1415161718181920					(13.5 - 25.0') Grout	(8.0 - 99.0') 10" Borehole	(13.5 - 25.0') 45.5 gallons	(13.5 - 25.0') 100 gallons (120%) Note: Type I, II and V with 6% Bentonite

Client: PG8 Project: Fina Location: PG8	al GW Remedy Phase 1 RE Topock, Needles, Californ er: RC000753.0051 Material Volumes Installed
Client: PG& Project: Fina Location: PG& Project Number Calculated Material Volumes	Material Volumes Installed (13.5 - 25.0') 100 gallons (120') Note: Type I, II and V with 6%
Project: Fina Location: PG& Project Number Calculated Material Volumes	er: RC000753.0051 Material Volumes Installed (13.5 - 25.0') 100 gallons (120') Note: Type I, II and V with 6%
Project Number Calculated Material Volumes	er: RC000753.0051 Material Volumes Installed (13.5 - 25.0') 100 gallons (120') Note: Type I, II and V with 6%
Project Number Calculated Naterial Volumes	er: RC000753.0051 Material Volumes Installed (13.5 - 25.0') 100 gallons (120' Note: Type I, II and V with 6%
Calculated Naterial Volumes	Material Volumes Installed (13.5 - 25.0') 100 gallons (120') Note: Type I, II and V with 6%
Calculated Naterial Volumes	Material Volumes Installed (13.5 - 25.0') 100 gallons (120 Note: Type I, II and V with 69
Material Volumes	Installed (13.5 - 25.0') 100 gallons (120 Note: Type I, II and V with 69
Material Volumes	Installed (13.5 - 25.0') 100 gallons (120 Note: Type I, II and V with 69
Material Volumes	Installed (13.5 - 25.0') 100 gallons (120 Note: Type I, II and V with 69
(13.5 - 25.0') 45.5 gallons	(13.5 - 25.0') 100 gallons (120 Note: Type I, II and V with 69 Bentonite
3	
(25.0 - 36.0') 8.08 bags	(25.0 - 36.0') 9 bags (11% Note: Puregold Medium Chij
(36.0 - 61.0') 25.4 bags	(36.0 - 61.0') 39 bags (54% Note: Lapis Lustre Sand
I = above mear	_
	mbol represents depth to wa
	bags = above mear

	NRCA	DIS Design & for natura built asset	Consultancy al and ets		Well Consti	ruction Log	5	Sheet: 3 of 5
Date St	tarted:	05/13/2019			_Surface Elevation:	N/A	Well ID: N	//W-M-57, MW-M-95
Date Co	ompleted:	07/30/2019			_Shallow Well Elevation:	N/A		
Drilling	Co.:	Cascade			_Deep Well Elevation:	N/A	Client: <u>PG&E</u>	
Drilling	Method:	Sonic Drilling			_Northing (NAD83):	N/A	Project: Final (GW Remedy Phase 1
Driller N	lame:	Tyler Alymer			_Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, California
Drilling .	Asst:	C. Winland/J.	Cande	laria	_Borehole Diameter:	<u>10-12 inches</u>		
Logger	:	M. Andrews/0	C.Stewa	art	_Water Level Start:	44.23 ft bgs	Project Number	r: RC000753.0051
Editor:		Sean McGrar	ne		_Development End Date:	6/17/2019		
Total D	epth:	99 ft bgs			_Well Completion:			
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
41		Topock - Alluvium Deposits	SM		(0.5 - 42.0') 2" PVC Sch 80 Casing (40.5 - 41.5') Centralizer (42.0 - 57.0') 2" Sch So PVC (20-slot)	(0.6 - 75.0') 2" PVC Sch 80 Casing		
43 		Topock - Alluvium Deposits	SC		Screen Screen		Jo.	0
45		Topock - Alluvium Deposits	SM					
47							3	
48 		Topock - Alluvium Deposits	SC					
50 51 		Topock - Alluvium Deposits	SM		(36.0 - 61.0') Cemex	(8.0 - 99.0') 10" Borehole	(36.0 - 61.0') 25.4 bags	(36.0 - 61.0') 39 bags (54%) Note: Lapis Lustre Sand
52		Topock - Alluvium Deposits	GM					
54 55 55 56 57	MW-M-VAS 52-57 (28 ppb) 3/28/2019 11:10	Topock - Alluvium Deposits	SM					
58 59 60			NR		(57.5 - 58.5') Centralizer (57.0 - 59.4') Sump — and End Cap	A CAST AND		sea level GW = groundwater

9/	ARCA	DIS Design for na built a	n & Consultancy etural and assets		Well Const	ruction Log	S	Sheet: 4 of 5
	Started:	05/13/2019			_Surface Elevation:	N/A	Well ID: N	/W-M-57, MW-M-95
	-	07/30/2019			Shallow Well Elevation:	N/A		·
Drilling		Cascade			Deep Well Elevation:	N/A	Client: PG&E	
Drilling Driller		Sonic Drillin	-		Northing (NAD83):	N/A	•	GW Remedy Phase 1
Drilling		Tyler Alyme C. Winland/		alaria	Easting (NAD83): Borehole Diameter:	N/A 10-12 inches	Location: PG&E	Topock, Needles, California
Logge		M. Andrews			Water Level Start:	44.23 ft bgs	Project Number	:: RC000753.0051
Editor:		Sean McGr		a	Development End Date:			. 110000100.0001
Total D		99 ft bgs			Well Completion:			
_		is E	1,0	10				
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well C	construction	Calculated Material Volumes	Material Volumes Installed
 61				\setminus	(36.0 - 61.0') Cemex #3 MESH (8x10)	.: (0.6 - 75.0') 2" PVC Sch 80 Casing	(36.0 - 61.0') 25.4 bags	(36.0 - 61.0') 39 bags (54%) Note: Lapis Lustre Sand
				$ \rangle / $				
62				$ \setminus $				
				$ \setminus $				
63				$ \ \ $				
			NR					
64				$ \ \ \ \ \ \ $				
- -				$ / \rangle $				
65				/	(61.0 - 70.0')		(04.0, 70.0)) 7.0	(04.0. 70.01) 0.1 1- 1- (40/)
				/ \	Bentonite seal — pellets		(61.0 - 70.0') 7.9 buckets	(61.0 - 70.0') 8 buckets (1%) Note: Pel-Plug (TR30) 3/8â€□
66				/ \	pellets			
 67				/ \				
0/		Topock -		6 X D				
68		Alluvium Deposits						
				// //				
69								
70		Topock -	SM		(69.5 - 70.5')	(8.0 - 99.0') 10"		
L –		Deposits	:		Centralizer	Borehole		
71								
<u> </u>								
72								
<u> </u>				10 PIC				
73				3				
- -	MW-M-VAS	Topock -		18 PJC				
74	72-77 (<0.033 U	Alluvium Deposits		G G				
	ppb) 3/29/2019	Боровно		10 P.C				(70.0 - 99.0') 31 bags (-3%)
75	14:01				(70.0 - 99.0') Cemex #3 MESH (8x10)	(75.0 - 95.0') 2" Sch	(70.0 - 99.0') 32 bags	Note: Lapis Lustre Sand
76				10 PIC		80 PVC (20-slot) Screen		
76								
77								
78		Topock - Alluvium						
L _		Deposits		KYP				
79								
L -				120				
80		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	10 11 5	<u> </u>			L	

9/	4RC4	DIS Design & for nature built asset	Consultancy al and ets		Well Const	ruction Log		Sheet: 5 of 5	
Date S	Started:	05/13/2019			_Surface Elevation:	N/A	Well ID: I	MW-M-57, MW-M-95	
Date 0	Completed:	07/30/2019			_Shallow Well Elevation:	N/A			
Drilling	g Co.:	Cascade			_Deep Well Elevation: <u>N/A</u>		Client: PG&E		
Drilling	g Method:	Sonic Drilling			_Northing (NAD83):	N/A	Project: Final GW Remedy Phase 1		
	Name:	Tyler Alymer			_Easting (NAD83):	N/A	Location: <u>PG&I</u>	E Topock, Needles, California	
Drilling	g Asst:	C. Winland/J.			_Borehole Diameter:	10-12 inches			
Logge		M. Andrews/0		art	_Water Level Start:	44.23 ft bgs	Project Numbe	er: RC000753.0051	
Editor:		Sean McGrar	ne		_Development End Date:		_		
Total [Depth:	99 ft bgs	1		_Well Completion:	⊠ Flush Stick-up			
Depth (ft)	Groundwat Sample II		USCS	USCS	Well C	Construction	Calculated Material Volumes	Material Volumes Installed	
81 82 83		Topock - Alluvium Deposits	GM			(75.0 - 95.0') 2" Sch 80 PVC (20-slot) Screen			
84 84 85		Topock - Alluvium Deposits	ML					(3)	
86 87 88		Topock - Alluvium Deposits	SM				3		
89 90		Topock - Alluvium Deposits	SC		(70.0 - 99.0') Cemex #3 MESH (8x10)	(8.0 - 99.0') 10" Borehole	(70.0 - 99.0') 32 bags	(70.0 - 99.0') 31 bags (-3%) Note: Lapis Lustre Sand	
9192939495969798		Topock - Alluvium Deposits	SW-SM		(95.5 - 96.5') Centralizer	(95.0 - 97.4') Sump and End Cap			
33					End of Boring at		-	•	
100	1				99.0 'bgs.				
	viations: I	ISCS - Unified	ا جمنا ۲	laccificat	tion System ft - foot has	= below ground surface, an	nel – ahove mean	sea level GW = groundwater	

ARCAI	DIS Design & Cor for natural are built assets	nd nd	Well Construc	ction Log		Sheet: 1 of 11
_	3/20/2019		Surface Elevation: N/A		Well ID: I	MW-M-132, MW-M-193
ate Completed: <u>(</u>			Shallow Well Elevation: <u>N//</u>			•
•	Cascade		Deep Well Elevation: <u>N/A</u>		Client: PG&E	
rilling Method: S	-		Northing (NAD83): N/A		•	GW Remedy Phase I
	yler Alymer		Easting (NAD83): <u>N/A</u>		Location: <u>PG&</u>	<u> Topock, Needles, California</u>
•	C. Winland/J. 0			2 inches		
	C. Bonessi/R.			85 ft bgs	Project Numbe	r: RC000753.0051
_	Sean McGrane	9	Development End Date: 6/1			
tal Depth: 2	216 ft bgs		Well Completion:	Flush Stick-up		T
Groundwater Sample ID	Geologic Formation	USCS Code USCS Class	Well Constru	uction	Calculated Material Volumes	Material Volumes Installed
1 _			(0.0 - 1.5') Concrete Pad (0.5 - 112.0') 2" PVC Sch 80 Casing	(0.6 - 173.2') 2" PVC Sch 80 Casing		(0.0 - 1.5') 5 bags Note: 2.5 x 2.5 ft concrete pad with 1 diameter lockable vault, King Kon-Crete 4000 PSI
2 — — 3 — —			(1.5 - 4.0') Portland Cement 6% Bentonite	(0.0 - 8.0') 12"	(1.5 - 4.0') 13.9 gallons	(1.5 - 4.0') 8 gallons (-42%) Note: Type I, II and V and Benseal
4 — — — — — — — — — — — — — — — — — — —		NR	(4.0 - 8.0') Bentoniteseal chips	(0.0 - 8.0) 12" Borehole	(4.0 - 8.0') 4.12 bags	(4.0 - 8.0') 15 bags (264%) Note: Puregold medium chips, little formation collapse, which moved casing to side of well, well checked no obstruction
	Topock - Fluvial Deposits	SW-SM	(9.5 - 10.5') Centralizer (8.0 - 13.0') Portland Cement 3% Bentonite		(8.0 - 13.0') 19.8 gallons	(8.0 - 13.0') 70 gallons (254%) Note: Type I, II and V and Benseal
3		NR	(13.0 - 37.1') Portland Cement 3%	— (8.0 - 197.6') 10" Borehole	(13.0 - 37.1') 95.4	(13.0 - 37.1') 200 gallons (110%)
17 - 18 - 19	Deposits	sw-sm	Bentonite		gallons	Note: Type I, II and V and Benseal
obreviations: U		101 14 L	cation System, ft = feet, bgs =	below ground surface:	, amsl = above me	ean sea level, GW =
			· · · · · · · · · · · · · · · · · · ·	y reporting limit, NR = I		
oundwater, ppb	= parts per bi	ilion, U = noi	. UELECLEU ADOVE LITE TADOFALOI	y roporting mint, rec	NO I LOCCETOIT, DIG	o water table cylliber

9ARC	Design & for natura built asse	Consultancy al and its	Well Const	ruction Log	5	Sheet: 2 of 11
Date Started:	03/20/2019		_Surface Elevation:	N/A	Well ID: N	MW-M-132, MW-M-193
Date Completed			_Shallow Well Elevation			
Drilling Co.:	Cascade		_Deep Well Elevation:	N/A	Client: PG&E	
Drilling Method:	Sonic Drilling		_Northing (NAD83):	N/A	Project: <u>Final</u>	GW Remedy Phase I
Driller Name:	Tyler Alymer		_Easting (NAD83):	N/A	Location: PG&E	Topock, Needles, California
Drilling Asst:	C. Winland/J.	. Candelaria	_Borehole Diameter:	4-12 inches		
Logger:	C. Bonessi/R	. Moniz	_Water Level Start:	44.85 ft bgs	Project Numbe	r: RC000753.0051
Editor:	Sean McGrar	ne	_Development End Date	e: <u>6/15/2019</u>		
Total Depth:	216 ft bgs		_Well Completion:			
Groundwa Sample I		USCS Code USCS Class	Well C	Construction	Calculated Material Volumes	Material Volumes Installed
	Topock - Fluvial Deposits	0,000000000000000000000000000000000000	(0.5 - 112.0') 2" PVC— Sch 80 Casing	—(0.6 - 173.2') 2" PVC Sch 80 Casing		
28	Topock - Fluvial Deposits	SW-SM	(13.0 - 37.1') Portland Cement 3% Bentonite (34.5 - 35.5') Centralizer	(8.0 - 197.6') 10" Borehole	(13.0 - 37.1') 95.4 gallons	(13.0 - 37.1') 200 gallons (110%) Note: Type I, II and V and Benseal
CTON DETAILS, POSE TOPOCK CYLON DETAILS, POSE TO	Topock - Fluvial Deposits	SM	(37.1 - 46.0') — Bentonite seal chips		(37.1 - 46.0') 6.54 bags	(37.1 - 46.0') 24 bags (267%) Note: Puregold Medium Chips. Bentonite sinking into high solids grout.
⊋lΔhhreviations:	USCS = Unified	d Soil Classific	ation System ft = feet h	as = below ground surface	e_amsl = above me	ean sea level GW =

ARC ⁴	DIS for natura built asse	Consultancy l and ts		Well Constru	uction Log	S	Sheet: 3 of 11
ate Started:	03/20/2019			_	I/A	Well ID: N	MW-M-132, MW-M-19
ate Completed				_Shallow Well Elevation: <u>N</u>			
illing Co.:	Cascade			•	I/A	Client: PG&E	
•	Sonic Drilling			• ,	I/A	•	GW Remedy Phase I
er Name:	Tyler Alymer			O (,	I/A	Location: <u>PG&E</u>	Topock, Needles, Californ
ng Asst:	C. Winland/J.	Cande	elaria	_Borehole Diameter: 4	-12 inches		
ger:	C. Bonessi/R	. Moniz		_Water Level Start: 4	4.85 ft bgs	Project Number	r: RC000753.0051
or:	Sean McGrar	ne		_Development End Date: 6			
al Depth:	216 ft bgs			_Well Completion:	⊠ Flush Stick-up		
Groundwa Sample II		USCS	USCS	Well Con	struction	Calculated Material Volumes	Material Volumes Installed
	Topock - Fluvial Deposits	SM		(0.5 - 112.0') 2" PVC— Sch 80 Casing	—(0.6 - 173.2') 2" PVC Sch 80 Casing		
- - - - - -	Topock - Alluvium Deposits	GM		(37.1 - 46.0') Bentonite seal chips		(37.1 - 46.0') 6.54 bags	(37.1 - 46.0') 24 bags (267%) Note: Puregold Medium Chips. Bentonite sinking into high solids grout.
	Topock - Alluvium Deposits	GM			(8.0 - 197.6') 10" Borehole		
MW-M-VAS 52-57 (28 ppb) 3/28/2019 11:10		GW		(46.0 - 94.3') High Solids Grout		(46.0 - 94.3') 191.2 gallons	(46.0 - 94.3') 228 gallons (19%) Note: Aqua Guard Bentonite Grout
	Topock - Alluvium Deposits	SM					
	JSCS = Unifie			ation System, ft = feet, bgs			
				detected above the laborat			
		aurad i	noet dev	velopment			

Well Construction Log	`	Sheet: 4 of 11
Surface Elevation: N/A	Well ID: N	MW-M-132, MW-M-193
Shallow Well Elevation: <u>N/A</u>	_	
Deep Well Elevation: <u>N/A</u>	_ Client: PG&E	
Northing (NAD83): N/A	-	GW Remedy Phase I
Easting (NAD83): N/A	_ Location: <u>PG&</u>	<u> Topock, Needles, California</u>
Borehole Diameter: 4-12 inches		
Water Level Start: 44.85 ft bgs	_ Project Numbe	r: <u>RC000753.0051</u>
Development End Date: 6/15/2019	_	
Well Completion: X Flush Stick-up		
Well Construction	Calculated Material Volumes	Material Volumes Installed
(0.5 - 112.0') 2" PVC————————————————————————————————————	•	
	2	
(64.5 - 65.5') Centralizer	6	9
(46.0 - 94.3') High Solids Grout (8.0 - 197.6') 10" Borehole	(46.0 - 94.3') 191.2 gallons	(46.0 - 94.3') 228 gallons (19%) Note: Aqua Guard Bentonite Grout
<u> </u>	lo Recovery, blu	e water table symbol
		cation System, ft = feet, bgs = below ground surface, amsl = above metaletected above the laboratory reporting limit, NR = No Recovery, bluevelopment

9/	ARCA	DIS Design & for natur built asso	Consultancy al and ets		Well Const	ruction Log	\$	Sheet: 5 of 11
Date S	Started:	03/20/2019			_Surface Elevation:	N/A	Well ID: I	MW-M-132, MW-M-193
Date (Completed	07/30/2019			_Shallow Well Elevation	: <u>N/A</u>		
Drilling	g Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	=
Drilling	g Method:	Sonic Drilling	<u> </u>		_Northing (NAD83):	N/A	Project: Final	GW Remedy Phase I
Driller	Name:	Tyler Alymer			_Easting (NAD83):	N/A	Location: PG&I	<u> Topock, Needles, California</u>
Drilling	g Asst:	C. Winland/J	. Cande	laria	_Borehole Diameter:	4-12 inches		
Logge	er:	C. Bonessi/R	R. Moniz		_Water Level Start:	44.85 ft bgs	Project Numbe	r: RC000753.0051
Editor		Sean McGra	ne		_Development End Date	e: <u>6/15/2019</u>		
Total I	Depth:	216 ft bgs			_Well Completion:			
Depth (ft)	Groundwate Sample ID		Sode	USCS Class		Construction	Calculated Material Volumes	Material Volumes Installed
81 81 82		Topock - Alluvium Deposits	ML		(0.5 - 112.0') 2" PVC— Sch 80 Casing	—(0.6 - 173.2') 2" PVC Sch 80 Casing		
83 84		Topock - Alluvium Deposits	GW-GM					
84		Topock - Alluvium Deposits	SM		(46.0 - 94.3') High Solids Grout	(8.0 - 197.6') 10" Borehole	(46.0 - 94.3') 191.2 gallons	(46.0 - 94.3') 228 gallons (19%) Note: Aqua Guard Bentonite Grout
95 96		Topock - Alluvium Deposits	ML		(94.3 - 96.3') Cemex #3 MESH (8x10)		(94.3 - 96.3') 2.1 bags	(94.3 - 96.3') 6 bags (186%) Note: Lapis Lustre Sand, drillers were concerned about bentonite swelling in casing overnight placed sand in casin and open borehole, sand filled void
97 98 99		Topock - Alluvium Deposits	SM		(96.3 - 106.9') Bentonite seal pellets		(96.3 - 106.9') 9 buckets	(96.3 - 106.9') 9.5 buckets (6%) Note: Pel-Plug (TR30) 3/8"
100	-				(99.5 - 100.5') Centralizer			
	viations: I	JSCS = Unifie	d Soil C	lassific		gs = below ground surfa	ce_amsl = above m	ean sea level GW =

ARC	ADIS Design & for nature built asset	Consultancy al and ets	Well Const	ruction Log	5	Sheet: 6 of 11
Date Started:	03/20/2019		Surface Elevation:	N/A	Well ID: N	MW-M-132, MW-M-193
Date Complete	d: <u>07/30/2019</u>		Shallow Well Elevation	: <u>N/A</u>		
Drilling Co.:	Cascade		Deep Well Elevation:	N/A	Client: PG&E	
Drilling Method	: Sonic Drilling		Northing (NAD83):	N/A	•	GW Remedy Phase I
Driller Name:	Tyler Alymer		Easting (NAD83): <u>N/A</u>		Location: PG&E	<u> Topock, Needles, California</u>
Drilling Asst:	C. Winland/J	<u>. Candelaria</u>	Borehole Diameter:	4-12 inches		
Logger:	C. Bonessi/R	. Moniz	Water Level Start:	44.85 ft bgs	Project Numbe	r: RC000753.0051
Editor:	Sean McGra	ne	Development End Date	e: <u>6/15/2019</u>		
Total Depth:	216 ft bgs		Well Completion:			
Groundw Sample		USCS Code USCS Class		Construction	Calculated Material Volumes	Material Volumes Installed
	Topock - Alluvium Deposits	ML ML	(99.5 - 100.5')	(0.6 - 173.2') 2" PVC Sch 80 Casing	(96.3 - 106.9') 9	(96.3 - 106.9') 9.5 buckets (6%)
081-000 L00:001 L00:00	Topock - Alluvium Deposits	SM	(96.3 - 106.9') Bentonite seal pellets		buckets	Note: Pel-Plug (TR30) 3/8"
03					(6)	
108	Topock -	SM		(8.0 - 197.6') 10" Borehole		
980 — 170 — — — — — — — — — — — — — — — — — — —			(112.0 - 132.0') 2" ———————————————————————————————————		(106.9 - 136.0') 30.2 bags	(106.9 - 136.0') 35 bags (16%) Note: Lapis Lustre Sand
Designation of the property of	Topock - Alluvium Deposits	M M				
The state of the s	USCS = Unifie	d Soil Classifi	cation System ft = feet h	gs = below ground surfac	e. amsl = above me	ean sea level GW =

ARCA	DIS Design & for nature built asset	Consultancy al and ets	Well Construction Log	Sheet: 7 of 11
Date Started:	03/20/2019		Surface Elevation: N/A	Well ID: MW-M-132, MW-M-193
Date Completed			Shallow Well Elevation: <u>N/A</u>	
Drilling Co.:	<u>Cascade</u>		Deep Well Elevation: <u>N/A</u>	Client: PG&E
Drilling Method:	Sonic Drilling		Northing (NAD83): N/A	Project: Final GW Remedy Phase I
Driller Name:	Tyler Alymer		Easting (NAD83): <u>N/A</u>	Location: PG&E Topock, Needles, California
Drilling Asst:	C. Winland/J	<u>. Candelaria</u>	Borehole Diameter: 4-12 inches	
Logger:	C. Bonessi/R	. Moniz	Water Level Start: 44.85 ft bgs	Project Number: RC000753.0051
Editor:	Sean McGra	ne	Development End Date: 6/15/2019	
Total Depth:	216 ft bgs		Well Completion: ⊠ Flush Stick-up	
Groundwat Sample II		USCS Code USCS Class	Well Construction	Calculated Material Volumes Material Volumes Installed
	Topock - Alluvium Deposits	GM O	(112.0 - 132.0') 2" —	VC
 123 124	Topock - Alluvium Deposits	SM		
125 	Topock - Alluvium Deposits	GW-GM		
127 			(106.9 - 136.0) Cemex #3 MESH (8x10)	(106.9 - 136.0') 30.2 bags (16%) Note: Lapis Lustre Sand
			(8.0 - 197.6') 10 Borehole	
	Topock - Alluvium	GM S	(132.5 - 133.5')	
 135	Deposits		(132.0 - 134.4') —	
-		1 191		
136				
136 137 138 			(136.0 - 163.0') Bentonite seal pellets	(136.0 - 163.0') 23.8 (136.0 - 163.0') 25 buckets (5%) Note: Pel-Plug (TR30) 3/8"
139				face, amsl = above mean sea level, GW =

Date Started 03/20/2019 Shallow Well Elevation NA	9/	ARCA	DIS Design & for natura built asse	Consultancy I and ts		Well Const	ruction Log	:	Sheet: 8 of 11
Shallow Well (Season						_Surface Elevation:	N/A	Well ID: 1	MW-M-132 MW-M-193
Drilling Marthod: Sonic Drilling A Northing (NAD83): NA Project: Enal GW Remedy Phase I Drilling Asia: C. Writinand J. Candelaria Borehole Diameter: 4-12 inches. C. BonesaidR. Montz Well Completion: 218 if bigs. Well	Date C	Completed	07/30/2019			_Shallow Well Elevation:	: <u>N/A</u>		10100-101-102, 10100-101-100
Driller Name Tyler Alymor Commission	Drilling	g Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&	E
Dilling Ass: C. Willing As	Drilling	Method:	Sonic Drilling			_Northing (NAD83):	N/A	Project: <u>Final</u>	GW Remedy Phase I
Composition	Driller	Name:	Tyler Alymer			_Easting (NAD83):	N/A	Location: <u>PG&</u>	E Topock, Needles, California
Development End Date: 6/15/2019 Development Card Detection: Sear McGrare Development End Date: 6/15/2019 Tuber Development Card Detection: Search Development Card Develo	Drilling	Asst:	C. Winland/J.	Cande	elaria	_Borehole Diameter:	4-12 inches		
Total Depth 216 ft bgs	Loggei	r:	C. Bonessi/R	. Moniz		_Water Level Start:	44.85 ft bgs	Project Numbe	er: RC000753.0051
Calculated Material Volumes	Editor:		Sean McGran	<u>ne</u>		_Development End Date	: <u>6/15/2019</u>		
-141	Total D	Depth:	216 ft bgs			_Well Completion:			Ţ
141	Depth (ft)		Geologic Formation	USCS	USCS Class	Well C		Material Volumes	
	141	MW-M-VAS 147-152 (<0.17 Upb) 3/31/2019	Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits	GM ML		(136.0 - 163.0') Bentonite seal pellets	Sch 80 Casing	(136.0 - 163.0') 23.8	

AR	CAD	Design & for natura built asse	Consultancy Il and ts		Well Const	ruction Log	S	Sheet: 9 of 11
Date Starte		/20/2019			_Surface Elevation:	N/A	Well ID: N	лw-м-132, мw-м-193
Date Comp					_Shallow Well Elevation			·
Drilling Co.		ascade			_Deep Well Elevation:	N/A	Client: PG&E	
Drilling Met		_					Project: Final GW Remedy Phase I	
Driller Nam	•	<u>ler Alymer</u>			_Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, California
Drilling Ass	t: <u>C.</u>	Winland/J.	Cande	elaria	_Borehole Diameter:	4-12 inches		
Logger:	<u>C.</u>	Bonessi/R	<u>. Moniz</u>	<u>-</u>	_Water Level Start: 44.85 ft bgs		Project Number	r: RC000753.0051
Editor:		ean McGrar	ne		Development End Date: 6/15/2019			
Total Depth	ı: <u>21</u>	6 ft bgs	ı		_Well Completion:			
	undwater mple ID	Geologic Formation	USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
161 162 163		Topock -			(136.0 - 163.0') — Bentonite seal pellets	—(0.6 - 173.2') 2" PVC Sch 80 Casing	(136.0 - 163.0') 23.8 buckets	(136.0 - 163.0') 25 buckets (5%) Note: Pel-Plug (TR30) 3/8"
164 165 166		Alluvium Deposits	GM				6	
167 168 169 170		Topock - Alluvium Deposits	SM			(8.0 - 197.6') 10" Borehole	8	
172 (<0. p 175_ 4/2	M-VAS- 2-177 2-133 U pb) /2019 4:57	Topock - Alluvium Deposits	GM		(163.0 - 197.6') Cemex #3 MESH (8x10)	(173.2 - 193.2') 2" Sch 80 PVC (20-slot) Screen	(163.0 - 197.6') 38.2 bags	(163.0 - 197.6') 42 bags (10%) Note: Lapis Lustre Sand
		Topock - Alluvium Deposits	GM			as = below ground surface		

	DIS Design & for natura built asse	Consultancy Il and ts	Well Construct	tion Log	Sh	neet: 10 of 11
Date Started:	03/20/2019		Surface Elevation: N/A		Well ID: M	W-M-132, MW-M-193
Date Completed	l: <u>07/30/2019</u>		Shallow Well Elevation: <u>N/A</u>			
Drilling Co.:	<u>Cascade</u>		Deep Well Elevation: <u>N/A</u>		Client: PG&E	
Drilling Method:	Sonic Drilling		_Northing (NAD83): N/A		Project: Final G	W Remedy Phase I
Driller Name:	Tyler Alymer		Easting (NAD83): N/A		Location: PG&E	Topock, Needles, California
Drilling Asst:	C. Winland/J.	Candelaria	Borehole Diameter: 4-12			
Logger:	C. Bonessi/R	. Moniz	Water Level Start: 44.8	_Water Level Start: 44.85 ft bgs		RC000753.0051
Editor:	Sean McGrar	ne	Development End Date: <u>6/15</u>	/2019		
Total Depth:	216 ft bgs			Flush⊡ Stick-up		
Groundwa Sample I		USCS Code USCS Class	Well Construc	tion	Calculated Material Volumes	Material Volumes Installed
	Topock - Alluvium Deposits	6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	(163.0 - 197.6') Cemex #3 MESH (8x10)	(173.2 - 193.2") 2" Sch 80 PVC (20-slot) Screen (8.0 - 197.6") 10" Borehole	(163.0 - 197.6') 38.2 bags	(163.0 - 197.6') 42 bags (10%) Note: Lapis Lustre Sand
	b)	GM SM GM	(193.7 - 194.7') — Centralizer	(193.2 - 195.5') Sump and End Cap	(197.6 - 209.5') 3.4	(197.6 - 209.5') 3 bags (-12%)
199			(197.6 - 209.5') — Bentonite seal chips	(197.6 - 211.0') 6" Borehole	(197.6 - 209.5') 3.4 bags	Note: Halliburton Holeplug 3/8", during reaming drilled out 0.6 ft of seal
- 7		[Lu/12				

9/	ARCA	DIS Design & for natur built asso	Consultancy al and ets		Well Const	ruction Log		Sheet: 11 of 11
	Started:	03/20/2019			_Surface Elevation:	N/A	Well ID:	MW-M-132, MW-M-193
	-	07/30/2019			_Shallow Well Elevation			•
Drilling	-	Cascade	·		Client: PG&E			
	-	Sonic Drilling			Northing (NAD83): N/A	Project: Final GW Remedy Phase I		
		Tyler Alymer			_Easting (NAD83):	N/A	Location: <u>PG&</u>	E Topock, Needles, California
Drilling			_Borehole Diameter:	4-12 inches	 			
Logge		C. Bonessi/R		<u>z</u>	_Water Level Start:	44.85 ft bgs	Project Numbe	er: RC000753.0051
Editor		Sean McGra	ne		_Development End Date			
Total I	Depth:	216 ft bgs			_Well Completion:			
Depth (ft)	Groundwate Sample ID		Code	USCS Class	Well C	Construction	Calculated Material Volumes	Material Volumes Installed
201	no sample- (Interval did not produce: 4/10/2019 12:28	Topock -	GM		(197.6 - 209.5') Bentonite seal chips		(197.6 - 209.5') 3.4 bags	(197.6 - 209.5') 3 bags (-12%) Note: Halliburton Holeplug 3/8", during reaming drilled out 0.6 ft of seal
206 207 		Topock - Bedrock - metadiorite	GM			— (197.6 - 211.0') 6" Borehole	961	
209 210								
211								
<u> </u>								
212		Topock - Bedrock -						
L _		metadiorite						(
_213					(209.5 - 216.0') Bentonite seal pellets		(209.5 - 216.0') 1.2 buckets	(209.5 - 216.0') 1 buckets (-17%) Note: Pel-Plug (TR30) 3/8"
						(211.0 - 216.0') 4"		
_214						Borehole		
215								
215								
- -								
216			ļ	K///XI	End of Boring at			
	-				216.0 'bgs.			
217								
<u> </u>	-							
218								
 -								
219								
L _								
220								
Abbre	viations: L	JSCS = Unifie	d Soil (Classific	ation System, ft = feet, b	ogs = below ground surfa	ce, amsl = above m	nean sea level, GW =
					· · · · · · · · · · · · · · · · · · ·	ratory reporting limit. NR		

groundwater, ppb = parts per billion, U = not detected an represents depth to water measured post development

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Bo	ring Lo	g		She	et: 1 of	11
Date S	started	: 03/20/2	2019		Surface	Elevation:	N/A	Borin	ua No .	MW-Md	
		ted: <u>04/30/</u> 2			Northing	g (NAD83):	N/A	_		10100 1010	
Drilling		Casca			_	(NAD83):	N/A	_ Client:	PG&E		
Drilling			•		Total De	-	216 ft bgs	_ Project:		N Remedy Ph	
Drill Ri							4-12 inches	_ Location	: <u>PG&E T</u>	opock, Needle	<u>es, California</u>
Driller		•			-		: 44.85 ft bgs	-			
Drilling			land/J. Cand			ig Method:	4 inch x 10 ft. Core Barrel	_ Project N	lumber: <u>F</u>	RC000753.005	51
Logge			essi/R.Moniz/		-	-	Continuous	-			
Editor:		Sean N	<u>/////////////////////////////////////</u>		Convert	ed to Well:	X Yes				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
1 _ 2 _ 3 _ 4 _ 5 _ 6 _ 7 _ 8	0				NR	foot bo	3.0") (NR); Hand cleared for utility clearan ulder encontered had to used rig to break bgs with no core collected, no recovery	s boulder loose	e, drilled	(0.0 - 8.0') Added 10 gallons of water to hydrate bentonite mud tub seal.	(0.0 - 37.0") No water used
- 9 11 12 14 16 17 - 17 - 17 - 17 - 17	24	No Sieve Samples Collected		Topock - Fluvial Deposits	SW-SM	gravel coarse pebble subrou hydrati	10.5') Topock - Fluvial Deposits; Well gra (SW-SM); light olive brown (2.5Y 5/4); ve grained, subangular to subround; some s, subangular to subround; trace cobbles nd; trace silt; trace clay; dry; some moist on of bentonite 17.0') (NR); No recovery.	ery fine graine granules to ve , subangular t	d to very ry large o	(8.0 - 32.0') Soft drilling, formation collapsing after every run	
17 18 19	120			Topock - Fluvial Deposits	SW-SM	gravel coarse pebble subrou hydrati	19.5') Topock - Fluvial Deposits; Well gr (SW-SM); light olive brown (2.5Y 5/4); ve grained, subangular to subround; some s, subangular to subround; trace cobbles ind; trace silt; trace clay; dry; some moisti on of bentonite	ery fine graine granules to ve , subangular t ure present du	d to very ery large o ue to		
20					GW-GM	(19.5 -	27.0') Topock - Fluvial Deposits; Well gr	aded gravel w	ith silt		
	/iation	s: USCS =	Unified Soil C	Classificati			bgs = below ground surface,	amsl = abo	ove mear	sea level, G\	N =

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	9		She	eet: 2 of	11
Date S	Started	: 03/20/2	<u>2</u> 019		Surface	Elevat	ion:	N/A	Borir	na No.:	MW-Md	
	•	eted: <u>04/30/2</u>			Northin			N/A			11111 1114	
Drilling		Cascad			Easting	•	33):	N/A	Client:	PG&E		
Drilling			•		Total D	•			Project:		W Remedy Ph	
Drill Ri				<u>CK MOUNL</u>				4-12 inches 44.85 ft bgs	Location	: PG&E	Topock, Needle	es, Calliornia
Drilling		•	land/J. Cand	elaria	Samplii			4 inch x 10 ft. Core Barrel	Project N	Number:	RC000753.005	 51
Logge			essi/R.Moniz/					Continuous	,	-		
Editor:		Sean M	<u>IcGrane</u>		Conver	ted to V	Vell:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
21	120			Topock - Fluvial Deposits	GW-GN		large pe grained subrour	nd (GW-GM); light olive brown (2.5Y 5/4); ebbles, subangular to subround; some ver sand, subangular to subround; trace cob nd; trace silt; trace clay; dry	y fine to very bles, subanc	y coarse jular to	(8.0 - 32.0") Soft drilling, formation collapsing after every run	(0.0 - 37.0') No water used
28	60	No Sieve Samples Collected		S'O			gravel (coarse pebbles to subro	38.0') Topock - Fluvial Deposits; Well gra SW-SM); light olive brown (2.5Y 5/4); ver grained, subangular to subround; some g s, subangular to subround; little silt; trace bund; dry	y fine graine ranules to ve	d to very ery large		
33 34 35 36	60			Topock - Fluvial Deposits	SW-SM		(32'); iro	on oxide staining; ~2 ft. diameter boulder			(32.0 - 37.0') Hard drilling, due to boulder, borehole collapsing after each clean out run. rod broke while doing clean out at 35 ft bgs	
37 38 39 40	60			Topock - Fluvial Deposits	SM		strong to angular to subal cement sandsto	42.0') Topock - Fluvial Deposits; Silty sar orown (7.5YR 5/6); very fine grained to ve to subangular; some granules to very lar ngular; some silt; little cobbles, subangula ation; iron oxide staining; cobbles compos one/breccia	ery coarse grage pebbles, a ge pebbles, a ar; dry to mois sed of	ained, angular st; weak	(37.0 - 42.0') Drill rods chattering, change geologist from CB to RM (37.1') Change in geologist from CB to RM.	(37.0') 5 gallons of water used; 5 gallons of water recovered; 0 gallons of water lost (37.0 - 205.0') No used
								bgs = below ground surface, a				
around	lwater	nnh = narts	ner hillion I	I = not de	tected a	hove th	ne labo	oratory reporting limit, NR = No	Recover	rv blue v	vater table svr	nhol

groundwater, ppb = parts per billion, U = not detected above t represents depth to water measured during first VAS interval

- /-	ARC	ADIS	Design & Consultancy for natural and built assets		Boring Lo	g		She	eet: 3 of	11
	tarted:		2019		Surface Elevation:	N/A	Borin	a No.:	MW-Md	
		ted: <u>04/30/</u>			Northing (NAD83):	N/A				
rilling	Co.:	<u>Casca</u>	de	[Easting (NAD83):	<u>N/A</u> (PG&E		
rilling	Metho	od: <u>Sonic</u>	Drilling		Total Depth:	216 ft bgs F	Project:	Final G	W Remedy Ph	ase 1
rill Ri	д Туре	e: <u>Borat I</u>	Longyear Tra	ick Mount 1	Borehole Diameter	4-12 inches L	_ocation:	PG&E 1	<u> Fopock, Needle</u>	es, Californi
riller	Name:	<u>Tyler A</u>	Alymer	[Depth to First Wate	er: <u>44.85 ft bgs</u>				
rilling	Asst:	C. Win	nland/J. Cand	delaria S	Sampling Method:	4 inch x 10 ft. Core Barrel F	Project No	umber: J	RC000753.005	51
oggei	r:	C.Bone	essi/R.Moniz	/D.Maurer S	Sampling Interval:	Continuous				
ditor:		<u>Sean N</u>	<u> McGrane</u>	(Converted to Well:					
_	gr.y			igic Ion	(0,0)					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code USCS Class	Soil Description			Drilling Notes	Drilling Fluid
									(37.0 - 42.0') Drill rods	(37.0 - 205.0') No used
.41_	60			Topock - Fluvial	SM				chattering, change geologist	
				Deposits					from CB to RM	
42_										
					(42.0 stron	- 47.0') Topock - Alluvium Deposits; Silty gra g brown (7.5YR 5/6); granules to very large po	ebbles and	d (GM);		
٦ ٦					Dara suba	ngular; some very fine to very coarse grained	sand, angul	ar to		
43					subr	ound; little cobbles; little silt; moist; weak cemeng; Interbedded silty units, cobbles composed	entation; iron	oxide		
. 1						stone/breccia				
44_				Topock -					(44.0 - 47.0')	
-				Alluvium	GM 6	~ ~ ~ ~ ~ ~ ~ .			Drill rods	
45_				Deposits	Para				chattering	
					L HAD					
46					S.P.I.d					
					100					
47_					k 017					
+′ —						- 52.0') Topock - Alluvium Deposits; Silty gra				
-					dark	vellowish brown (10YR 4/4); granules to very ar to subround; some silt; little cobbles; little v	large pebble	s,		
8_					grain	ed sand, angular to subround; little clay; mois	t to wet	.Suiditi	(48.0')	
_									Approximate	
9_					Pola				depth to water table	
_[Topock - Alluvium	GM P					
50		No Sieve		Deposits						
		Samples Collected			100					
., T										
51_			•	KJ		prown (7.5YR 5/4); little silt; trace clay; moist;				
-					iron	xide st <mark>ainin</mark> g; increase in granules and pebble	es, decrease	in		
2_	120					- 59.0') Topock - Alluvium Deposits; Well gra	aded aravel v	vith	(52.0 - 57.0')	
4					sand	(GW); strong brown (7.5YR 5/6); granules to	very large p	ebbles,	` Drill rods ´	
53_					anguangu	ar to subround; some very fine to very coarse ar to subround; little cobbles; trace silt; wet; w	e grained sar veak cement	nd, ation;	chattering, driller suggest water	
						xide staining			table has been encountered	
54_			MW-M-VAS-						encountered	
			52-57							
<u>,</u>			(28 ppb) 3/28/2019							
55_			11:10	Topock -						
-				Alluvium	GW					
56				Deposits						
57										
									(57.0 - 67.0') Hard drilling and	
58					[.6.7]				became harder	
JU					(58')	moist			at 61ft	
_	114									
59				Topodr	(50 (- 61.0') Topock - Alluvium Deposits; Silty sar	nd with arave	el (SM)·		
JJ				Topock -					1 1	
-				Alluvium Deposits	SM Sm	sh brown (10YR 5/2), very fine grained to med tle granules to very large pebbles, angular to	ululli grailleu	, some		

9	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	S	Sheet: 4 of	11
	Started				Surface		•	Boring No	.: <u>MW-Md</u>	
	-		2019			- '				
Drilling	-	<u>Casca</u>			_	•	· ·	Client: PG&E		
_	g Metho		<u>Drilling</u>			•	216 ft bgs	•	•	
	ig Type						eter: 4-12 inches	Location: PG&	<u>E Topock, Needle</u>	es, California
	Name:	•	Alymer		•		Water: 44.85 ft bgs		D0000750.005	- 4
•	g Asst:		nland/J. Cand		Samplir	-		Project Number	r: <u>RC000753.005</u>	01
Logge			essi/R.Moniz/ McGrane		•	•				
Editor:		<u>Sean i</u>	T		Conver	Ted to t	veli. A res I no		1 1	
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
 61				Topock - Alluvium Deposits	SM		clay; trace cobbles, angular to subround; moist		(57.0 - 67.0') Hard drilling and became harder at 61ft	(37.0 - 205.0') No used
62 63				Topock - Alluvium Deposits	GM		(61.0 - 63.0') Topock - Alluvium Deposits; Silty g light brownish gray / pale yellowish brown(10YR large pebbles, subangular to subround; little very grained sand, subangular to subround; little silt; t	6/2); granules to very fine to medium		
63 64	114					0	(63.0 - 67.0") Topock - Alluvium Deposits; Sitty s (7.5YR 4/3); very fine grained to medium grained subround; little granules to very large pebbles, ar little silt; trace cobbles, angular to subround; trace cementation; iron oxide staining	d, angular to ngular to subround;	9	
65 _ 65 _ 66				Topock - Alluvium Deposits	SM		(65'); potential caliche deposits in sediments	0		
67							(67.0 - 75.0') Topock - Alluvium Deposits; Silty g	gravel with sand (GM);	(67.0 - 77.0')	
 68 69							brown (7.5YR 4/3); granules to very large pebble subround; some cobbles, angular to subround; some cobbles, angular to subround; little some grained sand, angular to subround; little some subround;	es, angular to ome very fine to very	Softer drilling	
 70 		No Sieve Samples Collected		Topock -	2		(69.5') brown (10YR 5/3); some silt; little cobbles subround; little clay; moist; weak cementation (70.5'); dry; potential caliche deposits in sedimen			
71 72	120			Alluvium Deposits	GM		(71'); moist (72'); wet; lens of green staining			
 73 					C					
74 75			MW-M-VAS- 72-77 (<0.033 U ppb) 3/29/2019 14:01				(75.0 - 78.0') Topock - Alluvium Deposits; Well g	wroded cond with		
 76 77			14.01	Topock - Alluvium Deposits	SW-SM		gravel (SW-SM); weak red (2.5YR 5/2); very fine grained, angular to subround; little granules to ve angular to subround; little silt; trace cobbles, angular to subround; little silt; trace sil	e grained to coarse ery large pebbles,	(77.0 - 87.0')	
 78	400			Topock -	611		(78.0 - 79.0') Topock - Alluvium Deposits; Silty g weak red (2.5YR 4/2); granules to very large peb		Soft drilling, lost core 82 to 87 ft	
79	120			Alluvium Deposits Topock -	GM SW SM		subround, little cobbles, angular to subround, little coarse grained sand, angular to subround, little s (79.0 - 80.0') Topock - Alluvium Deposits; Poorly	e very fine to very silt; little clay; wet y graded sand with silt		
 80				Alluvium Deposits	SW-SM		and gravel (SW-SM); weak red (2.5YR 5/2); med coarse grained, angular to subround; and granule	dium grained to very es to very large		
	viation	s: USCS =	Unified Soil C	Classification	on Syste	em, ft =	feet, bgs = below ground surface, a		ean sea level, G\	N =

9/-	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 5 of	11
Date S	Started	: 03/20/	2019		Surface	Eleva	tion: N/A	Borin	a No.:	MW-Md	
	•	eted: <u>04/30/</u>			Northing		•			<u> </u>	
Drilling	g Co.:	<u>Casca</u>			Easting	(NAD	33): <u>N/A</u>	Client:	PG&E		
Drilling	y Meth	od: <u>Sonic</u>	Drilling		Total De	epth:	216 ft bgs	Project:	Final G	N Remedy Ph	ase 1
Drill Ri	ig Туре	e: <u>Borat l</u>	Longyear Tra	ck Mount	Borehol	e Dian	neter: 4-12 inches	Location:	PG&E 1	opock, Needle	es, California
Driller	Name	•	-		Depth to	o First	Water: <u>44.85 ft bgs</u>				
Drilling	J Asst:	C. Wir	<u>ıland/J. Cand</u>	elaria	Samplin	ng Metl	nod: 4 inch x 10 ft. Core Barrel	Project N	lumber: [RC000753.005	51
Logge	r:	C.Bon	<u>essi/R.Moniz/</u>	<u>/D.Maurer</u>	Samplin	ng Inte					
Editor:		<u>Sean I</u>	<u> McGrane</u>		Convert	ted to \	Well: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
					-		pebbles, angular to subround; little silt; trace cobl	bles angular	to	(77.0 - 87.0')	(37.0 - 205.0')
				T			subangular; wet		/	Soft drilling, lost	No used
81				Topock - Alluvium	ML		(80.0 - 82.0') Topock - Alluvium Deposits; Sandy brown (7.5YR 4/3); low plasticity; some very fine	/ silt with grav to medium gr	el (ML); ained	core 82 to 87 ft downhole	
<u> </u>				Deposits			sand, angular to subround; little granules to very angular to subangular; little clay; moist to wet; me	large pebbles			
82											
							(82.0 - 84.0') Topock - Alluvium Deposits; Well g and sand (GW-GM); weak red (2.5YR 5/2); gran	ules to very la	arge		
83				Topock - Alluvium	GW-GM		pebbles, angular to subround; some medium to v sand, angular to subround; little cobbles, angular	ery coarse gr	ained		
	400			Deposits	GVV-GIVI		silt; wet	to subariguia	ar, mue		
84	120										
							(84.0 - 95.0') Topock - Alluvium Deposits; Silty s brown (7.5YR 4/3); medium grained to very coars				
							subround; some granules to very large pebbles, a	angular to sul	oround;		
65							some silt; little cobbles, angular to subround; trac interbedded with layers of silty gravel, with sand a			•	
							sand				
86											
87										(87.0 - 97.0')	
				4						Soft drilling,	
88										recovered 82 to 87 ft core	
89											
				Topock -	SM						
90		No Sieve	_	Alluvium Deposits	SIVI						
		Samples Collected					, 6/1				
91			•								
92	120						(91.7'); dry; with lenses of potential caliche in sec cementation	diments and v	veak		
93											
94											
95											
							(95.0 - 97.0') Topock - Alluvium Deposits; Sandy	silt with grav	el (ML);		
				Topock -		1998	brown (7.5YR 4/3); low plasticity; some medium to grained sand, angular to subround; little granules	s to very large	:		
96				Alluvium Deposits	ML	4 4	pebbles, angular to subround; little cobbles, and to subround; little cobbles	ular to subrou	nd; trace		
├ <u>-</u> ┤						699					
97					+	[a 0	(97.0 - 100.0') Topock - Alluvium Deposits; Silty	sand with gra	ivel		
┝╶┤							(SM); brown (7.5YR 4/3); medium grained to very angular to subround; some granules to very large	y coarse grair	ned,		
98							subround; some silt; trace cobbles, angular to su	bround; trace	clay;		
<u> </u>	120			Topock - Alluvium	SM		moist; interbedded with layers of silty gravel with with sand	sand and gra	velly silt		
99				Deposits							
L											
100											
Abbrev	viation	s: USCS =	Unified Soil C	Classificati	on Syste	em, ft =	feet, bgs = below ground surface, a	amsl = abo	ove mear	n sea level, G\	N =

ARC	CADIS	Design & Consultancy for natural and built assets		Borir	າg Log)		Shee	et: 6 of	11
Date Started				Surface Ele		N/A	Boring	No.:	MW-Md	
Date Comple				Northing (N	•	N/A				
Drilling Co.:	<u>Casca</u>			Easting (NA	,	N/A	-	PG&E	V Dl Dl-	1
Drilling Meth		<u>Drilling</u> Longyear Tra				216 ft bgs 4-12 inches	-		V Remedy Ph	
Drill Rig Typ Driller Name		Longyear fra Alymer				44.85 ft bgs	Location.	PG&E I	ороск, мееці	es, California
Drilling Asst:		nland/J. Cand				4 inch x 10 ft. Core Barrel	Project Nu	ımber: F	C000753.005	 51
Logger:		essi/R.Moniz				Continuous		<u>.</u>		•
Editor:		McGrane		Converted t						
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code USCS	Class	Soil Description			Drilling Notes	Drilling Fluid
			Topock - Alluvium Deposits	ML ML	(ML); bi grained pebbles trace cla	. 103.5') Topock - Alluvium Deposits; Sar rown (7.5YR 4/3); low plasticity; some ver sand, angular to subround; little granules , angular to subround; trace cobbles, ang ay; moist; weak cementation; iron oxide st dry; with lens of potential caliche in sedim- ation	y fine to mediu to very large ular to subrour aining	m	(97.0 - 127.0') Formation collapse during clean out drilling with 10 inch casing, soft drilling (97' to 107'), slightly rough drilling (107' to 109'), soft drilling (109' to 117'), soft drilling lost 5 feet	(37.0 - 205.0') No used
_104			Topock - Alluvium Deposits	SM	(SM); g grained angular	105.0") Topock - Alluvium Deposits; Silty rayish brown (2.5Y 5/2) and brown (7.5Yf to very coarse grained, little granules to v to subround; little silt, trace cobbles, anguay; moist; interbedded color changes	R 4/3); medium ery large pebb	les,	of sample downhole (117' to 127') with 6 inch casing	
_105 _106 _107					(104'); t (105.0 - (SM); b angular subrour moist; ir (106'); t	o 104.5', wet silty gravel lens 114.5') Topock - Alluvium Deposits; Silty rown (7.5YR 4/3); medium grained to ven to subround; some granules to very large and; some silt; trace cobbles, angular to su the substantial substa	/ coarse graine e pebbles, angu bround; trace o	ed, llar to	(107.0') During	
	No Sieve Samples Collected	MW-M-VAS- 107-112 (<0.033 U ppb) 3/30/2019 13:59	Topock - Alluvium Deposits	SM		o 109.5', wet			reaming with 10-inch casing flapper bit broke, getting poor recovery, driller thinks material is getting pushed into formation or falling down 6-inch rathole	
 113 _114_										
 115 _116_ 					(GM); b subrour subang	122.0') Topock - Alluvium Deposits; Silty rown (7.5YR 4/3); granules to very large nd; some very fine to medium grained san ular; some silt; little cobbles, angular to sureen staining	pebbles, angul d, angular to	ar to		
_117	_		Topock -		\H					
			Alluvium Deposits	GM O	(118.2')	; sand lens at 118.2 ft				
 120 Abbreviation	ns: USCS =	Unified Soil 0	Classificatio	n Svstem.	ft = feet,	ogs = below ground surface, a	msl = abov	/e mean	sea level. G\	N =

	CADIS	Design & Consultancy for natural and built assets		Boring Log	She	et: 7 of	11
ate Starte				Surface Elevation: N/A	Boring No.:	MW-Md	
-		2019		Northing (NAD83): N/A			
rilling Co.:				Easting (NAD83): N/A		N Domody Db	1
rilling Meth Fill Rig Typ		Drilling			Project: Final GV Location: PG&E T	N Remedy Ph	
riller Name		<u>Longyear fra</u> Alymer		Depth to First Water: 44.85 ft bgs	Location. FG&L 1	ороск, мееці	es, Calliottii
rilling Asst				•	<u>rel</u> Project Number: <u>F</u>	RC000753.005	 51
ogger:				Sampling Interval: Continuous			
ditor:				Converted to Well: ⊠ Yes ☐ No			
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Soil Descript	ion	Drilling Notes	Drilling Fluid
- 121_ - 122_			Topock - Alluvium Deposits	GM (120.5'); weathered metamorphic cobble around cobble	black and green staining	(97.0 - 127.0') Formation collapse during clean out drilling with 10 inch casing, soft drilling (97' to	(37.0 - 205.0') No used
- 123 - 120 124			Topock - Alluvium Deposits	(122.0 - 124.0') Topock - Alluvium Depo (SM); dark grayish brown / dark yellowis grained to very coarse grained, angular to to very large pebbles, angular to subang	h brown(10YR 4/2); very fine to subangular; little granules	107'), slightly rough drilling (107' to 109'), soft drilling (109' to 117'), soft drilling lost 5 feet of sample	
125_				(124.0 - 128.0') Topock - Alluvium Depo silt and sand (GW-GM); light olive brown large pebbles, angular to subangular; so grained sand, angular to subangular; littl oxide staining; occasional sandier and si	n (2.5Y 5/6); granules to very me very fine to very coarse e silt; trace cobbles; wet; iron	downhole (117' to 127') with 6 inch casing	
126 - 127			Topock - Alluvium Deposits	GW-GM (126') brown (7.5YR 4/3); orange stainin			
128_			(0 \(\text{(127'); moist} \) 0 \((128.0 - 144.0') Topock - Alluvium Depotent of GM); light olive brown (2.5Y 5/6); granu	sits; Silty gravel with sand	(127.0 - 132.0') Soft drilling, recovered lost 5 feet of sample from drilling run	
129 - 60	No Sieve Samples			angular to subangular; little very fine to vangular to subangular; little silf; little clay moist	ery coarse grained sand,	(117' to 127')	
131_	Collected	•	0	0 0 0 0 0 (131'); to 131.5' cobbles			
132	_			(132') brown (7.5YR 4/2)		(132.0 - 142.0') Rough drilling	
134			Topock - Alluvium Deposits	GM (133.5'); dry; with potential caliche in sec	liments and weak		
135_							
136 ₉₀ 							
138							
_139							

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	og		She	et: 8 of	11
Date S						Elevation:	N/A	Borin	a No.:	MW-Md	
		eted: <u>04/30/</u>				g (NAD83):	N/A				
Drilling	-	<u>Casca</u>			_	(NAD83):	N/A		PG&E	// D	
Drilling	-		•	als Massest		•	216 ft bgs	-		N Remedy Ph	
Drill R Driller			Longyear i rad Alymer				: <u>4-12 inches</u> er: <u>44.85 ft bgs</u>	_ Location:	PG&E I	ороск, мееан	es, California
Drilling		•	nland/J. Cand				4 inch x 10 ft. Core Barrel	– Project Ni	ımher: F	20000753 004	 51
Logge	-		iessi/R.Moniz/		-	_	Continuous	_ 1 10,000114	amber. <u>r</u>	<u> </u>	<i>7</i> I
Editor			McGrane		-	ted to Well:		_			
				0 5							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
141 142 143 	90			Topock - Alluvium Deposits	GM					(132.0 - 142.0') Rough drilling	(37.0 - 205.0') No used
144 145				Topock - Alluvium Deposits	ML	ML grair pebb	.0 - 144.5') Topock - Alluvium Deposits; S ; brown (10YR 5/3); low plasticity; some ve ed sand, angular to subangular; trace grar les, angular to subround; wet, liquefied	ery fine to mediu nules to very lar	m ge		
146						(SM very pebb	.5 - 154.4') Topock - Alluvium Deposits; S ; brown (7.5YR 4/2) and brown (7.5YR 4/5 coarse grained, angular to subround; som les, angular to subround; some silt; trace of ngular; trace clay; moist to wet; occasiona	3); very fine g <mark>rai</mark> le granules to ve cobbles, angular	ned to ry large to		
147	120					lens	es 2in to 6in thick				
148			MW-M-VAS-								
149 150		No Sieve	147-152 (<0.17 U ppb) 3/31/2019	Topock - Alluvium Deposits	SM						
150 151		Samples Collected	15:21		2		10,				
 152				X						(450.0 467.0)	
153				*						(152.0 - 167.0') Soft drilling	
154											
155						(GM	.4 - 166.5') Topock - Alluvium Deposits; S); brown (7.5YR 4/2) and brown (7.5YR 4/: pebbles, angular to subround; some very , angular to subround; some silt; little cobb	granules to v fine to medium	ery		
156	180					suba 2in t	ngular; moist to wet; iron oxide staining; or o 6in thick		enes		
157				Topock - Alluvium Deposits	GM	(157	'); dry; with red and green staining				
158							'); moist				
159											
160 Abbre	viation	s: USCS =	Unified Soil C	L Classificati	on Syst	em, ft = fee	t, bgs = below ground surface,	amsl = abo	ve mear	n sea level, G\	W =

ARC	CADIS	Design & Consultancy for natural and built assets		Boring Lo	g	5	Sheet: 9 of	11
Date Started				Surface Elevation:	N/A	Boring No	o.: <u>MW-Md</u>	
•	eted: <u>04/30/</u>			Northing (NAD83):	N/A	_		
Orilling Co.:	<u>Casca</u>			Easting (NAD83):	N/A	Client: PG&		
Orilling Meth		•		Total Depth:	216 ft bgs	•	GW Remedy Ph	
Orill Rig Typ				Borehole Diameter:		_ Location: <u>PG&</u>	E Topock, Needle	es, Californi
Oriller Name	•	Alymer		Depth to First Wate	•		50000750005	- 4
Orilling Asst				Sampling Method:	4 inch x 10 ft. Core Barrel	_ Project Numbe	r: <u>RC000753.005</u>)1
Logger: Editor:				Sampling Interval: Converted to Well:	Continuous	_		
	<u>Seam </u>	<u> McGrane</u>		Converted to vveil.	△ Fes ☐ No		 	
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code USCS Class	Soil Description		Drilling Notes	Drilling Fluid
							(152.0 - 167.0') Soft drilling	(37.0 - 205.0') No used
163_			Topock - Alluvium Deposits	GM O			0	
				(164');	moist to dry			
_100								
166_				800				
167				(166.5 (SM)	- 170.0') Topock - Alluvium Deposits; Sil reddish brown (5YR 4/3); very fine graine	ty sand with gravel		
168_			Topock -	angula ::::::::::::::::::::::::::::::::::::	r to subround; some silt; little granules to r to subround; trace cobbles, angular to s	very large pebbles,	(167.0 - 177.0') Soft drilling	
			Alluvium Deposits	SM				
_ _170	No Sieve							
	Samples Collected			(170.0 (GM):	- 176.5') Topock - Alluvi <mark>um</mark> Deposits; Sil brown (7.5YR 4/3) with brown (7.5YR 5/2	ty gravel with sand		
171_		•	0	large p	ebbl <mark>es, angular to</mark> subround; some cobbl gular; little very fine to medium grained sa gular; little silt; moist	es, angular to		
172120				0 (172');	dry; to 176.5', with red and green staining	g, potential caliche in		
			Topock -	I BRID	nts and weak cementation			
4			Alluvium Deposits	GM .				
_174		MW-M-VAS- 172-177	·	200				
4		(<0.033 U ppb)						
_175		4/2/2019 14:57						
				1 1:19				
176								
					- 192.0') Topock - Alluvium Deposits; Sil		- 	
177	1			D D D pebble	reddish brown / moderate brown(5YR 4/4 s, angular to subangular; some very fine	to very coarse grained	(177.0 - 192.0')	
170			_	sand;	ittle medium to very large pebbles, angulas; little silt; trace clay; wet to moist; interbe	ar to subangular; little	Soft drilling	
178_			Topock - Alluvium		onal well graded sand with gravel lenses			
180			Deposits					
_179								
180				1 BH				
	se: LISCS -	I Inified Soil (laccification	on System ft = foot	bgs = below ground surface,	amel = abovo m	oan soa lovol. GV	Λ/ —

AF	RCADIS	Design & Consultancy for natural and built assets		Boring Lo	g		She	et: 10 of	11
Date Star	rted: <u>03/20/</u>	2019	;	Surface Elevation:	N/A	Borino	ı No.:	MW-Md	
Date Con	npleted: <u>04/30/</u>	2019	I	Northing (NAD83):	N/A	_	,	<u> </u>	
Drilling Co	o.: <u>Casca</u>	de	I	Easting (NAD83):	N/A	_ Client: <u> </u>	PG&E		
Drilling M		Drilling		Total Depth:	216 ft bgs	_ Project: <u> </u>	Final GV	V Remedy Ph	ase 1
Drill Rig T	Гуре: <u>Borat</u>	Longyear Tra		Borehole Diameter:		_ Location: [PG&E T	opock, Needl	es, California
Driller Na	•	Alymer		Depth to First Wate	: 44.85 ft bgs	_			
Drilling As				Sampling Method:	4 inch x 10 ft. Core Barrel	_ Project Nu	mber: <u>F</u>	RC000753.00	51
Logger:				Sampling Interval:	Continuous	_			
Editor:	<u>Sean I</u>	McGrane	(Converted to Well:					
Depth (ft)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code USCS Class	Soil Description			Drilling Notes	Drilling Fluid
 181 _182_								(177.0 - 192.0') Soft drilling	(37.0 - 205.0') No used
 183 					70.	O		0	
184 185									
			Topock -						
186 ₁₈	80		Alluvium Deposits	GM Po 0					
			Ворозна						
_187				PIPIS					
			40	l of b					
_188				1 5 PJ					
_									
_189				60°					
_190	No Sieve Samples								
_]	Collected			Porto					
_191				P P					
 _192		MW-M-VAS-							
_104		190-195 (<0.17 U		(192.0	- 195.0') Topock - Alluvium Deposits; Sil reddish brown / moderate brown(5YR 4/4	ty gravel with sa	nd	(192.0') Change	
102		ppb) 4/10/2019		D P. C 12 5 VI	R 4/4): granules to large pebbles, angular	to subround: sor	ne 📗	in geologist to CB	
193		16:35	Topock -	very fi	ne to very coarse grained sand, angular to very coarse grained sand, angular to ay; trace cobbles; wet; weak cementation		silt;		
			Alluvium Deposits	GM 5 1	, , , , , , , , , , , , , , , , , , , ,				
194			_ 5550110						
				[PA					
195			Topock -	(195.0	- 196.0') Topock - Alluvium Deposits; Sil	ty sand with grav	/el		
			Alluvium	SM (SM);	reddish brown / moderate brown(5YR 4/4 grained, angular to subround; some silt;); very fine grain	ed to		
_196 ₁₂	20		Deposits	pebble pebble	s, angular to subround; trace clay; wet			(196.0 - 203.0')	
 _197				(196.0 (GM); (2.5YI) very fi	 205.0") Topock - Alluvium Deposits; Sil reddish brown / moderate brown(5YR 4/4 k 4/4); granules to large pebbles, angular ne to very coarse grained sand, angular to ay; trace cobbles; wet; weak cementation 	 trace reddish b to subround; sor o subround; little 	rown ne	Rough drilling	
198			Topock -	1 5.719 I	a,, adoc cossico, wor, woar comentation				
			Alluvium Deposits	GM P					
 199									
133				l\$H					
				1 600					
200	tions: LISCS -	Linified Soil C	laccificatio	n System ft = feet	bgs = below ground surface,	amel = ahov	e mean	see level C	\/ -

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Boring Log	g		Sheet: 11 of	11
Date S	Started	: 03/20/2		_	Surface Elevation:	N/A	- Boring I	No.: MW-Md	
Date 0	Comple	ted: <u>04/30/</u>	2019		Northing (NAD83):	N/A		<u> </u>	
Drilling		<u>Casca</u>			Easting (NAD83):	N/A		8&E	
Drilling			Drilling		Total Depth:	216 ft bgs	•	al GW Remedy Ph	
Drill R			••		Borehole Diameter:	4-12 inches	_ Location: <u>PG</u>	6&E Topock, Needle	<u>es, California</u>
Driller Drilling		_	-		Depth to First Water Sampling Method:	4 inch x 10 ft. Core Barrel	- Project Num	her: RC000753 005	 51
Logge					Sampling Interval:	Continuous	_ i roject ivaiii	DCI. 110000730.000	<i>7</i> I
Editor:			ИсGrane		Converted to Well:		-		
	>			υ 5					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code USCS Class	Soil Description		Drilling Notes	Drilling Fluid
								(196.0 - 203.0') Rough drilling	(37.0 - 205.0') No used
201									
202									
202	400		no sample (Interval did	Topock -					
	120		not produce.) 4/10/2019	Alluvium Deposits	GM O				
			12:28						
204									
16:05									
205_								(205.0244.0)	(005.0044.01)
0					(GM);	 - 208.0') Topock - Bedrock - metadiorite; grayish brown (2.5Y 5/2) with greenish gr 	ay(10Y 6/1); granu	les Very tight	(205.0 - 211.0') 600 gallons of
206_				Tanada	grained	e pebbles, angular to subround; some ver I sand, angular to subround; some silt; lit		up core barrel at	water used; 600 gallons of water
				Topock - Bedrock -	GM o modera	ate cementation; weathered metadiorite		208'	recovered; 0 gallons of water
207				metadiorite					lost
A		No Sieve							
208_	72	Samples Collected			(208.0	- 216.0') Topock - Bedrock - metadiorite;	grayish brown (2.5	y -	
209_					subanc	th greenish gray(10Y 6/1); granule <mark>s to</mark> lar jular; some very fine <mark>to</mark> very coarse grain	ed sand, angular to	,	
209_						jular; some silt; little clay; dry; moderate c zed during drilling	ementation; bedroo	k	
출 # 210									
DAIABAS									
Š _211_									
101/81 1					(211'); of time	to 213 ft. moist, potential slough based o between runs, notes, and photos	n QC geologist revi	ew (211.0 - 216.0') Rough drilling,	(211.0 - 216.0') No used
212_				Topock - Bedrock -		, , ,		hard, rods and head chattering	
				metadiorite					
213_									
00101	48								
ž_214_					(214'):	to 214.2 silt lens potentially pulverized m	etadiorite		
					(211)	to 211.2 on tone potentially parvoned in	otationto		
215_									
216 24				I	ı K///X	End of Boring at 216.0 'bg	S.		<u> </u>
017									
_217									
5 5 _219_									
220									
2					<u> </u>	bgs = below ground surface,			
20			-			oratory reporting limit, NR = N	o Recovery, b	olue water table syr	nbol
g repres	ents d	eptn to wate	r measured	auring first	VAS interval				

Date Started:	9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	og		Sheet:	1 of	5
Notifing (No. 1975) Cascade Sand Compared Tack Mount to Depth Sonic Drilling Street Sonic Street Street Sonic Street Sonic Street Street Sonic Street Street Sonic Street Street Street Street Sonic Street			05/13/2	2019					Boring	No.: N	MW-Ms	
Drilling Method: Drilling Asst: D		-										
Drilling Asst. Drilling Fuld Drilling Fuld Drilling Asst. Drilling Fuld Dr		-										
Drilling Mass: C. Winland M. Candelaria Sampling Method: Sam McGrane Converted to Well: (2) Yes □ No Sean McGrane Converted to Well: (2) Yes □ No Sean McGrane Converted to Well: (3) Soil Description Sean McGrane Converted to Well: (3) Soil Description Drilling Notes Drilli				-			•	_	•		-	
Drilling Asst:									_ Location: P	G&E TOP	ock, iveedi	es, California
Comparison Com			-			-		-	- Project Nur	mher: RC		 51
Editor: Sean McGrane		-				-	-		_ 1 10,000 1401	ilber. <u>Ito</u>	000700.000	71
1			·			-	-		_			
1		>			υ 5							
1	Depth (ft)	Recover (in)			Geologi	USCS	USCS Class	Soil Description		Di	rilling Notes	Ü
20 drill rods			No Sieve Samples Collected				clea recc	r past 3 ft. bgs recieved approval to start drivery - 37.0') (NR); Core not collected or logged,	illing, not logged, r	F	(18.0 - 19.0') Drill rods chattering (19.0 - 20.0')	(6.0 - 7.0') 5 gallons of water used; 5 gallons of water recovered; 0 gallons of water lost (7.0 - 99.0') No
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =	Abbre	viations	s: USCS = I	Unified Soil C	Classificati	on Svste	em. ft = fee	et, bas = below around surface.	amsl = above	e mean s	ea level. G\	/ / =

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	eet: 2 of	5
Date S	Started	05/13/2	2019		Surface	Elevation:	N/A	Bori	na No.:	MW-Ms	
	-	ted: <u>05/28/2</u>				g (NAD83):	N/A	_			
Drilling	-	Casca				(NAD83):	N/A	_ Client:	PG&E		
Drilling			-		Total D	-	99 ft bgs	_ Project:		W Remedy Ph	
Drill R Driller			<u>_ongyear Tra</u>				10-12 inches : 44.23 ft bgs	_ Location	1: <u>PG&E</u>	Topock, Need	ies, California
Drilling		•	<u>lland/J. Cand</u>		-	ng Method:	8 inch x 10 ft. Core Barrel	- Project	Number	RC000753 00	 51
Logge			el Andrews		-	ng Interval:	Screen Interval	_ 1 10,000	rtarribor.	1.0000100.00	01
Editor			McGrane		-	ted to Well:	Yes □ No	_			
	>			о <u>Б</u>							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
21	108	No Sieve Samples Collected		Topock - Alluvium Deposits	NR SM	(7.5R suban	42.5') Topock - Alluvium Deposits; Silty 4/3); very fine grained to very coarse gra gular; some granules to very large pebble gular; little silt; trace clay; dry to moist	ined, angular	to	chattering (20.0 - 27.0') Casing getting stuck, voids forming, rough drilling and drill rods chattering (20' to 26') (33.0 - 38.0') Drill rods chattering	(7.0 - 99.0') No water used
-											
40 Abbre	viation:	s: USCS = I	Unified Soil C	L Classificati	on Syste	<u> </u>	bgs = below ground surface,	amsl = ah	nove mea	n sea level. G	W =

	1110	ADIS	Design & Consultancy for natural and built assets		Bo	ring Lo	9		Sheet: 3 of	5
	tarted:					Elevation:	N/A	Boring N	lo.: MW-Ms	
	-	ted: <u>05/28/</u>				g (NAD83):	N/A	. —	<u> </u>	
-	Co.:	<u>Casca</u>			-	(NAD83):	N/A	Client: PG8		
-	Metho		•			•	99 ft bgs	•	al GW Remedy Ph	
	g Type		Longyear Tra				10-12 inches	Location: PG	&E Topock, Needl	<u>es, Californi</u>
	Name:	-	-		•		: 44.23 ft bgs	. — — — — — — — — — — — — — — — — — — —	DC000752.00	F 4
_	Asst:		nland/J. Cand el Andrews		-	ng ivietnou: ng Interval:	8 inch x 10 ft. Core Barrel Screen Interval	Project Numb	er: RC000753.00	01
ogger ditor:	•		McGrane		-	ted to Well:	X Yes □ No	•		
1101.		<u>Sean i</u>	I		T	led to vveii.	△ Tes ☐ NO			<u> </u>
(ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
- 41 - 42				Topock - Alluvium Deposits	SM					(7.0 - 99.0') No water used
43 - 44	108			Topock - Alluvium Deposits	sc	(SC); to sub little cl	44.0') Topock - Alluvium Deposits; Claye rown (10YR 4/3); fine grained to very coound; some granules to large pebbles, any; trace silt; dry to moist	arse gr <mark>ained,</mark> angular gular to subangular;		
45 45 - 46				Topock - Alluvium Deposits	SM	brown subrou	46.0') Topock - Alluvium Deposits; Silty s (10YR 4/3); very fine grained to very coar nd; little granules to large pebbles, angula iica; wet	se grained, angular	to	
47						7//// (47.0	47.0"); No recovery 49.5") Topock - Alluvium Deposits; Claye		(47.0 - 52.0')	
48 - 49				Topock - Alluvium Deposits	sc	angula	rown (10YR 4/3); very fine grained to ver to subround; some granules to very larg jular; some cobbles, angular to subangula	e pebbles, angular to		
50 - 51		No Sieve Samples Collected		Topock - Alluvium Deposits	SM	brown suban	52.0') Topock - Alluvium Deposits; Silty s (10YR 4/3); fine grained to coarse grained jular; some granules to very large pebbles jular; some silt; trace clay; wet	d, angular to `	1);	
52_	120			T		6 4 6 6 2 0	53.0') Topock - Alluvium Deposits; Silty of	gravel with sand (GN	4).	
- 53				Topock - Alluvium Deposits	GM	dark g large p	agish brown / dark yellowish brown(10YR ebbles, angular to subangular; little fine to ingular to subround; little silt; trace cobble jular; trace boulders; trace clay; wet	(4/2); granules to ve very coarse grained	ery	
54 			MW-M-VAS- 52-57 (28 pph)			dark y graine	57.0') Topock - Alluvium Deposits; Silty sellowish brown (10YR 4/4); very fine grain I, subround; some small to large pebbles, jular; some silt; trace clay; trace mica; we	ed to very coarse angular to	1);	
55 - 56 - 57			(28 ppb) 3/28/2019 11:10	Topock - Alluvium Deposits	SM					
58_							67.0') (NR); Core not collected or logged log MW-Md for lithology	, no recovery, see		
.59_					NR					
					1	/ \				1

pate Started: Date Comple Drilling Co.: Drilling Method Drill Rig Type Driller Name: Drilling Asst: Drilling As	ted: 05/28/ Casca od: Sonic : Borat I Tyler A C. Wir Michae	2019 de Drilling _ongyear Trad	Ck Mount E	Northing Easting Fotal De Borehold Depth to Samplin	e Diamete	N/A N/A 99 ft bgs r: 10-12 inches er: 44.23 ft bgs 8 inch x 10 ft. Core Barrel Screen Interval	Location: PG&E T	N Remedy Ph	es, California 51 Drilling Fluid
Orilling Co.: Orilling Method Orill Rig Type Oriller Name: Orilling Asst: Orilling Method Orilling Asst: Oril	Casca od: Sonic : Borat I Tyler A C. Wir Michae Sean N	de Drilling Longyear Tracklymer Island/J. Candelel Andrews McGrane Groundwater	Ck Mount E elaria S (Easting Fotal De Boreholo Depth to Samplin Samplin Convert	(NAD83): epth: e Diamete o First Wai g Method: g Interval: ed to Well	N/A 99 ft bgs r: 10-12 inches er: 44.23 ft bgs 8 inch x 10 ft. Core Barrel Screen Interval : X Yes No	Client: PG&E Project: Final GV Location: PG&E I	W Remedy Ph opock, Needle RC000753.005	es, California 51 Drilling Fluid (7.0 - 99.0') No
Orilling Method Prill Rig Type Oriller Name: Oriller Name: Oriller Name: Orilling Asst: Orilling Method Orill Rig Type Orilling Asst: Ori	od: Sonic Borat I Tyler A C. Wir Michae Sean N	Drilling Longyear Tracklymer Island/J. Candel Andrews McGrane Groundwater	ck Mount E elaria S	Fotal De Borehold Depth to Samplin Converto	epth: e Diamete o First War ig Method: ig Interval: ed to Well	99 ft bgs r: 10-12 inches er: 44.23 ft bgs 8 inch x 10 ft. Core Barrel Screen Interval : X Yes No	Project: Final G\ Location: PG&E T	opock, Needle	es, California 51 Drilling Fluid (7.0 - 99.0') No
Orill Rig Type Oriller Name: Orilling Asst: Orillin	Borat I Tyler A C. Wir Michae Sean I	ongyear Trac Alymer Iland/J. Cande El Andrews McGrane Groundwater	ck Mount E	Borehold Depth to Samplin Samplin Converto SOSO	e Diamete o First War og Method: og Interval: ed to Well	r: 10-12 inches er: 44.23 ft bgs 8 inch x 10 ft. Core Barrel Screen Interval : X Yes No	Location: PG&E T	opock, Needle	es, California 51 Drilling Fluid (7.0 - 99.0') No
Oriller Name: Orilling Asst: Original Asst: Original Asst: Orilling Asst: Original Asst: Origina	Tyler A C. Wir Michae Sean I	Alymer aland/J. Cande el Andrews McGrane Groundwater	elaria (Depth to Samplin Samplin Convert SOSO	o First War g Method: g Interval: ed to Well	er: 44.23 ft bgs 8 inch x 10 ft. Core Barrel Screen Interval X Yes No		RC000753.005	51 Drilling Fluid (7.0 - 99.0') No
Orilling Asst: ogger: ditor: (ditor:	C. Wir Michae Sean M	aland/J. Cande el Andrews McGrane Groundwater	elaria	Samplin Samplin Converte SOSO	g Method: g Interval: ed to Well	8 inch x 10 ft. Core Barrel Screen Interval	Project Number: £		Drilling Fluid (7.0 - 99.0') No
ogger: ditor: tditor: tditor	Michae Sean I	el Andrews McGrane Groundwater		Samplin Converte SOSO	g Interval: ed to Well	Screen Interval ∴ Yes No	Project Number: [Drilling Fluid (7.0 - 99.0') No
######################################	Sean N	McGrane Groundwater		SOSO SOSO	ed to Well	Yes No		Drilling Notes	(7.0 - 99.0') No
-6162636465	Sieve	Groundwater		USCS				Drilling Notes	(7.0 - 99.0') No
-61 -62 -63 -64 -65			Geologic		USCS	Soil Description		Drilling Notes	(7.0 - 99.0') No
-62_ -63_ -64_ -65_				NR					
_67			Topock - Alluvium Deposits	GM	(7.5 fine clay	0 - 68.0') Topock - Alluvium Deposits; Silty g R 4/4); granules to very large pebbles, angula to very coarse grained sand, angular to subre ; wet	ar to subround; some bund; little silt; trace	(67.0 - 77.0') Rough drilling	
	No Sieve Samples Collected		Topock - Alluvium Deposits	SM	ed and to s	0 - 72.0') Topock - Alluvium Deposits; Silty silish brown (5YR 4/3); medium grained to very lar to subround; some silt, little granules to leubangular; trace cobbles, angular to subangu 5'); some small to very large pebbles, angular oles, angular to subangular; trace mica	rocarse grained, arge pebbles, angular lar; trace clay; wet to subangular; trace		
73]					peb	oles, angular to subangular; some fine to very ned sand, angular to subangular; little silt; trad			
						ied sand, angular to subangular, little siit, trac ubangular; trace clay; wet	oc connies, arigular		
74		MW-M-VAS-	Topock - Alluvium	GM					
		72-77 (<0.033 U	Deposits	GIVI	P P				
_75		ppb) 3/29/2019			r Pid				
		14:01			Hø				
76					k P.12				
_76						0 - 83.5') Topock - Alluvium Deposits; Silty gr			
_					DANS and	t yellowish brown (10YR 4/4); granules to ver ular to subangular; some fine to very coarse (grained sand, angular		
_77					tos	ubround; little silt; trace cobbles, angular; wet			
			Topock -						
_78			Alluvium	GM	1397				
- 120			Deposits						
_79					学时				
4									
80					741 <u>7</u>	et, bgs = below ground surface, a			

9/-	١RC	ADIS	Design & Consultancy for natural and built assets		Bo	ring	Log	g		She	eet: 5 of	5
Date S					Surface			N/A	Borin	ıq No.:	MW-Ms	
	•	ted: <u>05/28/2</u>			Northin			N/A	_			
Drilling		Cascad			Easting	•	33):	N/A	Client:	PG&E		
Drilling			Orilling		Total D	•		99 ft bgs	-		W Remedy Ph	
Drill Ri			ongyear Tra					10-12 inches	_ Location:	PG&E	l opock, Need	les, California
Driller		•	llymer land/J. Cand		-			: <u>44.23 ft bgs</u> <u>8 inch x 10 ft. Core Barrel</u>	- Droiget N		DC000753.00	
Drilling					Samplii Samplii	-		Screen Interval	_ Project iv	iumber. <u>I</u>	RC000753.00	<u> </u>
Logge Editor:			/IcGrane		Conver	-			_			
Luitoi.		<u>ocan n</u>			T		V CII.	163 [140				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
 81 82 83	120			Topock - Alluvium Deposits	GM			ecrease in cobbles	0			(7.0 - 99.0') No water used
84 85				Topock - Alluvium Deposits	ML		brown (grained	85.0') Topock - Alluvium Deposits; Sand 10 YR 4/3); low plasticity; some very fine i sand, angular to subangular; little granu s, angular; wet	to very coarse	e `		
86 86 87				Topock - Alluvium Deposits	SM		brown (88.5') Topock - Alluvium Deposits; Silty s (10YR 4/3); very fine grained to very coar nd; little granules to large pebbles, angula	rse gr <mark>ained, ar</mark>	ngular to	(87.0 - 97.0')	
 88 								90.5') Topock - Alluvium Deposits; Claye			Rough drilling	
89 90		No Sieve Samples Collected		Topock - Alluvium Deposits	SC		angular	rown (10YR 4/3); medium grained to very r to subround; little small to very large pet jular; little silt; little clay; trace cobbles, an	obles, angular	to		
 91 _92_ _93_	120		•	8	0		and gra	97.0') Topock - Alluvium Deposits; Well (avel (SW-SM); dark yellowish brown (10) to very coarse grained, angular to round ebbles, angular to subangular; little silt; w	/R 4/4); mediu l; some granul	ım		
 94 95 96				Topock - Alluvium Deposits	SW-SM							
97 98 					NR			99.0") (NR); Core not collected or logged log MW-Md for lithology	, no recovery,	see		
								End of Boring at 99.0 'bgs	i.			
100												
	/iation	s: USCS = l	Jnified Soil C	lassificati	on Syst	em, ft =	feet,	bgs = below ground surface, a	amsl = abo	ove meal	n sea level, G	W =
1			1									

groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = No Recovery, blue water table symbol represents depth to water measured during first VAS insterval MW-Md

ARCA	DIS Design & for natura built asset	Consultancy al and ets		Well Consti	ruction Log	5	Sheet: 1 of 8
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger: Editor: Total Depth:	06/16/2019 07/31/2019 Cascade Sonic Drilling Eddie Ramos L. Amaya/ O. G. Jeffers / A Sean McGrar 143 ft bgs	Flores . Mack		_ Surface Elevation: _ Shallow Well Elevation: _ Deep Well Elevation: _ Northing (NAD83): _ Easting (NAD83): _ Borehole Diameter: _ Water Level Start: _ Development End Date: _ Well Completion:	N/A N/A N/A N/A N/A N/A 10-12 inches 90.27 ft bgs 7/13/2019 Flush Stick-up	Client: PG&E Project: Final (GW Remedy Phase 1 Topock, Needles, California T: RC000753.0051
Groundwat Sample II		USCS Code	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
1				(0.0 - 1.4') Concrete Pad (0.5 - 89.0') 2" PVC Sch 80 Casing (1.4 - 4.0') Bentonite seal chips	(0.6 - 119.0') 2" PVC Sch 80 Casing	(1.4 - 4.0') 2.68 bags	(0.0 - 1.4') 6.5 bags Note: 2.5 x 2.5 ft concrete pad with 18 diameter lockable vault, King Kon-Crete 4000 PSI (1.4 - 4.0') 7 bags (161%) Note: Puregold Medium Chips, used to fill void from approximately 2 to 4 ft bgs
4		NR NR		(4.0 - 75.0') Portland Cement 6% Bentonite	(0.0 - 15.0') 12.0" Borehole	(4.0 - 75.0') 286.1 gallons	Note: During development an obstruction was observed at ~8 ft. bgs, a buldge in the casing was observed with a downhole camera, the casing does not appear to be compromised (4.0 - 75.0') 480 gallons (68%) Note: Used Type I,II, and V and Hydrogel

ARC	DIS Design & for natura built asset	Consultancy al and ets	Well Const	ruction Log	5	Sheet: 2 of 8
Date Started:	06/16/2019		Surface Elevation:	N/A	Well ID: N	//W-R-109, MW-R-139
Date Completed			Shallow Well Elevation:	·		
Drilling Co.:	Cascade		Deep Well Elevation:	N/A	Client: <u>PG&E</u>	
Drilling Method:	Sonic Drilling		Northing (NAD83):	N/A	•	GW Remedy Phase 1
Driller Name:	Eddie Ramos		Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, California
Drilling Asst:	L. Amaya/ O.		Borehole Diameter:	10-12 inches	— — — — — — — — — — — — — — — — — — —	DC0007E2 00E4
Logger:	G. Jeffers / A. Sean McGrar		Water Level Start:	90.27 ft bgs	Project Number	r: RC000753.0051
Editor: Total Depth:	143 ft bgs	<u>ie</u>	Development End Date: Well Completion:	. <u>//13/2019</u>		
Total Deptili.					T	
Groundwa Sample I	Geologic Formation	USCS Code USCS Class		Construction	Calculated Material Volumes	Material Volumes Installed
21		NR	(4.0 - 75.0') Portland Cement 6% Bentonite (29.5 - 30.5') Centralizer	(15.0 - 143.0') 10.0" Borehole	(4.0 - 75.0') 286.1 gallons	(4.0 - 75.0') 480 gallons (68%) Note: Used Type I,II, and V and Hydrogel

ARC	DIS Design & C for natura built asset	Consultancy Land ts	Well Const	ruction Log	S	Sheet: 3 of 8
Date Started:	06/16/2019		_Surface Elevation:	N/A	Well ID: N	//W-R-109, MW-R-139
Date Completed			_Shallow Well Elevation:	N/A		
Drilling Co.:	Cascade		_Deep Well Elevation:	N/A	Client: PG&E	
Drilling Method:	Sonic Drilling		_Northing (NAD83):	N/A	•	GW Remedy Phase 1
Driller Name:	Eddie Ramos		_Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, California
Drilling Asst:	L. Amaya/ O.		_Borehole Diameter:	10-12 inches	— — — — — — — — — — — — — — — — — — —	DC0007E2 00E4
Logger: Editor:	G. Jeffers / A. Sean McGran		_Water Level Start: _Development End Date:	90.27 ft bgs	Project Number	:: RC000753.0051
Total Depth:	143 ft bgs	<u>.</u>	_Development End Date. _Well Completion:	✓ Flush Stick-up	<u> </u>	
			_ 11011 00111p10110111			
Groundwa Sample I	Geologic Formation	USCS Code USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
- 41 42 43		NR	(4.0 - 75.0') Portland Cement 6% Bentonite	(15.0 - 143.0') 10.0" Borehole	(4.0 - 75.0') 286.1 gallons	(4.0 - 75.0') 480 gallons (68%) Note: Used Type I,II, and V and Hydrogel

	ARC4	DIS Design & Co for natural shuilt assets	onsultancy and		Well Consti	ruction Log	S	Sheet: 4 of 8	
(0.5 - 80.0) 2° PVC Sch 80 Casing PVC Sc	Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger: Editor:	Orate Completed: 07/31/2019 Orilling Co.: Cascade Orilling Method: Sonic Drilling Oriller Name: Eddie Ramos Orilling Asst: L. Amaya/ O. Flores Origger: G. Jeffers / A. Mack Editor: Sean McGrane Total Depth: 143 ft bgs			Surface Elevation: Shallow Well Elevation: Deep Well Elevation: Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Date:	N/A N/A N/A N/A N/A 10-12 inches 90.27 ft bgs 7/13/2019	Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, C		
(0.5 - 88.07) 2° PVC Sch 80 Casing PVC S	Groundwar Sample II	Geologic	Code	USCS	Well Co	onstruction			
			NR		(4.0 - 75.0') Portland Cement 6% Bentonite	PVC Sch 80 Casing	(4.0 - 75.0') 286.1 gallons	(4.0 - 75.0') 480 gallons (68% Note: Used Type I,II, and V ar Hydrogel	
					(75.0 - 85.0') Bentonite seal chips		(75.0 - 85.0') 6.97 bags	(75.0 - 85.0') 8 bags (15%) Note: Puregold Medium Chip	
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundward pb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval MW-Rd, VA	 80 Abbreviations: U								

9/	ARCA	D	S Design & C for natura built asset	Consultancy l and ts		Well Const	truction Log		Sheet: 5 of 8
Date S	started:	06/	16/2019			_Surface Elevation:	N/A	Well ID:	MW-R-109, MW-R-139
	completed:	07/	31/2019			_Shallow Well Elevation:	: <u>N/A</u>		
Drilling	Co.:	Cas	scade			_Deep Well Elevation:	N/A	Client: PG8	&E
Drilling	Method:	Sor	nic Drilling			_Northing (NAD83):	N/A	Project: Fina	l GW Remedy Phase 1
Driller I	Name:	Edd	<u>die Ramos</u>			Easting (NAD83):	N/A	Location: <u>PG</u> 8	RE Topock, Needles, California
Drilling	Asst:	<u>L. /</u>	Amaya/ O.	Flores		Borehole Diameter:	10-12 inches		
Logge	r:	<u>G.</u> .	Jeffers / A.	Mack		_Water Level Start:	90.27 ft bgs	Project Numb	er: RC000753.0051
Editor:		Sea	an McGran	ie		Development End Date:	e: <u>7/13/2019</u>		
Total D	Depth:	143	3 ft bgs			Well Completion:			
Depth (ft)	Groundwate Sample ID		Geologic Formation	USCS	USCS Class	Well C	Construction	Calculated Material Volumes	Material Volumes Installed
81 82 83 84 85				NR		(0.5 - 89.0') 2" PVC — Sch 80 Casing (75.0 - 85.0') — Bentonite seal chips	— (0.6 - 119.0') 2" PVC Sch 80 Casing	(75.0 - 85.0') 6.97 bags	(75.0 - 85.0') 8 bags (15%) Note: Puregold Medium Chips
86 87 88 90 91 92			Topock - Alluvium Deposits	SW-SM		(89.0 - 109.0') 2" ———————————————————————————————————	(15.0 - 143.0') 10.0" Borehole		
93 94 95 96	MW-R-VAS- 92-97 (45 ppb) 5/13/2019 11:44		Deposits Topock -			(85.0 - 113.0') Cemex #3 MESH (8x10)		(85.0 - 113.0') 27.2 bags	(85.0 - 113.0') 34 bags (25%) Note: Lapis Lustre Sand
97 98 99 100			Alluvium Deposits Topock - Alluvium Deposits	SM SW-SM					

9/	ARCA	DIS Design & for natura built asse	Consultancy I and ts		Well Consti	ruction Log	:	Sheet: 6 of 8
Date S	tarted:	06/16/2019			_Surface Elevation:	N/A	Well ID: N	MW-R-109, MW-R-139
Date C	completed:	07/31/2019			_Shallow Well Elevation:	N/A		
Drilling	Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	Ξ
Drilling	Method:	Sonic Drilling			_Northing (NAD83):	N/A	Project: Final	GW Remedy Phase 1
Driller I	Name:	Eddie Ramos			_Easting (NAD83):	N/A	Location: PG&I	E Topock, Needles, California
Drilling		L. Amaya/ O.			_Borehole Diameter:	<u>10-12 inches</u>	<u> </u>	
Loggei	r:	G. Jeffers / A.	Mack		_Water Level Start:	90.27 ft bgs	Project Numbe	r: RC000753.0051
Editor:		Sean McGrar	ie		_Development End Date:	7/13/2019		
Total D	epth:	143 ft bgs			_Well Completion:			
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
			SW-SM		(89.0 - 109.0') 2" —	(0.6 - 119.0') 2" PVC Sch 80 Casing		
101		Tanaak			(20-slot) Screen			
		Topock - Alluvium	SM					
100		Deposits						
102				1				
				1\ /				
103				\ /				
				$ \setminus / $				
104				$ \setminus / $				
				$ \ \ \ \ $			•	
105			NR					
				$ \ \ \ \ $				
106				/				
				/	(85.0 - 113.0') Cemex #3 MESH		(85.0 - 113.0') 27.2 bags	(85.0 - 113.0') 34 bags (25%) Note: Lapis Lustre Sand
107				/ \	(8x10)		bags	Note: Lapis Lustre Sand
108								
				$\langle \langle \lambda \rangle \rangle$				
109		Topock - Alluvium	SM					
		Deposits	Sivi					
110					(109.5 - 110.5')	(15.0 - 143.0') 10.0"		
				1	Centralizer	Borehole		
111			•		(109.0 - 111.3')			
					Sump and End Cap			
112								
				$ \setminus $		의 [기		
113				$ \ \ \ \ $				
\vdash \dashv			NR					
114				/\				
\vdash \dashv				/	(112.0 117.0)			
115				/	(113.0 - 117.0') Bentonite seal		(113.0 - 117.0') 3.3 buckets	(113.0 - 117.0') 4 buckets (21%) Note: Pel-Plug (TR30) 3/8"
<u> </u>				/ \	pellets			3, 11, 11
116				/ \				
\vdash \dashv				/ \				
117					i, i.e.			
<u> </u>				$ \setminus / $		세 [4]		
118	MW-R-VAS-		NR	$\mid \times \mid$				
L	117-122 (5.8 ppb)			/	(117.0 - 143.0') Cemex #3 MESH		(117.0 - 143.0') 27.3	(117.0 - 143.0') 34 bags (25%)
119	5/14/2019 10:14			<u> </u>	(8x10)		bags	Note: Lapis Lustre Sand
	10.17	Topock - Alluvium	SM			(119.0 - 139.0') 2" Sch 80 PVC		
120		Deposits				(20-slot) Screen		
Abbrev	/iations: U	SCS = Unified	Soil Cl	lassifica	tion System, ft = feet, bgs	= below ground surface, ar	msl = above mean	sea level, GW = groundwater,

9/	ARCA	DIS Design for natural built as	& Consultancy ural and sets		Well Const	ruction	Log		Sheet: 7 of 8
	Started:	06/16/2019			_Surface Elevation:	N/A		Well ID:	MW-R-109, MW-R-139
	-	07/31/2019			_Shallow Well Elevation:	N/A			
Drilling		Cascade			_Deep Well Elevation:	N/A		Client: PG	
Drilling	Method:	Sonic Drilling]		_Northing (NAD83):	N/A		Project: <u>Fina</u>	al GW Remedy Phase 1
Driller	Name:	Eddie Ramo	S		_Easting (NAD83):	N/A		Location: <u>PG</u>	&E Topock, Needles, California
Drilling	y Asst:	L. Amaya/ O	. Flores		_Borehole Diameter:	10-12 inch	ies		
Logge	r:	G. Jeffers / A	A. Mack		_Water Level Start:	90.27 ft bg	<u>js</u>	Project Numb	per: RC000753.0051
Editor:		Sean McGra	ne		_Development End Date:			_	
Total [Depth:	143 ft bgs			_Well Completion:	× Flush	Stick-up		
Depth (ft)	Groundwat Sample IE		USCS	USCS	Well C	onstruction		Calculated Material Volumes	Material Volumes Installed
 121 122	MW-R-VAS- 117-122 (5.8 ppb) 5/14/2019 10:14	Topock - Alluvium Deposits	SM				119.0 - 139.0') 2" Sch 80 PVC 20-slot) Screen		
 123									
 124									(9)
125		Topock - Alluvium	GW-GM				X		
126 _		Deposits							
127					0				
128 129								•	
130		Toposk			(117.0 - 143.0') Cemex #3 MESH	(15	5.0 - 143.0') 10.0" Borehole	(117.0 - 143.0') 27. bags	3 (117.0 - 143.0') 34 bags (25%) Note: Lapis Lustre Sand
131		Topock - Alluvium Deposits	GM		Cemex #3 MESH (8x10)		Boleriole	zugo	100. 24,00 200.0 04.10
132									
133					6				
134		Topock - Alluvium Deposits	GW-GM						
135 136		Boposito							
137									
138		Topock - Alluvium Deposits	SM						
139 140		Topock - Alluvium Deposits	SW-SM		(139.5 - 140.5') Centralizer				

9/	ARC4	DIS Design 8 for nature built ass	Consultancy ral and ets		Well Const	ruction Log	5	Sheet: 8 of 8
	Started:	06/16/2019			_Surface Elevation:	N/A	Well ID: N	//W-R-109, MW-R-139
Drilling	-	07/31/2019 Cascade			_Shallow Well Elevation: _Deep Well Elevation:	N/A N/A	Client: <u>PG&E</u>	<u> </u>
_		Sonic Drilling			_Northing (NAD83):	N/A		GW Remedy Phase 1
_	, Name:	Eddie Ramos			_Easting (NAD83):	N/A	•	Topock, Needles, California
Drilling	Asst:	L. Amaya/ O.	Flores		_Borehole Diameter:	10-12 inches		
Logge		G. Jeffers / A			_Water Level Start:	90.27 ft bgs	Project Number	r: RC000753.0051
Editor		Sean McGra	ne		_Development End Date:		<u> </u>	
Total [Depth:	143 ft bgs	<u> </u>		_Well Completion:			
Depth (ft)	Groundwat Sample II		Code	USCS		onstruction	Calculated Material Volumes	Material Volumes Installed
 141 142 143		Topock - Alluvium Deposits	SW-SM		(139.5 - 140.5') Centralizer (117.0 - 143.0') Cemex #3 MESH (8x10)	(15.0 - 143.0') 10.0" Borehole (139.0 - 141.4') Sump and End Cap	(117.0 - 143.0') 27.3 bags	(117.0 - 143.0') 34 bags (25%) Note: Lapis Lustre Sand
144					End of Boring at 143.0 'bgs.			9
145								
146								
 147						~ (O) 1		
				1				
148							•	
149								
150								
						10		
151								
152								
153	-							
154								
155								
156								
157	1							
157	1							
158								
L _								
159								
160								

PARCADIS Design & Consultancy for natural and bullt assets				Well Const	ruction Log	;	Sheet: 1 of 15
Date Started: Date Complete Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger: Editor: Total Depth:	ate Completed: 07/31/2019 rilling Co.: Cascade rilling Method: Sonic Drilling riller Name: E. Ramos / D. O'Mara rilling Asst: L. Amaya/ O. Flores ogger: G. Jeffers / C. Stewart ditor: Sean McGrane otal Depth: 287 ft bgs			Northing (NAD83): N/A Easting (NAD83): N/A Borehole Diameter: 4-12 inches		Client: PG&I Project: Final Location: PG&I	WW-R-192, MW-R-275 GW Remedy Phase 1 Topock, Needles, California r: RC000753.0051
Groundw Sample		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
1	Topock - Alluvium Deposits	n SM		(0.0 - 1.5') Concrete Pad (0.5 - 172.0') 2" PVC Sch 80 Casing (1.5 - 10.0') Bentonite Chips	(0.6 - 255.0') 277" PVC Sch 80 Casing — (0.0 - 15.0') 12.0" Borehole	(1.5 - 10.0°) 8.75 bags	(0.0 - 1.5') 7 bags Note: 2.5 x 2.5 ft concrete pad with 18 diameter lockable vault, King Kon-Crete 4000 PSI (1.5 - 10.0') 19 bags (117%) Note: Puregold Medium Chips, used to fill 24 to 36 inch void from ~5 to 10 ft bgs
	Topock - Alluvium Deposits Topock - Alluvium Deposits	NR SM		(10.0 - 66.8') Portland Cement 6% Bentonite	(15.0 - 279.0') 10.0" Borehole	(10.0 - 66.8') 221.8 gallons	Note: During installation of the first lift of high solids grout a 10 ft section of tremie pipe became unthreaded, during attempts to retrieve the pipe, the pipe fell to ~20 ft. bgs and was grouted in place in with the Portland Cement 6% Bentonite grout (10.0 - 66.8') 320 gallons (44%) Note: Type I, II, and V and Benseal
	Topock - Alluvium Deposits	SW-SM					aca level CW = groundwater

9/	ARCA	DIS Design & for natural built asset	Consultancy al and ets		Well Const	ruction Log	5	Sheet: 2 of 15
Date S		05/11/2019			_Surface Elevation:	N/A	Well ID: N	MW-R-192, MW-R-275
		07/31/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
Drilling Driller I		Sonic Drilling E. Ramos / D		•	_Northing (NAD83):	N/A N/A	•	GW Remedy Phase 1
Drilling		L. Amaya/ O.		<u>a</u>	_Easting (NAD83): _Borehole Diameter:	4-12 inches	Location: PG&E Topock, Needles, California	
Logger		G. Jeffers / C		rt	_Water Level Start:	90.59 ft bgs	Project Numbe	r: RC000753.0051
Editor:		Sean McGrar			_ _Development End Date:	•	_ ,	
Total D	epth:	287 ft bgs			_Well Completion:			
Depth (ft)	Groundwate Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
 21		Topock - Alluvium Deposits	SW-SM		(0.5 - 172.0') 2" ———————————————————————————————————	(0.6 - 255.0') 277" PVC Sch 80 Casing		
22 23 24		Topock - Alluvium Deposits	SM				0	0
25		Topock - Alluvium Deposits	SW-SM		(25.5 - 26.5') Centralizer (10.0 - 66.8') Portland Cement 6% Bentonite	(15.0 - 279.0') 10.0" Borehole	(10.0 - 66.8') 221.8 gallons	(10.0 - 66.8') 320 gallons (44%) Note: Type I, II, and V and Benseal
34		Topock - Alluvium Deposits	SW					
36 36 37			NR					
38		Topock - Alluvium Deposits	SM					

9/	ARCA	DIS Design for not built a	n & Consultancy tural and ssets		Well Const	ruction Log		Sheet: 3 of 15
Date S	tarted:	05/11/2019			_Surface Elevation:	N/A	- Well ID:	MW-R-192, MW-R-275
		07/31/2019			_Shallow Well Elevation:		_	
Drilling		Cascade			_Deep Well Elevation:	N/A	_Client: <u>PG8</u>	
_		Sonic Drilling	-		_Northing (NAD83):	N/A	-	I GW Remedy Phase 1
Driller N		E. Ramos /		a	_Easting (NAD83):	N/A	_ Location: <u>PG8</u>	E Topock, Needles, California
Drilling		L. Amaya/ C			_Borehole Diameter:	4-12 inches		
Logger		G. Jeffers / 0		<u>rt</u>	_Water Level Start:	90.59 ft bgs	_ Project Numb	er: RC000753.0051
Editor:		Sean McGra	ane		_Development End Date:		_	
Total D	epth:	287 ft bgs			_Well Completion:	✓ Flush Stick-up		
Depth (ft)	Groundwate Sample ID		USCS	USCS Class			Calculated Material Volumes	Material Volumes Installed
 41		Topock - Alluvium Deposits	SM	8 8 8 8 8	(0.5 - 172.0') 2" ———————————————————————————————————	— (0.6 - 255.0') 277" PVC Sch 80 Casing		
414243444546474849505151525354555556575859		Topock - Alluvium Deposits Topock - Alluvium Deposits	SW-SM		(10.0 - 66.8') Portland Cement 6% Bentonite	(15.0 - 279.0') 10.0" Borehole	(10.0 - 66.8') 221.8 gallons	(10.0 - 66.8') 320 gallons (44%) Note: Type I, II, and V and Benseal
60				<u>/ \</u>				

ate Started: <u>0</u> ate Completed: <u>0</u>	05/11/2019							
ate Completed: C					N/A	Well ID: M	//W-R-192, MW-R-27	
					N/A		<u> </u>	
•	Cascade			_Deep Well Elevation:	N/A	Client: PG&E		
illing Method: S	•			• , ,	N/A	Project: Final GW Remedy Phase 1		
	E. Ramos / D.			- 0 (,	N/A	Location: <u>PG&E</u>	Topock, Needles, Californ	
-	Amaya/ O.				4-12 inches			
	G. Jeffers / C.				90.59 ft bgs	Project Number	: RC000753.0051	
	Sean McGran	ie		_Development End Date:		<u> </u>		
otal Depth: 2	287 ft bgs			_Well Completion:				
Groundwater Sample ID	Geologic	Code	Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed	
61	Topock - Alluvium Deposits	SW-SM		(0.5 - 172.0') 2" ———————————————————————————————————	— (0.6 - 255.0') 277" PVC Sch 80 Casing			
63	Topock - Alluvium Deposits	SM		(10.0 - 66.8') Portland Cement 6% Bentonite		(10.0 - 66.8') 221.8 gallons	(10.0 - 66.8') 320 gallons (44 Note: Type I, II, and V and Ben	
65 - 66	Topock - Alluvium Deposits	SW)		(65.5 - 66.5') Centralizer				
67	Topock - Alluvium Deposits	SM		(66.8 - 71.0') Bentonite seal chips	—(15.0 - 279.0') 10.0" Borehole	(66.8 - 71.0') 2.96 bags	(66.8 - 71.0') 5.5 bags (86% Note: Enviroplug Medium Chi chips partially settled into high s grout	
	Topock - Alluvium Deposits	SW-SM		(71.0 - 149.7') High Solids Grout		(71.0 - 149.7') 295.2 gallons	(71.0 - 149.7') 320 gallons (8' Note: Baroid Industrial Drillir Products - Aquaguard Benton Grout	
	lion, U = not o	detected			= below ground surface, a mit, NR = no recovery, blue			

	DIS Design & for natura built asse	rts		Well Consti	aonon Log		Sheet: 5 of 15	
Date Started:	05/11/2019			_Surface Elevation:	N/A	Well ID: I	MW-R-192, MW-R-27	
ate Completed:				_Shallow Well Elevation:	N/A			
rilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&I		
Orilling Method:	_			_Northing (NAD83):	N/A	•	Final GW Remedy Phase 1	
Oriller Name:	E. Ramos / D		a	_Easting (NAD83):	N/A	Location: <u>PG&I</u>	E Topock, Needles, Californ	
ogger:	L. Amaya/ O. G. Jeffers / C.		+	_Borehole Diameter: Water Level Start:	4-12 inches 90.59 ft bgs	— Project Number	r: <u>RC000753.0051</u>	
ogger: :ditor:	Sean McGran		ι	_vvaler Level Start. _Development End Date:		Project Numbe	1. KC000755.0051	
otal Depth:	287 ft bgs	10		_ Well Completion:				
Groundwat Sample II		Code	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed	
-81 -81 -82 -83 -83 -84 -85 -86	Topock - Alluvium Deposits	SW-SM		(0.5 - 172.0') 2" PVC Sch 80 Casing	(0.6 - 255.0') 277" PVC Sch 80 Casing		Note: 1/2 Bag of Bentonite Chips 1/2 bag of #3 Cemex Sand insta in annulus to find depth to hig solids grout	
	Topock - Alluvium	SM		(71.0 - 149.7') High — Solids Grout	(15.0 - 279.0') 10.0" Borehole	(71.0 - 149.7') 295.2 gallons	(71.0 - 149.7') 320 gallons (8% Note: Baroid Industrial Drillin Products - Aquaguard Bentoni Grout	
94 — MW-R-VAS 92-97 (45 ppb) 5/13/2019 11:44 96 — — — — — — — — — — — — — — — — — — —	Deposits							
	SCS = Unified	Soil Cla	assificat	ion System, ft = feet, bgs	= below ground surface, a	msl = above mean	sea level, GW = groundwa	
.bbreviations: U	CCC Crimica							

9/	ARC4	DIS Design for natural built as	& Consultancy Iral and sets		Well Const	ruction Log	:	Sheet: 6 of 15
Date S	Started:	05/11/2019			_Surface Elevation:	N/A	Well ID: N	MW-R-192, MW-R-275
	-	07/31/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
_		Sonic Drilling			_Northing (NAD83):	N/A	•	GW Remedy Phase 1
	Name:	E. Ramos / [<u>a</u>	_Easting (NAD83):	N/A	Location: <u>PG&</u>	E Topock, Needles, California
Drilling		L. Amaya/ O			_Borehole Diameter:	4-12 inches		D0000750 0054
Logge Editor:		G. Jeffers / C Sean McGra		π	_Water Level Start:	90.59 ft bgs	Project Numbe	r: RC000753.0051
	Depth:	287 ft bgs	ne		_Development End Date: _Well Completion:	_Development End Date: 7/9/2019 _Well Completion: Stick-up		
TOTAL	Јерин.							
Depth (ft)	Groundwat Sample II		USCS	USCS		onstruction	Calculated Material Volumes	Material Volumes Installed
	117-122 (5.8 ppb) 5/14/2019 10:14	Topock - Alluvium Deposits	SM GM		(105.5 + 106.5') (71.0 - 149.7') High Solids Grout	(15.0 - 279.0') 10.0" Borehole	(71.0 - 149.7') 295.2 gallons	Note: 1 Bag of Bentonite Chips and 1/2 bag of #3 Cemex Sand installed in annulus to find depth to high solids grout (71.0 - 149.7') 320 gallons (8%) Note: Baroid Industrial Drilling Products - Aquaguard Bentonite Grout

ARC	DIS Design & C for natura built asset	Consultancy Il and ts		Well Consti	ruction Log	5	Sheet: 7 of 15
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger: Editor: Total Depth:	05/11/2019 d: <u>07/31/2019</u> <u>Cascade</u>		_ Surface Elevation: _ Shallow Well Elevation: _ Deep Well Elevation: _ Northing (NAD83): _ Easting (NAD83): _ Borehole Diameter: _ Water Level Start: _ Development End Date: _ Well Completion:	N/A N/A N/A N/A N/A N/A 4-12 inches 90.59 ft bgs 7/9/2019 Flush Stick-up	Client: PG&E Project: Final (MW-R-192, MW-R-275 GW Remedy Phase 1 Topock, Needles, California T: RC000753.0051	
Groundwa Sample II		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
- MW-R-VAS 117-122 (5.8 ppb) 5/14/2019 10:14 -122		GM GM		(71.0 - 149.7') HighSolids Grout	(0.6 - 255.0') 277" PVC Sch 80 Casing	(71.0 - 149.7') 295.2 gallons	(71.0 - 149.7') 320 gallons (8%) Note: Baroid Industrial Drilling Products - Aquaguard Bentonite Grout

ARCA	DIS for natural built assets	onsultancy and S		Well Consti	ruction Log	\$	Sheet: 8 of 15
Date Started:	05/11/2019			_Surface Elevation:	N/A	Well ID: N	MW-R-192, MW-R-275
Date Completed:	07/31/2019			_Shallow Well Elevation:	N/A		
Drilling Co.:	<u>Cascade</u>			_Deep Well Elevation:	N/A	Client: PG&E	
Drilling Method:	Sonic Drilling			_Northing (NAD83):	N/A	Project: <u>Final (</u>	GW Remedy Phase 1
	E. Ramos / D.		a	_Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, California
_	L. Amaya/ O. I			_Borehole Diameter:	4-12 inches		
	G. Jeffers / C.		<u>t</u>	_Water Level Start:	90.59 ft bgs	Project Number	r: RC000753.0051
	Sean McGran	<u>e</u>		Development End Date: 7/9/2019			
Total Depth:	287 ft bgs			Well Completion: X Flush Stick-up			
Groundwate Sample ID		Code	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
	Topock - Alluvium Deposits	SM		(71.0 - 149.7') High Solids Grout (147.5 - 148.5') Centralizer	(0.6 - 255.0') 277" PVC Sch 80 Casing	(71.0 - 149.7') 295.2 gallons	(71.0 - 149.7') 320 gallons (8%) Note: Baroid Industrial Drilling Products - Aquaguard Bentonite Grout
	Topock - Alluvium Deposits Topock - Alluvium Deposits	GM		(149.7 - 170.0') Bentonite seal pellets	(15.0 - 279.0') 10.0" Borehole	(149.7 - 170.0') 18.5 buckets	(149.7 - 170.0') 15 buckets (-19%) Note: Pel-Plug (TR30) 3/8"

9/	ARCA	DIS Design & for natura built asset	Consultancy al and ets		Well Const	ruction Log	;	Sheet: 9 of 15	
		05/11/2019			_Surface Elevation:	N/A	Well ID: N	MW-R-192, MW-R-275	
l l	-	07/31/2019			_Shallow Well Elevation:			· · · · · · · · · · · · · · · · · · ·	
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&E		
_		Sonic Drilling			_Northing (NAD83):	N/A	•	GW Remedy Phase 1	
Driller		E. Ramos / D		a	_Easting (NAD83):	N/A	Location: <u>PG&</u> E	E Topock, Needles, California	
Drilling		L. Amaya/ O.			_Borehole Diameter:	4-12 inches		D0000750 0054	
Logge Editor:		G. Jeffers / C Sean McGrar		π	_Water Level Start:	90.59 ft bgs	Project Numbe	r: RC000753.0051	
Total D		287 ft bgs	ie		Development End Date: 7/9/2019 Well Completion: ∑ Flush Stick				
Total	осрии.				_ vvoii completion.		T		
Depth (ft)	Groundwate Sample ID		USCS	USCS Class		construction	Calculated Material Volumes	Material Volumes Installed	
161		Topock - Alluvium Deposits	GW		(0.5 - 172.0') 2" PVC Sch 80 Casing (149.7 - 170.0') Bentonite seal pellets	— (0.6 - 255.0') 277" PVC Sch 80 Casing	(149.7 - 170.0°) 18.5 buckets	(149.7 - 170.0') 15 buckets (-19%) Note: Pel-Plug (TR30) 3/8"	
171172173174175176177178178179		Topock - Alluvium Deposits Topock - Alluvium Deposits	SM		(172.0 - 192.0') 2" ———————————————————————————————————	Borehole	(170.0 - 196.0') 25.2 bags	(170.0 - 196.0') 30.75 bags (22%) Note: Lapis Lustre Sand	
180		<u> </u>	<u> </u>	<u> [[]] </u>		+: ::	L	and level CW = groundwater	

9/-	ARCA	DIS Design & for natu built ass	Consultancy al and ets		Well Consti	ruction Log	S	Sheet: 10 of 15
Date S	Started:	05/11/2019			_Surface Elevation:	N/A	- Well ID: N	//W-R-192, MW-R-275
Date C	Completed:	07/31/2019			_Shallow Well Elevation:	N/A		102, 11111 17 270
Drilling	Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
Drilling	Method:	Sonic Drilling			_Northing (NAD83):	N/A	Project: Final 0	GW Remedy Phase 1
Driller I	Name:	E. Ramos / D). O'Mar	a	_Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, California
Drilling	Asst:	L. Amaya/ O.	Flores		_Borehole Diameter:	4-12 inches		
Logge	r:	G. Jeffers / C	. Stewa	rt	_Water Level Start:	90.59 ft bgs	Project Number	:: RC000753.0051
Editor:		Sean McGra	ne		_Development End Date:			
Total D	Depth:	287 ft bgs			_Well Completion:			
Depth (ft)	Groundwat Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
		Topock - Alluvium	SM		(172.0 - 192.0') 2" —			
181		Deposits			(20-5101) 3016611			
182		 	-					
L -		Topock - Alluvium	ML					
183		Deposits	<u> </u>					
184								
iL]							\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	
185								
186								
187								
100					(170.0 - 196.0')		(170.0 - 196.0') 25.2	(170.0 - 196.0') 30.75 bags (22%)
188					Cemex #3 MESH (8x10)		bags	Note: Lapis Lustre Sand
 - -					(OX10)			
189								
H -								
190						(15.0 - 279.0') 10.0" Borehole		
H -								
191		Topock -	4					
		Alluvium	SM					
192		Deposits						
┡╶┤								
193					(192.5 - 193.5'); Centralizer			
194	MW-R-VAS- 192-197	-			(192.0 - 194.0') — : : L Sump and End Cap			
-	(<0.033 U ppb)							
195	5/16/2019							
<u> </u>	09:55							
196								
197								
198					(196.0 - 253.0')		(196.0 - 253.0') 54.2	(196.0 - 253.0') 54 buckets (0%)
					Bentonite seal — pellets		buckets	Note: Pel-Plug (TR30) 3/8"
199								
133								
200								
	viations: U	SCS = Unified	d Soil C	assifica	tion System, ft = feet, bas	= below ground surface. ar	msl = above mean :	sea level, GW = groundwater,

9/	ARCA	DIS Design & for natura built asse	Consultancy all and ts		Well Const	ruction Log		Sheet: 11 of 15	
I .	Started:	05/11/2019			_Surface Elevation:	N/A	Well ID:	MW-R-192, MW-R-275	
		07/31/2019			_Shallow Well Elevation:	N/A			
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG8		
		Sonic Drilling	011.4		_Northing (NAD83):	N/A	-	GW Remedy Phase 1	
Driller I Drilling		E. Ramos / D L. Amaya/ O.		<u>a</u>	_Easting (NAD83): _Borehole Diameter:	N/A 4-12 inches	Location: PG8	E Topock, Needles, California	
Logge		G. Jeffers / C.		rt	_ Borenole Diameter. _Water Level Start:	90.59 ft bgs	— Project Number	Project Number: <u>RC000753.0051</u>	
Editor:		Sean McGrar		11	_vvaler Ecverolart. _Development End Date:		r roject rumb	CI. 110000700.0001	
Total D		287 ft bgs			_Well Completion:				
	<u> </u>				<u> </u>	<u> </u>			
Depth (ft)	Groundwat Sample ID		Code	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed	
		Topock - Alluvium Deposits	SM		(196.0 - 253.0') Bentonite seal pellets	— (0.6 - 255.0') 277" PVC Sch 80 Casing — (15.0 - 279.0') 10.0" Borehole	(196.0 - 253.0') 54.2 buckets	(196.0 - 253.0') 54 buckets (0%) Note: Pel-Plug (TR30) 3/8"	
220			<u> </u>				L	1	

9/-	PARCADIS Design & Consultancy for natural and built assets Date Started: 05/11/2019				Well Const	ruction Log	Sheet: 12 of 15		
Date C Drilling	Completed: Co.:	05/11/2019 07/31/2019 Cascade			_Surface Elevation: _Shallow Well Elevation: _Deep Well Elevation:	N/A N/A N/A	Client: <u>PG&</u>		
_		Sonic Drilling			_Northing (NAD83):	N/A	•	GW Remedy Phase 1	
Driller I		E. Ramos / D.		a	_Easting (NAD83): _Borehole Diameter:	N/A 4-12 inches	Location: <u>PG&</u>	E Topock, Needles, California	
Drilling Logge		L. Amaya/ O. G. Jeffers / C.		rt	_ Borenole Diameter. _ Water Level Start:	90.59 ft bgs	— Project Numbe	er: RC000753.0051	
Editor:		Sean McGran			_Development End Date:			<u></u>	
Total D	Depth:	287 ft bgs			_Well Completion:				
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed	
	MW-R-VAS- 227-232 (<0.033 U ppb) 5/17/2019 10:05	Topock - Alluvium Deposits	SM		(196.0 - 253.0") Bentonite seal pellets (235.5 - 236.5") Centralizer	— (0.6 - 255.0') 277" PVC Sch 80 Casing — (15.0 - 279.0') 10.0" Borehole	(196.0 - 253.0') 54.2 buckets	(196.0 - 253.0') 54 buckets (0%) Note: Pel-Plug (TR30) 3/8"	

9/	ARCA	DIS Design & for natura built asse	Consultancy Il and ts		Well Const	ruction Log	\$	Sheet: 13 of 15
Date S	tarted:	05/11/2019			_Surface Elevation:	N/A	Well ID: N	MW-R-192, MW-R-275
	-	07/31/2019			_Shallow Well Elevation:	N/A		<u> </u>
Drilling		<u>Cascade</u>			_Deep Well Elevation:	N/A	Client: PG&E	
		Sonic Drilling			_Northing (NAD83):	N/A	•	GW Remedy Phase 1
Driller I		E. Ramos / D		a	_Easting (NAD83):	N/A	Location: <u>PG&E</u>	E Topock, Needles, California
Drilling		L. Amaya/ O.		4	_Borehole Diameter:	4-12 inches	— — — — — — — — — — — — — — — — — — —	D0000750 0054
Logger		G. Jeffers / C.		ırt	_Water Level Start:	90.59 ft bgs	Project Numbe	r: RC000753.0051
Editor: Total D		Sean McGran 287 ft bgs	ie		_Development End Date: _Well Completion:	✓ Flush Stick-up		
Total L	ериі.		l		_ well Completion.			
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
241		Topock - Alluvium Deposits	SM		(196.0 - 253.0') Bentonite seal pellets	— (0.6 - 255.0') 277" PVC Sch 80 Casing	(196.0 - 253.0') 54.2 buckets	(196.0 - 253.0') 54 buckets (0%) Note: Pel-Plug (TR30) 3/8"
	MW-R-VAS- 255-260 (<0.17 U ppb 5/29/2019 12:00	Topock - Alluvium Deposits	SM		(253.0 - 279.0') Cemex #3 MESH — (8x10)	—(255.0 - 275.0') 277" Sch 80 PVC (20-slot) Screen	(253.0 - 279.0') 27.3 bags	(253.0 - 279.0') 36 bags (32%) Note: Lapis Lustre Sand

9/-	ARCA	DIS Design & for natura built asse	l and ts		Well Const	ruction Log	S	Sheet: 14 of 15
	Started:	05/11/2019			_Surface Elevation:	N/A	Well ID: N	/W-R-192, MW-R-275
I .	-	07/31/2019			_Shallow Well Elevation:			
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
Drilling Driller		Sonic Drilling E. Ramos / D	O'Ma	·	_Northing (NAD83):	N/A N/A	•	GW Remedy Phase 1
Drilling		L. Amaya/ O.		<u>a</u>	_Easting (NAD83): Borehole Diameter:	4-12 inches	Location: PG&E	Topock, Needles, California
Logge		G. Jeffers / C.		rt		90.59 ft bgs	— Proiect Number	:: RC000753.0051
Editor:		Sean McGrar			_ Development End Date:			. 110000100.0001
Total D		287 ft bgs			_Well Completion:			
		.º C						
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
 261		Topock - Alluvium Deposits	SM			C255.0 - 275.0') 277" Sch 80 PVC C20-slot) Screen		
 263							7	
								0
_264								
 _265								
200								*
_267						A N		
L _		Topock -						
_268		Weathered Bedrock -	SM					
		conglomerate				X:H:		
_269					(050 0 070 01)			
					(253.0 - 279.0') Cemex #3 MESH	(15.0 - 279.0') 10.0" Borehole	(253.0 - 279.0') 27.3 bags	(253.0 - 279.0') 36 bags (32%) Note: Lapis Lustre Sand
_270					(8x10)			
						H		
_271	MW-R-VAS- 269-274		•					
272	(<0.17 U ppb 5/30/2019 14:30)						
						항 		
_274								
<u> </u>								
_275								
_276					(275.5 - 276.5') Centralizer			
 _277		Topock -				(275.0 - 277.0')		
		Competent Bedrock -				Sump and End Cap		
278		conglomerate						
_279								
					(279.0 - 287.0')	(279.0 - 287.0') 6"	(279.0 - 287.0') 2.18 bags	(279.0 - 287.0') 2 bags (-8%) Note: Enviroplug Medium Chips
280	.:_4:	000 - U-::	0-:10	\(\frac{1}{2}\)	Bentonite seal chips	Borehole		<u> </u>

ARCA	DIS Design & C for natural built asset	Consultancy Land S		Well Const	ruction Log	;	Sheet: 15 of 15
Date Started:	05/11/2019			_Surface Elevation:	N/A	Well ID: I	MW-R-192, MW-R-275
Date Completed:				_Shallow Well Elevation:	N/A		
Drilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&I	
_	Sonic Drilling			_Northing (NAD83):	N/A	•	GW Remedy Phase 1
Driller Name:	E. Ramos / D.		a	_Easting (NAD83):	N/A	Location: <u>PG&I</u>	E Topock, Needles, California
Drilling Asst:	L. Amaya/ O.			_Borehole Diameter:	4-12 inches	<u> </u>	
	G. Jeffers / C.		<u>rt</u>	_Water Level Start:	90.59 ft bgs	Project Numbe	er: RC000753.0051
Editor:	Sean McGran	<u>e</u>		_Development End Date:			
Total Depth:	287 ft bgs			_Well Completion:	区 Flush Stick-up	Т	T
Groundwat Sample IE		USCS	USCS	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
281 282 283	Topock - Competent Bedrock - conglomerate			(279.0 - 287.0') Bentonite seal chips	(279.0 - 287.0') 6" Borehole	(279.0 - 287.0') 2.18 bags	(279.0 - 287.0') 2 bags (-8%) Note: Enviroplug Medium Chips
284 		NR		End of Boring at	Borenole	bags	Note: Enviroping ividual Chips
				287.0 bgs.			

Date Started Difful (2013)	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log]		She	eet: 1 of	15
Nothing for the properties Beday 2019 Cassade Easting (NAD83) NA									Borin	a No.:	MW-Rd	
Topolite Rig Types Personic Track Mount Office Rig Types Personic Track Mount Endowed Present 287 h bgs Project Rig GM Remedy Phase 1 Continue Page 1 Continue					-							
Dolling Type: Prosenic Truck Mount Borehole Diameter: 4-12 Inches Location: PG&E Topock, Needles, California Orling Asst. Camps Common Camps C	_				_	•	33):					
Delire Name: E. Ramaya / D. Eloras Sand McGrane Converted to Well: San	_		•						-		-	
Defining Assist Lamayar Defores Sampling Interval: Continuous Signature Project Number: RC000753.0051									Location:	PG&E 1	<u> Fopock, Needle</u>	<u>es, California</u>
Continuous Con					-			_				
Editor: Sean McGrane Converted to Well: Version No Sean McGrane Converted to Well: Version No Sean McGrane Service Description Converted to Well: Version Sold Description Description Drilling Notes Deling Flaid 1	_		•		-	-			Project N	lumber: <u>I</u>	RC000753.005	51
Some Sample ID Countedator Sample ID Countedator Sample ID Sample				art	-	-		•				
1 1 2 2 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	Editor:	<u>Sean N</u>	/lcGrane		Convert	ed to V	Vell:	Yes □ No				
Topock- Allieum Person (10fr 630): very firer gained by very coarse gained, angular to standed to the server state gained by the server of the	Depth (ft) Recovery (in)			Geologic Formation	Code	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
	- 1	Samples		Topock - Alluvium Deposits Topock - Alluvium Deposits	SW-SM		(7.0 - 14 and grad coarse pebbles subang	10YR 5/3); very fine grained to very coand; little granules to very large pebbles, are trace cobbles, angular to subround; dry; le of granite, basalt and metadiorite 4.0') Topock - Alluvium Deposits; Well gravel (SW-SM); brown (10YR 5/3); very fing grained, angular to subround; little granuli, angular to subangular; little silt; trace coular; trace mica; coarser clasts composed ular; trace mica; coarser clasts composed to 17.0') No recovery (NR)	aded sand with graves and with graves and with graves angular to subrect the grained to the grained to the grained to the grained to the grained and with graves and grained,	th silt very great to le; dry let (SM); ngular to ce mica;	(3.5 - 5.0') Lost 12" casing down hole (13.0') 12 inch casing started to fall added 2 more feet of casing and set	
r mararianana. Gaga - oninog don ongoniognon oyotom, it - root, aga - bolow ground agrigor, dinar-gayore modifaca level. Uvv -	20	s: USCS = I	Unified Soil C	Alluvium Deposits			and gra	vel (ŚW-SM); brown (10YR 5/3); very fin grained, angular to subround; some gran	ie grained to vules to very la	very arge	n sea level <i>G</i> V	N =

AR	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 2 of	15
Date Starte	d: <u>05/11/</u>	/2019	;	Surface	Eleva	ion: <u>N/A</u>	Borin	u No .	MW-Rd	
Date Comp	leted: <u>06/04/</u>	/2019		Northin	g (NAD	83): <u>N/A</u>	Borni	9 110	IVIVV-IXU	
Drilling Co.:	<u>Casca</u>	ade		Easting	(NAD	33): <u>N/A</u>	Client:	PG&E		
Drilling Met	hod: <u>Sonic</u>	Drilling		Total D	epth:	287 ft bgs	Project:	Final G\	W Remedy Ph	ase 1
Drill Rig Ty	oe: <u>Proso</u>	nic Truck Mo	unt l	Boreho	le Diam	eter: 4-12 inches	Location:	PG&E 1	Topock, Needl	es, California
Driller Nam	e: <u>E. Rar</u>	<u>mos / D. O'M</u>	ara l	Depth t	o First	Water: <u>90.59 ft bgs</u>	-			
Drilling Ass		aya/ O. Flore		-	ng Meth		Project N	umber: <u>I</u>	RC000753.00	51
Logger:		fers / C. Stev		-	ng Inter		=			
Editor:	<u>Sean</u>	<u>McGrane</u>		Conver	ted to V	Vell: ⊠ Yes □ No				
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
			Topock - Alluvium Deposits	SW-SM		pebbles, angular to subangular; little silt; trace or subangular; trace boulders, subangular; trace m composed of metadiorite; dry	ica; coarser cla	asts		(0.0 - 27.0') No water used
22 22 23 120			Topock - Alluvium Deposits	SM		(21.0 - 24.0') Topock - Alluvium Deposits; Silty s brown (10YR 5/3); very fine grained to very coar subround; some granules to very large pebbles, subangular; little silt; trace cobbles, angular to su coarser clasts composed of metadiorite; dry	rse grained, an angular to ubangular; trac	gùlar to e mica;	0)	
L J						(24.0 - 33.0') Topock - Alluvium Deposits; Well and gravel (SW-SM); brown (10YR 5/3); very fir				
25						coarse grained, angular to subround; some gran pebbles, angular to subangular; little silt; trace co	ules to very lar	ge		
						subangular; trace mica; coarser clasts compose				
 27										
_21									(27.0 - 32.0')	(27.0 - 32.0') 10
									Core barrel and sediments in	gallons of water used; 0 gallons
28			Topock -						core hot, slow drilling due to	of water recovered: 10
			Alluvium	SW-SM		(28.5'); pulzerived boulder			tight formation	gallons of water
29			Deposits			(29'); and granules to very large pebbles, angula	er to subangula	r.	and soils falling out of core	lost
60	Na Ciarra					decrease in sand	ar to ouburiguid	''	during clean out runs	
_30	No Sieve Samples									
_	Collected									
31										
_32										
						(32'); some granules to very large pebbles, anguincrease in sand	ılar to subangu	lar;	(32.0 - 37.0') Core barrel and	(32.0 - 37.0') 5 gallons of water
33						in care			sediments in	used; 0 gallons of water
					\$.W.	(33.0 - 35.0') Topock - Alluvium Deposits; Well gravel (SW); brown (10YR 5/3); very fine graine			core hot, slow drilling due to	recovered; 5
			Topock -		8.0.	grained, angular to subround; some granules to	very large pebl	oles,	tight formation and soils falling	gallons of water lost
34			Alluvium Deposits	SW		angular to subangular; trace silt; trace mica; coa of metadiorite; dry	rser clasts con	nposed	out of core during clean out	
36						, ,			runs	
_35			 	 	****	(35.0 - 37.0') No recovery (NR)				
					$ \setminus / $,				
36				NR	X					
					/					
37	_		L	<u> </u>	<u> </u>	707.0 44.00 Tamada Allanda B		1/(0/4)	(27.0 47.01)	(27.0 40.0)\ 5
_						(37.0 - 41.0') Topock - Alluvium Deposits; Silty s brown (10YR 5/3); very fine grained to very coar	rse grained, an	gular to	(37.0 - 47.0') Slow drilling due	(37.0 - 42.0') 5 gallons of water
38						subround; some silt; little granules to very large subangular; trace clay; trace mica; coarser clast	pebbles, angulated of	ar to	to tight formation and soils falling	used; 0 gallons of water
60			Topock - Alluvium	SM		metadiorite; dry			out of core	recovered; 5
			Deposits	J SIVI					during clean out runs	gallons of water lost
40										
Abbreviatio	ns: USCS =	Unified Soil (Classification	n Syst	em, ft =	feet, bgs = below ground surface, a	amsl = abo	ve mear	n sea level, G\	W =
-						ne laboratory reporting limit, NR = no				
I I I I I I I	., FF~ Puit	- P							Oyilik	•

represents depth to water measured during the first VAS interval

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 3 of	15
Date S	tarted	: <u>05/11/</u>	2019		Surface	Eleva	tion: N/A	Borin	a No .	MW-Rd	
Date C	omple	ted: <u>06/04/</u>	2019		Northing	g (NAD	083): <u>N/A</u>		ig 110	<u>IVIV IXA</u>	
Drilling	Co.:	<u>Casca</u>	de		Easting	(NAD8	83): <u>N/A</u>	_ Client:	PG&E		
Drilling	Meth				Total Do	epth:	287 ft bgs	_ Project:	Final G\	<u> </u>	ase 1
Drill Ri	д Туре	e: <u>Proso</u> r	nic Truck Mou	unt	Borehol	e Dian	neter: 4-12 inches	_ Location:	PG&E T	opock, Needl	es, California
Driller			<u>nos / D. O'Ma</u>		-		Water: 90.59 ft bgs	_			
Drilling	Asst:		aya/ O. Flores		Samplin	•		_ Project N	lumber: <u>F</u>	RC000753.005	51
Logge		-	<u>fers / C. Stew</u>	<u>art</u>	Samplin	•		_			
Editor:		<u>Sean I</u>	<u> McGrane</u>		Convert	ed to \	Well: 🗵 Yes 🗌 No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
				Topock -						(37.0 - 47.0') Slow drilling due	(37.0 - 42.0') 5 gallons of water
41				Alluvium Deposits	SM					to tight formation	used; 0 gallons
41	60						(41.0 - 47.0') Topock - Alluvium Deposits; Wel			and soils falling out of core	of water recovered; 5
							and gravel (SW-SM); brown (10YR 5/3); very f coarse grained, angular to subround; some gra	nules to very la	arge	during clean out runs	gallons of water lost
42							pebbles, angular to subangular; little silt; trace of composed of metadiorite; dry; trace oxidized states.	mica: coarser d	lasts	runo	(42.0 - 270.0')
							Somposed of metadorito, any, trade oxidized ex	all III 19.			No water used
43								AU			
				Topock -							
44				Alluvium	SW-SM						
	60			Deposits							
45											
46											
47										(47.0 50.01)	
						\	(47.0 - 50.0') No recovery (NR); core bag brok	e soils fell into l	nopper	(47.0 - 52.0') Drill rods	
48						$ \setminus / $				chattering, slow drilling due to	
					NR	$ \bigvee $				tight formation	
49					INK					and soils falling out of core	
										during clean out runs	
50		No Sieve									
50		Samples Collected		<u> </u>			(50.0 - 57.0') Topock - Alluvium Deposits; Wel	graded sand v	vith silt		
	48				TO		and gravel (SW-SM); brown (10YR 5/3); very f coarse grained, angular to subangular; little gra	anules to very la	arge		
51			<				pebbles, angular to subangular; little silt; trace coarser clasts composed of metadiorite; dry	clay; trace mica	ι;		
							dearger diagraphic design for the laudionic, dry				
52										(52.0 - 54.0')	
										Slow drilling due to tight formation	
53				TI						and soils falling	
-				Topock - Alluvium	SW-SM					out of core during clean out	
54				Deposits			(54.0 57.0)) 25	blee comit		runs	
L J							(54.0 - 57.0'); some granules to very large pebl subangular; decrease in sand, no clay	ωes, angular to		(54.0 - 72.0') Drill rods	
55							•			chattering, slow drilling due to	
L	36									tight formation and soils falling	
56	55									out of core	
										during clean out runs	
57							1				
						\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	(57.0 - 60.0') No recovery (NR)			(57.0 - 60.0')	
 - -						\ /				Core bag broke, core lost in	
58						$ \setminus /$				hopper	
- -	24				NR	X					
59						/ \					
						/ \					
60	/iation	e: 11808 -	Unified Sail C	laccificat	ion Synt	y \	= feet, bgs = below ground surface,	amel = ah	NA MOST	L sea lovel C	Λ/ —
wnnie/	/เลแบท	s. USUS =	Ullilled SOII C	Jassiiicat	เบเา องรโ	7111, IL =	- ieet, bys - below ground surface,	amsi - abi	ove mear	ı sea level, G	/v —

Date District Di	AR	CADIS	Design & Consultancy for natural and built assets		Bo	ring	Log		Sheet: 4 of	15
Northing (No. Sa.) No. Cascade Easing (NADB3) No. No. Cascade Cascade Easing (NADB3) No. Cascade								Boring N	No.: MW-Rd	
Project: Final GW Remedy Phase Project					_		•	_		
Deling Name Prosonic Truck Mount Borehole Diameter 4-12 inches Location: PG&E Topock, Needles, Californic Drilling Asst: Lamayat O, Eloros Sampling Method: A inch x 10 ft. Core Barrel Project Number: RC000753.0051	_				_	•	·			
Drilling Assis: L. Amaya/ Do Flores G. Jefflers / C. Stewart Sean McGrano Converted to Well:	_					•	-	•	•	
Drilling Assist: Cardinary C. Stewart Seam McGarne Converted to Well: Seam McGarne Converted t								Location: <u>PG</u>	&E Topock, Nee	dles, California
Segon McGrane Converted to Well:					•		G	_		
Editor: Sean McGrane Converted to Well: Very Sol No Serphe D Converted to Well: Very Sol Sol Description Drilling Notes Drilling Fluid Topod: Allukum Deposits W. SM Topod: Allukum Deposits SM Topod: Topod: Allukum Deposits SM Topod: Topod: Allukum Deposits SM Topod: Top	_		•		-	-		Project Numb	ber: <u>RC000753.0</u>	051
Simple ID Concentration Sample					-	-		-		
Topock- Allowing Deposits W-SM Depo	Editor:	<u>Sean I</u>	McGrane 		Convert	ed to \	Vell: ⊠ Yes □ No			
Topock Alluvium Deposits SW-SM SM SW-SM SM SW-SM SW-SM SW-SM Swap Swap Swap Swap Swap Swap Swap Swap	Depth (ft) Recovery (in)			Geologic Formation	Code	USCS Class	·			
Topock Alluvium Deposits SM Topock Alluvium Deposits (SW) by the granted to very coarse graned angular to submit of the granted to see the granted servery for present of the granted servery for granted server				Alluvium	SW-SM		and gravel (SW-SM); brown (10YR 4/3); very fill coarse grained, angular to subangular; some grapebbles, angular to subangular; little silt; trace m	ne grained to very anules to very large	Drill rods chattering, slo drilling due to tight formatior and soils fallin out of core	No water used
Topock-Altonium Deposits SW SW Strom (10/R 53) very fine grained to very large pebble, angular to subangular, sone granules to very large pebble, angular to subangular, trace sit; trace day, trace mica dry, larger class consist of metadicitie and conglomerate to very large pebble, angular to subangular, trace sit; trace day, trace mica dry, larger (16/F), very fine grained to very large pebble, angular to subangular, ittle sit; trace mica, dry, larger class consist of metadicitie and conglomerate Topock-Altonium Deposits No Sieve Samples Collected Topock-Altonium Deposits Topock-Altonium Deposits (17/F), trace mica, dry, larger class)	 63 			Alluvium	SM		brown (10YR 5/3); very fine grained to very coa subround; some silt; little granules to very large subangular; trace clay; trace mica; coarser clast	rse grained, angular pebbles, angular to	r to runs	ut
From (10YR 5/3) little brown (10YR 5/3) little brown (10YR 4/3); very fine grained to very coarse grained; so the very large pebbles, angular to subangular; ittle stilt, trace mica; dry; larger clasts consist of metadiorite and conglomerate. Topock - Alluvium Deposits: Well graded sand with stilt pebbles. Topock - Alluvium Deposits: Well graded sand with stilt and pebbles. Topock - Alluvium Deposits: Well graded sand with stilt and gravel (SW-SM); brown (10YR 5/3) some brown (10YR 5/3), very fine grained to very coarse grained, angular so subangular, some granular some person (10YR 5/3), very fine grained to very coarse grained, angular so subangular, some granular some brown (10YR 5/3), very fine grained to very coarse grained, angular some pebbles, angular some brown (10YR 5/3), very fine grained to very coarse grained, angular some pebbles, angular some granular some person (10YR 5/3), very fine grained to very coarse grained, angular some pebbles, angular some person (10YR 5/3), very fine grained to very coarse grained, angular some pebbles, angular some person (10YR 5/3), very fine grained to very coarse grained, angular some pebbles, angular some person (10YR 5/3), very fine grained to very coarse grained, angular some pebbles, angular some person (10YR 5/3), very fine grained to very coarse grained, angular some pebbles, angular some person (10YR 5/3), very fine grained to very coarse grained, angular some pebbles, angular some person (10YR 5/3), very fine grained to very coarse grained, angular some pebbles, angular some person (10YR 5/3), very fine grained to very coarse grained, and the pebbles grained to very coarse grained to very coarse grained, and the pebbles grained to very coarse grained to very coar	_			Alluvium	sw		gravel (SW); brown (10YR 5/3); very fine grained grained, angular to subangular; some granules angular to subangular; trace silt; trace clay; trace clasts consist of metadiorite and conglomerate	d to very coarse to very large pebbles e mica; dry; larger		
Deposits Deposits Deposits No Sieve Samples Collected Topock - Alluvium Deposits; Well graded sand with silt and gravel (SW-SM); brown (10YR 5/3) some brown (10YR 4/3); very fine grained to very coarse grained, angular to subangular; some of	68				SM		brown (10YR 5/3) little brown (10YR 4/3); very f coarse grained, angular to subround; some grar pebbles, angular to subangular; little silt; trace m	ine grained to very rules to very large		
and gravel (ŚW-SM); brown (10YR 5/3) some brown (10YR 4/3); very fine grained to very coarse grained, angular to subangular; some grained, angular to subangular; trace to tight formation and soils falling out of core during clean out runs Topock - Alluvium Deposits SW-SM Topock - 108		Samples			S					
75_ _76_ _77_ _77_ _78_ _ 108					C		and gravel (SW-SM); brown (10YR 5/3) some beine grained to very coarse grained, angular to suparanules to very large pebbles, angular to subar cobbles, angular, trace mica; dry, larger clasts of	orown (10YR 4/3); ve ubangular; some ngular; little silt; trace	ery Slow drilling du to tight formatic and soils fallin- out of core during clean ou	pe g
	60 - 75_			Tanack -						
	76 77			Alluvium	SW-SM					
	108									
· , , , , , , , , , , , , , , , , , , ,	80									

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring L	og		She	eet: 5 of	15
Date S	Started	: 05/11/				Elevation		Borir	na No.:	MW-Rd	
1	-	ted: <u>06/04/</u>				(NAD83	,	_		111111110	
Drilling	-	<u>Casca</u>				(NAD83):		_ Client:	PG&E		
Drilling			Drilling		Total D	-	287 ft bgs	_ Project:		W Remedy Ph	
Drill Ri Driller			nic Truck Mou nos / D. O'Ma				er: <u>4-12 inches</u> ater: <u>90.59 ft bgs</u>	_ Location	PG&E	Topock, Needl	es, California
Drilling			aya/ O. Flores		-	g Method	_	Project N	lumber:	RC000753 00!	 51
Logge			<u>fers / C. Stew</u>		-	ig Interval		_ 1 10,00011	idilibei.	110000700.000	<i>7</i> I
Editor:			VicGrane		-	ed to Wel		_			
	>			υ <u>5</u>							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
81	108			Topock - Alluvium Deposits	SW-SM					(72.0 - 92.0') Slow drilling due to tight formation and soils falling out of core during clean out runs	(42.0 - 270.0') No water used
	72	No Sieve Samples Collected				(Si an suu me (87	6.0 - 117.0') Topock - Alluvium Deposits; Silt W); brown (10YR 5/3); very fine grained to wigular to subround; some granules to very lar bangular; little silt; trace clay; trace mica; dry stadiorite and conglomerate "); decrease in silt, increase in sand 1'); moist; weak cementation 2'); some silt; little small to very large pebbles	ery coarse grai ge pebbles, an ; larger clasts o	ned, gular to	(92.0')	
93 94 95 96 97	60		MW-R-VAS- 92-97 (45 ppb) 5/13/2019 11:44	Topock - Alluvium Deposits	SM	Sul (9/ cla	bangular; wet; no clay, no cementation 4.5'); some small to very large pebbles, angular; weak cementation; increase in silt, decrease in	alar to subangul ase in sand		Approximate depth to water	
 98 99 100 Abbrev	120 viation:	s: USCS =	Unified Soil (Classificat	ion Svst	inc	rease in silt, decrease in sand, weathered g	ranules to pebb	oles	n sea level. G	W =

9/	4RC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g	S	heet: 6 of	15
Date S	Started	: <u>05/11</u>	2019		Surface	Elevation:	N/A	Boring No	· MW-Rd	
Date 0	Comple	ted: <u>06/04/</u>	<u>2019</u>		Northing	g (NAD83):	N/A	_ Borning itto	<u>inivi ita</u>	
Drilling	g Co.:	<u>Casca</u>	ıde		Easting	(NAD83):	N/A	Client: PG&E		
Drilling	g Meth	od: <u>Sonic</u>	Drilling		Total De	epth:	287 ft bgs	Project: Final (GW Remedy Ph	nase 1
Drill R	ig Type	e: <u>Proso</u>	<u>nic Truck Mo</u>	<u>unt</u>	Borehol	e Diameter:	4-12 inches	Location: PG&E	Topock, Needl	es, California
Driller	Name	<u>E. Ra</u>	<u>mos / D. O'M</u>	ara	Depth to	o First Wate	r: <u>90.59 ft bgs</u>			
Drilling	g Asst:		aya/ O. Flore		-	ng Method:	4 inch x 10 ft Core Barrel	Project Number	: RC000753.00	51
Logge			fers / C. Stev	vart	-	ng Interval:	Continuous	-		
Editor	:	<u>Sean</u>	<u>McGrane</u>		Convert	ed to Well:				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description		Drilling Notes	Drilling Fluid
101102103104105106107	- 120									(42.0 - 270.0') No water used
108 109 110 111 112 113 114	120	No Sieve Samples Collected		Topock - Alluvium Deposits	SM	(112. granu	; pulverized weathered metadiorite boulder 5') brown (10YR 5/3) trace reddish brown (les to very large pebbles, angular to subar mentation, trace mottling	(2.5YR 5/4); some		
115 116 117 118 119	- 60		MW-R-VAS- 117-122 (5.8 ppb) 5/14/2019 10:14	Topock - Alluvium Deposits	GM	(117.0 (GM); small graine	; decrease silt, increase granules and peb 0 - 128.5') Topock - Alluvium Deposits; Silt brown (10YR 5/3) little reddish brown (2.5 cobbles, angular to subangular; some very ad sand, angular to subround; little silt; trac osed of metadiorite; wet; silt nodules	ty gravel with sand 5YR 5/4); granules to y fine to very coarse	(115.0 - 122.0') Soft drilling	
120 Abbre	viation	s: USCS =	Unified Soil (Classificati	on Syste	m ft = feet	bas = below around surface.	amsl = above me	an sea level G	\/\/ =

9/-	١RC	ADIS	Design & Consultancy for natural and built assets		Во	ring L	og		Sheet:	7 of	15
Date S						Elevation	N/A	Boring	y No.: <u>N</u>	MW-Rd	
	•	ted: <u>06/04/</u>				g (NAD83)	N/A				
Drilling		<u>Casca</u>			_	(NAD83):	N/A		PG&E		
Drilling			•			•	287 ft bgs			Remedy Ph	
Drill Ri			nic Truck Mou				: <u>4-12 inches</u>	_ Location: J	PG&E Top	ock, Needl	<u>es, California</u>
Driller			<u>nos / D. O'Ma</u>		-		er: <u>90.59 ft bgs</u>				
Drilling			aya/ O. Flores		•	ng Method:	4 inch x 10 ft Core Barrel	_ Project Nu	ımber: <u>RC</u>	000753.005	51
Logge			fers / C. Stew		-	ng Interval:	Continuous	_			
Editor:		<u>Sean I</u>	<u>McGrane</u>		Conver	ted to Well					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			rilling Notes	Drilling Fluid
 121 _122_	60		MW-R-VAS- 117-122 (5.8 ppb) 5/14/2019 10:14							115.0 - 122.0') Soft drilling	(42.0 - 270.0') No water used
	60			Topock - Alluvium Deposits	GM); and very fine to very coarse grained san ngular; decrease in granules to cobbles	nd, angular to			
126 							100/1	1			
 129 _130_ 		No Sieve Samples Collected		Topock - Alluvium Deposits	SM	(SM) grai to v coa	5 - 130.5') Topock - Alluvium Deposits; Si; brown (10YR 5/3) trace reddish brown (2 ed to very coarse grained, angular to subary large pebbles, angular to subangular; so ser clasts composed of metadiorite; wet .5 - 137.5') Topock - Alluvium Deposits; Si	2.5YR 5/4); very t angular; some gra ome silt; trace mi	fine anules ca;		
131 132 133	120			8	C	(GN sma); brown (10YR 5/3) trace reddish brown (2 cobbles, angular to subangular; and very ed sand, angular to subangular; little silt; tr s composed of metadiorite; wet; silt nodule	2.5YR 5/4); granu fine to very coar race mica; coarse	ules to		
134 135 136				Topock - Alluvium Deposits	GM						
 137 				Topock -			.5 - 138.5') Topock - Alluvium Deposits; Sa	andy silt with ara	vel		
138 139	120			Alluvium Deposits Topock -	ML	(ML larg grai ∵ \con	; brown (10YR 5/3); medium plasticity; son pebbles, angular to subangular; some ver ed sand, angular to subangular; trace mica posed of metadiorite; wet; soft to medium s	ne granules to ve y fine to very coa a; coarser clasts tiff	ery arse		
 140 Abbrev	/iation:	s: USCS =	Unified Soil C	Alluvium Deposits	SM on Syste	(SM grai	5 - 153.0') Topock - Alluvium Deposits; Si ; brown (10YR 5/3) trace reddish brown (2 ed to very coarse grained, angular to suba t, bgs = below ground surface,	2.5YR 5/4); very t angular; some gra	fine anules	ea level, G\	N =

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring L	og	5	Sheet: 8 of	15
Date S	Started	05/11/	2019		Surface	Elevatio	: <u>N/A</u>	Boring No	o.: <u>MW-Rd</u>	
	•	ted: <u>06/04/</u>				g (NAD83		_		
Drilling		<u>Casca</u>				(NAD83)		_ Client: PG&		
Drilling			Drilling		Total D	•	287 ft bgs	•	GW Remedy Ph	
Drill Ri			<u>nic Truck Μοι</u>				er: 4-12 inches	_ Location: <u>PG&</u>	E Topock, Needl	es, California
Driller			mos / D. O'Ma		•		ter: <u>90.59 ft bgs</u>			
Drilling			aya/ O. Flores			ng Method		_ Project Numbe	r: <u>RC000753.00</u>	51
Logge			fers / C. Stew	<u>art </u>	-	ng Interva		_		
Editor:		<u>Sean</u>	McGrane		Conver	ed to We	I: X Yes No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
	120			Topock - Alluvium Deposits	SM	co gr (1	very large pebbles, angular to subangular; litt arser clasts composed of metadiorite; wet, int inule to pebble lenses (1'); some silt; decrease in sand, increase in (2.5'); little silt; increase in sand, increase in	terbeded silt and granules and pebbles	93	(42.0 - 270.0') No water used
	120	No Sieve Samples Collected	MW-R-VAS- 151-156 (<0.033 U ppb) 5/15/2019 10:20	Topock - Alluvium Deposits	GM		9'); some silt; decrease in sand 3.0 - 157.0') Topock - Alluvium Deposits; Sil M); brown (10YR 5/3) little reddish brown (5Y y large pebbles, angular to subangular; some arse grained sand, angular to subangular; littl arser clasts composed of metadiorite; wet; int ses, trace reddish brown (2.5YR 5/4)	e very fine to very le silt; trace mica; terbeded silt and sand	(151.0 - 156.0') Cave in prevented sampler from being set at 152 to 157 ft. bgs	
158 159 160	120	o: 11808 -	Unified Soil C	Topock - Alluvium Deposits	GW	sa to su mi	67.0 - 168.5') Topock - Alluvium Deposits; W nd (GW); brown (10YR 4/3); granules to very subangular; and very fine to very coarse grai pangular; trace silt; trace mica; coarser clasts tadiorite; wet; silt nodules	/ large pebbles, angula ned sand, angular to s composed of		M =
Annie,	viatiOf	s. USUS =	Utililed Still C	nassiiical	ion Syste	5111, IL – IE	er, bys – below ground surface,	ambi – above me	cail Sea level, G	vv –

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	et: 9 of	15
Date S	Started	: <u>05/11/</u>	2019		Surface	Elevation:	N/A	Borin	u No .	MW-Rd	
	•	eted: <u>06/04/</u>				g (NAD83):	N/A	_		10177 170	
Drilling		<u>Casca</u>				(NAD83):	N/A	_ Client:	PG&E		
Drilling			•		Total D		287 ft bgs	_ Project:		N Remedy Ph	
Drill Ri			nic Truck Mou				4-12 inches	_ Location:	PG&E T	opock, Needle	<u>es, California</u>
Driller			<u>nos / D. O'Ma</u>		-		: 90.59 ft bgs	-			
Drilling			aya/ O. Flores		-	ng Method:	4 inch x 10 ft Core Barrel	_ Project N	lumber: <u>F</u>	RC000753.005	51
Logge			fers / C. Stew	<u>art </u>	-	ng Interval:	Continuous	-			
Editor:		<u>Sean r</u>	<u>McGrane</u>		Conven	ted to Well:	X Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	nscs Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
										(157.0 - 167.0') Soft drilling	(42.0 - 270.0') No water used
161											
162											
163											
[120										
164	120			Topock -							
				Alluvium Deposits	GW						
165				Deposits							
166											
167											
							() ~ \ \ \				
168											
169							- 179.0') Topock - Alluvium Deposits; Sil prown (7.5YR 4/4); very fine grained to ve				
						angula	r to subangular; some granules to very la angular; little silt; trace mica; coarser clas	irge pebbles, a	ngular		
170		No Sieve	ľ				orite; wet; interbeded silt and granule to p		"		
		Samples Collected					some sil <mark>t; trace cob</mark> bles, <mark>ang</mark> ular to suba es and pebbles, decrease in sand	ngular; increas	se in		
171											
172	120										
	120										
173											
				Topock -		(173');	pulverized boulder fragments				
174				Alluvium	SM						
				Deposits		(174');	increase in silt, decrease in sand				
175											
176											
							- 179.0') dark yellowish brown (10YR 4/4 ace clay; mottled; iron oxide staining; dec				
178							s, no cobbles	5 grant			
	120										
179	120										
				Topock - Alluvium	SW-SM		- 180.0') Topock - Alluvium Deposits; W I gravel (SW-SM); dark yellowish brown (ell graded sand (10YR 4/4) son	d with		
180				Deposits		brown	(7.5YR 4/3); very fine grained to very coa	arse grained, a	ngular		
Abbrev	viation	s: USCS =	Unified Soil C	Classificat	ion Syste	em, ft = feet,	bgs = below ground surface,	amsl = abo	ove mear	n sea level, G\	N =

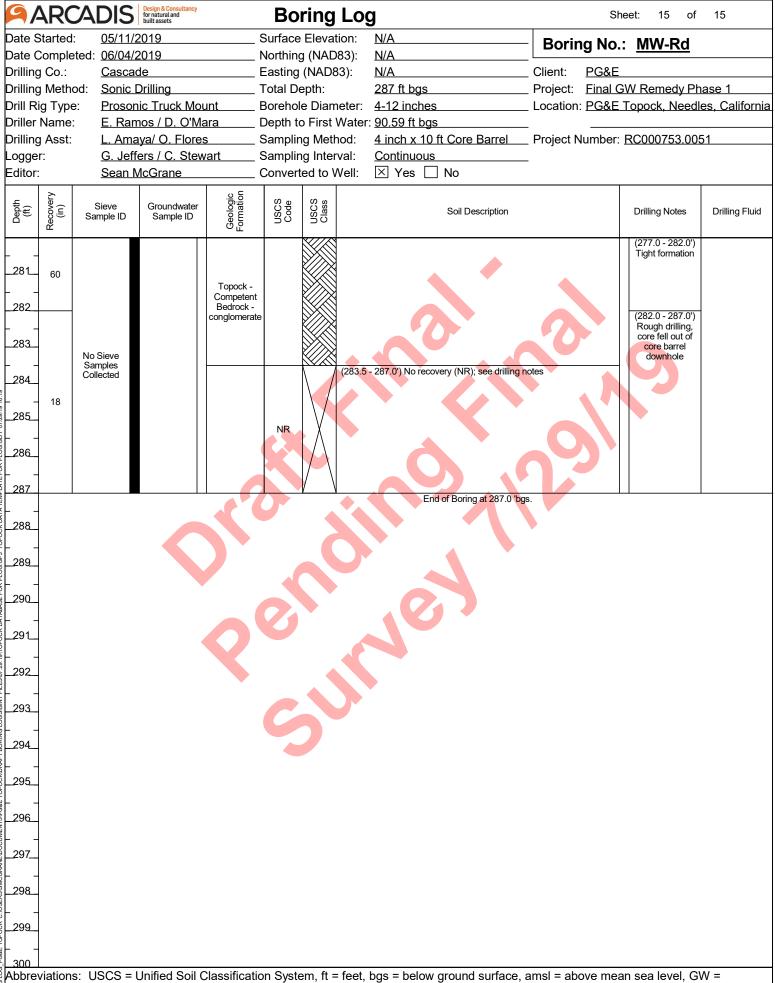
9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	rin	J Log		She	eet: 10 of	15
	Started				Surface			Borin	g No.:	MW-Rd	
		ted: <u>06/04/</u>			Northing		•				
Drilling		Casca			_	•	•	Client:	PG&E		
_	Meth		•			•	287 ft bgs	-		W Remedy Ph	
	g Type						meter: 4-12 inches	Location:	PG&E	Topock, Needl	es, Californi
	Name		mos / D. O'M		=		Water: 90.59 ft bgs	Dania at N		2000252	-4
_	, Asst:		aya/ O. Flore		Samplin	-		. Project N	umber: <u>I</u>	RC000753.008	01
Logge Editor:			fers / C. Stev		Samplir Convert	-					
Editor.		<u>Sean i</u>	McGrane		Conven	eu lo	vveii. 🛆 fes 🗌 No				Ι
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
				Topock - Alluvium	SM		to subangular; some granules to very large pebb subangular; little silt; trace cobbles, angular to su				(42.0 - 270.0') No water used
181				Deposits	""		coarser clasts composed of metadiorite; wet; mo (180.0 - 181.0') Topock - Alluvium Deposits; Silt		avol		
_							(SM); brown (10YR 4/3) little brown (7.5YR 4/3);	very fine grai	ned to		
182							: very coarse grained, angu <mark>lar to</mark> subangular; som ∴ large pebbles, angu <mark>lar to</mark> sub <mark>ang</mark> ular; little silt; tra	ne granules to ace mica; coar	very ser		
				Topock -	N		clasts composed of metadiorite; wet; mottled; into	erbeded silt ar	d		
				Alluvium Deposits	ML		: (181.0 - 182.0'); some silt; trace clay; iron oxide	staining; decre	ease in		
_100							sand (182.0 - 183.0') Topock - Alluvium Deposits; Sar	ndy eilt with ar	avel		
	120						(ML); brown (7.5YR 4/3); low plasticity; some gra	anules to very	large		
_104							pebbles, angular to subangular; some very fine t sand, angular to subround; trace cobbles, suban sand, angular to subangular; trace cobbles, subangular	igular; coarser	clasts		
405							composed of metadiorite; wet; stiff to very stiff; woxide staining; trace weathered granules and pel		ion; iron		
185_							(183.0 - 247.0') Topock - Alluvium Deposits; Silt	y sand with gr	avel		
-					2.31		∷ (SM); brown (7.5YR 4/3) some br <mark>own</mark> (10YR 5/3 ∵ very coarse grained, <mark>ang</mark> ular to subangular; som	ne granules to	very		
_186							: large pebbles, angular to subangular; some silt; t : to subangular; trace mica; coarser clasts compo	trace cobbles,	angular		
-							wet; laminated; weak cementation; little weathere	ed g <mark>ran</mark> ules an	d d		
_187							: pebbles, interbeded silt and granule to cobble ler ∴ (186'); dry; for 0.5 ft.				
_				1			(187'); decrease in silt, increase in granules and	pebbles			
_188					T					(188.0 - 207.0')	
_										Drill rod broke	
_189										off during during reaming, was	
_	60									retrieved to continue drilling	
190_		No Sieve Samples									
_		Collected									
_191											
_			•	Topock - Alluvium	SM						
192				Deposits	J SIVI						
_193											
100_							(193'); increase in sand, decrease in silt, no cem	nentation, no			
104			MW-R-VAS-				. lammadon 				
_194			192-197 (<0.033 U								
405	60		` ppb)								
_195			5/16/2019 09:55								
-											
196_											
-											
_197				-							
-							4				
198_							: (198'); increase in silt, decrease in granules and	nebblos			
_	120						.] (190), increase in siit, decrease in grandies and	hennigs			
199_											
_											
200							<u> </u>				
	viation	s: USCS =	Unified Soil (Classification	on Syste	em, ft	= feet, bgs = below ground surface, a	amsl = abo	ve mear	n sea level, G	w =

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring l	Log		She	et: 11 of	15
Date S	Started	: 05/11/2	2019		Surface	Elevation	on: <u>N/A</u>	Borin	a No:	MW-Rd	
	•	ted: <u>06/04/2</u>			Northing					11111111111	
Drilling	-	Casca			Easting			Client:	PG&E		
	g Meth		-		Total De	-	287 ft bgs	-		N Remedy Ph	
	ig Type		nic Truck Mou				ter: 4-12 inches	Location:	PG&E T	opock, Needl	<u>es, California</u>
	Name		nos / D. O'Ma				/ater: 90.59 ft bgs				
1	g Asst:		aya/ O. Flores		Samplin	-		. Project N	umber: <u>F</u>	RC000753.008	01
Logge Editor			ers / C. Stew McGrane	<u>⁄aπ</u>	Samplin	ig intervited to W		-			
Luitor		Seann			Conven	led to vv	eli. 🔼 l'es 🗌 No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	nscs Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
201 202 203 204 205 206 207	120						200'); and silt; decrease in granules to pebbles 205'); some silt; increase in granules and pebbl	es		(188.0 - 207.0') Drill rod broke off during during reaming, was retrieved to continue drilling	(42.0 - 270.0') No water used
208 209 210 211 212 213 214 215	120	No Sieve Samples Collected		Topock - Alluvium Deposits	SM		207'); trace clay; decrease in sand 215'); some silt; increase in silt, decrease in sa	nd		(207.0 - 227.0') Soft drilling (10" casing)	
216 _217 						() () () () () () () () () ()	217'); decrease in silt, increase in sand, increa bebbles, no clay, silt nodules	se in granules	and		
_218	120										
220 Abbre	viation	s: USCS = I	Unified Soil C	Classificat	ion Syste	em. ft = 1	feet, bgs = below ground surface, a	amsl = abo	ve mear	sea level. G\	N =

ARCADIS Design & Consultancy for natural and bulk assets					Во	ring Lo	g	Sheet: 12 of 15			
Date S	tarted	: <u>05/11/</u>	/2019		Surface	Elevation:	N/A	Borin	a No .	MW-Rd	
	•	ted: <u>06/04</u>	/2019		Northing	g (NAD83):	N/A		19 110	<u>IVIVV-IXA</u>	
Drilling	Co.:	Casca	ide		Easting	(NAD83):	N/A	_ Client:	PG&E		
Drilling	Meth		Drilling		Total D	-	287 ft bgs	_ Project:		N Remedy Ph	
Drill Ri			<u>nic Truck Μοι</u>				4-12 inches	_ Location	: <u>PG&E T</u>	opock, Needl	es, California
Driller			<u>mos / D. O'Ma</u>				r: <u>90.59 ft bgs</u>	_			
Drilling			aya/ O. Flores		-	ng Method:	4 inch x 10 ft Core Barrel	_ Project N	lumber: <u>F</u>	RC000753.005	51
Logge			fers / C. Stew		-	ng Interval:	Continuous	_			
Editor:		Sean	McGrane		Conven	ed to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
	120					(225)	; little silt; increase in granules and pebble			(207.0 - 227.0') Soft drilling (10" casing)	(42.0 - 270.0°) No water used
228 229 230 231 232	60	No Sieve Samples Collected	MW-R-VAS- 227-232 (<0.033 U ppb) 5/17/2019 10:05	Topock - Alluvium Deposits	SM		brune /7 EVD A/A) and raddish brane / n		A/EVD	(227.0 - 232.0') Picked sample location based on lithology (227.0 - 267.0') Soft drilling (10" casing)	
<u> </u>				Y		4/4), a	brown (7.5YR 4/4) and reddish brown / mand granules to very large pebbles, angula	ar to subangula	n(5YR ar; trace		
233						cobble	es, angular to subangular; decrease in silt	, mottled			
						(222)	5'); pulverized boulder fragments within sil	t matrix 1 foot	thick		
234						(200.)	o, partoneda bodidor naginionia wililli sii		. J. HOR		
235											
236	180										
_237											
238											
 											
239											
						(239.5	5'); some granules to very large pebbles, a	angular to suba	angular;		
240 Abbre\	/iation:	s: USCS =	Unified Soil C	L Classificati	on Syste	em, ft = feet	, bgs = below ground surface,	amsl = abo	ove mear	n sea level, G\	N =

ARCADIS Design & Consultancy for natural and built assets Boring Log Sheet:	13 of 15
Date Started: 05/11/2019 Surface Elevation: N/A Boring No.: M	/W-Rd
Date Completed: <u>06/04/2019</u> Northing (NAD83): <u>N/A</u>	iiii ita
Drilling Co.: <u>Cascade</u> Easting (NAD83): <u>N/A</u> Client: <u>PG&E</u>	
·	Remedy Phase 1
	<u>ock, Needles, California</u>
Driller Name: <u>E. Ramos / D. O'Mara</u> Depth to First Water: <u>90.59 ft bgs</u>	
Drilling Asst: L. Amaya/ O. Flores Sampling Method: 4 inch x 10 ft Core Barrel Project Number: RC0	000753.0051
Logger: G. Jeffers / C. Stewart Sampling Interval: Continuous	
Editor: Sean McGrane Converted to Well: X Yes No	T
	illing Notes Drilling Fluid
-	27.0 - 267.0') (42.0 - 270.0') ft drilling (10" No water used casing)
242	
Topock - Alluvium SM	
245	
246	
247	
o \(\bigcup \left(\frac{247.0 - 258.0'\) Topock - Alluvium Deposits; Silty gravel with sand o \(\bigcup \left(\frac{6(M)}{3}\); brown (7.5YR 4/4) and reddish brown / moderate brown(5YR 1/4/4) gravular to subparellar; and year, fine	
248	
249 lenses	
No Sieve Samples	
Collected	
252 120 Topock - Alluvium GM	
Deposits Deposits	
254	
256(256'); 1 foot thick very saturated zone	
255-260 (<0.17 U	
$\lceil \ \rceil \ \ \square \ ppb \rangle $	
12:00 (258.0 - 261.5') Topock - Alluvium Deposits; Silty sand with gravel	
120 259 Topock - Alluvium SM SM (SM); brown (7.5YR 4/4); very fine grained to very coarse grained, angular to subangular; some granules to very large pebbles, angular to subangular; osme silt; trace cobbles, angular to subangular; trace	
Deposits Deposits Deposits Deposits Granules and pebbles, interbeded silt and granule to pebble lenses, granular increase in silt with depth	
260	ea level, GW =

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	SI	neet: 14 of	15
Date S	tarted	: 05/11/2	2019		Surface	Eleva	tion: N/A	Boring No.	: MW-Rd	
		ted: <u>06/04/</u>			Northin		· ·			
Drilling		<u>Casca</u>			Easting	`	,	Client: PG&E		
Drilling					Total D	-	287 ft bgs	•	GW Remedy Ph	
Drill Ri			nic Truck Mou				neter: 4-12 inches	Location: PG&E	Topock, Needl	<u>es, California</u>
Driller I			nos / D. O'Ma		=		Water: 90.59 ft bgs	. — — — — — — — — — — — — — — — — — — —	DC0007E2 00/	-4
Drilling Logger			aya/ O. Flores fers / C. Stew		Samplir Samplir	-		Project Number:	RC000753.003) I
Editor:			McGrane		Conver	-		-		
Luitor.			T		T		Veii. E 163 E 140			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
 261				Topock - Alluvium Deposits	SM		(261'); pulverized boulder fragments		(227.0 - 267.0') Soft drilling (10" casing) (247.0 - 274.0') Smooth drilling	(42.0 - 270.0') No water used
262							(261.5 - 274.5') Topock - Weathered Bedrock - sand with gravel (SM); reddish brown / moderate trace red / moderate reddish brown (10R 4/6); ve	e brown(5YR 4/4) ery fine grained to very	(10" casing) (247.0 - 274.0') Smooth drilling (10" casing)	
	400						coarse grained, angular to subangular; some gra pebbles, angular to subangular; some silt; trace coarser clasts composed of metadiorite; wet; we interbeded silt and granule to pebble lenses	clay; trace mica;		
264	120									
265									(265.0 - 267.0') Tight formation	
266								900		
_267							(267'); increase in silt, no clay		(267.0 - 279.0') Tight and rough	
268				Topock - Weathered Bedrock - conglomerat	SIVI				drilling (10" casing)	
_269							(268.5'); little silt; trace cobbles, angular to suba sand, increase in granules to cobbles	ngular; increase in		
270		No Sieve Samples Collected					(270'); weathered metadiorite		(270.0 - 279.0') Formation	(270.0 - 279.0') 800 gallons of
271			MW-R-VAS- 269-274 (<0.17 U				(271'); increase in sand, increase silt, decrease pebbles, weathered fractured boulder of metadic	in granules and orite	collapse after pulling 10" casing up 10 ft	water used; 0 gallons of water recovered; 800 gallons of water
272	120		ppb) 5/30/2019 14:30							lost
273										
274									(274.0 - 279.0') Tight and rough	
_275							(274.5 - 283.5') Topock - Competent Bedrock - brown / moderate brown(5YR 4/4); moist to dry;	conglomerate; reddish friable	drilling (10" casing)	
276										
277_				Topock - Competent			/077'\: dn/		(277.0 - 282.0')	
				Bedrock -			(277'); dry		(277.0 - 282.0') Tight formation	
278				conglomerat						
-	60									
279										
-										
280 Abbrev	/iations	s: USCS =	Unified Soil C	ı Classificati	on Syste	<u>w//</u> >> em, ft =	= feet, bgs = below ground surface, a	amsl = above me	ı_ı an sea level, G\	N =



9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	eet: 1 of	8
Date S						Elevation:	N/A	Borir	na No.:	MW-Rs	
	-	ted: <u>06/17/</u> 2				g (NAD83):	N/A	_		<u></u>	
Drilling		Casca				(NAD83):	N/A	_ Client:	PG&E		
Drilling			-		Total D	-	143 ft bgs	_ Project:		W Remedy Pr	
Drill R Driller			nic Truck Moi Ramos	unt			10-12 inches : 90.27 ft bgs	_ Location	: PG&E	Fopock, Needl	es, California
Drilling			aya/ O. Flore:	•	-	ng Method:	4 inch x 10 ft. Core Barrel	– Project N	Jumber: I	RC000753 004	 51
Logge	-		ers / A. Macl			ng Interval:	Screen Intervals	_ 1 10,0001	varriber. <u>1</u>	10000733.00	J 1
Editor			//cGrane	•	-	ted to Well:		_			
				ی ج							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
_ 1 1 1 1	60 60 96	No Sieve Samples Collected			NR	(0.0 - i boring	37.0') (NR); Core not collected or logged log MW-Rd for lithology	, no recovery, s	See	(15.0') 12 inch conductor casing dropped and mud tub seal had to be reset (15.0') 12 inch casing dropped to 15 ft. bgs reset mud tub seal, driller indicated formation was collapsing @ 17 ft. bgs, when examining core, ~1 ft boulder was observed, will pay close attention to borehole when installing well	(0.0 - 133.0') No water used
20 Abbre	viation	s: LISCS = I	Unified Soil (lassificat	ion Syst	em ft = feet	bas = below around surface.	amsl = ah	ove mear	ı n sea level G	\/\/ =

9/	ARC	ADIS	for natural and built assets		Bo	ring Lo	g		Sh	eet: 2 of	8
Date S	Started	06/16/2	2019		Surface	Elevation:	N/A	Borin	na No.	MW-Rs	
	-	ted: <u>06/17/2</u>				g (NAD83):	N/A	_		<u> </u>	
Drilling		Cascad				(NAD83):	N/A	_ Client:	PG&E		
Drilling					Total De		143 ft bgs	_ Project:		W Remedy Pr	
Drill Ri	• • •		<u>ic Truck Μοι</u>			e Diameter:	10-12 inches	_ Location	: PG&E	Topock, Need	es, California
Drilling			<u>kamos</u> iya/ O. Flores		-	g Method:	: 90.27 ft bgs 4 inch x 10 ft. Core Barrel	- Project N		RC000753.00	51
Logge	-		<u>ers / A. Mack</u>		-	ig Interval:	Screen Intervals	_ 1 10,0001	varriber.	10000733.00	<u> </u>
Editor:			/IcGrane			ed to Well:		_			
	>			٥ <u>۶</u>							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
21	108									(27.01) Tight	(0.0 - 133.0') No water used
	120	No Sieve Samples Collected		Q	NR					(27.0') Tight formation	
3838	60										
IAhhre	viation	USCS = I	Initied Soil C	:lassificati	on Syste	m tt = feet	bas = below around surface.	amsl = ah	ove mea	n sea level. G	vv =

9/	AKC	ADIS	for natural and built assets		Во	ring Loເ			She	eet: 3 of	8
Date S	Started	: 06/16/2	2019		Surface	Elevation:	N/A	Borin	na No :	MW-Rs	
Date C	Comple	ted: <u>06/17/2</u>	2019		Northing	g (NAD83):	N/A	_		10100-113	
Drilling		Casca				(NAD83):	N/A	_ Client:	PG&E		
Drilling			-		Total De		143 ft bgs	_ Project:		W Remedy P	
Drill R			nic Truck Mou	<u>ınt </u>		e Diameter:	10-12 inches	_ Location	: <u>PG&E</u>	Topock, Need	<u>lles, California</u>
Driller							90.27 ft bgs	– Droinet N		DC0007E2 00	NE 1
Drilling Logge			iya/ O. Flores ers / A. Mack			ng Method: ng Interval:	4 inch x 10 ft. Core Barrel Screen Intervals	_ Project i	number:	RC000753.00	15 1
Editor:			<u>//cGrane</u>	<u> </u>		ed to Well:		_			
	I I				1						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
41 42	60										(0.0 - 133.0') No water used
43							70	10			
44										9	
	60										
45											
46									5)		
-											
47											
48											
49											
50		No Sieve Samples	×		NR						
		Collected									
51											
52	120										
				Ť							
53											
54											
55											
56											
57											
58											
	120										
59	.23										
60	.: _4:	LICCC - I	Initiad Call C) :fi+	ion Curt		has = helow around surface)\A/ -

9/	4RC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sh	eet: 4 of	8
	Started		2019			Elevation:	N/A	Bori	na No.:	MW-Rs	
	-	eted: 06/17/2				g (NAD83):	N/A	_			
Drilling		Casca				(NAD83):	N/A	Client:	PG&E	W D D	
Drilling			-		Total De	-	143 ft bgs	Project:		W Remedy Ph	
Drill R Driller			nic Truck Mou			e Diameter:	10-12 inches : 90.27 ft bgs	Location	1: <u>PG&E</u>	Topock, Need	es, California
l l	g Asst:		iya/ O. Flores		-	ig Method:	4 inch x 10 ft. Core Barrel	- Project l	Viimher:	RC000753 00	51
Logge	-		ers / A. Mack		•	ig Interval:	Screen Intervals	_ 1 10,0001	Turribor.	1.0000700.00	01
Editor			/lcGrane			ed to Well:	Yes □ No	_			
	>			o 5							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
6162636465665665666767	120									9	(0.0 - 133.0') No water used
- 68 - 68 - 69 - 69 - 71 - 72 - 73 - 74 - 75 - 75 - 75 - 75 - 75 - 75 - 75	120	No Sieve Samples Collected			NR						
80											
Ahhra	viation	. HSCS - I	Inified Soil C	laccificatio	n Svete	m ft - foot	has = helow around surface :	amel – ah	ove mea	n soa lovol G	۱۸/ –

9/-	۱RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	3		She	et: 5 of	8
Date S	Started	06/16/	2019		Surface	Eleva	tion:	N/A	Borin	a No :	MW-Rs	
Date C	Comple	ted: <u>06/17/</u>	2019		Northing	g (NAD	83):	N/A	Богіп	9 110	10100-123	
Drilling	g Co.:	<u>Casca</u>	de		Easting	(NAD8	33):	N/A	Client:	PG&E		
Drilling	g Meth	od: <u>Sonic</u>	Drilling		Total De	epth:		143 ft bgs	Project:	Final GV	N Remedy Ph	ase 1
Drill Ri	ig Type	e: <u>Proso</u> i	nic Truck Mou	unt	Borehol	e Dian	neter:	10-12 inches	Location:	PG&E T	opock, Needle	es, California
Driller	Name	<u>Eddie</u>	Ramos		Depth to	o First	Water:	90.27 ft bgs				
Drilling	g Asst:	L. Am	aya/ O. Flores	3	Samplin	ng Meth	nod:	4 inch x 10 ft. Core Barrel	Project N	umber: <u>F</u>	RC000753.005	51
Logge	r:	G. Jef	fers / A. Mack	<u> </u>	Samplin	ng Inter	val:	Screen Intervals				
Editor:	:	<u>Sean l</u>	<u>McGrane</u>		Convert	ed to \	Vell:	Yes □ No				
_	ery.			ig ion	(0, a)	(0, 0						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS		Soil Description			Drilling Notes	Drilling Fluid
81 82 83 84 85 86 87	120				NR						0)	(0.0 - 133.0') No water used
88	120	No Sieve Samples Collected	MW-R-VAS- 92-97 (45 ppb) 5/13/2019 11:44	Topock - Alluvium Deposits Topock - Alluvium Deposits	SW-SM		and gracoarse pebbless trace m of grane (88.5 - 9 brown (some w little silt; (91'); so	88.5') Topock - Alluvium Deposits; Well givel (SW-SM); brown (7.5YR 4/3); very fir grained, angular to subround; and granule, angular to subround; and granule, angular to subangular; little silt; trace coica; moist; cobble at bottom of formation, dodiorite and metadiorite 95.5') Topock - Alluvium Deposits; Silty granules to small cobbles, an ery fine to very coarse grained sand, angu; coarser clasts composed of metadiorite; ome silt; trace clay; decrease in granules to small cobbles crease in granules to small cobbles. 98.5') Topock - Alluvium Deposits; Silty sr.5YR 4/3); very fine grained to very coarngular; and granules to very large pebbles ular; little silt; trace cobbles, angular to su omposed of metadiorite; wet	ne grained to ves to very large bibles, subang coarser clasts gravel with san gular to subang moist to very large personand with grave personand with graverse grained, are, andular to, andular to subang moist to very large personand with graverse grained, are, and are grained, are, and with graverse grained, are, and are grained, are grained, are, and are grained, are, and are grained, are, and are grained, are, and are grained, are grained, are, and are grained,	ery e pullar; consist d (GM); ngular; ular; ebbles	(91.0 - 91.0') Approximate depth to water	
97 98 99 100	60			Alluvium Deposits Topock - Alluvium Deposits	SM SW-SM		(98.5 - and gra coarse pebbles metadic	100.5') Topock - Alluvium Deposits; Well vel (SW-SM); brown (7.5YR 4/3); very fir grained, angular to subangular; and grant s, angular to subround; little silt; wet; large prite	ne grained to vules to very land	rery rge st of		M.
Apprev	viation	s: USUS =	Unitied Soil C	∍iassi⊺icati	on Syste	∍m, ft =	- reet, I	bgs = below ground surface, a	ırnsı = abo	ve mear	ı sea level, G\	/v =

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 6 of	8
Date S	Started	: <u>06/16</u>	/2019		Surface	Eleva	tion: <u>N/A</u>	- Borin	na No ·	MW-Rs	
Date C	Comple	eted: <u>06/17</u>	/2019		Northing	g (NAE	D83): <u>N/A</u>		19 110	10177-1723	
Drilling	g Co.:	Casca	ade		Easting	(NAD	83): <u>N/A</u>	_ Client:	PG&E		
Drilling	g Meth	od: <u>Sonic</u>	Drilling		Total D	epth:	143 ft bgs	_ Project:	Final G\	N Remedy Ph	ase 1
Drill Ri	ig Type	e: <u>Proso</u>	nic Truck Mo	unt	Borehol	e Dian	neter: 10-12 inches	Location:	: <u>PG&E T</u>	opock, Needl	es, California
Driller	Name	<u>Eddie</u>	Ramos		Depth to	First	Water: 90.27 ft bgs	_			
Drilling	g Asst:	L. Am	aya/ O. Flore	<u>s</u>	Samplin	ng Metl	hod: 4 inch x 10 ft. Core Barrel	_ Project N	lumber: <u>F</u>	RC000753.00	51
Logge	r:	G. Jef	fers / A. Mac	<u>k</u>	Samplin	ig Inte	rval: <u>Screen Intervals</u>	_			
Editor:	:	<u>Sean</u>	<u>McGrane</u>		Conver	ed to \	Well: ⊠ Yes ☐ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
					SW-SM						(0.0 - 133.0') No water used
101_ 102	60			Topock - Alluvium Deposits	SM		(100.5 - 102.0') Topock - Alluvium Deposits; S (SM); brown (7.5YR 4/3); very fine grained to angular to subangular; some granules to very to subround; little silt; wet; larger clasts consis	very coarse gra large pebbles, a	ined,	(102.0 - 108.0')	water useu
 103 _104_								70		Heaving sands	
 105					NR		$\langle \cdot \cdot \cdot \rangle$				
 106)		
107											
108				Towns.			; (108.0 - 110.0') Topock - Alluvium Deposits; ((SM); brown (7.5YR 5/3); very fine grained to angular to subangular; some granules to large	very coarse gra	ined,		
109	108	No Sieve		Topock - Alluvium Deposits	SM		subround; little silt; wet; 35,50,15,0	pebbles, aligui	al to		
110 111		Samples Collected			3		(110.0 - 117.0') (NR); Core not collected or lo boring log MW-Rd for lithology	gged, no recove	ery, see	(110.0 - 117.0') Core not collected	
				V		$\left\ \cdot \right\ $					
113											
 114					NR						
 115											
 116						$\left \right \setminus$					
 117						<u> </u>	(117.0 - 119.0') (NR); Core not logged, no rec	covery, see borin	ng log		
118	60		MW-R-VAS- 117-122 (5.8 ppb) 5/14/2019		NR		MW-Rd for lithology				
119 120			10:14	Topock - Alluvium Deposits	SM		(119.0 - 122.0') Topock - Alluvium Deposits; \$ (SM); brown (7.5YR 4/3); very fine grained to angular to subangular; some granules to very	very coarse gra large pebbles, a	ined, angular		
Ahhre	viation	s: LISCS =	Unified Soil (lassificati	ion Svet	m ft :	= feet has = helow around surface	amel = aho	ove mear	G laval cas	Λ/ =

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Boring	Log		Sheet: 7 of	8
	tarted				Surface Eleva		Boring N	No.: MW-Rs	
	-	eted: <u>06/17/</u>			Northing (NAI	•	-		
	Co.:	<u>Casca</u>			Easting (NAD	•		i&E	
_	Meth				Total Depth:	143 ft bgs	•	<u>al GW Remedy Ph</u>	
	g Type					neter: 10-12 inches	_ Location: <u>PG</u>	&E Topock, Needl	<u>es, Californi</u>
	Name		Ramos		•	Water: <u>90.27 ft bgs</u>	_		
_	Asst:		-		Sampling Met		_ Project Numl	per: <u>RC000753.00</u>	51
ogge			<u>fers / A. Mac</u>		Sampling Inte		_		
ditor:		<u>Sean I</u>	<u>McGrane</u>		Converted to	Well: ⊠ Yes ☐ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code USCS Class	Soil Description		Drilling Notes	Drilling Fluid
- 121_ - 122_	60		MW-R-VAS- 117-122 (5.8 ppb) 5/14/2019 10:14	Topock - Alluvium Deposits	SM	to subround; little silt; trace clay; coarser clasts metadiorite; wet (120') brown (7.5YR 4/3) with dusky red (10R 3 subangular to subround; mottled	•		(0.0 - 133.0') N water used
123_						(122.0 - 129.0') Topock - Alluvium Deposits; W silt and sand (GW-GM); dark brown (7.5YR 3/3 large pebbles, subangular to subround; and ver grained sand, angular to subround; little silt; coa); granules to very y fine to very coarse		
- 124_						of metadiorite; wet		70	
125_				Topock - Alluvium	GW-GM	(125') dark brown (7.5YR 3/3) with dusky red (1 cobbles, angular to subangular; mottled	0R 3/3); trace		
126_ -				Deposits		.0			
127 <u> </u>	120			4					
128_									
129_						(129.0 - 132.0') Topock - Alluvium Deposits; Sil	ty gravel with good		
_					[0]	(GM); dark brown (7.5YR 3/3); granules to very	large pebbles,		
130_		No Sieve Samples			Pol de	subangular to subround; little very fine to very c subangular to subround; little silt; trace cobbles	oarse grained sand, , subangular to	•	
_		Collected		Topock - Alluvium	GM 0	subround; coarser clasts composed of metadion			
131_				Deposits	Para				
			•		1 19				
132									
					1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	(132.0 - 137.0') Topock - Alluvium Deposits; W silt and sand (GW-GM); dark brown (7.5YR 3/3		h	
133_						large pebbles, angular to subangular; some ver	y fine to very coarse	.	
						grained sand, angular to subangular; little silt; of composed of metadiorite; wet		(133.0 - 143.0') Water used to	
- 34_					201	(133') dark brown (7.5YR 3/3) with dusky red (1	0R 3/3); mottled	blow out fines	
34_				Topock -				before well install, volume of	
125				Alluvium Deposits	GW-GM			water used and recovered not	
135				'				documented	
, _ 									
136	132								
37						(137.0 - 139.0') Topock - Alluvium Deposits; Sil	ty sand with gravel		
\dashv				Topock -		(SM); brown (7.5YR 4/3); very fine grained to very angular to subround; some granules to large pe	ery coarse grained,		
138_				Alluvium	SM	subround; little silt; coarser clasts composed of	metadiorite; wet;		
4				Deposits		metadiorite boulder fragments in 6" silt matrix at lens at 138 ft bgs	137.5 ft bgs, 1" cla	ay	
39_				<u> </u>	0.000	(139.0 - 143.0') Topock - Alluvium Deposits; W	oll graded acad		
4				Topock - Alluvium	SW-SM	silt and gravel (SW-SM); brown (7.5YR 4/3) wit	h dusky red (10R 3/	(3);	
				Deposits		very fine grained to very coarse grained, angula	r to subangular; sor	ne	

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval MW-Rd, VAS collected during drilling MW-Rd

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 8 of	8
Date S	Started	: 06/16/2	2019		Surface	Eleva	tion: <u>N/A</u>	Borin	a No .	MW-Rs	
Date C	Comple	ted: <u>06/17/2</u>	<u>2019</u>		Northing	g (NAD			9 110	10177 173	
Drilling	g Co.:	Cascac	<u>le</u>		Easting	(NAD8	,	Client:	PG&E		
Drilling	g Meth	od: <u>Sonic [</u>	<u> Drilling</u>		Total De	epth:	143 ft bgs	Project:	Final G\	N Remedy Ph	ase 1
Drill R			ic Truck Mou	ınt	Borehol			Location:	PG&E T	opock, Needle	es, California
Driller					-		Water: <u>90.27 ft bgs</u>				
Drilling			ya/ O. Flores		Samplin	•		Project N	umber: <u>F</u>	RC000753.005	51
Logge			<u>ers / A. Mack</u>	<u> </u>	Samplin	•					
Editor:		<u>Sean N</u>	<u>//cGrane</u>		Convert	ted to \	Vell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
	132	No Sieve Samples Collected		Topock - Alluvium Deposits	SW-SM		granules to very large pebbles, angular to subrou clasts composed of metadiorite; wet; mottled	ınd; little silt; c	coarser	(133.0 - 143.0') Water used to blow out fines before well install, volume of water used and recovered not documented	
143							End of Boring at 143.0 lbgs.	10			
 144										9	
145							$\langle \cdot \cdot \rangle$				
146								19),		
147							" ()				
148											
_149											
150					0						
151			•	Q			N				
152											
153					Ç						
154_											
155 156											
150											
159_											
160 Abbre	viation	s: USCS = l	 Jnified Soil (Classificat	ion Svste	em. ft =	feet, bgs = below ground surface, a	ımsl = abo	ove mear	sea level. G\	N =

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval MW-Rd, VAS collected during drilling MW-Rd

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	9		She	et: 1 of	7
Date S					Surface			N/A	Borir	ng No.:	MW-10D	
		ted: <u>04/01/2</u>			Northing		,	N/A				
Drilling		Cascac			Easting	•	33):	N/A	Client:	PG&E	/ D D	
Drilling			Drilling ic Truck Mou		Total De Borehol	-	otori	130 ft bgs 6-12 inches	Project:		V Remedy Ph opock, Needle	
Drill Ri			/asquez	<u> 111 </u>				6-12 inches 73.86 ft bgs	Location	. PG&E I	ороск, мееан	es, Calliornia
Drilling			ya/ O. Flores		Samplin			4 inch x 10 ft Core Barrel	Project N	Jumber: F	RC000753.00	 51
Logge			ers / G. Willfo		Samplin	-		Continuous				
Editor:			1cGrane		Convert	-						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
_ 1	36						(0.0 - 3	.0'); Hand augered for utility clearance	2		(0.0 - 3.0') Boulders and cobbles prevented clearing to 5 ft. bgs	(0.0 - 130.0') No water used
_ 3	48			Topock - Alluvium Deposits	SW		gravel grained pebble subang gravel fracture	.0') Topock - Alluvium Deposits; Well (SW); brown (10YR 5/3); very fine grain angular to subangular; some granules, angular to subangular; trace cobbles yular; trace boulders; trace silt; trace mense, larger clasts consist of meta-dio ed	ned to very of s to very larve, s, angular to ica; dry; inte rite, boulder	oarse ge rbeded s	(7.0 - 17.0') Bag	
8	96	No sieve samples collected		Topock - Alluvium Deposits	SM		(SM); b angula angula subang	orown (10YR 5/3); very fine grained to very to subangular; some granules to very to subangular; little silt; trace cobbles jular; trace boulders; trace clay; trace lenses, larger clasts consist of meta-di-	ery coarse g large pebble , angular to nica; dry; int	grained, es, erbeded	(7.0 - 17.0) Bag for soil core broke lost part of the core, soil compaction	
17 18 19 20	72	IISOS – I	Initiad Soil Cl	oppification	2 Sustan	#	oot he	s = below ground surface. ams	d = above	moon or a	(17.0 - 23.0') Rough drilling, core barrel cracked.	Proupdwata-

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval

/-	ARCA	DIO	for natural and built assets		DU	ring Lo	Jy		She	et: 2 of	,
	Started:	03/31/2				Elevation:	N/A	Borin	a No ·	MW-10D	
	Completed:	04/01/2	2019		Northing	g (NAD83):	N/A			11144-100	
Drilling	Co.:	Casca	de		Easting	(NAD83):	N/A	Client:	PG&E		
_	Method:	Sonic [Drilling		Total De	epth:	130 ft bgs	-		V Remedy Ph	
	g Type:		nic Truck Mou			le Diameter		Location:	PG&E T	opock, Needl	es, Califor
Oriller I	Name:	Steve \	/asquez		Depth to	o First Wate	er: 73.86 ft bgs				
Orilling	Asst:		aya/ O. Flores		Samplir	ng Method:	4 inch x 10 ft Core Barr	el Project N	umber: <u>F</u>	RC000753.00	51
ogge			ers / G. Willfo		-	ng Interval:	Continuous				
Editor:		Sean N	// dcGrane		Convert	ted to Well:					
Depth (ft)		Sieve mple ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Descrip	tion		Drilling Notes	Drilling Fl
21	72									(17.0 - 23.0') Rough drilling, core barrel cracked.	(0.0 - 130 No water t
24				Topock - Alluvium Deposits	SM						
_ _25	48								N		
26								100			
_27							7	1/3			
_ _28						(27.	5 - 29.5') Topock - Alluvium Depo l); brown (7.5YR 4/3); granules to	sits; Silty gravel with s	sand		
29				Topock - Alluvium Deposits	GM	som	le very fine to very coarse grained angular; some silt; trace cobbles, k cementation; larger clasts consi	sand, angular to angular; trace mica; o			
30	sai	sieve mples					5 - 63.0') Topock - Alluvium Depo); brown (7.5YR 5/3) trace red / m ; very fine grained to very coarse g	oderate reddish brow	ravel rn(10R		
_31	COI	lected		0	U	sub sub bou	, very line grained to very coarse grangular; some granules to very lar angular; some silt; trace cobbles, ders; trace clay; trace mica; dry; r beded gravel lenses, larger clasts	ge pebbles, angular t angular to subangula nottled; weak cement	r; trace ation;		
_32	108						ders fractured	, consist of meta-diol	,		
_33							5 - 33.5'); increase in silt, decreas				
_34				Topock -		(33.	5 - 35.5'); trace caliche; decrease	in silt, increase in sa	and		
_35				Alluvium Deposits	SM	(35	5 30 0'\: increase in silt decreas	o in cand, decrease			
_36							5 - 39.0'); increase in silt, decreas nules and pebbles	e iii sanu, ueurease			
_37											
_38	96										
_39						(39.	0 - 44.0'); decrease in silt, increas	e in garanules and pe	ebbles		
_40		SCS - I	Inified Soil C	locaification	Cycton	<u> 16.1€01601</u> o. ff = foot J	ogs = below ground surfac	o amel = abeve r		lovel CW =	aroundwa

9/	4R (ADIS	Design & Consultancy for natural and built assets		Bo	ring Lo	og		She	et: 3 of	7
Date S	Started	03/31/2			Surface	Elevation:	N/A	Borin	a No .	MW-10D	
	Comple	ted: <u>04/01/</u>	2019		Northing	g (NAD83):	N/A			11111 100	
Drilling	-	Casca			_	(NAD83):	N/A	Client:	PG&E		
_	Metho		-		Total De		130 ft bgs	Project:		N Remedy Ph	
	ig Type Name:		nic Truck Mou			le Diameter:	6-12 inches er: 73.86 ft bgs	Location:	PG&E I	Topock, Needl	es, California
Drilling			Vasquez aya/ O. Flores		-	ว คารเ พลเซ ng Method:	4 inch x 10 ft Core Barrel	Project N	umber F	RC000753.00	 51
Logge			ers / G. Willfo		-	ng Interval:	Continuous	, i rojecti	umber. <u>I</u>	10000700.00	01
Editor			<i>McGrane</i>		-	ted to Well:		•			
	>			υ <u>Ε</u>							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	SOSU	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
41	96					(44.)	0 - 47.0'); little silt; increase in sand, no co	obbles			(0.0 - 130.0') No water used
47 — 47 — 48 — 48 — 48 — 49 — 49 — 50 — 51 — 51 — 52 — 53 — 53 — 53 — 53 — 53 — 53 — 53	84	No sieve samples collected		Topock - Alluvium Deposits	SM	(52.	5 - 57.0'); decrease in silt, increase sand, pebbles, decrease in clay				
54											
	-										
55	-										
_ 	36										
56	-										
	1										
57						(57.0	0 - 58.8'); some silt; moderate cementatio	n; increase i	n silt,	(57.0 - 59.0')	-
58	24					∵	ease in sand, decrease in granules and pel fragments at 58.5' bgs	pebbles, fract	ured [°]	Rough drilling, drill rods chattering.	
Š 59						(58.8	B'); weak cementation; decrease in silt, in	crease in gra	nules,		_
60 Abbre	96	» 11808 – 1	Inified Soil Cl	assification	System	fract	ured gravel fragments at 62.5' bgs ogs = below ground surface, ams			a level GW -	groundwater
g woore	viations	s. usus = l	Jilliea 2011 Cl	assilication	ı əysten	ı, ıı = ıeet, k	уу» – реюм ground surface, ams	ı – apove	mean sea	a level, GVV =	groundwater,

Abbreviations: USCS = Unified Soil Classification System, it = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwate ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval

Date Started Date Compl		/2019							
Date Compl					Elevation:	N/A	Boring No	o.: <u>MW-10D</u>	
	<u> </u>				g (NAD83):	N/A		'	
Orilling Co.:	Casca			-	(NAD83):	N/A	Client: PG8		
Orilling Meth		Drilling		Total D	•	130 ft bgs	•	GW Remedy Ph	
Drill Rig Typ Driller Name		nic Truck Mou Vasquez			e Diameter: o First Water:	6-12 inches	Location: PG&	E Topock, Needl	es, Califor
Orilling Asst		i vasquez iaya/ O. Flores		•	g Method:	4 inch x 10 ft Core Barrel	Project Number	er: RC000753.00	<u></u>
ogger:		ffers / G. Willfo			ig interiod. ig Interval:	Continuous	i roject Numbe	i. <u>110000733.00</u>	J I
Editor:		McGrane			ed to Well:				
		- I		1	1 1				
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Flu
61			Tanada						(0.0 - 130. No water u
. 4			Topock - Alluvium	SM					
_62			Deposits						
_63					(63.0 -	64.5') Topock - Alluvium Deposits; Sar	ndy silt with gravel		
96			Topock -		(ML); t	rown (7.5YR 5/4); no plasticity; some g s, angular to subangular; some very fin	ranules to very large	e	
_64			Alluvium Deposits	ML	graine	sand, angular to subangular; trace mi	ca; dry; medium stif	f D	
4						weak cementation; larger clasts consist 74.0') Topock - Alluvium Deposits; Silt			
_65					∵ ∵ ∵ (SM), I	rown (7.5YR 5/3) tra <mark>ce du</mark> sky red / dar	k reddish brown(10F	2	
4					subang	ery fine grained to very c <mark>oars</mark> e grained, jular; some granules to very large pebb	oles, angular; some		
_66					weak o	ce cobbles, <mark>angu</mark> lar; trace caliche; trac ementation; larger clasts consist of me	eta-diorite,	;	
4					interbe	ded silt lenses, fractured gravel fragme	ents at 71.5' and 73'		
_67									
. 4			1						
_68									
4									
_69			Topock -						
. 4			Alluvium Deposits	SM					
_70	No sieve samples								
. 4	collected								
_71									
108									
_72									
. 4			·						
_73									
. 4									
_74					(74.0	75 0') Tanaak Alluvium Danaaita: Sar	adv oilt with grovel	_ 	
. 4			Topock - Alluvium	ML	(ML); t	75.0') Topock - Alluvium Deposits; Sarrown (7.5YR 5/4); low plasticity, no dila	atency; some small		
_75			Deposits		sand, a	e pebbles, angular; some very fine to ve angular to subangular; trace mica; mois	st; stiff to very stiff;		
. 4						ementation; larger clasts consist of me 77.0') Topock - Alluvium Deposits; Silt		-	
_76			Topock - Alluvium	SM	∷ ∴ ∴ (SM), I	rown (7.5YR 5/3) trace dusky red / dar	k reddish brown(10F	२	
- 12			Deposits		· · · suban	ery fine grained to very coarse grained, jular; some granules to very large pebb	les, angular; some		
_77	_		<u> </u>	·L	clasts	ce cobbles, angular; trace mica; moist consist of metadiorite, interbeded silt a	nd silty gravel	(77.0. 77.01)	1
					l Hlenses	<u>fractured gravel fragments at 76.5' bg</u> 81.5') Topock - Alluvium Deposits; Silt	s	(77.0 - 77.0') Approximate	
_78		No samples collected			(GM); I	prown (10YR 5/3); granules to very larg	e pebbles, angular	depth to water	
120		MW-10	Topock - Alluvium	GM	angula	angular; some very fine to very coarse or r to subround; some silt; wet; larger cla	st consist of		
_79		screened across	Deposits		metadi	orite, interbeded silt, silty sand and silt	y gravel lenses		
_		interval			12 P				
80					D. 14.19				
						s = below ground surface, ams			groundwa
pb = parts	per billion, N	IR = no recove	ery, blue wa	ater tabl	e symbol repr	esents depth to water measure	d during the firs	t VAS interval	

	ARCA	DI3	for natural and built assets		ВО	ring	Log		311	eet: 5 of	7
	tarted:	03/31/2			Surface			Borin	g No.	MW-10D	
	•				Northin			_			
Orilling		Casca			Easting	•	•	_ Client:	PG&E		
_	Method:	Sonic I	•		Total D	•	130 ft bgs	_ Project:		W Remedy Pr	
-	g Type: Name:		nic Truck Mou	<u>unt</u>	Boreho			_ Location:	<u>PG&E</u>	Topock, Need	ies, Calito
Orilling			√asquez aya/ O. Flores		Samplin		ater: 73.86 ft bgs d: 4 inch x 10 ft Core Barrel	– Project N	umbor:	RC000753.00	
ogger۔ -ogge			ers / G. Willfo		Samplir	-		_ Projectiv	umber.	KC000755.00	131
Editor:			<u>сто до wwiiite</u> ИсGrane	<u> </u>	Conver	-		_			
				0.5	1						
Depth (ft)		Sieve mple ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling F
81				Topock - Alluvium Deposits	GM		(81'); little silt; increase sand and gravel				(0.0 - 130 No water
							81.5 - 96.5') Topock - Alluvium Deposits; Si	lty sand with g	ravel		
_82							SM); brown (7.5YR 4/4); very fine grained to angular to subround; some granules to very	arge pebbles,	angular		
_83							o subangular; so <mark>me silt; trace</mark> cobbles, suba wet; larger clast consist of metadiorite, interl	angular; trace beded silt, silty	mica; / sand		
_00	120						and silty gravel lenses, weathered gravel				
_84	120										
_85											
_86							-0	3			
_87											
				4							
_88											
				Topock -							
_89				Alluvium Deposits	SM						
	No	sieve	No samples collected	Deposits							
_90	sai	mples lected	MW-10 screened				10				
1			across interval		V						
_91											
92	400										
_52	120										
_93											
_94											
.											
_95											
_96											
. 4							96.5 - 104.5') Topock - Alluvium Deposits; S	Silty gravel with	n sand		
_97						600	GM); brown (7.5YR 4/3) trace brown (7.5YF	(4/4); granule:	s to very		
						139	arge pebbles, angular to subangular; some coarse grained sand, angular to subround; li	ttle silt; trace r	nica;		
_98				Topock - Alluvium	GM	60	wet; mottled; larger clasts consist of metadio and sily sand lenses, weathered gravel	orite, interbede	ed Silt		
	120			Deposits	GIVI	199					
_99											
						199					
100	/iations: II	909 - 1	Inified Sail C	assification	Syston	<u>የ </u>	et, bgs = below ground surface, am	el = abovo	mean so	a level CM -	droupdy
ייייירי	naudilia. U						<u> </u>			AS interval	groundw

A	NRCA	DIS	for natural and built assets		Bo	ring	_og		SH	eet: 6 of	7
Date St		03/31/2				Elevation		Borin	g No.:	MW-10D	
	ompleted:					g (NAD8			PG&E		
Orilling (Method:	Cascad Sonic I			⊏asung Total D∈	(NAD83	130 ft bgs			W Remedy Ph	nace I
Orill Rig			nic Truck Mou			ерии. le Diame	<u> </u>			Topock, Need	
Oriller N			√asquez				ater: 73.86 ft bgs				
Drilling /	Asst:		ya/ O. Flores		•	ng Metho	•	 Project N	umber:	RC000753.00	51
_ogger:	:	G. Jeff	ers / G. Willfo		•	ng Interv					
Editor:		Sean N	//cGrane		Conver	ted to W	ll: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve ample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fl
											(0.0 - 130 No water u
_102				Topock -							
				Alluvium Deposits	GM						
_103			No samples collected			39		AU			
_104	120		MW-10 screened across interval								
_105							04.5 - 107.0') Topock - Alluvium Deposits SM); brown (7.5YR 4/4) little very dark gra	y (7.5YR 3/1); ve	ry fine		
106				Topock - Alluvium	SM		rained to very coarse grained, angular to ranules to very large pebbles, angular to s ace cobbles, angular to subangular; trace	subangular; some mica; trace orga	e silt; anics;		
_106				Deposits			et; mottled; lar <mark>ger</mark> clasts consist of metac ravel, silt nodules	liorite, interbede	d silty		
_107							07.0 (45.5) T	0110			
. 4						101/9/	07.0 - 115.5') Topock - Alluvium Deposit GM); brown (7.5YR 4/4) and very dark gra	y (7.5YR 3/1); gr	anules		
_108						144	small cobbles, angular to subangular; so parse grained sand, angular to subround;	some silt; trace	mica;		
						6 D	tle organics; wet; mottled; larger clasts co terbeded silt and sily sand lenses, trace s	onsist of metadic silt nodules, trace	orite, e		
_109			MW-10D- VAS-107-			1963	eddish brown 5YR 4/4				
	60 No	sieve	112 (96 ppb)			600					
_110		mples llected	4/1/2019 14:32			99					
_111				Topock -	U	5910					
				Alluvium Deposits	GM	þ					
_112				Берозііз							
. 4				•		020					
_113						2000					
_114											
_115											
_113											
_116	174			Topock - Alluvium	SM		15.5 - 116.5') Topock - Alluvium Deposits SM); reddish brown (5YR 5/4); very fine gr	s; Silty sand with	gravel		
	''-			Deposits	JIVI	1:1:4:4	rained, angular to subangular; some gran ebbles, angular; some silt; trace cobbles,	ules to very large	9		
_117						r	tle mica; wet; iron oxide staining; larger c letadiorite, trace weathered rock	lasts consist of	,		
						19 9 J	16.5 - 121.0') Topock - Alluvium Deposits GM); very dark gray (7.5YR 3/1) some bro	s; Silty gravel wit	h sand		
_118				Topock -	014	101/9 1	ranules to very large pebbles, angular to s	subangular; som	e very		
			MW-10D- VAS-118-	Alluvium Deposits	GM	1944	ne to very coarse grained sand, angular to ace cobbles, angular to subangular; trace of mottled; iron oxide staining; larger sla	mica; little orga	nics;		
_119			123 (190 ppb)				et; mottled; iron oxide staining; larger cla: letadiorite, interbeded silt and sily sand le	nses, trace silt			
- 400			4/2/2019 12:05			1967	odules, trace 5 YR 4/4 reddish brown				
120		909 - I	Initiad Cail Cl	locaification	Sycton	o ft – fo	t, bgs = below ground surface, ar	nel = abovo r	noon co	a level GW =	aroundwa

9/	ARC	ADIS	for natural and built assets		Во	ring L	_og		Shee	et: 7 of	7
Date S						Elevation		Borir	ng No.:	MW-10D	
	•	ted: <u>04/01/2</u>				g (NAD83	•				
Drilling Drilling		Cascac			Easting Total D∈	(NAD83)	100 6 1	Client: Project:	PG&E	/ Remedy Ph	aco I
Drill Ri			ic Truck Mou			e Diamete	_	•		•	es, California
Driller			/asquez				ater: 73.86 ft bgs				
Drilling	Asst:	L. Ama	ıya/ O. Flores		-	g Method		Project N	lumber: R	C000753.00	51
Logge			ers / G. Willfo			ig Interval					
Editor:		Sean M	/IcGrane	_	Convert	ed to We	ll: ⊠ Yes □ No				T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
 121			MW-10D-	Topock - Alluvium Deposits	GM						(0.0 - 130.0') No water used
122			VAS-118- 123 (190 ppb) 4/2/2019 12:05	Topock - Alluvium Deposits	ML	(N	21.0 - 123.0') Topock - Alluvium Deposits; S AL); reddish brown (5YR 4/3) and very dark gasticity; some very fine to very coarse graine ubangular; little granules to very large pebble ubangular; trace mica; trace organics; moist iff; mottled; larger clasts consist of metadior	gray (5YR 3/ ed sand, ang es, angular to to wet; stiff t	1); low ular to		
124	174					(2) (2	23.0 - 127.0') Topock - Weathered Bedrock andy silt with gravel (ML); reddish brown(2.5 t.5YR 5/6); no plasticity, no dilatency; some varse grained sand, angular to subangular; lirge pebbles, angular to subangular; trace mis	YR 4/3) little very fine to v ittle granules	e red ery s to very		
 125		No sieve samples collected		Topock - Weathered Bedrock - conglomerate	IVIL	ve	ery stiff; mottled; weak cementation; larger cl letadiorite	asts consist	of		
126				Conglomerati				2			
127						(1) (2)	27.0 - 130.0') Topock - Competent Bedrock 2.5YR 4/6); dry; friable	- conglomer	rate; red	(127.0 - 130.0') Rough drilling,	
128	36			Topock - Competent Bedrock -				•		bedrock encountered at 127 ft. bgs	
129				conglomerate	e		.0,				
130					3	IV/ALY	End of Boring at 130.0 'bgs	S.	,		
132				X		3					
 133											
134											
135											
136											
137											
138 											
139											
Abbre	viations	s: USCS = L	Inified Soil C	assification	Systen	n, ft = feet	, bgs = below ground surface, ams	l = above	mean sea	level, GW =	groundwater,

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwate ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval

DIS Design & I for natura built asse	l and ts		Well Constr	uction Log	8	Sheet: 1 of 7
03/31/2019 04/01/2019			Shallow Well Elevation:			
			-			
_					_	Topock, Needles, Californ
-			• ,			
-					Project Number	:: RC000753.0051
Sean McGran	ie		Development End Date:	4/11/2019		
130 ft bgs			Well Completion:	☐ Flush☐ Stick-up		
Geologic Formation	USCS	Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
Topock - Alluvium Deposits	SW		(0.0 - 108.1') 2" — PVC Sch 80 Casing	— (0.0 - 3.0') 12" Borehole		9
	*6***		(3.0 - 46.0') Portland Cement 5% Bentonite	(3.0 - 112.0') 6" Borehole	(3.0 - 46.0') 46 gallons	(3.0 - 46.0') 82 gallons (78% Note: Type I, Type II, Type V v Hydrogel.
Topock - Alluvium Deposits	SM					
	Topock - Alluvium Deposits	Alluvium SM	Topock - Alluvium Deposits Alluvium SM	Surface Elevation: Shallow Well Elevation: Deep Well Elevation: Deep Well Elevation: Deep Well Elevation: Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Date: Well Completion: Well Completion: Topock- Alluvium Deposits Well Completion: (3.0 - 46.0') Portland Cement 5% Bentonite	Surface Elevation: N/A Alton/1/2019 Shallow Well Elevation: N/A Shallow Well Elevation: N/A N/A Deep Well Elevation: N/A N/A Steve Vasquez Easting (NAD83): N/A Easting (NAD83): N/A Borehole Diameter: 6-12 inches Jean McGrane 30 ft bgs Well Completion: Flush Stick-up Well Construction Topock- Alluvium Deposits SW Topock- Alluvium SM Topock- Alluvium SM SM Topock- Alluvium SM SM Topock- Alluvium SM Surface Elevation: N/A	

	DIS Design & for natura built asse	Consultancy al and ts		Well Constr	uction Log	8	Sheet: 2 of 7
	3/31/2019				N/A	Well ID: N	/IW-10D
ate Completed: <u>(</u>	04/01/2019				N/A		
rilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
•	Sonic Drilling			• ,	N/A	•	GW Remedy Phase I
	Steve Vasque			• ,	N/A	Location: PG&E	Topock, Needles, Californ
-	<u> Amaya/ O.</u>				6-12 inches		
	G. Jeffers / G.		<u>d</u>		73.86 ft bgs	Project Number	: RC000753.0051
	Sean McGran	ne		_Development End Date:			
otal Depth: <u>1</u>	130 ft bgs			_Well Completion:	☐ Flush☐ Stick-up		
Groundwater Sample ID	Geologic	USCS	USCS	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
- 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39	Topock - Alluvium Deposits Topock - Alluvium Deposits	SM		(24.5 - 25.5') Centralizer (3.0 - 46.0') Portland Cement 5% Bentonite	(3.0 - 112.0') 6" Borehole	(3.0 - 46.0') 46 gallons	(3.0 - 46.0') 82 gallons (78% Note: Type I, Type II, Type V v Hydrogel.

ARCA	built asse	Consultancy al and ts		Well Collsti	ruction Log	,	Sheet: 3 of 7
ate Started:	03/31/2019			_Surface Elevation:	N/A	Well ID: N	/W-10D
ate Completed:	04/01/2019			_Shallow Well Elevation:	N/A		
rilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
rilling Method:	Sonic Drilling			_Northing (NAD83):	N/A	Project: Final 0	GW Remedy Phase I
riller Name:	Steve Vasque	z		_Easting (NAD83):	N/A	Location: PG&E	Topock, Needles, Califor
rilling Asst:	L. Amaya/ O.			_Borehole Diameter:	6-12 inches		,
ogger:	G. Jeffers / G		d.	Water Level Start:	73.86 ft bgs	Project Number	:: RC000753.0051
ditor:	Sean McGrar		<u>u</u>	_Development End Date:	_	1 10,0001140111001	. 110000700.0001
otal Depth:	130 ft bgs	<u> </u>		_ Well Completion:	Flush Stick-up		
Т		1		_ vveii Completion.	I lusii Stick-up		
Groundwat Sample II		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
-41	Topock - Alluvium Deposits	SM		(0.0 - 108.1') 2" PVC Sch 80 Casing (3.0 - 46.0') Portland Cement 5% Bentonite (46.0 - 101.5') Portland Cement 5% Bentonite	(3.0 - 112.0') 6" Borehole	(3.0 - 46.0') 46 gallons (46.0 - 101.5') 72.1 gallons	(3.0 - 46.0') 82 gallons (78% Note: Type I, Type II, Type V v Hydrogel. (46.0 - 101.5') 190 gallons (16 Note: Type I, Type I, Type V v Hydrogel, grout settled to 46 ft 4.4.2019.
hbrovistis : : ' '	900 - U-:::	 Soil O	loocifi	ion System # = fact have	- bolow ground surface		ooo lovol CM = =========
and property of the state of th		JUIL C	เลอรแเCฝโ	ion avsiem, ii – leel, das	– peiow groung suriace. 2	amai – above mean :	sea level, GW = groundwa

Design & O for natura built asset	l and ts		Well Constr	uction Log	;	Sheet: 4 of 7
3/31/2019			_Surface Elevation:	N/A	Well ID: N	/IW-10D
4/01/2019						
Cascade			_Deep Well Elevation:	N/A		
Sonic Drilling			• ,		•	GW Remedy Phase I
•			O (,		Location: PG&E	Topock, Needles, Californ
-						
		<u></u>	-	-	Project Numbe	r: RC000753.0051
	ie				<u> </u>	
			_Well Completion:	Flush Stick-up		
Geologic Formation	USCS	USCS Class	Well Cor	nstruction	Calculated Material Volumes	Material Volumes Installed
Topock - Alluvium Deposits	SM		(0.0 - 108.1') 2" ———————————————————————————————————			
Topock - Alluvium Deposits	ML					0)
Topock - Alluvium Deposits	SM		(46.0 - 101.5') Portland Cement 5% Bentonite	(3.0 - 112.0') 6" Borehole	(46.0 - 101.5') 72.1 gallons	(46.0 - 101.5') 190 gallons (16 Note: Type I, Type II, Type V v Hydrogel, grout settled to 46 ft 4.4.2019.
Alluvium Deposits	ML		(74.5 - 75.5')			
Topock - Alluvium Deposits	SM		Centralizer			
Topock - Alluvium Deposits	GM					
	Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits	A/O1/2019 Cascade Conic Drilling Steve Vasquez Amaya/ O. Flores G. Jeffers / G. Willford Cean McGrane 30 ft bgs Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits GM	Alluvium Deposits Topock - Alluvium Deposits	Surface Elevation: Shallow Well Elevation: Shallow Well Elevation: Shallow Well Elevation: Deep Well Elevation: Shallow Brain Shallow	Surface Elevation: Al(01/2019 Shallow Well Elevation: N/A N/A Sascade Deep Well Elevation: N/A N/A Shallow Well Elevation: N/A N/A Shallow Well Elevation: N/A N/A N/A N/A Shallow Well Elevation: N/A N/A N/A N/A Shallow Well Elevation: N/A N/A N/A Shallow Well Elevation: N/A N/A N/A Shallow Well Elevation: N/A N/A N/A N/A Shallow Well Construction Well Construction Well Construction	Surface Elevation: N/A Well ID: 1 4/01/2019 Shallow Well Elevation: N/A M/A 4/01/2019 Shallow Well Elevation: N/A Client: PG&t 5/01/2019 Northing (NAD83): N/A Project: Einal 6/01/2019 Northing (NAD83): N/A Project: Einal 6/01/2019 Sorehole Diameter: Stating (NAD83): N/A Location: PG&t 6/01/2019 Sorehole Diameter: Stating 6/01/2019 Sorehole Diameter: Stating

ARC	Design & for natura built asset	Consultancy al and ets		Well Constr	uction Log	\$	Sheet: 5 of 7
Date Started:	03/31/2019			_Surface Elevation:	N/A	Well ID: N	/W-10D
Date Completed					N/A		
Drilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
Drilling Method:				_Northing (NAD83):	N/A	•	GW Remedy Phase I
Driller Name:	Steve Vasque			_Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, California
Drilling Asst:	L. Amaya/ O.				6-12 inches	<u> </u>	
Logger:	G. Jeffers / G		<u>d</u>		73.86 ft bgs	Project Number	r: RC000753.0051
Editor:	Sean McGrar	ne		_ Development End Date:	4/11/2019		
Total Depth:	130 ft bgs			_Well Completion:			
Groundwa Sample		Code	USCS		onstruction	Calculated Material Volumes	Material Volumes Installed
81	Topock - Alluvium Deposits	GM		(0.0 - 108.1') 2" — PVC Sch 80 Casing			
		SM		(46.0 - 101.5') Portland Cement 5% Bentonite	(3.0 - 112.0') 6" Borehole	(46.0 - 101.5') 72.1 gallons	(46.0 - 101.5') 190 gallons (164%) Note: Type I, Type II, Type V with Hydrogel, grout settled to 46 ft bgs 4.4.2019.

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured post development

PARCADIS Design & Consultancy for natural and built assets				Well Consti	ruction Log	Sheet: 6 of 7		
Date S		03/31/2019			_Surface Elevation:	N/A	Well ID: N	/W-10D
	-	04/01/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			Deep Well Elevation:	N/A	Client: PG&E	
		Sonic Drilling			Northing (NAD83):	N/A	•	GW Remedy Phase I
Driller I		Steve Vasque			Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, California
Drilling		L. Amaya/ O.			_ Borehole Diameter:	6-12 inches		
Logge		G. Jeffers / G.		ď	Water Level Start:	73.86 ft bgs	Project Number	r: RC000753.0051
Editor:		Sean McGran	ie		Development End Date: Well Completion:			
Total D	рерит.	130 ft bgs			vveii Completion.	☐ Flush☐ Stick-up		
Depth (ft)	Groundwate Sample ID		USCS	USCS		onstruction	Calculated Material Volumes	Material Volumes Installed
 101 					(0.0 - 108.1') 2" PV(4&ው) ዳው Casing Portland Cement 5% Bentonite		(46.0 - 101.5') 72.1 gallons	(46.0 - 101.5') 190 gallons (164%) Note: Type I, Type II, Type V with Hydrogel, grout settled to 46 ft bgs 4.4.2019.
102 103	No samples collected MW-10	Topock - Alluvium Deposits	GM		(101.5 - 105.0') Bentonite seal chips		(101.5 - 105.0') 0.85 bags	(101.5 - 105.0') 1 bags (18%) Note: Enviroplug 3/8"
104 105	screened across interval					823 S		9
106 107		Topock - Alluvium Deposits	SM			(3.0 - 112.0') 6" Borehole	3	
108 109 110 111 111	MW-10D- VAS-107-112 (96 ppb) 4/1/2019 14:32	Topock - Alluvium Deposits	GM		(108.1 - 123.1') 2" ———————————————————————————————————			
113 114 115					(105.0 - 127.0') Cemex #3 MESH (8x10)		(105.0 - 127.0') 7.8 bags	(105.0 - 127.0') 7.4 bags (-5%) Note: Lapis Lustre Sand
116		Topock - Alluvium	SM			(112.0 - 130.0') 6"		
<u> </u>		Deposits				Borehole		
117				6 PIG				
\vdash \dashv				1991				
118		Topock -	GN4	607		HAN .		
 119 	MW-10D- VAS-118-123 (190 ppb) 4/2/2019 12:05	Alluvium Deposits	GM					
120	dations, II	000 - 11-5-1	0-:1-01	<u> </u>	tion Contons # = foot bar			noo lovol CW = groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured post development

9/	ARCA	DIS Design & Office for natural built asset	Consultancy Il and ts		Well Consti	ruction Log		Sheet: 7 of 7
Date S	Started:	03/31/2019			_Surface Elevation:	N/A	Well ID: I	MW-10D
Date C	Completed:	04/01/2019 Shallow Well Elevation: N/A Cascade Deep Well Elevation: N/A						
Drilling	J Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&	
_		Sonic Drilling			_Northing (NAD83):	N/A	•	GW Remedy Phase I
		Steve Vasque			_Easting (NAD83):	N/A	Location: <u>PG&</u>	E Topock, Needles, California
Drilling		L. Amaya/ O.			_Borehole Diameter:	6-12 inches		
Logge		G. Jeffers / G.		rd	_Water Level Start:	73.86 ft bgs	Project Numbe	r: RC000753.0051
Editor:		Sean McGran	<u>ıe</u>		_Development End Date:			
Total L	Depth:	130 ft bgs			_Well Completion:	☐ Flush☐ Stick-up		
Depth (ft)	Groundwate Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
		Topock - Alluvium Deposits	GM		(108.1 - 123.1') 2" —			
121 	MW-10D- VAS-118-123 (190 ppb) 4/2/2019 12:05		ML				2	
124 125 126 127		Topock - Weathered Bedrock - conglomerate	ML		(105.0 - 127.0') Cemex #3 MESH (123(§x1•24.5') Centralizer (123.1 - 125.5') Sump and End Cap	(112.0 - 130.0') 6" Borehole	(105.0 - 127.0') 7.8 bags	(105.0 - 127.0') 7.4 bags (-5%) Note: Lapis Lustre Sand
128 129 		Topock - Competent Bedrock - conglomerate			(127.0 - 130.0') Bentonite Chips		(127.0 - 130.0') 0.8 bags	(127.0 - 130.0') 0.75 bags (-6%) Note: Enviroplug 3/8"
			•		End of Boring at 130.0 bgs.			
131					100.0 ago.			
			•					
132								
133								
134								
135								
_135								
136								
<u> </u>								
137								
<u> </u>								
138								
<u> </u>								
139								
L -								
140								
Abbre	viations: U	SCS = Unified	Soil C	lassifica [*]	tion System, ft = feet, bas	= below ground surface,	amsl = above mean	sea level, GW = groundwater,

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured post development

9/	ARC4	Design & for natura built asse	Consultancy al and ets		Well Cons	truction Log	Sheet: 1 of 10		
		12/16/2018			_ Surface Elevation:	529.6 ft amsl	- Well ID: N	MW-L-90, MW-L-180	
		:04/09/2018			_ Shallow Well Elevation				
Drilling	Co.:	Cascade			_ Deep Well Elevation:	529.1 ft amsl	Client: PG&E		
Drilling	Method:	Sonic Drilling			_ Northing (NAD83):	2102862.2	Project: <u>Final</u>	Groundwater Remedy Phase	
Driller	Name:	<u>Dan O'Mara</u>			_ Easting (NAD83):	7615260.4	Location: <u>1</u>		
Drilling	Asst:	E. Huellmante	el / T. V	Volfe	_ Borehole Diameter:	10-12 inches	PG&E	Topock, Needles, California	
Logger	r:	Michael Andre	ews		_ Water Level Start:	74.65 ft bgs	Project Numbe	r: RC000753.0051	
Editor:		Sean McGrar	ne		_ Development End Dat	:e <u>3/29/2019</u>			
Total D	Depth:	184 ft bgs			_ Well Completion:	⊠ Flush Stick-up	.	,	
Depth (ft)	Groundwat Sample II		Code	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed	
 _ 1 _					(0.0 - 1.0') Concrete Pad (0.5 - 70.0') 2" PVC Sch 40 Casing	(0.6 - 160.0') 2" PVC Sch 80 Casing		(0.0 - 1.0') 20 bags (%) Note: 3.5 x 3.5 ft concrete pad with 18" dia lockable vault, King Kon-Crete 4000 PSI	
2 3					(2.0 - 3.0') Portland Cement 6% Bentonite		(2.0 - 3.0') 5.5 gallons	(2.0 - 3.0') 8 gallons (45%) Note: Topped off with Type I, II, and V with Hydrogel on 4/1/19.	
_						(0.0 - 7.0') 12" Borehole			
_ 5 _									
_					(3.0 - 8.0') Portland Cement 6% Bentonite		(3.0 - 8.0') 26.6 gallons	(3.0 - 8.0') 30 gallons (13%) Note: Type I, II, and V with Hydrogel	
 - 7 -									
_ 8 _									
_ 9 _ _ 9 _									
10									
_ 11 _									
 12									
 13					(8.0 - 18.0')		(8.0 - 18.0') 8.14 bags	(8.0 - 18.0') 25 bags (207%) Note: Chips used to fill large void,	
					Bentonite seal chips	(7.0 - 184.0') 10" Borehole	(0.0 - 10.0) 0.14 bags	chips hydrated for 1 hour.	
14 									
15									
 16									
 17									
18 									
19					(18.0 - 65.0') Portland Cement 6% Bentonite		(18.0 - 65.0') 206.1 gallons	(18.0 - 65.0') 700 gallons (240%) Note: Type I, II, and V with Hydrogel	
20		1000 11 :	10.76) ::		has = below ground surface			

9 ARC	Design & Confor natural a built assets	nsultancy nd	Well Const	ruction Log	5	Sheet: 2 of 10
Date Started:	12/16/2018		_ Surface Elevation:	529.6 ft amsl	Well ID: N	MW-L-90, MW-L-180
Date Completed			_ Shallow Well Elevatior			•
Drilling Co.:	Cascade		_ Deep Well Elevation:	529.1 ft amsl	Client: PG&E	
Drilling Method:	-		_ Northing (NAD83):	2102862.2	•	Groundwater Remedy Phase
Driller Name:	Dan O'Mara	/ T \ \ \ / - f -	_ Easting (NAD83):	7615260.4	Location: 1	T
Drilling Asst:	E. Huellmantel		_ Borehole Diameter:	10-12 inches		Topock, Needles, California
Logger: Editor:	Michael Andrey Sean McGrane		_ Water Level Start:	74.65 ft bgs	Project Numbe	r: RC000753.0051
Total Depth:	184 ft bgs	;	_ Development End Date _ Well Completion:	≅ <u>3/29/2019</u>		
Тотаг Бертіт.			_ vveli Completion.	☐ Flush☐ Stick-up		
Groundwa Sample I		USCS Code USCS Class		Construction	Calculated Material Volumes	Material Volumes Installed
	USCS = Unified	Soil Classific	(18.0 - 65.0') Portland Cement 6% Bentonite (31.5 - 32.5') Centralizer	ogs = below ground surface	(18.0 - 65.0') 206.1 gallons	(18.0 - 65.0') 700 gallons (240%) Note: Type I, II, and V with Hydrogel
groundwater, pr	ob = parts per bi	llion, U = not	detected above the labo	ratory reporting limit, NR =	No Recovery, blu	e water table symbol

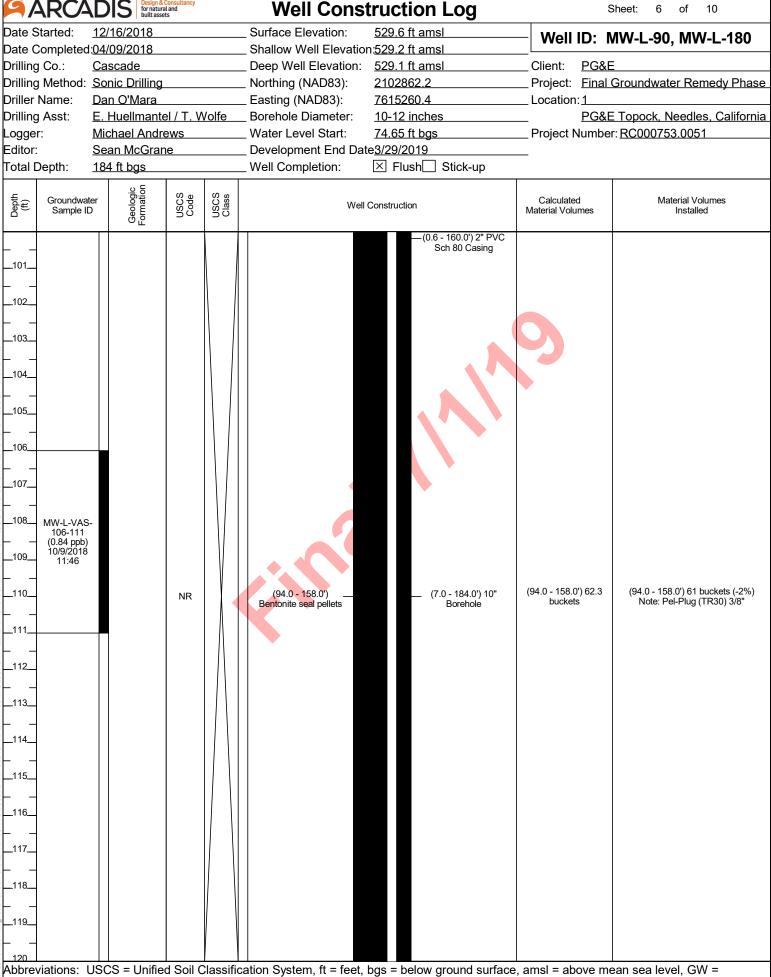
represents depth to water measured post development Note: water samples were collected from MW-Ld borehole.

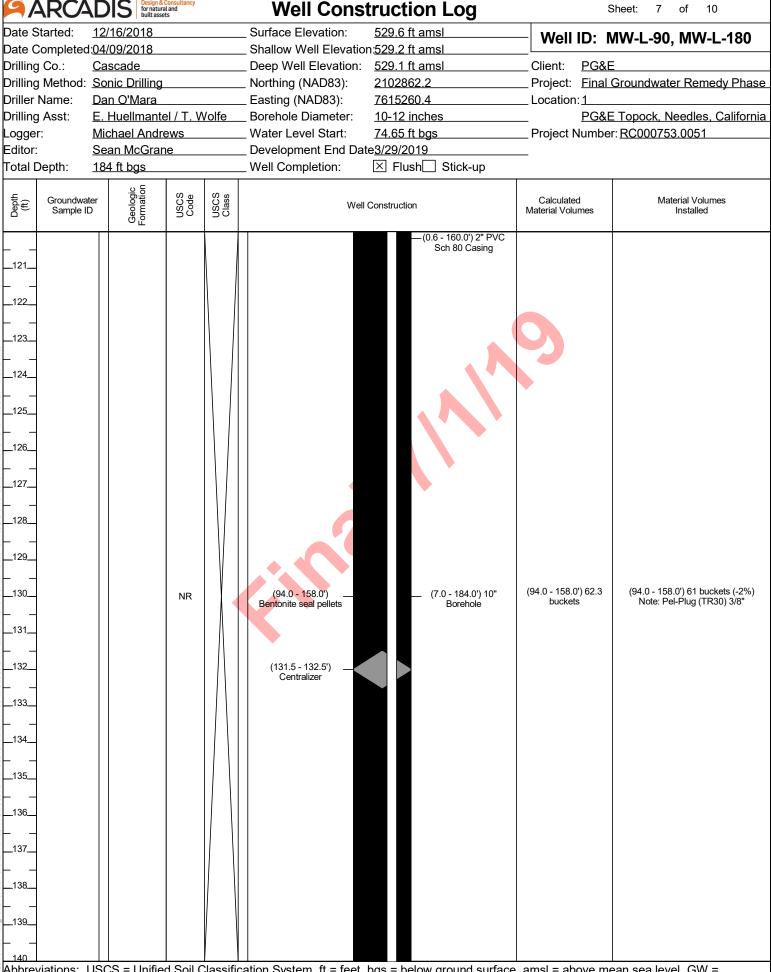
ARC	Design & Co for natural a built assets	nsultancy and	Well Const	truction Log	5	Sheet: 3 of 10
Date Started:	12/16/2018		_ Surface Elevation:	529.6 ft amsl	Well ID: I	MW-L-90, MW-L-180
Date Completed			_ Shallow Well Elevation			· · · · · · · · · · · · · · · · · · ·
Drilling Co.:	Cascade		_ Deep Well Elevation:		Client: PG&E	
Drilling Method:	_		_ Northing (NAD83):	2102862.2	•	Groundwater Remedy Phase
Driller Name:	Dan O'Mara	/ T \\/ - If -	Easting (NAD83):	7615260.4	Location:1	N
Drilling Asst:	E. Huellmantel		_ Borehole Diameter:	10-12 inches		Topock, Needles, California
Logger: Editor:	Michael Andrew Sean McGrane		_ Water Level Start:	74.65 ft bgs	Project Numbe	r: RC000753.0051
Total Depth:	184 ft bgs	;	_ Development End Dat _ Well Completion:	e <u>3/29/2019</u> ⊠ Flush⊡ Stick-up		
Тотаг Бертіт.			_ vveii Completion.	△ Flusii Stick-up		<u> </u>
Groundwa Sample I		USCS Code USCS Class		Construction	Calculated Material Volumes	Material Volumes Installed
- 41	USCS = Unified	Soil Classifi	(0.5 - 70.0') 2" PVC — Sch 40 Casing (18.0 - 65.0') Portland Cement 6% — Bentonite	bgs = below ground surface	(18.0 - 65.0') 206.1 gallons	(18.0 - 65.0') 700 gallons (240%) Note: Type I, II, and V with Hydrogel
groundwater, pr	ob = parts per bi	illion, U = not	detected above the labo	oratory reporting limit, NR =	No Recovery, blu	e water table symbol

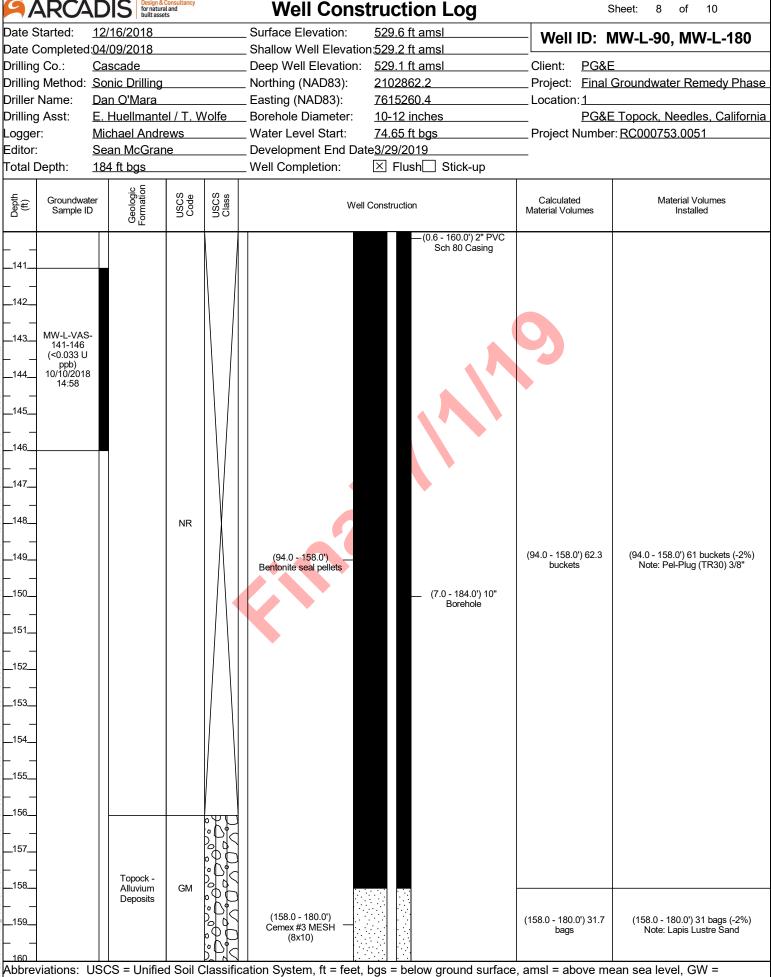
represents depth to water measured post development Note: water samples were collected from MW-Ld borehole.

9/	ARCA	DIS Design & C for natura built asset	Consultancy Land ts		Well Construction Log	Sheet: 4 of 10	
Date S	tarted: <u>:</u>	12/16/2018			Surface Elevation: 529.6 ft amsl	Well ID: MW-L-90, MW-L-180	
Date C	ompleted:	04/09/2018			_ Shallow Well Elevation: <u>529.2 ft amsl</u>		
Drilling		<u>Cascade</u>			_ Deep Well Elevation: 529.1 ft amsl	Client: PG&E	
Drilling	Method: 3	Sonic Drilling			_ Northing (NAD83): 2102862.2	Project: Final Groundwater Remedy Phas	<u>se</u>
Driller I	Name: [Dan O'Mara			_ Easting (NAD83): <u>7615260.4</u>	Location: 1	
Drilling	Asst: <u>I</u>	<u>E. Huellmante</u>	<u>el / T. V</u>	/olfe	Borehole Diameter: <u>10-12 inches</u>	PG&E Topock, Needles, Californ	<u>iia</u>
Logger	: :	<u> Michael Andre</u>	ews		_ Water Level Start: 74.65 ft bgs	Project Number: RC000753.0051	
Editor:	<u> </u>	<u>Sean McGran</u>	e		_ Development End Date <u>3/29/2019</u>		
Total D	epth: <u>2</u>	184 ft bgs			_ Well Completion:	р	
Depth (ft)	Groundwate Sample ID	Geologic Formation	Code	USCS Class	Well Construction	Calculated Material Volumes Material Volumes Installed	
6162636465					(0.5 - 70.0') 2" PVC ———————————————————————————————————) Jel
66 67		Topock - Fluvial	SM		(65.0 - 67.0') — Bentonite seal chips	(65.0 - 67.0') 1.63 (65.0 - 67.0') 3 bags (84%) Note: Puregold Medium Chips	
6869		Topock - Fluvial Deposits	SW-SM		(7.0 - 90.0') 2" Sch — (7.0 - 184.0' Borehold Screen		
73	MW-L-VAS- 76-81 (31 ppb) 10/6/2018	Topock - Fluvial Deposits	SM		(67.0 - 94.0') Cemex	(67.0 - 94.0') 31.6 bags (67.0 - 94.0') 41 bags (30%) Note: Lapis Lustre Sand	
79 	16:34	Deposits	GW-GM		potion System ft – fact, has – halous assured	surface, amsl = above mean sea level. GW =	

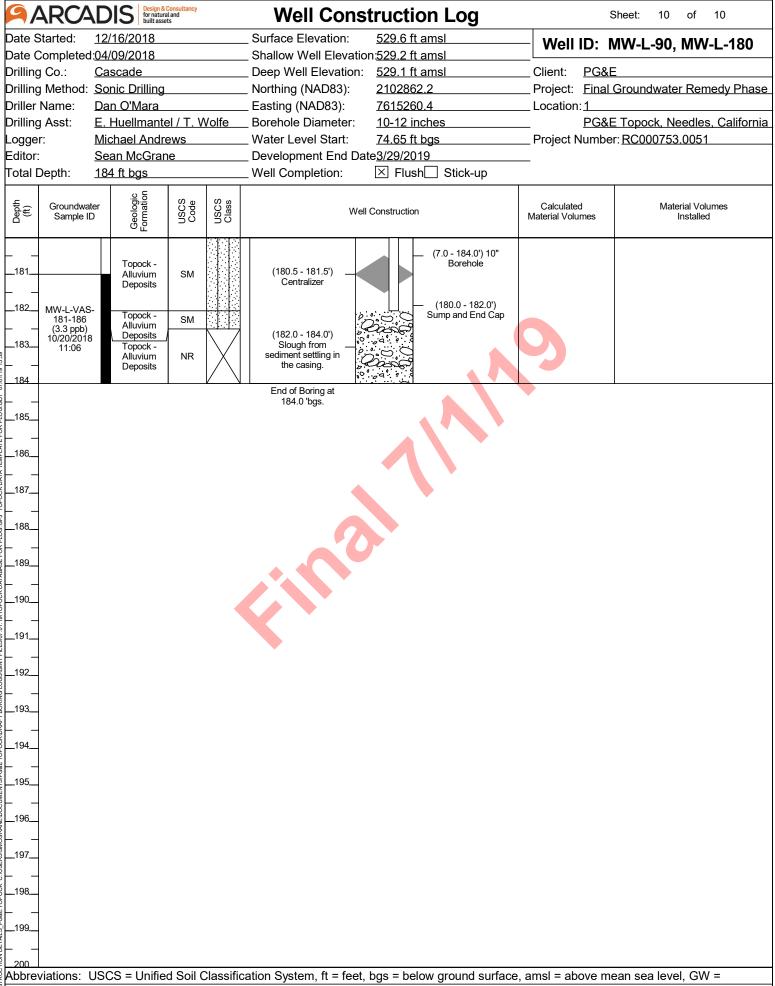
9/	\RC4	DIS Design for natural built as	& Consultancy ral and sets		Well Construction Log	S	Sheet: 5 of 10
Date S	Started:	12/16/2018			Surface Elevation: 529.6 ft amsl	- Well ID: N	//W-L-90, MW-L-180
Date C	Completed	:04/09/2018			_ Shallow Well Elevation: <u>529.2 ft amsl</u>		1111-E-30, 11111-E-100
Drilling	Co.:	Cascade			_ Deep Well Elevation: 529.1 ft amsl	Client: PG&E	
Drilling	Method:	Sonic Drilling	<u></u>		_ Northing (NAD83): 2102862.2	Project: <u>Final (</u>	Groundwater Remedy Phase
Driller	Name:	Dan O'Mara			_ Easting (NAD83): <u>7615260.4</u>	Location: <u>1</u>	
Drilling	Asst:	E. Huellman	<u>tel / T. V</u>	Volfe	Borehole Diameter: <u>10-12 inches</u>	PG&E	Topock, Needles, California
Logge	r:	Michael And	rews		_ Water Level Start: 74.65 ft bgs	Project Number	r: RC000753.0051
Editor:		Sean McGra	ne		_ Development End Date <u>3/29/2019</u>		
Total [Depth:	184 ft bgs	T		_ Well Completion:	1	
Depth (ft)	Groundwat Sample II		Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
81		Topock - Alluvium Deposits Topock - Alluvium Deposits	NR SM		(67.0 - 94.0') Cemex (7.0 - 184.0') 10" (90.5 - 91.5') Centralizer (90.0 - 92.3') Sump and End Cap	(67.0 - 94.0') 31.6 bags	(67.0 - 94.0') 41 bags (30%) Note: Lapis Lustre Sand
94 95 96		Topock - Alluvium Deposits	SM				
97 98 99			NR		(94.0 - 158.0') Bentonite seal pellets	(94.0 - 158.0') 62.3 buckets	(94.0 - 158.0') 61 buckets (-2%) Note: Pel-Plug (TR30) 3/8"
100			Ш	<u>/</u> \			
Abbrev	viations: l	JSCS = Unific	ed Soil (Classific	cation System, ft = feet, bgs = below ground surface	e. amsl = above me	ean sea level, GW =







9/	ARC4	DIS Design & Office for natural built asset	Consultancy I and ts		Well Const	ruction Log	S	heet: 9 of 10
Date S	tarted:	12/16/2018			_ Surface Elevation:	529.6 ft amsl	- Well ID: M	/W-L-90, MW-L-180
Date C	completed	:04/09/2018			_ Shallow Well Elevation	ı: <u>529.2 ft amsl</u>		1111-E-30, 11111-E-100
Drilling	Co.:	Cascade			_ Deep Well Elevation:	529.1 ft amsl	Client: PG&E	
Drilling	Method:	Sonic Drilling			_ Northing (NAD83):	2102862.2	Project: <u>Final (</u>	Groundwater Remedy Phase
Driller	Name:	Dan O'Mara			_ Easting (NAD83):	7615260.4	Location: <u>1</u>	
Drilling	Asst:	E. Huellmante	<u>el / T. V</u>	Volfe	_ Borehole Diameter:	<u>10-12 inches</u>	PG&E	Topock, Needles, California
Logger	r:	Michael Andre	ews		_ Water Level Start:	74.65 ft bgs	Project Number	::RC000753.0051
Editor:		Sean McGran	ie		_ Development End Date	e <u>3/29/2019</u>		
Total D	Depth:	184 ft bgs			_ Well Completion:	✓ Flush Stick-up		
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well (Construction	Calculated Material Volumes	Material Volumes Installed
161 162 163		Topock - Alluvium Deposits	SM			— (160.0 - 180.0") 2" Sch 80 PVC (20-slot) Screen	0)	
164 165 166 167		Topock - Alluvium Deposits	GM					
168 169 170		Topock - Alluvium Deposits	SM		(158.0 - 180.0')	(7.0 - 184.0') 10"	(158.0 - 180.0') 31.7	(158.0 - 180.0') 31 bags (-2%)
171172173174175176177		Topock - Alluvium Deposits	GM		Cemex #3 MESH (8x10)	Borehole	bags	Note: Lapis Lustre Sand
178 179 		Topock - Alluvium Deposits	SM			age - below ground surface		



urface Elevation: 530.0 ft amsl hallow Well Elevation: 529.8 ft amsl eep Well Elevation: 529.6 ft amsl orthing (NAD83): 2102858.8 hasting (NAD83): 7615264.9 horehole Diameter: 4-12 inches hater Level Start: 76.27 ft bgs hevelopment End Date 3/4/2019 hell Completion: X Flush Stick-up	Client: PG&E Project: Final (Groundwater Remedy Phase Topock, Needles, California
peep Well Elevation: 529.6 ft amslorthing (NAD83): 2102858.8 pasting (NAD83): 7615264.9 prehole Diameter: 4-12 inches pater Level Start: 76.27 ft bgs prevelopment End Date 3/4/2019	Client: PG&E Project: Final (Groundwater Remedy Phase Topock, Needles, California
orthing (NAD83): 2102858.8 asting (NAD83): 7615264.9 orehole Diameter: 4-12 inches ater Level Start: 76.27 ft bgs evelopment End Date3/4/2019	Project: Final of Location: 1 PG&E	Groundwater Remedy Phase Topock, Needles, California
asting (NAD83): 7615264.9 prehole Diameter: 4-12 inches ater Level Start: 76.27 ft bgs evelopment End Date 3/4/2019	Location: 1 PG&E	Topock, Needles, California
brehole Diameter: 4-12 inches dater Level Start: 76.27 ft bgs evelopment End Date 3/4/2019	PG&E	•
ater Level Start: <u>76.27 ft bgs</u> evelopment End Date <u>3/4/2019</u>		•
evelopment End Date <u>3/4/2019</u>	Project Number	
		r: RC000753.0051
ell Completion: X Flush Stick-up		
	1	
Well Construction	Calculated Material Volumes	Material Volumes Installed
(0.0 - 1.0") Concrete Pad (0.5 - 205.0") 2" PVC Sch 80 Casing (0.6 - 235.0") 2" PVC Sch 80 Casing		(0.0 - 1.0') 12 bags (%) Note: 3.5 x 3.5 ft concrete pad with 18" dia lockable vault, King Kon-Crete 4000 PSI
(1.0 - 15.0') Portland Cement 5% Bentonite (0.0 - 28.0') 12" Borehole	(1.0 - 15.0') 77.6	(1.0 - 15.0') 100 (29%) Note: Type I, II and V and Benseal, large void at approximately 15 feet bgs
Portland Cement 5% Bentonite Postern, ft = feet, has = below ground surface	(15.0 - 50.0') 168.6 gallons	(15.0 - 50.0') 450 gallons (167%) Note: Type I, II and V and Benseal
	(15.0 - 50.0') Portland Cement 5% Bentonite (15.0 - 50.0') Portland Cement 5% Bentonite	(1.0 - 1.0') Concrete Pad (1.0 - 15.0') Portland Cement 5% Bentonite (15.0 - 50.0') 12" Borehole (15.0 - 50.0') 168.6 callons

9/	ARC	DIS Design & for natu built ass	& Consultancy ral and sets		Well Const	ruction Log	\$	Sheet: 2 of 16
Date S	Started:	11/27/2018			_ Surface Elevation:	530.0 ft amsl	Well ID: N	MW-L-225, MW-L-245
		:04/04/2019			_ Shallow Well Elevation	:529.8 ft amsl		
Drilling	g Co.:	Cascade			_ Deep Well Elevation:	529.6 ft amsl	Client: PG&E	<u> </u>
Drilling	Method:	Sonic Drilling			_ Northing (NAD83):	2102858.8	Project: <u>Final</u>	Groundwater Remedy Phase
Driller	Name:	Dan O'Mara			_ Easting (NAD83):	7615264.9	Location: <u>1</u>	
Drilling	g Asst:	E. Huellmant	<u>el / J. C</u>	<u>ampbe</u>	II Borehole Diameter:	4-12 inches	PG&E	Topock, Needles, California
Logger	r:	S. McGrane	/ G.Jeffe	ers	_ Water Level Start:	76.27 ft bgs	Project Numbe	r: RC000753.0051
Editor:		Sean McGra	ne		_ Development End Date	3/4/2019		
Total D	Depth:	315 ft bgs			_ Well Completion:	⊠ Flush⊡ Stick-up		
Depth (ft)	Groundwat Sample II		Code	USCS Class		construction	Calculated Material Volumes	Material Volumes Installed
21		Topock - Fluvial Deposits	SW-SM		(0.5 - 205.0') 2" PVC— Sch 80 Casing	(0.6 - 235.0') 2" PVC Sch 80 Casing		
22		Topock - Fluvial Deposits	SM					
23 24		Topock - Fluvial Deposits	GP			(0.0 - 28.0) 12"	9)	
25 26			NR			Borehole		
20 27 28		Topock - Fluvial Deposits	ML					
 29		Topock - Fluvial Deposits	ML					
30 31		Topock - Fluvial Deposits	GW		(15.0 - 50.0') Portland Cement 5% Bentonite		(15.0 - 50.0') 168.6 gallons	(15.0 - 50.0') 450 gallons (167%) Note: Type I, II and V and Benseal
32		Topock - Fluvial Deposits	ML			(28.0 - 249.0') 10"		
35 36 37 38		Topock - Fluvial Deposits	SM			Borehole		
39		Topock - Fluvial Deposits Topock -	SM					
\vdash \dashv		Fluvial Deposits	SM					
40 Abbrox	viations: I		nd Soil (<u> : : : </u> Naccific	nation System ft = foot h	ors = helow ground surface	amel = abovo m	can soa lovol. GW =

9/	ARCA	DIS Design & for natura built asse	Consultancy I and ts		Well Const	truction Log	9	Sheet: 3 of 16
Date S		11/27/2018			_ Surface Elevation:	530.0 ft amsl	Well ID:	MW-L-225, MW-L-245
		:04/04/2019			_ Shallow Well Elevation			
Drilling		<u>Cascade</u>			_ Deep Well Elevation:		Client: PG	
_		Sonic Drilling			_ Northing (NAD83):	2102858.8	•	al Groundwater Remedy Phase
Driller		<u>Dan O'Mara</u>			_ Easting (NAD83):	7615264.9	Location:1	
Drilling				-	<u>ll</u> Borehole Diameter:	4-12 inches		&E Topock, Needles, California
Logger		S. McGrane /		ers	_ Water Level Start:	76.27 ft bgs	Project Numl	per: <u>RC000753.0051</u>
Editor:		Sean McGran	<u>ie</u>		_ Development End Date			
Total D	Depth:	315 ft bgs			_ Well Completion:		·up	T
Depth (ft)	Groundwate Sample ID		USCS	USCS Class		Construction	Calculated Material Volumes	Material Volumes Installed
41 42 43		Topock - Fluvial Deposits	SM		(0.5 - 205.0') 2" PVC— Sch 80 Casing	(0.6 - 235.0°) Sch 80 C		
44 45 46		Topock - Fluvial Deposits	SW		(15.0 - 50.0') Portland Cement 5% Bentonite		(15.0 - 50.0') 168.6 gallons	6 (15.0 - 50.0') 450 gallons (167%) Note: Type I, II and V and Benseal
47 48 49 50		Topock - Fluvial Deposits	SM		(46.5 - 47.5') Centralizer	(28.0 - 249	l.0') 10"	
51 52 53		Topock - Fluvial Deposits	SW-SM			Boreho	ole	
54		Topock - Fluvial Deposits	SW		(50.0 - 58.0') — Bentonite seal chips		(50.0 - 58.0') 6.25 bags	(50.0 - 58.0') 2 bags (-68%) Note: Puregold Medium chips, borehole diameter most likely smaller due to grout caking borehole walls.
58 59 60		Topock - Fluvial Deposits	SM		(58.0 - 66.0') Portland Cement 5% Bentonite		(58.0 - 66.0') 35.1 gallons	void from 58 to 66 ft bgs

Description	9/	ARC4	DIS Design for national built as	& Consultancy ural and sets		Well Const	truction Log	\$	Sheet: 4 of 16
Sale Completion (2011) Sale Completion (2012) Sale	Date S	started:	11/27/2018			_ Surface Elevation:	530.0 ft amsl	Well ID: N	MW-I -225 MW-I -245
Drilling Method: Sonic Drilling Northing (NADA3): 2102858.8 Project. Final Groundwater Remedy Phase Drilling Assis: E. Huellmantel / J. Campbell Borehole Diameter: 4-12 inches PGSE Topock, Needles, California Project Number: RC000753.0051 Post 27ft bgs			:04/04/2019						
Driller Name	Drilling	Co.:	<u>Cascade</u>			_ Deep Well Elevation:	529.6 ft amsl	Client: PG&E	<u> </u>
Development End Developmen	Drilling	Method:	Sonic Drilling	<u></u>		_ Northing (NAD83):	2102858.8	Project: <u>Final</u>	Groundwater Remedy Phase
Sample S	Driller	Name:	Dan O'Mara			_ Easting (NAD83):	7615264.9	Location: <u>1</u>	
Sean McGrane	Drilling	Asst:	E. Huellman	<u>tel / J. C</u>	<u>ampbe</u>	<u>ll</u> Borehole Diameter:	4-12 inches	PG&E	Topock, Needles, California
Flush Stok-up Stok-u	Loggei	r:	S. McGrane	/ G.Jeff	ers	_ Water Level Start:	76.27 ft bgs	Project Numbe	r: RC000753.0051
Calculated Material Volumes Material Volumes Material Volumes Material Volumes Installed	Editor:		Sean McGra	ne		_ Development End Dat	e <u>3/4/2019</u>		
Topock Florid Deposits SM Sch 80 Casing Sch 80 Casin	Total [Depth:			T 1	_ Well Completion:			
Sch 80 Casing Sch 80 Casin	Depth (ft)		Geologic Formation	USCS	USCS Class				
Composition			Fluvial	SM		(0.5 - 205.0') 2" PVC — Sch 80 Casing	—(0.6 - 235.0') 2" PVC Sch 80 Casing		
Elividi Deposits SM Deposits SW-SM Deposits SM Deposit	 64 		Fluvial	GW		Portland Cement 5%		(58.0 - 66.0') 35.1 gallons	(58.0 - 66.0') 310 gallons (783%) Note: Type I, II and V and Benseal, void from 58 to 66 ft bgs
Fitivial Deposits SW-SM Deposits SM Deposi			Fluvial	SM					
			Fluvial	SW-SM					
80 Alluvium ML I NO I	70	76-81 (31 ppb) 10/6/2018	Fluvial Deposits				— (28.0 - 249.0') 10" Borehole		
Abbreviations: USCS = Unified Soil Classification System ft = feet, bds = below ground surface, amsl = above mean sea level, GW =			Alluvium		<u> </u>				

ARC/	ADIS Design & for natura built asse	Consultancy al and ts		Well Const	ruction Log	S	Sheet: 5 of 16
Date Started:	11/27/2018			Surface Elevation:	530.0 ft amsl	Well ID: N	//W-L-225, MW-L-245
Date Complete				Shallow Well Elevation			
Drilling Co.:	Cascade			Deep Well Elevation:		Client: PG&E	
Drilling Method:	•			Northing (NAD83):	2102858.8	•	Groundwater Remedy Phase
Driller Name:	Dan O'Mara			Easting (NAD83):	7615264.9	Location:1	T
Drilling Asst:			-	Borehole Diameter:	4-12 inches		Topock, Needles, California
Logger:	S. McGrane /		3	Water Level Start:	76.27 ft bgs	Project Number	r: RC000753.0051
Editor:	Sean McGrar	<u>ie</u>		Development End Date Well Completion:	e <u>3/4/2019</u>		
Total Depth:	315 ft bgs			vveii Compietion.	△ Flush Stick-up	1	
ta (£) Groundwa Sample	Geol Form	Code	Class		Construction	Calculated Material Volumes	Material Volumes Installed
	Deposits			(0.5 - 205.0') 2" PVC— Sch 80 Casing	—(0.6 - 235.0') 2" PVC Sch 80 Casing		
81	Topock -			-			
	Alluvium Deposits	SM 🗀					
82	Deposits						
83							
999							
84_							
×204 —	Topock - Alluvium	SM ∷					
95	Deposits						
일85						(66.004.0!) 20.4	(66.0 04.0!) 10 ham (100/)
ATE F				(66.0 - 91.0') — Bentonite seal chips		(66.0 - 91.0') 20.4 bags	(66.0 - 91.0') 18 bags (-12%) Note: Purgold Medium Chips
86							
ATA							
§ — 87 —							
88_							
9R —							
89_							
CK DATABASE FOR	Topock -						
ğ90	Alluvium Deposits	SM			(28.0 - 249.0') 10"		
01/01/0					Borehole		
91				77	73 777		
92_							
9019							
8 93							
ZAFT _							
94_	Topock - Alluvium	ML 🔡					
E 10p	Deposits Topock -	CM					
5 _ 95 _	Alluvium	SM [∴					
N N N N N N N N N N N N N N N N N N N	Deposits			(91.0 - 201.0') High		(91.0 - 201.0') 482.5	(91.0 - 201.0') 570.2 gallon (18%)
				Solids Bentonite Grout		gallon	Note: Grout settled 20 ft below projected depth of 71 ft.
96			111				
SWC OZ		:					
SE 97	Topock -		111				
5	Alluvium Deposits	ML :					
98_		:					
- d&e							
99 <u></u>		:					
Abbreviations:	 SCS = Unific	d Soil Cla	esifica	ation System ft - foot	ogs = below ground surfac	e amel = abovo mo	an sea level GW -
					oratory reporting limit, NR =		
Frepresents dep					acory roporting mint, NIX -	. to recovery, blue	Tatol table symbol
≥ robiosciiis uch	to water me	addica pu	J. UEV	оюринсти			

9/.	4RC4	DIS Design & for natura built asset	Consultancy al and ets		Well Consti	ruction Log	5	Sheet: 6 of 16
	Started:	11/27/2018			_ Surface Elevation:	530.0 ft amsl	Well ID: N	/W-L-225, MW-L-245
	•	:04/04/2019			_ Shallow Well Elevation:			·
Drilling	-	Cascade			_ Deep Well Elevation:		Client: PG&E	
_	-	Sonic Drilling			• ,	2102858.8	•	Groundwater Remedy Phase
	Name:	Dan O'Mara			9 ,	7615264.9	Location: <u>1</u>	
	-			-		4-12 inches		Topock, Needles, California
Logge		S. McGrane / Sean McGran		ers		76.27 ft bgs	Project Numbe	r: RC000753.0051
Editor:		315 ft bgs	<u>ie</u>		_ Development End Date _ Well Completion:	∑ Flush Stick-up		
TOtal	Берин. Г				_ vveii Completion. [1	
Depth (ft)	Groundwat Sample II		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
101	- MW-L-VAS 106-111 (0.84 ppb) 10/9/2018 11:46	Topock - Alluvium Deposits	ML		(0.5 - 205.0') 2" PVC—Sch 80 Casing (106.5 - 107.5') Centralizer (91.0 - 201.0') High Solids Bentonite Grout	(28.0 - 249.0') 10" Borehole	(91.0 - 201.0') 482.5 gallon	(91.0 - 201.0') 570.2 gallon (18%) Note: Grout settled 20 ft below projected depth of 71 ft.
113		Topock - Alluvium Deposits	ML					
114								
115116117118		Topock - Alluvium Deposits	ML					
120								
Abbre	viations: l	JSCS = Unifie	d Soil (Classific	ation System, ft = feet, b	gs = below ground surface	e, amsl = above me	ean sea level, GW =

9/	4RC4	Design & for natura built asset	Consultancy I and ts		Well Construction Log	5	Sheet: 7 of 16
	Started:	11/27/2018			Surface Elevation: 530.0 ft amsl	Well ID: N	//W-L-225, MW-L-245
	-	I: <u>04/04/2019</u>			Shallow Well Elevation: <u>529.8 ft amsl</u>		
Drilling	-	Cascade			Deep Well Elevation: 529.6 ft amsl	Client: PG&E	
Drilling	g Method:	Sonic Drilling			Northing (NAD83): 2102858.8	Project: <u>Final (</u>	<u> Groundwater Remedy Phase</u>
Driller	Name:	Dan O'Mara			Easting (NAD83): 7615264.9	Location: <u>1</u>	
Drilling	g Asst:	E. Huellmante	<u>el / J. C</u>	ampbell	Borehole Diameter: 4-12 inches	PG&E	Topock, Needles, California
Logge	r:	S. McGrane /	G.Jeffe	ers	Water Level Start: 76.27 ft bgs	Project Number	r: RC000753.0051
Editor:	:	Sean McGrar	<u>ie</u>		Development End Date <u>3/4/2019</u>		
Total [Depth:	315 ft bgs			_ Well Completion:		
Depth (ft)	Groundwa Sample II		USCS	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
L _		Topock - Alluvium	ML		(0.5 - 205.0') 2" PVC————————————————————————————————————		
121		Deposits					
		Topock - Alluvium Deposits	ML			9	
YE		Topock - Alluvium Deposits	ML		(91.0 - 201.0') High Solids Bentonite Grout (28.0 - 249.0') 10" Borehole	(91.0 - 201.0') 482.5 gallon	(91.0 - 201.0') 570.2 gallon (18%) Note: Grout settled 20 ft below projected depth of 71 ft.
132		Topock - Alluvium Deposits	ML	0 0			ean sea level, GW =

9/-	ARCA	DIS Design & C for natura built asset	Consultancy l and ts		Well Const	ruction Log	5	Sheet: 8 of 16
		11/27/2018			_ Surface Elevation:	530.0 ft amsl	Well ID: N	MW-L-225, MW-L-245
	-	04/04/2019			_ Shallow Well Elevation			
Drilling		Cascade			_ Deep Well Elevation:		Client: PG&E	
_		Sonic Drilling			_ Northing (NAD83):	2102858.8	-	<u>Groundwater Remedy Phase</u>
		Dan O'Mara			_ Easting (NAD83):	7615264.9	Location: <u>1</u>	
Drilling				-	<u>ll</u> Borehole Diameter:	4-12 inches		Topock, Needles, California
Logge		S. McGrane /		ers	_ Water Level Start:	76.27 ft bgs	Project Numbe	r: RC000753.0051
Editor:		Sean McGran	<u>e</u>		_ Development End Date		<u> </u>	
Total E	Depth:	315 ft bgs			_ Well Completion:		Γ	Γ
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well (Construction	Calculated Material Volumes	Material Volumes Installed
141	MW-L-VAS- 141-146 (<0.033 U ppb) 10/10/2018 14:58	Topock - Alluvium Deposits	ML SM SM GM SM SM		(91.0 - 201.0') High Solids Bentonite Grout	— (28.0 - 249.0') 10" Borehole	(91.0 - 201.0') 482.5 gallon	(91.0 - 201.0') 570.2 gallon (18%) Note: Grout settled 20 ft below projected depth of 71 ft.
Abbre	viations: L	JSCS = Unified	d Soil C	Classific	cation System, ft = feet, b	ogs = below ground surface	, amsl = above me	ean sea level, GW =

94	ARCAI	DIS Design & for natura built asse	Consultancy al and ts		Well Construct	ion Log		Sheet: 9 of 16
Date S	tarted: <u>1</u>	1/27/2018			_ Surface Elevation: 530.0	ft amsl	Well ID:	MW-L-225, MW-L-245
	ompleted: <u>0</u>				_ Shallow Well Elevation: <u>529.8</u>			
Drilling		ascade			_ Deep Well Elevation: 529.6		Client: PG&	
•		onic Drilling			_ Northing (NAD83): 21028		-	Groundwater Remedy Phase
Driller N		an O'Mara	1/10	amnha	_ Easting (NAD83): 76152		Location:1	Tanaak Naadlaa California
Drilling Logger		. ниентапц . McGrane /		-	II Borehole Diameter: 4-12 ir Water Level Start: 76.27			E Topock, Needles, California er: RC000753.0051
Logger Editor:		<u>ean McGrane</u>		515	_ Water Level Start	-	FTOJECT NUTIBE	1. NC0007 33.003 1
Total D		15 ft bgs				sh Stick-up	_	
					1 —			
Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Well Constructi	on	Calculated Material Volumes	Material Volumes
۵	Sample ID	Ser Forr	30	30			Material Volumes	Installed
					(0.5 - 205.0') 2" PVC————————————————————————————————————	—(0.6 - 235.0') 2" PVC Sch 80 Casing		
161					Sch ad Casing	Scil 60 Casing		
		Topock -	CM.					
162		Alluvium Deposits	SM					
102								
163						;		
_103								
 164								
104		Topock -						
405		Alluvium Deposits	SM					
165								
166								
		Topock - Alluvium	GM					
167		Deposits			(166.5 - 167.5')Centralizer			
168								
		Topock - Alluvium	SM					
169		Deposits	""					
					(91.0 - 201.0') High		(0.4.0	(91.0 - 201.0') 570.2 gallon (18%)
170				b V V	Solids Bentonite	(28.0 - 249.0') 10" Borehole	(91.0 - 201.0') 482.5 gallon	Note: Grout settled 20 ft below projected depth of 71 ft.
				8 Pid	Grout			projected deptir or 7 m.
171				HG				
		Topock -		60d				
172		Alluvium Deposits	GM	137				
		Deposits						
173								
174				646				
		Topock -		k 01d				
175		Alluvium	GM	397				
		Deposits						
176				0 0				
_		Topock -				,		
177		Alluvium Deposits	SM]		
⊢		<u> </u>				3		
178		1				;		
L		Topock -]		
179		Alluvium Deposits	SM					
L		1				<u> </u>		
180		100 11 15	10 " 1			1		1 1 200
Abbrev	iations: US	SUS = Unifie	a Soll (Jassitio	cation System, ft = feet, bgs = b	∍iow ground surface,	, amsı = above m	ean sea ievei, GW =

RUCTION DETALS, PG&E TOPOCK C. UUSERSISMOGRANEIDOCUMENTSPG&E TOPOCKIDRAFT BORING LOGS/GINT FILES/07.01.19170POCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 07/01/19 15:56 groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = No Recovery, blue water table symbol represents depth to water measured post development

9/	4RC4	D	S Design & C for natura built asset	Consultancy Land s		Well Const	ruction Log	S	Sheet: 10 of 16
Date S	Started:	11/2	27/2018			Surface Elevation:	530.0 ft amsl	Well ID: N	/W-L-225, MW-L-245
Date 0	Completed	: <u>04/0</u>)4/2019			Shallow Well Elevation	: <u>529.8 ft amsl</u>		
Drilling	g Co.:	<u>Cas</u>	cade			Deep Well Elevation:	529.6 ft amsl	Client: PG&E	
Drilling	g Method:	<u>Son</u>	ic Drilling			Northing (NAD83):	2102858.8	Project: Final 0	<u> Groundwater Remedy Phase</u>
Driller	Name:	Dan	O'Mara			Easting (NAD83):	7615264.9	Location: <u>1</u>	
Drilling	g Asst:	<u>E. F</u>	<u>luellmante</u>	<u>l / J. C</u>	<u>ampbell</u>	Borehole Diameter:	4-12 inches	PG&E	Topock, Needles, California
Logge	r:	<u>S. N</u>	//IcGrane /	G.Jeffe	ers	Water Level Start:	76.27 ft bgs	Project Number	::RC000753.0051
Editor	:	<u>Sea</u>	<u>ın McGran</u>	<u>e</u>		Development End Date		<u></u>	
Total I	Depth:	<u>315</u>	ft bgs			Well Completion:			
Depth (ft)	Groundwat Sample ID		Geologic Formation	USCS Code	USCS Class		Construction	Calculated Material Volumes	Material Volumes Installed
101			Topock - Alluvium	SM		(0.5 - 205.0') 2" PVC ———————————————————————————————————	—(0.6 - 235.0') 2" PVC Sch 80 Casing		
181			Deposits						
182 183 	- MW-L-VAS- 181-186 (3.3 ppb) 10/20/2018 11:06		Topock - Alluvium Deposits	ML				9	
			Topock - Alluvium Deposits	SM					
			Topock - Alluvium Deposits	ML			(38.0. 240.01) 40"		
190 190 191 191 191 192 193 194 194 195 195 195 195 195 195 195 195 195 195			Topock - Alluvium Deposits	SM		(91.0 - 201.0') High Solids Bentonite Grout	— (28.0 - 249.0') 10" Borehole	(91.0 - 201.0') 482.5 gallon	(91.0 - 201.0') 570.2 gallon (18%) Note: Grout settled 20 ft below projected depth of 71 ft.
196	viations		Topock - Alluvium Deposits	ML 1 Soil (pation System # = fact	pgs = below ground surface	amel = abovo ma	oon soo lovel CW -

Date Strated: 11/27/2018	ARC	ADIS Design & for nature built ass	<mark>l Consultancy</mark> ral and ets	Well Cons	truction Log	5	Sheet: 11 of 16
Date Deposits De						Well ID: N	MW-L-225. MW-L-245
Dolling Name Dolling Morthing (NAD83) 21(2858.8 Project Enal Groundwater Remedy Phase Dolling Name Dolling Nam	-						
Delilor Market Dan O'Maria Easting (NAD83) 7515264 9 Location: 1 Location: 1 Location: 1 Location: 1 Location: 2 Location: 3 Location: 3 Location: 3 Location: 3 Location: 3 Location: 4 Location: 3 Location: 4 Location: 5 Location: 5 Location: 6 Location:	_						
Deliling Assis: E. Huellmantel / J. Campbell Borentole Diameter: 4-12 inches	Drilling Metho	-		Northing (NAD83):		Project: <u>Final</u>	<u> Groundwater Remedy Phase</u>
Logger S. McGrane / G. Jeffers Sean McGrane Development End Dates 24/2019 Total Depth: Sean McGrane Development End Dates 24/2019 Develop	Driller Name:			<u> </u>	<u>7615264.9</u>		
Editor	Drilling Asst:	<u>E. Huellmant</u>	<u>el / J. Campb</u>			PG&E	<u> Topock, Needles, California</u>
Total Depth: 315 ft bgs	Logger:				•	Project Numbe	r: RC000753.0051
Figure F		<u>Sean McGra</u>	ne	Development End Da	te <u>3/4/2019</u>		
Topock	Total Depth:			Well Completion:			
All Authority	Ground Sampl	water Geologic Pormation	USCS Code USCS Class				
Deposits SM Deposits S		Alluvium	ML				Note: Grout settled 20 ft below
206			SM	(201.0 - 203.0') Bentonite seal pellets			
206				(205.0. 235.0) 2"			
Alluvium Deposits GM Deposits		Alluvium	ML	Sch 80 PVC (20-slot) Screen			
210		Alluvium	GM 0				
211	8						
214_	211	Alluvium	GM OO	Cemex #3 MESH			(203.0 - 228.5') 29 bags (-3%) Note: Lapis Lustre Sand
214_	213.						
215	3		[3]	↓			
Topock - Alluvium Deposits SM 216.	214_						
Alluvium Deposits SM Deposits	215_	Topock -	[.]				
218	<u> </u>	Alluvium	SM				
218 Alluvium Deposits SM Deposits SM Deposits SM Deposits SM Deposits SM Deposits De							
	MW-L-V 218-22 (66 pp 10/21/20	Alluvium Deposits AS- 33 b) 118					
	220		1011	11 ::			

9/	ARCAI	DIS Design & C for natura built asset	consultancy and s		Well Constr	ruction Log	S	heet: 12 of 16
		1/27/2018				530.0 ft amsl	Well ID: N	/W-L-225, MW-L-245
	Completed: <u>0</u>				_Shallow Well Elevation:			
Drilling	-	Cascade			-	529.6 ft amsl	Client: PG&E	
1	-	Sonic Drilling			• ,	2102858.8		Groundwater Remedy Phase
		an O'Mara			O (,	7615264.9	Location:1	T
	•	s. Huelimante S. McGrane /		•		4-12 inches 76.27 ft bgs		Topock, Needles, California RC000753.0051
Logge Editor		<u>s. McGrane /</u> Sean McGran		215	_ Water Level Start. _ Development End Date <u>:</u>	•	Project Number	. <u>KC000733.0031</u>
	_	15 ft bgs	<u> </u>			∑ Flush Stick-up		
-								
Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS	USCS		onstruction	Calculated Material Volumes	Material Volumes Installed
	- MW-L-VAS- 218-223 - (66 ppb) 10/21/2018 - 10:50	Topock - Alluvium Deposits	GM		(205.0 - 225.0') 2" —			
223		Topock - Weathered Bedrock - conglomerate	ML		(203.0 - 228.5') Cemex #3 MESH (8x10) (225.5 - 226.5') Centralizer (225.0 - 227.4') Sump and End Cap		(203.0 - 228.5') 29.9 bags	(203.0 - 228.5') 29 bags (-3%) Note: Lapis Lustre Sand
228		Topock - Weathered Bedrock - conglomerate	ML		(228.5 - 233.0') Bentonite seal pellets	(28.0 - 249.0') 10" Borehole	(228.5 - 233.0') 4.4 buckets	(228.5 - 233.0') 4 buckets (-9%) Note: Pel-Plug (TR30) 3/8"
235236238235		Topock - Weathered Bedrock - conglomerate	ML		(233.0 - 249.0') Cemex #3 MESH — (8x10)	— (235.0 - 245.0') 2" Sch 80 PVC (20-slot) Screen	(233.0 - 249.0') 19.5 bags	(233.0 - 249.0') 25 bags (28%) Note: Lapis Lustre Sand
240								
∄Abbre	viations: US	SCS = Unified	d Soil (Classifica	ation System, ft = feet, bo	gs = below ground surface	e, amsl = above me	ean sea level, GW =

ARC/	ADIS Design & for natura built asse	Consultancy Il and ts	Well Consti	ruction Log	S	heet: 13 of 16
Date Started:	11/27/2018			530.0 ft amsl	Well ID: M	/W-L-225, MW-L-245
Date Complete			_ Shallow Well Elevation:			<u> </u>
Drilling Co.:	Cascade		•	529.6 ft amsl	Client: PG&E	
Drilling Method	•		• ,	2102858.8	Project: <u>Final C</u> Location: <u>1</u>	Groundwater Remedy Phase
Driller Name: Drilling Asst:	Dan O'Mara	al / I. Campbo	3 \ ,	7615264.9 4-12 inches		Topock, Needles, California
Logger:	S. McGrane /	-		76.27 ft bgs		: RC000753.0051
Editor:	Sean McGran		_ Water Level Start. _ Development End Date	_	r roject Number	.10000733.0031
Total Depth:	315 ft bgs			✓ Flush ✓ Stick-up		
				<u> </u>		
Groundwa Sample		USCS Code USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
	Topock - Weathered Bedrock - conglomerate	SM	(233.0 - 249.0') Cemex #3 MESH	(235.0 - 245.0') 2" Sch 80 PVC (20-slot) Screen	(233.0 - 249.0') 19.5 bags	(233.0 - 249.0') 25 bags (28%) Note: Lapis Lustre Sand
245	Topock - Weathered Bedrock -	ML	(8x10) (245.5 - 246.5') Centralizer	(245.0 - 247.3') Sump and End Cap		
250	conglomerate					
255	Topock - Weathered Bedrock - conglomerate Topock - Weathered Bedrock -	ML	(249.0 - 266.0') — Bentonite seal chips	(249.0 - 303.0') 7" Borehole	(249.0 - 266.0') 7.4 bags	(249.0 - 266.0') 8 bags (8%) Note: Purgold Medium Chips
ON DET	conglomerate					
Abbreviations:	USCS = Unifie	l Soil Classific	cation System. ft = feet_be	gs = below ground surface	 e, amsl = above me	ean sea level. GW =
~ — — — — — — — — — — — — — — — — — — —			<u> </u>	ratory reporting limit, NR =		

represents depth to water measured post development

9/	ARCAE	Design & C for natura built asset	Consultancy Il and ts		Well Const	truction Log	S	heet: 14 of 16
Date S		1/27/2018			_ Surface Elevation:	530.0 ft amsl	Well ID: N	1W-L-225, MW-L-245
l l	Completed:0				_ Shallow Well Elevation			· · · · · · · · · · · · · · · · · · ·
Drilling		ascade			_ Deep Well Elevation:		Client: PG&E	
_		onic Drilling			_ Northing (NAD83):	2102858.8	-	<u> Groundwater Remedy Phase</u>
Driller		an O'Mara			_ Easting (NAD83):	7615264.9	Location: <u>1</u>	
Drilling				-	I Borehole Diameter:	4-12 inches		Topock, Needles, California
Logge		. McGrane /		ers	_ Water Level Start:	76.27 ft bgs	Project Number	: RC000753.0051
Editor:		ean McGran	<u>e</u>		_ Development End Dat		<u> </u>	
Total E	Deptn: <u>3</u>	15 ft bgs			_ Well Completion:			
Depth (ft)	Groundwater Sample ID	Geologic Formation	nscs Code	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
261 262 	MW-L-VAS-	Topock - Weathered Bedrock - conglomerate	ML		(249.0 - 266.0') —		(249.0 - 266.0') 7.4	(249.0 - 266.0') 8 bags (8%)
264 265 266	261-266 (<0.17 U ppb) 10/22/2018 14:50				Bentonite seal chips		bags	Note: Purgold Medium Chips
		Topock - Weathered Bedrock - conglomerate	ML		(266.0 - 308.0') Portland Cement	— (249.0 - 303.0') 7" Borehole	(266.0 - 308.0') 77.5 gallons	(266.0 - 308.0') 80 gallons (3%) Note: Type I, II and V
Abbre	viations: US	SCS = Unified	lioS t	Classific	ation System, ft = feet,	bgs = below ground surfa	ce, amsl = above me	ean sea level, GW =

ARCAD	Design & Consultancy for natural and built assets		Well Construction Log	S	Sheet: 15 of 16
Date Started: 11/	/27/2018		Surface Elevation: 530.0 ft amsl	Well ID: N	//W-L-225, MW-L-245
Date Completed:04/	/04/2019		Shallow Well Elevation:529.8 ft amsl		
Drilling Co.: Cas	scade		Deep Well Elevation: 529.6 ft amsl	Client: PG&E	
Drilling Method: Son	nic Drilling		Northing (NAD83): 2102858.8	Project: <u>Final (</u>	<u> Groundwater Remedy Phase</u>
Driller Name: Da	n O'Mara		Easting (NAD83): 7615264.9	Location: <u>1</u>	
Drilling Asst: E.	Huellmantel / J. (<u>Campbell</u>	Borehole Diameter: 4-12 inches	PG&E	Topock, Needles, California
Logger: S.	McGrane / G.Jef	<u>fers</u>	Water Level Start: 76.27 ft bgs	Project Number	r: RC000753.0051
Editor: Sea	an McGrane		Development End Date 3/4/2019		
Total Depth: 315	5 ft bgs		Well Completion: ⊠ Flush Stick-up		
Groundwater Sample ID	Geologic Formation USCS Code	USCS	Well Construction	Calculated Material Volumes	Material Volumes Installed
292	Topock - Weathered Bedrock - conglomerate Topock - Weathered Bedrock - conglomerate ML ML		(266.0 - 308.0°) Portland Cement (249.0 - 303.0°) 7" Borehole	(266.0 - 308.0') 77.5 gallons	(266.0 - 308.0') 80 gallons (3%) Note: Type I, II and V

9/	ARCAI	DIS Design & C for natura built asset	consultancy and s		Well Const	truction Log	5	Sheet: 16 of 16
Date S	_	1/27/2018			Surface Elevation:	530.0 ft amsl	Well ID: N	MW-L-225, MW-L-245
	ompleted:				Shallow Well Elevation			
Drilling		Cascade Sonic Drilling			Deep Well Elevation:		Client: PG&E	
Driller I		Dan O'Mara			Northing (NAD83): Easting (NAD83):	2102858.8 7615264.9	Project: <u>Final</u> Location: <u>1</u>	Groundwater Remedy Phase
Drilling			el / J. C		Borehole Diameter:	4-12 inches		Topock, Needles, California
Logger		S. McGrane /		-	Water Level Start:	76.27 ft bgs		r: RC000753.0051
Editor:		Sean McGran			Development End Dat	_		
Total D	epth: <u>3</u>	15 ft bgs			Well Completion:			
Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
301	no sample (Interval did not produce) 10/25/2018 09:48	Topock - Weathered Bedrock - conglomerate Topock - Bedrock - Metadiorite	NR		(266.0 - 308.0') Portland Cement (308.0 - 315.0') Formation Collapse End of Boring at 315.0 'bgs.	(249.0 - 303.0') 7" Borehole (303.0 - 315.0') 4" Borehole	(266.0 - 308.0') 77.5 gallons	(266.0 - 308.0') 80 gallons (3%) Note: Type I, II and V
317317318								
ON DETAILS, PG&E.								
<u>5</u> 320 L Abbrev	viations: U	SCS = Unified	d Soil (Classifica	ation System, ft = feet,	bgs = below ground surface	e, amsl = above me	ean sea level, GW =
						oratory reporting limit, NR =		
<u> </u>		to water mea				<u> </u>		-

ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 1 of	16
ate Started				Surface			Borin	a No.:	: MW-Ld	
-	eted: 11/27/2			Northin		· ·				
rilling Co.:	<u>Casca</u>			Easting	•	•	Client:	PG&E		
rilling Meth		•			•	315 ft bgs	Project:		roundwater Re	medy Phas
ill Rig Type		onic track mo					Location			
iller Name				-		Vater: 76.27 ft bgs			Topock, Needle	
illing Asst:		ellmantel / J. (•		•		Project N	lumber:	RC000753.005	51
gger:		<u> Grane / G.Jef</u>		Samplir -	-		•			
litor:	<u>Sean I</u>	<u> </u>		Conver	ted to V	Vell:				
(ft) (Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
1_			Topock - Fluvial Deposits	sw		(0.0 - 1.5') Topock - Fluvial Deposits; Well grade (SW); brown (10YR 4/3); very fine grained to ve angular to subround; some granule to large peb very coarse grained sand, subangular to subrou trace boulders, angular to subangular; trace silt;	ry coarse grai bles; some coa nd; trace cobb	ned, arse to	(0.0 - 5.0') Hand cleared for utility clearance	
3 — 72 4 — — — — — — — — — — — — — — — — — — —			Topock - Fluvial Deposits	sw		(1.5 - 6.0') Topock - Fluvial Deposits; Well grade (SW); brown (7.5YR 4/3); very fine grained to ve subangular to round; some granule to medium p subangular; trace silt; dry (6.0 - 11.0') Topock - Fluvial Deposits; Sand Silt	ery coarse graebbles, angul	ined, ar to		
7 — 3 — 5 — 6 — 6 — 6 — 6 — 6 — 6 — 6 — 6 — 6	No sieve samples collected		Topock - Fluvial Deposits	SM		(7.5YR 4/3); very fine grained to very coarse gra subrounded; some granule to very large pebbles subangular; some silt; trace cobbles, angular; tra to subangular; dry	ined, angular t, angular to ace boulders,	to angular		
12			Topock - Fluvial Deposits	SW-SM		(11.0 - 16.0') Topock - Fluvial Deposits; Well gragravel (SW-SM); dark grayish brown / dark yellc 4/2); very fine grained to very coarse grained, as some granule to large pebbles; little silt; trace co subangular; dry	wish brown(1 ngular to suba	0YR ngular:		
16			Topock - Fluvial Deposits	SW-SM		(16.0 - 21.5') Topock - Fluvial Deposits; Well grayer (SW-SM); very dark gray (10YR 3/1); ver coarse grained, angular to subangular; some grapebbles; little silt; trace cobbles, angular to subar	y fine grained anule to very l	to very	(16.0') Lost core barrel down hole	

AK	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 2 of	16
ate Starte	ed: <u>10/03/</u>	2018		Surface	Eleva	ion: <u>530.0 ft amsl</u>	Borin	a No :	MW-Ld	
-	leted: <u>11/27/</u>	2018		Northin	g (NAE	· ·				
rilling Co.	: <u>Casca</u>	de		Easting	(NAD	3): <u>7615264.9</u>		PG&E		
rilling Me		•			•	<u> </u>	Project:	Final G	<u>roundwater Re</u>	medy Phas
rill Rig Ty	pe: <u>Terras</u>	onic track mo	ount l	Borehol	e Dian	eter: 4-12 inches	Location:	1		
riller Nam	e: <u>Dan O</u>	'Mara		Depth to	o First	Water: <u>76.27 ft bgs</u>			<u> Fopock, Needl</u>	
rilling Ass		<u>llmantel / J. (</u>	-	-	-		Project No	umber: J	RC000753.005	51
ogger:	<u>S. McC</u>	<u> Grane / G.Jef</u>	fers :	Samplir	ng Inte					
ditor:	Sean N	<u> McGrane</u>		Convert	ted to \	Vell: ⊠ Yes □ No				
Depth (ft) (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
- 21_			Topock - Fluvial Deposits	SW-SM						
22			Topock - Fluvial Deposits	SM		(21.5 - 22.5') Topock - Fluvial Deposits; Silty sand dark gray (10YR 4/1); very fine grained to very coangular to subround; some granule to very large p subangular; some silt; dry	arse grained,	` ''		
23 _— 96 - 24_			Topock - Fluvial Deposits	GP		(22.5 - 24.0') Topock - Fluvial Deposits; Poorly grablack (10YR 2/1); small cobbles to large cobbles, and dry				
25				NR		(24.0 - 26.0') (NR); No Recovery sample bags bro	oke			
26						(26.0 - 28.0°) Topock - Fluvial Deposits; Sandy sil	t with gravel ((ML):	(26.0') Rough	
27 28			Topock - Fluvial Deposits	ML		brown (10YR 5/3); no plasticity; some very fine to sand, angular to subangular; little granule to very langular to subangular; trace cobbles, angular to si mica; dry	very coarse glarge pebbles	grained ,	drilling	
29			Topock - Fluvial Deposits	ML		(28.0 - 29.5') Topock - Fluvial Deposits; Sandy sit brown (10YR 5/3); no plasticity; and very fine to ve sand, angular to subangular; little granule to very langular to subangular; trace cobbles, angular to simica; dry	ery coarse gr large pebbles ubangular; tra	ained , ace		
30	No sieve samples collected		Topock - Fluvial Deposits	GW		(29.5 - 31.0') Topock - Fluvial Deposits; Well grad (GW); dark yellowish brown (10YR 4/4); granules angular to subround; little very fine to coarse grain subangular to subround; dry	to small cobb			
32			Topock - Fluvial Deposits	ML		(31.0 - 34.5') Topock - Fluvial Deposits; Sandy silbrown (10YR 5/3); no plasticity; some very fine to sand, angular to subangular; little granule to very langular to subangular; trace cobbles, angular to simica; dry	very coarse	grained	(31.0') Lost core barrel down hole	
34_										
- 84 35						(34.5 - 38.0') Topock - Fluvial Deposits; Silty sand 5/3); very fine grained to fine grained, subangular silt; dry				
36 - 37 -			Topock - Fluvial Deposits	SM					(36.0 - 38.0') Drilled to extra two feet to collect lost core 31 to 36 ft. bgs	
383996			Topock - Fluvial Deposits	SM		(38.0 - 39.0') Topock - Fluvial Deposits; Silty sand grayish brown (2.5Y 5/2); very fine grained to very angular to subround; some silt; little granule to large to subangular; moist	/ coarse grain	ned,		
40			Topock - Fluvial Deposits	SM		(39.0 - 43.0") Topock - Fluvial Deposits; Silty sanc grayish brown (2.5Y 3/2); very fine grained to coat to subangular; and silt; trace granule to medium pr	rse grained, a	angular		

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	g		She	eet: 3 of	16
Date S	tarted	: <u>10/03</u>	/2018		Surface	Elevat	ion:	530.0 ft amsl	Borin	a No .	MW-Ld	
Date C	omple	ted: <u>11/27</u>	/2018		Northing	g (NAD	83):	2102858.8		9 110	IVIV EU	
Drilling	Co.:	Casca	ade		Easting	(NAD8	33):	7615264.9	Client:	PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total D	epth:		315 ft bgs	Project:	Final G	<u>roundwater Re</u>	emedy Phase
Drill Ri	д Туре	e: <u>Terra</u> s	sonic track mo	ount	Borehol	le Diam	eter:	4-12 inches	Location:	1		
Driller I	Name:	Dan C)'Mara		Depth to	o First \	Water	: <u>76.27 ft bgs</u>	_	PG&E 7	<u> Fopock, Needl</u>	<u>es, California</u>
Drilling	Asst:	<u>E. Hu</u>	ellmantel / J.	<u>Campbell</u>	Samplin	ng Meth	nod:	4 inch x 10 ft Core Barrel	Project N	umber: <u>I</u>	RC000753.00	51
Logger	r:	S. Mc	<u>Grane / G.Jef</u>	fers	Samplin	ng Inter	val:	Continuous	_			
Editor:		<u>Sean</u>	<u>McGrane</u>		Conver	ted to V	Vell:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
41 42 43 44 45	96			Topock - Fluvial Deposits Topock - Fluvial Deposits	SM		(43.0 - brown (subanc	gular; trace clay; moist 46.0') Topock - Fluvial Deposits; Well gra (7.5YR 5/3); very fine grained to very coagular to subround; trace granule to very laound; trace cobbles, subround; trace silt;	arse grained, arge pebbles, a			
46 47 48 49 50 51	120	No sieve samples collected		Topock - Fluvial Deposits	SM SW-SM		brown (subang subang subang formati	52.0') Topock - Fluvial Deposits; Well gr	rse grained, ge pebbles, subangular to irsening downv	vard in		
52 53 54 55 56 56 57 58 59	120			Fluvial Deposits Topock - Fluvial Deposits Topock - Top	sw		angular (52.0 - (SW); v coarse pebbles some n	M); brown (10YR 5/3); very fine grained or to subround; trace slit; little mica; dry 59.0") Topock - Fluvial Deposits; Well gray dark grayish brown (10YR 3/2); very grained, angular to subangular; and grars, subangular to round; trace cobbles, sunica; dry	aded sand with r fine grained to rule to very larg bangular to sul	gravel overy ge ge proround;		
60				Fluvial Deposits	SM		little silt	ery fine grained to very coarse grained, and title clay; trace granule to large pebbles	s, angular to su	bround;		

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	;	Sheet: 4 of	16
Date S	Started	: <u>10/03</u>	/2018		Surface	Eleva	on: <u>530.0 ft amsl</u>	- Boring No	o.: <u>MW-Ld</u>	
Date C	Comple	eted: <u>11/27</u>	/2018		Northing	g (NAC	33): <u>2102858.8</u>	_ Borning ive	J <u>IVIVV-LU</u>	
Drilling	g Co.:	Casca			Easting	(NAD8	3): <u>7615264.9</u>	Client: PG&	<u>E</u>	
Drilling	g Meth	od: <u>Sonic</u>	Drilling		Total De	epth:	315 ft bgs	Project: Final	Groundwater Re	medy Phase
Drill Ri	ig Туре	e: <u>Terras</u>	sonic track mo	ount	Borehol	e Dian	eter: 4-12 inches	Location: 1		
Driller	Name	Dan C)'Mara		Depth to	First	Vater: <u>76.27 ft bgs</u>	P <u>G&</u>	E Topock, Needle	es, California
Drilling	g Asst:	E. Hu	ellmantel / J.	<u>Campbell</u>	Samplir	ng Metl	od: 4 inch x 10 ft Core Barrel	_ Project Numbe	r: RC000753.005	51
Logge	r:	<u>S. Mc</u>	<u> Grane / G.Jef</u>	fers	Samplir	ıg Intei	val: <u>Continuous</u>	_		
Editor:		<u>Sean</u>	<u>McGrane</u>		Convert	ed to \	/ell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
 61				Topock - Fluvial Deposits	SM		dry			
62 63 64 65	120			Topock - Fluvial Deposits	GW		(62.0 - 65.5') Topock - Fluvial Deposits; Well gr (GW); light brownish gray / pale yellowish brown to small cobbles, angular to subround; little very grained sand, angular to subround; trace boulds subangular; dry	n(10YR 6/2); granules fine to very coarse		
66 _ 67				Topock - Fluvial Deposits	SM		(65.5 - 67.0') Topock - Fluvial Deposits; Silty sa dark grayish brown / dark yellowish brown(10YF grained to very coarse grained, angular to subrolarge pebbles, angular to subangular; little silt; li angular; dry	R 4/2); very fine bund; little granule to ttle clay; trace cobbles	,	
 68 				Topock - Fluvial Deposits	SW-SM		(67.0 - 69.0') Topock - Fluvial Deposits; Well gr (SW-SM); light brownish gray / pale yellowish b fine grained to very coarse grained, angular to s trace granule to medium pebbles, subangular to	rown(10YR 6/2); very subangular; little silt;		
	120	No sieve samples collected					(69.0 - 79.5') Topock - Fluvial Deposits; Silty sabrown (7.5YR 5/3); fine grained to very coarse subround; little granule to very large pebbles, sulittle silt; trace cobbles, angular to subangular; tr subangular; tr subangular to well-round; little mica; dry	grained, subangular to ıbangular to round;		
 73 							(72.5') olive / moderate olive brown(5Y 4/4); sor large pebbles	ne granule to very		
74 				Topock - Fluvial Deposits	SM		(74') dark grayish brown / dark yellowish brown((10YR 4/2)	*	
75 76							(75') dark brown (7.5YR 3/4); moist			
76 77 78 79	120		MW-L-VAS- 76-81 (31 ppb) 10/6/2018 16:34				(76') brown (7.5YR 4/3); and granule to very lar subangular to round; little silt; trace cobbles, sul water table		(76.0') Approximate depth of water table	(76.0 - 86.0') 60 gal of water used
 80				Topock - Alluvium	ML	4.4	(79.5 - 80.0') Topock - Alluvium Deposits; Sand	ly silt with gravel (ML);	7	
	viation	s: USCS =	Unified Soil C		on Syste	em, ft =	feet, bgs = below ground surface,	amsl = above m	ean sea level, G\	N =

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Shee	et: 5 of	16
Date S	Started	: <u>10/03/2</u>	2018		Surface	Eleva	tion: <u>530.0 ft amsl</u>	Borino	ı No .	MW-Ld	
Date (Comple	eted: 11/27/2	2018		Northing	g (NAC	983): <u>2102858.8</u>	Bornig	, 110	IVIVV-LU	
Drilling	g Co.:	<u>Cascac</u>	de		Easting	(NAD8	33): <u>7615264.9</u>	Client: F	PG&E		
Drilling	g Meth	od: <u>Sonic [</u>	<u> Drilling</u>		Total De	epth:	315 ft bgs	Project: <u>F</u>	Final Gro	<u>oundwater Re</u>	emedy Phase
Drill R	ig Type	e: <u>Terras</u>	onic track mo	ount	Borehol	e Dian	neter: 4-12 inches	Location: <u>1</u>	1		
Driller	Name				-		Water: <u>76.27 ft bgs</u>			•	<u>es, California</u>
Drilling	g Asst:		<u>llmantel / J. (</u>	-	-	-		Project Nu	mber: R	C000753.00	51
Logge			<u> Grane / G.Jef</u>		Samplin	-		_			
Editor	:	Sean N	/lcGrane		Convert	ed to \	Vell: ⊠ Yes ☐ No				1
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
81 82 83	120			Topock - Alluvium Deposits	SM		reddish brown(2.5YR 4/3) with reddish brown (5 some very fine to very coarse grained sand, sub little granule to very large pebbles, subround to 1 (80.0 - 82.5') Topock - Alluvium Deposits; Silty dark grayish brown / dark yellowish brown(10YF grained to very coarse grained, angular to subart to large pebbles, angular to subround; some silt; (82.5 - 86.0') Topock - Alluvium Deposits; Silty brown (10YR 5/2); very fine grained to very coarse granule to very large subangular; and silt; trace granule to very large subangular; trace cobbles, angular; trace clay; s	pangular to subro round; wet sand with gravel & 4/2); very fine ngular; some gra ; wet sand (SM); gray; rse grained, ang pebbles, angular	ound; (SM); anule ish ular to		(76.0 - 86.0') 60 gal of water used
84 85 86				Topock - Alluvium Deposits	SM		strong cementation (86.0 - 93.5') Topock - Alluvium Deposits; Silty:	sand with gravel	(SM);		(86.0 - 96.0') 20
87 88 90 91 92 93	- 120	No sieve samples collected		Topock - Alluvium Deposits	SM		dark grayish brown / dark yellowish brown (10ÝF grained to very coarse grained, angular to subar granule to very large pebbles, angular to subar moderate cementation (89.5'); decrease in ganules to large pebbles, inc	R 4/2); very fine ngular; some sitt jular; little clay; r	: little		gal of water used
94				Topock - Alluvium	ML		(93.5 - 94.0') Topock - Alluvium Deposits; Sand grayish brown (2.5Y 5/2); no plasticity; some ver				
L _				Deposits Topock -	J SM		grained sand, angular to subround; little granule angular to subround; little clay; wet; wea	to large pebbles	5,		
95				Alluvium Deposits			(94.0 - 95.0') Topock - Alluvium Deposits; Silty	sand with gravel	(SM);		
L				Pehosita	1		dark grayish brown / dark yellowish brown(10ÝF grained to very coarse grained, angular to subar	ngular; some silt	; little		
							granule to large pebbles, angular to subangular; cobbles, angular to subangular; moist; moderate	little clay; trace			
							(95.0 - 112.0') Topock - Alluvium Deposits; San	dy silt with grave			(96.0 - 106.0') 50 gal of water
_ 97							(ML); grayish brown (2.5Y 5/2); no plasticity; sol coarse grained sand, angular to subangular; little	e granule to very	/ large		used
				Topock -			pebbles, angular to subangular; trace clay; trace cementation				
 98	004			Alluvium Deposits	ML		(96'); moist to dry; iron oxide staining; increase i large pebbles, decrease in sand, increase in silt.				
	234						go possice, acorease in sand, increase in sill,	, accreace in old	,		
99											
	1										
100											
	viation	s: USCS = I	Unified Soil C	Classificati	on Syste	em, ft =	= feet, bgs = below ground surface, a	amsl = abov	e mean	sea level, G	W =

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	9		She	eet: 6 of	16
Date S	Started	: <u>10/03/2</u>	2018		Surface	Eleva	tion:	530.0 ft amsl	Borir	na No.:	MW-Ld	
	-	eted: <u>11/27/</u> 2	2018		Northin	g (NAE	083):	2102858.8	_		<u> </u>	
Drilling		Casca	de		Easting	•	33):	7615264.9	_ Client:	PG&E		
Drilling			-		Total D	•		315 ft bgs	_ Project:		<u>roundwater Re</u>	emedy Phase
Drill R	• • •		onic track mo		Borehol			4-12 inches	_ Location			
Driller					-			: <u>76.27 ft bgs</u>	_		Topock, Need	
Drilling	-		llmantel / J.	•	•	•		4 inch x 10 ft Core Barrel	_ Project N	lumber: .	RC000753.00	51
Logge			Grane / G.Jet		Samplin	•		Continuous	_			
Editor		Sean N	//cGrane		Conver	ed to \	/Vell:					1
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
												(96.0 - 106.0') 50 gal of water used
103 104												
104_												
				Topock -	ML							
107				Deposits	I WIE		(106'); granule	wet; mode <mark>rat</mark> e cementation; iron oxide st es to large pebbles, increase in sand	taining; decrea	ise in		(106.0 - 116.0') 100 gal of water used
107							(107'); in gran	moist to dry; strong cementation; iron ox ules to large pebbles, decrease in sand	ide staining; ir	crease		
108	234		MW-L-VAS- 106-111									
			(0.84 ppb) 10/9/2018 11:46				C					
		No sieve samples collected										
		Collected										
-114-					1		(112.0 (MI): h	- 114.0') Topock - Alluvium Deposits; Sa rown (10YR 5/3) little dark reddish brow	andy silt with g	ravel		
113				Topock - Alluvium	ML		plasticit	y; some granule to very large pebbles, a ery fine to very coarse grained sand, an	angular to suba	angular;		
				Deposits	IVIL		trace cl	ay; trace mica; little caliche; moist to dry	; strong ceme	guiar, ntation;		
114							iron oxi	de staining				
							(ML); g	- 121.0') Topock - Alluvium Deposits; Sa rayish brown (2.5Y 5/2); no plasticity; sc	me very fine t	o very		
115							coarse	grained sand, angular to subangular; litt s, angular to subangular; trace clay; trace	le granule to v	erv large		
							moist; r	noderate cementation; iron oxide stainin	g	,		
116								(40) /D 4/5				(440.0 155.5"
							(116') b	rown (10YR 4/3); no caliche; iron oxide	staining			(116.0 - 126.0') 130 gal of water
117				Topock - Alluvium	ML							used
5				Deposits			1					
118	108											
							1					
119												
							1					
120	viotios	o: 11909 - 1	Inified Sail (laccificati	on Sust		foot	has - holow around surface	amel = ah	0)/0 mag	n soa loval. C	
Appre	viation	s. USUS = 1	Uninea Soil (Jiassificati	on Syste	≠111, TC =	- ieet,	bgs = below ground surface,	amsı = ab	ove mea	n sea ievel, G	vv =

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 7 of	16
	-	: 10/03/2 eted: 11/27/2 Cascad	2018		Surface Northing Easting	g (NAE	983): <u>2102858.8</u>	Borin Client:	g No.:	MW-Ld	
Drilling	g Meth		-			•	315 ft bgs	-		roundwater Re	emedy Phase
	ig Type Name:		onic track mo				neter: <u>4-12 inches</u> Water: <u>76.27 ft bgs</u>	Location:		Fanack Nood	les, California
	g Asst: •r:	E. Hue S. McG	ellmantel / J. (Grane / G.Jef McGrane	Campbell fers	-	ng Met ng Inte	nod: 4 inch x 10 ft Core Barrel val: Continuous	- _ Project N -		•	
Depth (ft)	>	Sieve Sample ID	Groundwater Sample ID	Geologic	USCS Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
	-			Topock - Alluvium Deposits	ML						(116.0 - 126.0') 130 gal of water used
	108			Topock - Alluvium Deposits	ML		(121.0 - 126.0') Topock - Alluvium Deposits; Sa (ML); brown (10YR 4/3) and reddish brown / mc 4/4); no plasticity; some granule to very large pe subangular; some very fine to very coarse grain subangular; trace mica; trace caliche; moist; strooxide staining	oderate brown(bbles, angular ed sand, angu	SYR to ar to		
127 128 129 130		No sieve samples collected		Topock - Alluvium Deposits	ML		(126.0 - 131.0') Topock - Alluvium Deposits; Sa (ML); dark grayish brown / dark yellowish brown plasticity; some granule to very large pebbles, a some very fine to very coarse grained sand, and trace clay; little mica; moist; weak cementation; i	(10YR 4/2); no ngular to subar gular to subang	ngular; Jular;		(126.0 - 136.0') 140 gal of water used
131 132 133 134 135	182.4			Topock -			(131.0 - 139.5') Topock - Alluvium Deposits; Sa (ML); dark yellowish brown (10YR 4/4); no plast very coarse grained sand, angular to subangular pebbles, angular to subangular; little clay; little n staining (132'); some granule to large pebbles, angular to clay; iron oxide staining; decrease sand, increas	icity; some ver r; little granule nica; wet; iron o o subangular; t	y fine to to large oxide		
136_ 137_ 138_ 138_				Alluvium Deposits	ML		(136'); iron oxide staining; increase gravel, decre	ease silt			(136.0 - 146.0') 60 gal of water used
139]										
140	<u> </u>	11000			ML		(139.5 - 146.0') Topock - Alluvium Deposits; Gr			<u> </u>	
Abbre	viation	s: USCS = l	Unitied Soil C	Jassificati	on Syste	em, ft :	feet, bgs = below ground surface,	amsl = abc	ve mear	n sea level, G	vv =

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	neet: 8 of	16
Date S					Surface			Boring No.	: MW-Ld	
	•	ted: <u>11/27/</u>			Northing		•	_		
Drilling		<u>Casca</u>			Easting	•	•	Client: PG&E		
Drilling	-		•			•	315 ft bgs		<u> Broundwater Re</u>	emedy Phase
Drill Ri			onic track mo				neter: <u>4-12 inches</u>	_ Location: <u>1</u>		
Driller					•		Water: 76.27 ft bgs		Topock, Needl	
Drilling			ellmantel / J.	•	-	-		_ Project Number:	RC000753.005	51
Logge			Grane / G.Jef		Samplir Convert	•		-		
Editor:		<u>sean i</u>	<u>McGrane</u>		Conven	ea to v	Well: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
 141 							ML); brown (10YR 4/3); no plasticity; some gra pebbles, angular to subangular; some very fine sand, angular to subangular; trace mica; wet; irc	to very coarse grained		(136.0 - 146.0') 60 gal of water used
142 143	182.4		MW-L-VAS- 141-146	Topock - Alluvium	ML					
 144			(<0.033 U ppb) 10/10/2018 14:58	Deposits						
145										
146 147							(146.0 - 151,0') Topock - Alluvium Deposits; Sa (SM); dark grayish brown / dark yellowish brown grained to very coarse grained, angular to subar	n(10YR 4/2); very fine ngular; some granule	(146.0') Seepage from outside	(146.0 - 156.0') 40 gal of water used
147 148							to very large pebbles, angular to subangular; so coarse grained sand, angular to subangular; littl angular; trace mica; dry; weak cementation		conductor casing, pull 6" casing and 7" conductor	
140 149				Topock - Alluvium Deposits	SM		0		casing and install 12" conductor casing	
150		No sieve samples collected							odollig	
 151	120						(151.0 - 153.0') Topock - Alluvium Deposits; Sil	ty sand with gravel		
152 				Topock - Alluvium Deposits	SM		(SM); brown (10YR 4/3); very fine grained to ver angular to subround; some granule to very large subangular; some silt; little clay; trace cobbles, a wet; weak cementation; iron oxide staining	e pebbles, angular to		
153				Topock -	-		(153.0 - 154.0') Topock - Alluvium Deposits; Sil (GM); brown (10YR 4/3); granules to very large			
154				Alluvium Deposits Topock -	GM	205	subangular; some very fine to very coarse grain subangular; some silt; trace mica; moist; weak c	ed sand, angular to		
 155				Alluvium Deposits	SM		(154.0 - 155.0') Topock - Alluvium Deposits; Sil (SM); brown (10YR 4/3); very fine grained to ve	ery coarse grained,		
 156				Topock - Alluvium Deposits	ML		angular to subround; some granule to very large subangular; some silt; little clay; trace cobbles, a wet; moderate cementation; iron oxide staining	angular; trace mica;		
157				Topock - Alluvium Deposits	GM		(155.0 - 156.0') Topock - Alluvium Deposits; Sa (ML); brown (10YR 4/3); low plasticity; some gra pebbles, angular to subangular; some very fine sand, angular to subangular; little clay; trace mice	anule to very large to very coarse grained	(156.0') Refill casing (110 gallons) after sampling from	(156.0 - 166.0') 50 gal of water used
158 159	120			Topock - Alluvium Deposits	SM		cementation; iron oxide staining (156.0 - 157.0') Topock - Alluvium Deposits; Sil (GM); brown (10YR 4/3); granules to very large subangular; some very fine to very coarse grain subangular; little silt; little clay; trace mica; wet; v oxide staining (157.0 - 163.0') Topock - Alluvium Deposits; Sil (SM); brown (10YR 4/3); very fine grained to ve	pebbles, angular to led sand, angular to weak cementation; iron ty sand with gravel	261-266ft bgs	
	viations	s: USCS =	Unified Soil (Classification	on Svete	em ft =	angular to subround; some granule to very large subangular; some silt; little clay; trace mica; moi = feet, bgs = below ground surface,	e pebbles, angular to ist; strong cementation;	an sea level G	<i>N</i> =
, יטטופי	v iatiOH		Crimed Our C	Jassintali	on Oyale	, iii, it -	100t, bgo – bolow ground sunace,	amoi – above iile	411 JOU 10 VOI, U	–

		ADIS	Design & Consultancy for natural and built assets		В	ring Lo	d	_	Sheet: 9 of	16
	tarted:					Elevation:	530.0 ft amsl	Boring No	.: MW-Ld	
	-	ted: <u>11/27/</u>				g (NAD83):	2102858.8			
rilling		<u>Casca</u>			_	(NAD83):	7615264.9	_ Client: <u>PG&E</u>		
-	Metho		•			•	315 ft bgs	-	<u>Groundwater Re</u>	emedy Phase
	g Type						4-12 inches	Location: <u>1</u>		
	Name:						: <u>76.27 ft bgs</u>		Topock, Need	
rilling	Asst:		ellmantel / J.	-	-	-	4 inch x 10 ft Core Barrel	_ Project Number	: RC000753.00	51
ogger			<u> Grane / G.Jef</u>		-	ng Interval:	Continuous	_		
ditor:		<u>Sean I</u>	<u> McGrane</u>		Convert	ted to Well:	Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
- 161_ - 162_ -				Topock - Alluvium Deposits	SM	iron ox	de staining			(156.0 - 166.0' 50 gal of water used
163 - 164_	120						- 166.0') Topock - Alluvium Deposits; S eddish brown (5YR 5/4); very fi <mark>ne grain</mark> , angular to subangular; some granule to subangular; some silt; little clay; littl	ned to very coarse to very large pebbles,		
- 165				Topock - Alluvium Deposits	SM	cemer	ation; iron oxide staining	, ,		
66 - 67				Topock - Alluvium Deposits	GM	(GM); some	- 167.5') Topock - Alluvium Deposits; \$ orown (10YR 4/3); granules to boulders ery fine to very coarse grained sand, a ; little clay; some mica; wet; strong cen	s, angular to subangular; ngular to subangular;		(166.0 - 176.0' 45 gal of water used
- 168_ - 169_ - 170_		No sieve		Topock - Alluvium Deposits	SM	(167.5 (SM); angula suban	- 170.0') Topock - Alluvium Deposits; \$ rown (10YR 4/3); very fine grained to very lar to subround; some granule to very lar jular; some silt; little clay; trace mica; we de staining	very coarse grained, ge pebbles, angular to		
- 171_ - 172_ - 173_	120	samples collected		Topock - Alluvium Deposits	GM	(GM); some	- 174.0') Topock - Alluvium Deposits; \$ orown (10YR 5/3); granules to boulders ery fine to very coarse grained sand, a ; trace clay; some mica; wet; strong ce	s, angular to subangular; ngular to subangular;		
_ 174_						15 PJd				
- 175_ - 176_				Topock - Alluvium Deposits	GM	(GM); to very coarse	 - 176.0') Topock - Alluvium Deposits; dark grayish brown / dark yellowish brown / grayish brown / dark yellowish brown / graying below / graying / gra	wn(10YR 4/2); granules some very fine to very		
177				Topock - Alluvium Deposits	SM	(176.0 (SM); angula suban	- 177.5') Topock - Alluvium Deposits; \$ orown (7.5'/R 5/3); very fine grained to to subangular; some small to very largular; some silt; little clay; little mica; we de staining	very coarse grained, ge pebbles, angular to		(176.0 - 186.0' 20 gal of water used
470	134.4			Topock -		(SM); angula	- 181.5') Topock - Alluvium Deposits; S orown (7.5YR 5/3); very fine grained to to subangular; some silt; little small to to subangular; trace clay; little mica; w	very coarse grained, very large pebbles,		
178_ - 179_				Alluvium Deposits	SM		ation; iron oxide staining			

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Date S	tarted	10/03/	2018		Surface	Eleva	tion: <u>530.0 ft amsl</u>	Boring No.	· MW-I d	
Date C	omple	ted: <u>11/27/</u>	2018		Northin	g (NAE	983): <u>2102858.8</u>		. INIVI EG	
Drilling	Co.:	<u>Casca</u>	<u>ide</u>		Easting	(NAD	33): <u>7615264.9</u>	Client: PG&E		
Drilling	Metho				Total D	•	315 ft bgs	-	<u> Broundwater R</u>	<u>emedy Phase</u>
Drill Ri							neter: 4-12 inches			
Driller I)'Mara		-		Water: 76.27 ft bgs		Topock, Need	
Drilling			ellmantel / J. (Grane / G.Jef	-	-	-		_ Project Number:	RC000753.00	151
Logger Editor:			<u>Grane / G.Jer</u> McGrane		Samplir Convert	-		-		
Luitor.		<u>OCAII</u>	T		T		Veli. El res El No			1
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
				Topock - Alluvium Deposits	SM					(176.0 - 186.0') 20 gal of water used
182 183 184	134.4		MW-L-VAS- 181-186 (3.3 ppb) 10/20/2018 11:06	Topock - Alluvium Deposits	ML		(181.5 - 184.5') Topock - Alluvium Deposits; Sa (ML); brown (10YR 5/3); medium plasticity; som pebbles, angular to subangular; some very fine sand, angular to subround; wet; iron oxide stain	ne granule to very large to very coarse grained		
				Topock - Alluvium Deposits	SM		(184.5 - 186.5') Topock - Alluvium Deposits; Sil (SM); brown (10YR 5/3); very fine grained to ve angular to subround; some small to very large p subangular; some silt; trace clay; some mica; we iron oxide staining	ry coarse grained, ebbles, angular to		(186.0 - 196.0')
				Topock - Alluvium Deposits	ML		(186.5 - 188.5') Topock - Alluvium Deposits; Sa (ML); brown (7.5YR 4/3); no plasticity; some grapebbles, angular to subangular; some very fine sand, angular to subangular; little clay; moist; st oxide staining	anule to very large to very coarse grained		35 gal of water used
		No sieve samples collected					(188.5 - 195.0') Topock - Alluvium Deposits; Sil (SM); brown (7.5YR 5/4); very fine grained to ve angular to subangular; some granule to very lar subangular; some silt; little clay; some mica; dry cementation; iron oxide staining	ery coarse grained, ge pebbles, angular to		
192				Topock - Alluvium Deposits	SM					
193 										
194 195										
196							(195.0 - 201.0') Topock - Alluvium Deposits; Sa (ML); reddish brown / moderate brown(5YR 4/4/4/3); low plasticity; some granule to very large p subangular; some very fine to very coarse grain subangular; trace clay; some mica; wet; stiff; moderatation; iron oxide staining) and brown (10YR ebbles, angular to ed sand, angular to		(196.0 - 206.0') 20 gal of water
197 198 	120			Topock - Alluvium Deposits	ML		ocinentation, from oxide Stallfillg			used
199 	viations	s: USCS =	Unified Soil (Classificati	on Syste	em ft :	= feet, bgs = below ground surface,	amsl = above mes	an sea level. G	W =

- /-	AKC	ADIS	Design & Consultancy for natural and built assets		Bo	ring	Log		She	eet: 11 of	16
	Started:				Surface		•	Borin	a No.:	MW-Ld	
	-	ted: <u>11/27/</u>			Northing	- `	,				
•	g Co.:	Casca			Easting	•	,		PG&E		
_	g Metho				Total De	•	315 ft bgs	-		<u>roundwater R</u>	emedy Phas
	ig Type		sonic track mo	<u>ount</u>				Location:			
	Name:				-		Water: <u>76.27 ft bgs</u>			<u> Fopock, Need</u>	
_	g Asst:		ellmantel / J.	•	•	•		Project No	umber:]	RC000753.00	51
ogge		·	<u>Grane / G.Jef</u>		Samplin	-					
ditor:		Sean	McGrane		Convert	ea to v	Vell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
- 201_				Topock - Alluvium Deposits	ML						(196.0 - 206.0 20 gal of wate used
- 202_ - 203_ - 204_	120			Topock - Alluvium Deposits	SM		(201.0 - 205.0") Topock - Alluvium Deposits; Silt (SM); brown (10YR 5/3); very fine grained to ver angular to subround; some granule to very large subround; some silt; trace clay; some mica; dry to cementation; iron oxide staining	y coarse grain pebbles, angu	ed, lar to		
- 205_							(005 0, 000 51) Turki, Ali Ali Ali Ali Ali				
- 206_				Topock - Alluvium Deposits	ML		(205.0 - 206.5') Topock - Alluvium Deposits; Sar (ML); brown (10YR 5/3) and reddish brown / mod 4/4); no plasticity; some granule to very large pel to very coarse grained sand, angular to subangu	derate brown(5 obles; some ve lar; trace clay;	SYR ery fine little		(206.0 - 216.
- 207				Topock - Alluvium	GM		mica; wet; medium stiff; mottled; weak cementation (206.5 - 208.0') Topock - Alluvium Deposits; Silt (GM); dark grayish brown / dark yellowish brown to very large pebbles, angular to subangular; sor	y gravel with s (10YR 4/2); gr	and anules		40 gal of wat used
- 208_				Deposits	-		to very coarse grained sand, angular to subangumica; moist; moderate cementation; iron oxide st (208.0 - 215.0') Topock - Alluvium Deposits; Silt	lar; little clay; t aining y gravel with s	race		
209_ -		No sieve					(GM); dark grayish brown / dark yellowish brown to very large pebbles, angular to subangular; no fine to very coarse grained sand, angular to sub- little clay; trace mica; moist; moderate cementation	plasticity; some	e very silt;		
210_ - 211_		samples collected									
212_	133.2			Topock - Alluvium Deposits	GM						
- 213_											
- 214_											
- 215_ _				Topock - Alluvium	SM		(215.0 - 216.0') Topock - Alluvium Deposits; Silt (SM); brown (7.5YR 4/4) and reddish brown (5Y)				
216_				Deposits			grained to very coarse grained, angular to suban to very large pebbles, angular to subangular; sor	gular; some gr ne silt: trace m	anule	(040 01) D 'II I	(040.0.000
							moist; mottled; weak cementation; iron oxide stai (216.0 - 219.5') Topock - Alluvium Deposits; Silt	ning		(216.0') Driller's observed some	(216.0 - 226. 125 gal of wa
217_							(SM); reddish brown / moderate brown(5YR 4/4)	very fine grai	ned to	heaving when tagging depths	used
_				Topock -			very coarse grained, angular to subangular; som large pebbles, angular to subangular; some silt; l			during reaming with 10-inch	
218_	111.6			Alluvium Deposits	SM		oxide staining			casing	
_			MW-L-VAS-	,							
219_			218-223 (66 ppb)								
			10/21/2018 10:50				(040 5 000 00 7				
220					GM		(219.5 - 222.0') Topock - Alluvium Deposits; Silt				
							feet, bgs = below ground surface, a				
		<u> </u>					ne laboratory reporting limit, NR = No	Recovery	/, blue w	vater table syr	nbol
nroc	ents de	epin to wate	er measured	uuring the	second	VASI	ılerval				

Driller Name: Drilling Asst: Logger: Editor: Sean McGrane / G. Jeffers Sample ID Sieve Sample ID Sample ID Sieve Sample ID Sample ID Sieve ID Sieve Sample ID Sieve Sample ID Sieve Sample ID Sieve Sample ID Sieve ID Sieve Sample ID Sieve ID Sieve Sample ID Sieve ID	9/	ARC	ADIS	Design & Consultancy for natural and built assets		Bo	ring	Log		She	et: 12 of	16
Defect Complete 11/2/2018 Northing (NADRS) 20/2/2028 Client PGAE					(Surface	e Eleva	tion: <u>530.0 ft amsl</u>	Borin	a No.:	MW-Ld	
Topoling May Type: Topoling Agriculture								•				
Dilling Name Dilling Name Double Name Dilling Name Dilli		-				-	•	•				
Deline Name: Dan O'Maria Depth to First Water, 75.27 ft bgs. PCSE Topock, Needles, Californi, District Water, 75.27 ft bgs. Depth to First Water, 75.27 ft		-		•			•	_	-		<u>oundwater R</u>	emedy Phase
Drilling Assts: E. Huellmantel / J. Campbell Sampling Intervals Sean McGrane C. Judeffers Sampling Intervals Sean McGrane C. Judeffers Sean McGra												
Seam McGrane / G. Jeffers Seam McGrane / Converted to Well:						-		-			•	
Sean McGrane Converted to Well: Yes No Silver Service D Science D Science Service D Science Service D Science D Science Service D Science D S	_	•			-	-	-		Project N	umber: <u>F</u>	RC000753.00	51
Service Description Consideration Description Consideration Description Descript						•	•		-			
Additional Content Topock T	-ditor:	:	<u>Sean I</u>	<u>McGrane</u>	(Conver	ted to	Well: ⊠ Yes □ No				
MW-LVAS- 219-223	Depth (ft)	Recovery (in)			Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
10:50 10	_221_			218-223 (66 ppb)	Alluvium	GM		large pebbles, angular to subangular; some very grained sand, angular to subround; some silt; litt	fine to very co	arse		(220.0 - 250.0') 1100 gal of
111.6 223	_222_					 -		(222.0 - 227.5') Topock - Westbered Bedrock -	conglomerate:	Sandy		
Topick Weatherst Bestock Conglemental								silt with gravel (ML); reddish brown (5YR 5/4) wi	th gray / light o	live		
Topock - Weathered Bedrook - conglomerate Sandy and samples collected 231 120 Topock - Weathered Bedrook - conglomerate Sandy and samples collected 232 233 234 235 120	223_	111.6						gray(5Y 6/1); no plasticity; some granule to very angular to subangular; some very fine to very co	large pebbles, parse grained s	and,		
Topock - Weathered Bedrock - conglomerate Bed										stiff;		
Weathered Bedrock - Conglomerate Bedrock - Conglomerate Sandy of the grade of the g	224_											
Bedrock - conglomerate Mil.	_					l						
228 228 229 220 No sieve samples collected 231 120 235 236 236 236 237 238 23 238 239 240 No sieve samples collected 232 233 234 235 235 236 238 239 240 No sieve samples collected 232 233 234 235 235 236 237 237 238 237 238 238 239 240 No sieve samples collected 233 234 235 235 236 236 237 237 238 237 238 238 239 240 No sieve samples collected 234 235 235 236 236 236 236 236 236 236 236 236 236	225_				Bedrock -							
228. 228. 229. 300. No sieve samples collected 231. 120 Topock Weathered Bedrock - conglomerate: Sandy yes with grave (ML); modes brown (SYR 5/4); no plasticity; some years grained so to very large pebbles, angular to subangular; some very line to very conser grained son, angular to subangular; some very line to very large pebbles, angular to subangular; some very line to very large very line very large very line very large very line very large very large very line very larg	_				Congiomerate							
227_ 228_ 228_ 229_ 230_ No sieve samples collected 231_ 120 Topock-Weathered Bedrock - conglomerate; Sandy staining: for each staining increase in sand and silt Topock-Weathered Bedrock - conglomerate; Sandy staining increase in sand and silt (233.5'); trace clay; iron oxide staining: increase in sand and silt (233.5'); trace clay; iron oxide staining: increase in sand and silt (233.5'); trace clay; iron oxide staining: increase in sand and silt (236.0 - 240.0') Topock - Weathered Bedrock - conglomerate; Sandy silt with grave (ML); reddish brown (5YR 54); no plassicity; some granule to very large pebbles, angular to subangular; some very fine not expected by the plassicity; some granule to very large pebbles, angular to subangular; some very fine to very corare granule for subangular; some very fine to very corare granule for subangular; some very fine to very corare granule for subangular; some very fine to very corare granule for subangular; some very fine to very corare granule for subangular; some very fine to very corare granule for subangular; some very fine to very corare granule for subangular; some very fine to very corare granule for subangular some very fine to very corare granule for subangular some very fine to very corare granule for subangular some very fine to very corare granule for subangular some very fine to very corare granule for subangular some very fine to very corare granule for subangular some very fine to very corare granule for subangular some very fine to very corare granule for very large pebbles, angular to subangular some very fine to very subangular some very fine to ver	226_											(226 0 - 236 0'\
228. 228. 229. 230. No sieve samples collected 231. 120 232. Topock - Weathered Bedrock - conglomerate: Sandy with the received search of	_											40 gal of water
and the state of t	227_											usea
starting and the starti	_							(227.5. 226.0") Topock, Woodbored Rodrock	conglomorato:	Sandy		
No sieve samples collected 231	228_							silt with gravel (ML); reddish brown (5YR 5/4); ne	o plasticity; sor	ne Î		
Staining Staining Staining Staining Staining Staining (230') yellowish red (5YR 4/6); dry; very stiff; strong cementation; iron oxide staining (230') yellowish red (5YR 4/6); dry; very stiff; strong cementation; iron oxide staining (230') yellowish red (5YR 4/6); dry; very stiff; strong cementation; iron oxide staining (230') yellowish red (5YR 4/6); dry; very stiff; strong cementation; iron oxide staining (230') yellowish red (5YR 4/6); dry; very stiff; strong cementation; iron oxide staining (230') yellowish red (5YR 4/6); dry; very stiff; strong cementation; iron oxide staining (230') yellowish red (5YR 4/6); dry; very stiff; strong cementation; iron oxide staining (230') yellowish red (5YR 4/6); dry; very stiff; strong cementation; iron oxide staining (230') yellowish red (5YR 4/6); dry; very stiff; strong cementation; iron oxide staining (230') yellowish red (5YR 4/6); dry; very stiff; strong cementation; iron oxide staining (230') yellowish red (5YR 4/6); dry; very stiff; strong cementation; iron oxide staining (230') yellowish red (5YR 4/6); dry; very stiff; strong cementation; iron oxide staining (230') yellowish red (5YR 4/6); dry; very stiff; strong cementation; iron oxide staining (230') yellowish red (5YR 4/6); dry; very stiff; strong cementation; iron oxide staining (230') yellowish red (5YR 4/6); dry; very stiff; strong cementation; iron oxide staining (230') yellowish red (5YR 4/6); dry; very stiff; strong cementation; iron oxide staining (230') yellowish red (5YR 4/6); dry; very stiff; strong cementation; iron oxide staining (230') yellowish red (5YR 4/6); dry; very stiff; strong cementation; iron oxide staining (230') yellowish red (5YR 4/6); dry; very stiff; strong cementation; iron oxide staining (230') yellowish red (5YR 4/6); dry; dry staining (230') yellowish red (5YR 4/6); dry; dry staining (230') yellowish red (5YR 4/6); dry; dry staining (230') yellowish red (5YR 4/6); dry staining (230') yellowish red (5YR 4/6); dry staining	_							to very coarse grained sand, angular to subangu	ılar; little clay; l	ittle		
samples collected 231	229_								tion; iron oxide			
samples collected 231	_											
231	230_		samples				MM	(2201) valley sich ved (EVD 4/C); drug vers etiff, etr		an iran		
Topock - Weathered Bedrock - conglomerate ML (233.5'); trace clay; iron oxide staining; increase in sand and silt (233.5'); trace clay; iron oxide staining; increase in sand and silt (233.5'); trace clay; iron oxide staining; increase in sand and silt (236.0 - 240.0') Topock - Weathered Bedrock - conglomerate; Sandy silt with grave (ML); reddish brown (5YR 5/4); no plasticity; some grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; trace cobbles, subangular; some very fine to very coarse grained sand, angular to subangular; trace cobbles, subangular;	_		collected					oxide staining	ong cementalio	ori, ilori		
Weathered Bedrock - conglomerate 234 235 236 237 238 120 Weathered Bedrock - conglomerate (233.5'); trace clay; iron oxide staining; increase in sand and silt (233.5'); trace clay; iron oxide staining; increase in sand and silt (236.0 - 240.0') Topock - Weathered Bedrock - conglomerate; Sandy granule to very large pebbles, angular to subangular; some very fine to very carse grained sand, angular to subangular; trace cobbles, subangular; trace clay; little mica; moist to wet; weak cementation; iron oxide staining Weathered Bedrock - conglomerate; Sandy granule to very large pebbles, angular to subangular; some very fine to very carse grained sand, angular to subangular; trace cobbles, subangular; trace clay; little mica; moist to wet; weak cementation; iron oxide staining Weathered Bedrock - conglomerate; Sandy granule to very large pebbles, angular to subangular; some very fine to very carse grained sand, angular to subangular; trace cobbles, subangular; trace clay; little mica; moist to wet; weak cementation; iron oxide staining Weathered Bedrock - conglomerate; Sandy granule to very large pebbles, angular to subangular; some very fine to very large clay; little mica; moist to wet; weak cementation; iron oxide staining Weathered Bedrock - conglomerate; Sandy granule to very large pebbles, angular to subangular; some very fine to very large pebbles, angular to subangular; some very fine to very large pebbles, angular to subangular; some very fine to very large pebbles, angular to subangular; trace cobbles, some granule to very large pebbles, angular to subangular; trace cobbles, some granule to very large pebbles, angular to subangular; trace cobbles, some granule to very large pebbles, angular to subangular; trace cobbles, some granule to very large pebbles, angular to subangular; trace cobbles, some granule to very large pebbles, angular to subangular; trace cobbles, some granule to very large pebbles, angular to subangular; trace cobbles, some granule to very large pebbles, angular to subangula	231_	120										
Bedrock - conglomerate 234 235 236 237 237 238 120 Topock - Weathered Bedrock - conglomerate Topock - Weathered Bedrock - conglomerate Bedrock - conglomerate WL (233.5'); trace clay; iron oxide staining; increase in sand and silt (236.0 - 240.0') Topock - Weathered Bedrock - conglomerate; Sandy silt with gravel (ML); reddish brown (SYR 54); no plasticity; some graule to very locarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular sand	_											
233_ 234_ 235_ 236 237_ 237_ 238_ 239_ 240 bbreviations: USCS = Uniffied Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =	232_				Bedrock -							
234	_				congiomerate							
235	233_											
235	_							(022 51) to a classic order to the control of the co	:	.		
236 237 238 120 Topock - Weathered Bedrock - conglomerate; Sandy silt with gravel (ML); reddish brown (5YR 5/4); no plasticity; some granule to very large pebbles, angular to subangular; some very fine to very coarse grained sand, angular to subangular; trace cobbles, subangular; trace clay; little mica; moist to wet; weak cementation; iron oxide staining ML ML Weathered Bedrock - conglomerate; Sandy silt with gravel (ML); reddish brown (5YR 5/4); no plasticity; some granule to very large pebbles, angular to subangular; some very fine to very coarse grained sand, angular to subangular; trace cobbles, subangular; trace clay; little mica; moist to wet; weak cementation; iron oxide staining ML Weathered Bedrock - conglomerate; Sandy silt with gravel (ML); reddish brown (5YR 5/4); no plasticity; some granule to very large pebbles, angular to subangular; trace cobbles, subangular; trace clay; little mica; moist to wet; weak cementation; iron oxide staining NL Weathered Bedrock - conglomerate; Sandy silt with gravel (ML); reddish brown (5YR 5/4); no plasticity; some granule to very large pebbles, angular to subangular; trace cobbles, subangular; trace clay; little mica; moist to wet; weak cementation; iron oxide staining NL Weathered Bedrock - conglomerate; Sandy some granule to very large pebbles, angular to subangular; trace cobbles, oxide staining oxide staining NL Weathered Bedrock - conglomerate; Sandy some granule to very large pebbles, angular to subangular; trace cobbles, oxide staining oxide staining	234_							(233.5), trace day, from oxide staining, increase	in sand and si	IL		
236 237 238 120 Topock - Weathered Bedrock - conglomerate; Sandy silt with gravel (ML); reddish brown (5YR 5/4); no plasticity; some granule to very large pebbles, angular to subangular; some very fine to very coarse grained sand, angular to subangular; trace cobbles, subangular; trace clay; little mica; moist to wet; weak cementation; iron oxide staining ML ML Weathered Bedrock - conglomerate; Sandy silt with gravel (ML); reddish brown (5YR 5/4); no plasticity; some granule to very large pebbles, angular to subangular; some very fine to very coarse grained sand, angular to subangular; trace cobbles, subangular; trace clay; little mica; moist to wet; weak cementation; iron oxide staining ML Weathered Bedrock - conglomerate; Sandy silt with gravel (ML); reddish brown (5YR 5/4); no plasticity; some granule to very large pebbles, angular to subangular; trace cobbles, subangular; trace clay; little mica; moist to wet; weak cementation; iron oxide staining NL Weathered Bedrock - conglomerate; Sandy silt with gravel (ML); reddish brown (5YR 5/4); no plasticity; some granule to very large pebbles, angular to subangular; trace cobbles, subangular; trace clay; little mica; moist to wet; weak cementation; iron oxide staining NL Weathered Bedrock - conglomerate; Sandy some granule to very large pebbles, angular to subangular; trace cobbles, oxide staining oxide staining NL Weathered Bedrock - conglomerate; Sandy some granule to very large pebbles, angular to subangular; trace cobbles, oxide staining oxide staining	_											
237	235_											
237	_											
Topock - Weathered Bedrock - conglomerate 239 239 240 Websterviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =	236_							(226.0. 240.0)) Tanasis Marth and B. I.		Candi		
Topock - Weathered Bedrock - conglomerate Washered Bedrock - with a staining wide staining with the sta	_							silt with gravel (ML); reddish brown (5YR 5/4); ne	o plasticity; sor	ne Î		
Topock - Weathered Bedrock - conglomerate 239 240 Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =	_237											
Weathered Bedrock - conglomerate ML Wathered Bedrock - conglomerate with the state of the state	_				Topock -				veak cementati	on; iron		
239	238_	120			Weathered	ML		J State Stanning				
240 240	_											
bbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =	239_											
bbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =												
, , ,												
								<u> </u>				

represents depth to water measured during the second VAS interval

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet: 13 of	16
Date S	Started	10/03/2	2018		Surface	Eleva	tion: 530.0 ft amsl	Boring	No.: MW-Ld	
	-	ted: <u>11/27/</u> 2			Northing		•		<u> </u>	
Drilling		<u>Casca</u>			Easting	(NAD	33): <u>7615264.9</u>		PG&E	
Drilling	g Meth	od: <u>Sonic I</u>	Drilling		Total D	•	315 ft bgs	Project: <u>F</u>	Final Groundwater Re	<u>emedy Phase</u>
Drill R			onic track mo					· -		
Driller					-		Water: <u>76.27 ft bgs</u>		PG&E Topock, Need	
Drilling			ellmantel / J.	-	-	-		Project Nu	mber: <u>RC000753.00</u>	51
Logge			<u> Grane / G.Jef</u>		Samplin	-				
Editor		Sean N	<u> McGrane</u>	_	Convert	ed to \	Vell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
241 242 243	120			Topock - Weathered Bedrock - conglomerate	SM		(240.0 - 244.0') Topock - Weathered Bedrock - os and with gravel (SM); reddish brown / moderate very fine grained to very coarse grained, angular granule to very large pebbles, angular to subrout cobbles, subangular; little mica; wet; iron oxide s	e brown(5YR 4/4 to subangular; nd; some silt; tra	some	(220.0 - 250.0') 1100 gal of water used (226.1 - 246.0') 1100 gal of water used (226.1 - 246.0') 1100 gal of water used
244							(244.0 - 254.0') Topock - Weathered Bedrock - silt with gravel (ML); reddish brown / moderate biplasticity; some granule to very large pebbles, ar	rown(5YR 4/4); ı	no	
_245							some very fine to very coarse grained sand, ang little mica; moist to wet; medium stiff to stiff; iron	ular to subangul		
										(246.0 - 256.0') 40 gal of water used
 248										
249				Topock - Weathered Bedrock - conglomerate	ML					
250 _251_		No sieve samples collected								(250.0 - 256.0') 40 gal of water used
	114									
254					<u> </u>		(254.0 - 258.0') Topock - Weathered Bedrock -			
255							silt with gravel (ML); reddish brown / moderate by plasticity; some granule to very large pebbles, ar some very fine to very coarse grained sand, and trace cobbles, angular; trace clay; little mica; moi	ngular to subang ular to subangul	jular; lar;	
256_				Topock - Weathered	ML		stiff; weak cementation; iron oxide staining			(056.0 000.0"
-				Bedrock - conglomerate						(256.0 - 266.0') 140 gal of water
257										used
ļ -										
258	108				1		(258.0 - 262.5') Topock - Weathered Bedrock - 0	conglomerate: 9	andy	
 259				Topock - Weathered Bedrock - conglomerate	ML		silt with gravel (ML); reddish brown / moderate b medium plasticity; some granule to very large pe subangular; some very fine to very coarse grains subangular; little clay; little mica; moist; medium cementation; iron oxide staining	rown(5YR 4/4); bbles, angular to ed sand, angular	or to	
260					<u> </u>		,			
Abbre	viation	s: USCS = I	Unified Soil (Classificati	on Syste	em, ft =	feet, bgs = below ground surface, a	amsl = abov	e mean sea level, G	W =

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log				She	et: 14 of	16
	Started			(Surface	Eleva	tion: <u>5</u>	30.0 ft an	nsl	Borin	a No.:	MW-Ld	
l l		ted: 11/27/2			Northin		,	102858.8		_			
Drilling	-	<u>Cascac</u>			Easting			<u>615264.9</u>		_ Client:	PG&E		
Drilling	-		•			•		15 ft bgs		•		oundwater Re	medy Phase
	ig Type		onic track mo					-12 inche		_ Location:		Tamaala Naadi	aa Califamia
Drilling	Name:		llmantel / J. (-			6.27 ft bg	s) ft Core Barrel	- Project N		opock, Needl	
Logge	•		Grane / G.Jef	-	Samplir	-		Continuous		_ i iojectiv	umber. <u>I</u>	<u>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</u>	<i>)</i>
Editor			ИсGrane		Convert	-		Yes [-			
	ı - ı	<u> </u>		,									
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS			Soil Description			Drilling Notes	Drilling Fluid
				Topock - Weathered Bedrock -	ML		(261'); dry	to moist; mo	derate cementation			(261.0 - 266.0')	(256.0 - 266.0') 140 gal of water used
262				conglomerate								Sample collected with a disposable bailer	
263	108		MW-L-VAS- 261-266 (<0.17 U ppb) 10/22/2018				silt with graphs plasticity; some very	avel (ML); da some granule fine to very o	 K - Weathered Bedrock - rk reddish brown (2.5YR) to very large pebbles, a coarse grained sand, and t; medium stiff; iron oxide 	3/4); medium ngular to suba gular to subang	ngular:		
264			10/22/2018 14:50				indio oldy, i	nao mioa, wo	i, mediament, on order	, otali ili g			
265													
266													(266.0 - 267.0')
									•				30 gal of water used (267.0 - 276.0')
									granule to very large peb				40 gal of water used
							subangula subangula	r; little very fi r; moist; stiff;	ne to very coarse graine weak cementation	d sand, angula	ır to		
270_		No sieve samples collected											
271_	138			Topock - Weathered Bedrock -	ML								
				conglomerate									
274_													
275_													
276_													
277													
	120												
280 Abbre	viation	s: 11808 - 1	Inified Soil (lassificatio	n Svet	em ft	= feet bo	ıs = helov	/ ground surface,	amel = aho	We mean	sea level Cl	N =
:[. JJJJ - (J 34 3011 C		- you	, IL -	.55., 59	, , , , , , , , ,	. ₃ . 54.14 5411455, 1	abc	o moul	. 554 15461, 01	

9/.	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g	S	heet: 15 of	16
Drilling Drilling Drill Ri	Comple g Co.: g Metho ig Type	ted: 11/27/2 Cascadod: Sonic I e: Terraso	2018 de Drilling onic track mo		Northing Easting Total Do Borehol	e Diameter:	530.0 ft amsl 2102858.8 7615264.9 315 ft bgs 4-12 inches	_ Location: <u>1</u>	: Groundwater Re	<u> </u>
Driller Drilling Logge Editor:	g Asst: r:	E. Hue S. McG	iwara Elmantel / J. E Grane / G.Jef McGrane	Campbell S ffers S	Samplir Samplir		r: 76.27 ft bgs 4 inch x 10 ft Core Barrel Continuous ─────────────────────────────────		: Topock, Needl : RC000753.00	
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	Class	Soil Description		Drilling Notes	Drilling Fluid
281 282 283 284 285	120			Topock - Weathered Bedrock - conglomerate	ML	Grave 4/4); r subar subar	0 - 299.0') Topock - Weathered Bedrock - elly silt with sand (ML); reddish brown / mo modium plasticity; some granule to very langular; little very fine to very coarse graine ngular; little silt; little clay; trace mica; moisintation	oderate brown(5YR rge pebbles, angular to ed sand, angular to		
	120	No sieve samples collected		Topock - Weathered Bedrock - conglomerate	ML				(296.0') Lost core down hole	
	36				NR		0 - 306.0') (NR); No Recovery, sample fell		(299.0') Attempted to collect GW	

9/	١RC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	et: 16 of	16
	Started:					Elevation:	530.0 ft amsl	Borin	a No.:	MW-Ld	
		ted: <u>11/27/</u>				g (NAD83):	2102858.8				
Drilling	-	<u>Casca</u>			_	(NAD83):	<u>7615264.9</u>		PG&E		. 5
_	Metho		-			•	315 ft bgs	•		oundwater Re	medy Phase
	ig Type Name:		onic track mo				4-12 inches : 76.27 ft bgs	Location:		opock, Needle	e California
Drilling			ellmantel / J.		•		4 inch x 10 ft Core Barrel	— Project N		•	
Logge			Grane / G.Jet	-	-	ng Interval:	Continuous	1 10,00011	umber. <u>I</u>	10000700.000	/ 1
Editor:			<u> McGrane</u>		-	ted to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
	Ϋ́			<u>ن</u> 5	-					sample but	
-						\ /				formation was	
301						\ /				and produced no water.	
-			no sample (Interval did			\ /				water.	
302			not produce) 10/25/2018			$ \setminus / $					
-			09:48			\					
303	36				NR					(303.0 - 306.0')	
						/\				6-inch casing got stuck and	
£ 504_						/ \				approximately 3 ft broke off down	
305_						/ \				hole and could not be retrived	
						/ \				(304.0') Rough Drilling	
306_				L	L	L_L_				(305.0') Drill rods chattering	
Ž _						(306.0 silt (ML	- 311.0') Topock - Weathered Bedro .); dark reddish brown(2.5YR 3/3); me	ck - conglomerate; edium plasticitv: so	Sandy me fine	(306.0 - 308.0') Drilled extra two	
307	18					to med	ium grained sand, subangular to sub ebbles, angular to subround; trace co	round; trace granul	e to	feet to collect lost core, core	
E	10	No sieve samples				mica; c	ry; very stiff; strong cementation	saroo gramoa sana	, 1100	sample was	
308_		collected		Topode						saturated with drilling/formation	
<u></u>				Topock - Weathered	ML					water above 307 ft. bgs	
309_				Bedrock - conglomerate							
¥											
<u>_</u> 310											
<u>_311_</u>						(311.0	- 315.0') Topock - Bedrock - Metadic	orite: dry: partially		(311.0') Rough	
	84					weathe	ered metadiorite	into, ary, partially		drilling	
312_											
= -				Topock -							
313				Bedrock - Metadiorite							
5				stadionte						(313.5') Core	
<u>_</u> 314										barrel stuck down hole,	
315										pulled both core barrel and 6"	
313				1	-	K///XI	End of Boring at 315.0	bgs.		casing	
J. C.											
GRAN											
318_											
190											
5 _319_											
<u></u>											
320		11000		N 161 C							A /
							bgs = below ground surface				
n —			•			VAS interval	oratory reporting limit, NR =	- INO Kecovery	y, blue W	ater table sym	IDOI
3 li ehtes	CIIIS U	אווו נט Wale	i incasuled	auring the	accollid	v 40 iiilei val					

Date Started: 12/03/2018 Surface Elevation: 529.6 ft amsl Borin	ua No .		
		: <u>MW-Ls</u>	
Date Completed: 12/15/2018 Northing (NAD83): 2102862.2			
Drilling Co.: <u>Cascade</u> Easting (NAD83): <u>7615260.4</u> Client:	PG&E		
		roundwater R	<u>emedy Phase</u>
Drill Rig Type: <u>Terrasonic track mount</u> Borehole Diameter: <u>10-12 inches</u> Location:			
Driller Name: Dan O'Mara Depth to First Water: 74.65 ft bgs		-	<u>les, California</u>
	lumber:]	RC000753.00	51
Logger: Michael Andrews Sampling Interval: Screen intervals			
Editor: Sean McGrane Converted to Well: X Yes No			
Sieve Sample ID Groundwater Sample ID Ground		Drilling Notes	Drilling Fluid
	MW-Ld	(0.0 - 18.0') Drilling rate 51.34 minutes, drill rods chattering 1 to 12 ft. bgs, rough drilling 12 to 18 ft. bgs (6.0') Rough drilling due to 20-inch boulder (8.0') Drilled slow due to 20-inch boulder (8.0') Drilled slow due to 20-inch boulder	

9 A	RC	ADIS	Design & Consultancy for natural and built assets		Во	ring L	_og		She	eet: 2 of	10
Date Sta Date Co Drilling M Drill Rig Driller M Drilling A Logger: Editor:	mplete Co.: Method Type: ame:	Terrasc Dan O'l E. Huel Michae	2018 de Orilling onic track mo	ount Wolfe	Northing Easting Total De Borehol Depth to Samplir Samplir	le Diamet	3): 2102862.2): 7615260.4 184 ft bgs ter: 10-12 inches ater: 74.65 ft bgs d: 4 inch x 10 ft Core Barrel al: Screen intervals	_ Client: _ Project: _ Location: _	PG&E Final G 1 PG&E	roundwater Re Topock, Needl RC000753.00	es, California
Depth (ft)	Kecovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
21		No sieve samples collected	Jniffed Soil C		on Syste	em. ft = fe	eet, bgs = below ground surface,	amsl = abo	ove mea	Formation collapsing (18.0 - 26.0') Drill time 21.1 minutes, voids forming, rough drilling, 6-inch to 20-inch boulder (24.0') Heavy rig chatter (26.0 - 36.0') Drill time 10.35 minutes, rough drilling 31 to 36 ft bgs (28.0') Voids forming 38 to 40 ft. bgs and 46 to 56 ft. bgs (37.0') Rough drilling	(0.0 - 184.0') No water used

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g			She	eet: 3 of	10
Date S	Started	: <u>12/03/2</u>	2018		Surface	Elevation:	529.6 ft ar	nsl	Borin	na No :	MW-Ls	
	-	eted: <u>12/15/2</u>				g (NAD83):	2102862.2		_		MITT EG	
Drilling	-	Cascac				(NAD83):	<u>7615260.4</u>		_ Client:	PG&E		
Drilling	-		-		Total De	-	184 ft bgs		_ Project:		roundwater Re	emedy Phase
Drill R			onic track mo	ount		e Diameter:			_ Location			0 1:6 :
Driller			<u>lMara</u> Ilmantel / T. '	Molfo	-		r: <u>74.65 ft bo</u>		- Droinet N		Topock, Needl	
Drilling	-		el Andrews		-	ng Method: ng Interval:	Screen int) ft Core Barrel	_ Project r	number: j	RC000753.00:	01
Logge Editor			Andrews AcGrane			ted to Well:	× Yes [_			
Luitor		COUNTY			1	1 1						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS		Soil Description			Drilling Notes	Drilling Fluid
 41 42 43									O		(36.0 - 56.0') Drill time 73.45 minutes, rough drilling, voids forming 38 to 40 ft. bgs and 46 to 56 ft. bgs	(0.0 - 184.0') No water used
44_											drilling	
45												
46												
47												
48												
49					•							
50_		No sieve										
		samples collected										
51												
52												
53												
54												
55												
56											(56.0 - 66.0')	
F7 -											Drill time 17.05 minutes, voids	
57											forming, rough drilling 61 to 65	
58											ft. bgs	
60												
Abbre	viation	s: USCS = l	Jnified Soil C	Classificati	ion Syste	em. ft = feet	. bas = belov	v ground surface,	amsl = ab	ove mea	n sea level. G	W =

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Bo	ring	Log		She	et: 4 of	10
Date S					Surface		· · · · · · · · · · · · · · · · · · ·	Borin	a No.:	MW-Ls	
	•	ted: <u>12/15/</u>			Northing		•				
Drilling		Casca			Easting	•	•	•	PG&E		
Drilling			•			•		-		<u>oundwater Re</u>	emedy Phase
Drill Ri			sonic track me				eter: 10-12 inches				
Driller I)'Mara		=		Water: <u>74.65 ft bgs</u>			opock, Needl	
Drilling			<u>ellmantel / T.</u>		Samplin	-		Project N	umber: <u>[</u>	RC000753.005	51
Logger			el Andrews		Samplin	-					
Editor:		<u>Sean</u>	<u>McGrane</u>		Convert	ed to V	Vell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
61 62 63 63 64 65 66										(56.0 - 66.0') Drill time 17.05 minutes, voids forming, rough drilling 61 to 65 ft. bgs (60.0') Heavy rig chatter	(0.0 - 184.0') No water used
67 68 68 69	72			Topock - Fluvial Deposits	SM		(66.0 - 68.0') Topock - Fluvial Deposits; Sitty sar brown (10YR 4/3); very fine grained to coarse gr subround; some granule to large pebbles, angula silt, little clay; trace cobbles, angular; trace mica; (67') yellowish brown / moderate yellowish brown granules to very large pebbles, angular to round; to round; trace clay; little mica; dry to moist; no o (68.0 - 72.0') Topock - Fluvial Deposits; Well gragravel (SW-SM); dark yellowish brown (10YR 40 very coarse grained, angular to subround; some pebble, angular to subangular; some cobbles, and	rained, subangular to subangular to subangular to moist; rn(10YR 5/4); little cobbles, dor aded sand with (4); fine graine granule to largular to rouncingular	ular to ar; little no odor ttle angular silt and d to ge ; little	(66.0 - 70.0') Voids forming	
70 71 72		No sieve samples collected		Topock - Fluvial Deposits	SW-SM		silt; trace boulders, subangular to well-rounded; I (70.5') brown (10YR 4/3); little granule to large pround; trace cobbles, angular to round (71'); wet	ebble, angular	to		
73 74 75	48			Topock - Fluvial Deposits	SM		(72.0 - 78.5') Topock - Fluvial Deposits; Silty sar brown (10YR 4/3); very fine grained to very coar subangular to round; some granule to very large round; some silt; little cobbles, angular to subang mica; dry to wet; dry to moist to wet with depth (74') angular to round; trace clay	se grained, pebble, angul	ar to	(72.0 - 76.0') Rough drilling, drill rods chattering, drill time 24.30 minutes	
76 77 78	63		MW-L-VAS- 76-81 (31 ppb) 10/6/2018 16:34				(76') dark grayish brown / dark yellowish brown(granule to very large pebble, angular to round; so cobbles, subangular to subround; trace clay; trace increase in granules and very large pebbles (77'); 6" lens with increase in fines	ome silt; trace ce mica; wet; n	o odor;	(76.0') Approximate depth to water table (76.1 - 86.0') Drill time 24.45, 76.5 to 81 ft. bgs drill rods chattering, 78 to	
79 80 Abbrev	viations	s: USCS =		Topock - Fluvial Deposits Classificati	GW-GM		(78.5 - 81.3') Topock - Fluvial Deposits; Well gra and sand (GW-GM); dark grayish brown / dark y 4/2); granules to very large pebbles, angular to ru angular to round; little very fine to medium graine to round; trace boulders, boulder; trace silt; trace feet, bgs = below ground surface, a	vellowish brown ound; little cob ed sand, subar e clay; wet; no	n(10YR bles, ngular odor	84 ft hard/rough drilling	W =

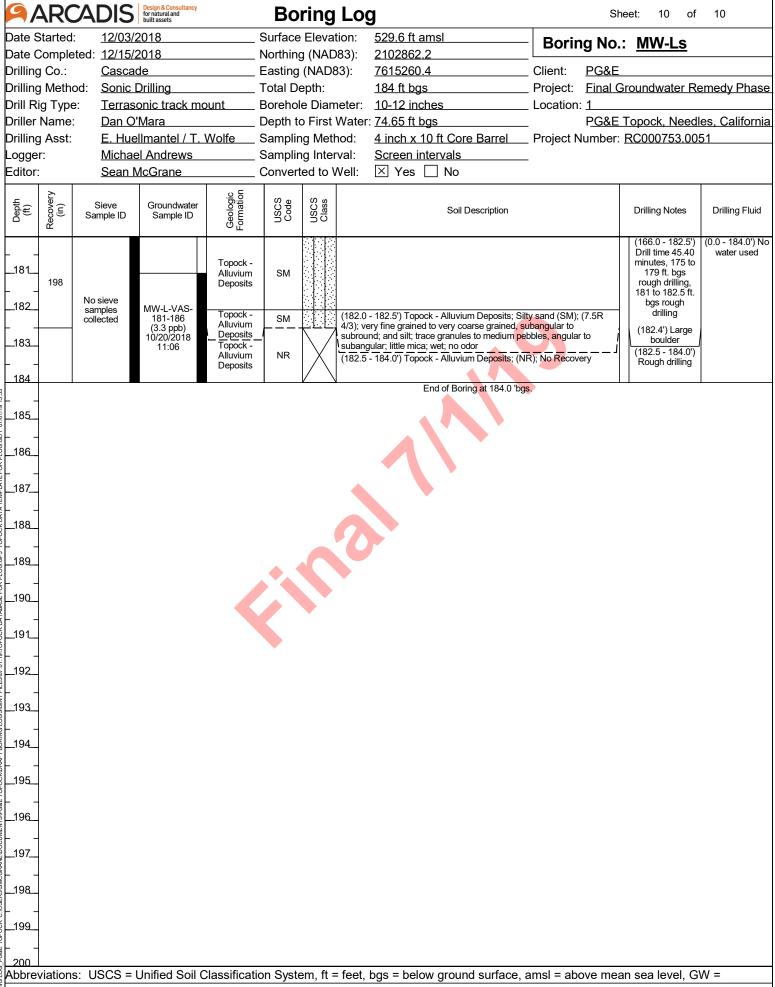
9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 5 of	10
Date S					Surface			Borin	ıa No.:	MW-Ls	
		ted: <u>12/15/</u>			Northing		· ·				
Drilling		Casca			Easting	•		Client:	PG&E		
Drilling			<u>Drilling</u>		Total De	-	184 ft bgs	Project:		<u>roundwater Re</u>	<u>emedy Phase</u>
Drill Ri			onic track mo		Borehol			Location:			0 "
Driller					-		Vater: 74.65 ft bgs	Designet N		Topock, Needl	
Drilling			ellmantel / T. \ el Andrews		Samplin Samplin	-		Projectiv	iumber: <u>i</u>	3C000753.00	01
Logger Editor:			McGrane		Convert	-					
Luitoi.		<u>ocan n</u>	T		T		TCI. E TCS E TC				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
 81				Topock - Fluvial Deposits	GW-GM			·. – – -		(76.1 - 86.0') Drill time 24.45, 76.5 to 81 ft. bgs drill rods chattering, 78 to	(0.0 - 184.0') No water used
 82 							(81.3 - 86.0') Topock - Alluvium Deposits; (NR); boulder at 81.25 jammed up core barrel	No recoverey	/,	84 ft hard/rough drilling	
83 84	63			Topock - Alluvium Deposits	NR	$ \bigvee $					
 85											
86							(86.0 - 94.5') Topock - Alluvium Deposits; Sandy (7.5R 4/3); very fine grained to very coarse grain round; some silt; little granule to very large pebbl	ned, subangul	vel (SM); ar to	(86.0 - 96.0') Soft drilling, drill time 21.30	
87 88 							sub <mark>ang</mark> ular; trace cla <mark>y,</mark> wet	, 0		minutes, core very wet	
89 90 		No sieve samples collected		Topock - Alluvium Deposits	SM						
91 92	108			Зорози							
93											
94							(94.5 - 96.0') Topock - Alluvium Deposits; Silty s	sand (SM); bro	own		
95 96				Topock - Alluvium Deposits	SM		(7.5YR 4/3); very fine grained to coarse grained, and silt; little clay; trace granules to large pebble round; trace cobbles, angular to subangular; little	s, subangular e mica; wet; no	to o odor	(00.0, 400.0)	
 97 							(96.0 - 156.0') (NR); iron oxide staining; No reco collected see Boring Log MW-Ld for lithology	overy core not		(96.0 - 106.0') Drill time 15.01 minutes, drill rods chattering 96 to 101 ft. bgs, 102 to 106 soft	
98 99					NR					driling	
100 Abbrev	/iation:	s: USCS =	Unified Soil C	l Classificati	on Svste	em, ft =	feet, bgs = below ground surface, a	amsl = abo	ove mear	n sea level. G	W =

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	og		Sh	eet: 6 of	10
Date S					Surface	Elevation:	529.6 ft amsl	Borir	na No.:	: MW-Ls	
		ted: <u>12/15/2</u>				g (NAD83):	2102862.2	_		<u> </u>	
Drilling		<u>Cascac</u>				(NAD83):	7615260.4	_ Client:	PG&E		
Drilling			-		Total D	-	184 ft bgs	_ Project:		roundwater Re	emedy Phase
Drill Ri			onic track mo	<u>ount</u>		e Diameter		_ Location			0 111 1
Driller I				\\/_If_	-		er: 74.65 ft bgs	 		Topock, Needl	
Drilling			ellmantel / T. ' el Andrews	<u>vvoite</u>	-	ng Method: ng Interval:	4 inch x 10 ft Core Barrel Screen intervals	_ Project N	number:	RC000753.00	01
Logger Editor:			McGrane		-	ted to Well:		_			
Laitor.					T	T T					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
101 102										(96.0 - 106.0') Drill time 15.01 minutes, drill rods chattering 96 to 101 ft. bgs, 102 to 106 soft driling	(0.0 - 184.0') No water used
 103											
104							1/1				
 105								•			
106										(106.0 - 126.0')	
107										Drill time 20.15 minutes, soft drilling	
108			MW-L-VAS-								
			106-111 (0.84 ppb) 10/9/2018								
		No sieve	11:46		MD						
		samples collected			NR						
112											
113											
114											
115											
116											
117											
118											
119											
120 Abbrev	/iations	s: USCS = I	Unified Soil (L Classificat	ion Syste	em, ft = feet	t, bgs = below ground surface,	amsl = ab	ove mea	ın sea level, G	W =

9/	ARC	ADIS	for natural and built assets		Во	ring Lo	g		She	et: 7 of	10
Date S	Started	: <u>12/03/2</u>	2018		Surface	Elevation:	529.6 ft amsl	Borin	ua No .	MW-Ls	
Date 0	Comple	eted: <u>12/15/2</u>	2018		Northin	g (NAD83):	2102862.2		19 110	IVIVV-L3	
Drilling	g Co.:	Cascac	de		Easting	(NAD83):	7615260.4	_ Client:	PG&E		
Drilling	g Meth	od: <u>Sonic [</u>	Drilling		Total D	epth:	184 ft bgs	_ Project:	Final Gr	<u>oundwater Re</u>	emedy Phase
Drill R			onic track mo	ount		e Diameter:	10-12 inches	_ Location			
Driller					-		: 74.65 ft bgs	_		-	<u>es, California</u>
Drilling	-		<u>llmantel / T.</u>	Wolfe			4 inch x 10 ft Core Barrel	_ Project N	Number: <u>F</u>	RC000753.00	51
Logge			l Andrews			ng Interval:	Screen intervals	_			
Editor	:	<u>Sean N</u>	<u>//cGrane</u>		Conver	ted to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
121										(106.0 - 126.0') Drill time 20.15 minutes, soft drilling	(0.0 - 184.0') No water used
122											
123								9			
124											
125											
126										(126.0 - 146.0')	
										Drill time 26.30, soft drilling	
127										Soft drilling	
128											
-											
129											
120		No sieve									
130	•	samples collected			NR						
131											
132						1 // 1					
133											
						1111					
134											
135											
<u> </u>											
136											
-	-										
137	-										
	-										
138											
-	-										
139_											
140	1										
	viation	s: USCS = l	Jnified Soil C	lassificat	ion Syste	em, ft = feet,	bgs = below ground surface,	amsl = ab	ove mear	sea level. G	W =

9/	4R (ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	og		She	eet: 8 of	10
	Started					Elevation:	529.6 ft amsl	Borir	ng No.:	MW-Ls	
	-	eted: <u>12/15/</u> 2				g (NAD83):	2102862.2		- -		
Drilling	-	<u>Casca</u>			_	(NAD83):	7615260.4	_ Client:	PG&E		- Dhana
Drilling Drill R	-		-		Total D	epun: le Diameter	184 ft bgs : 10-12 inches	<pre>_ Project:</pre> <pre>_ Location</pre>		roundwater Re	emedy Phase
Driller			onic track mo	Juni			er: <u>74.65 ft bgs</u>	_ Location		Topock, Needl	es California
	g Asst:		ellmantel / T.	Wolfe	-	ng Method:	4 inch x 10 ft Core Barrel	– Project N		•	
Logge	-		el Andrews	vvolic	-	ng Interval:	Screen intervals	_ 1 10,00011	turriber.	1.0000700.000	<i>3</i> 1
Editor			<u> </u>		•	ted to Well:		_			
		`		0 5	1						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
141	-									(126.0 - 146.0') Drill time 26.30, soft drilling	(0.0 - 184.0') No water used
142	-										
143			MW-L-VAS- 141-146 (<0.033 U								
144	-		ppb) 10/10/2018 14:58								
145	-										
146										(146.0 - 156.0') Drill rods	
147	-									chattering, drill time 15.05 minutes, drill time with	
148					NR	2				10-casing 30.20 minutes	
149					•						
150	-	No sieve samples collected									
151											
152											
153	-										
154	-										
155	-										
156				L	L	h 1450	0 460 0\\ Topcok Allundura Danas'' C	iltry ground : : #4		(156.0 166.0)	
	-					[(GM)	0 - 160.0') Topock - Alluvium Deposits; S ; brown (10YR 4/3); granules to very large	e pebbles, angu	ular to	(156.0 - 166.0') Soft driling, drill	
157	-					subro	ngular; some very fine to very coarse grain ound; some silt; trace cobbles, angular to s	ned sand, angu subangular; tra	ular to ce clay;	time 25.31 minutes, lost	
158	117			Topock - Alluvium Deposits	GM	wet				core barrel down hole	
	-			Dehosits		(159); little very fine to very coarse grained sar	nd, subangular	to		
160 Abbre	viation	s: USCS =	Unified Soil (Classificati	ion Syste	subro	ound; wet; weak cementation; increase gra	anules to very I	arge	n sea level G	M =
Lunie	viatiON	3. 0303 -	Jillieu 3011 C	االاحتادة	on Syste		, bys - below ground surface,	amsi – abi	ove mea	ii sca icvei, G	v v —

	ADIS	for natural and built assets		BO	ring L	.og		She	et: 9 of	10
ate Started:	12/03/	2018			e Elevatio	n: <u>529.6 ft amsl</u>	Borin	a No ·	MW-Ls	
ate Complete					g (NAD83	•			<u> </u>	
rilling Co.:	<u>Casca</u>			-	(NAD83)			PG&E		
rilling Method		<u>Drilling</u>		Total D	•	184 ft bgs	•		oundwater Re	emedy Pha
rill Rig Type:		sonic track mo			le Diamet	-	_ Location:		'amaala N! !!	O-"
riller Name:	Dan O					ater: 74.65 ft bgs	— Droiget N		opock, Needle	
rilling Asst: ogger:		ellmantel / T. ' el Andrews	vvolle	•	ng Methoo ng Interva		_ Project N	umber: <u>F</u>	<u> </u>) I
ditor:		McGrane		•	ted to We		_			
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Flu
			Topock - Alluvium Deposits	SM	(S) gr s.c	60.0 - 163.5') Topock - Alluvium Deposits; S M); reddish brown (5YR 4/3); very fine grain ained, angular to round; little granule to large bround; little silt; little clay; little mica; wet; no mentation 63.5 - 167.5') Topock - Alluvium Deposits; S M); dark grayish brown / dark yellowish brow large pebbles, angular to subangular; some ained sand, angular to subangular; little silt; l	ed to very coars pebble, angular odor; weak ilty gravel with s vn(10YR 4/2); gr very fine to very	and ranules	(156.0 - 166.0') Soft driling, drill time 25.31 minutes, lost core barrel down hole	(0.0 - 184.0') water user
165			Topock - Alluvium Deposits	GM		67,5 - 170,0') Topock - Alluvium Deposits; S		avel	(166.0 - 182.5') Drill time 45.40 minutes, 175 to 179 ft. bgs rough drilling, 181 to 182.5 ft.	
168 169 170	No sieve samples collected		Topock - Alluvium Deposits	SM	ar to	M); brown (10YR 4/3); very fine grained to v gular to subrounded; some granules to very subangular; some silt; little clay; trace mica;	large pebbles, a wet; no odor	angular	bgs rough drilling	
171_ 172_ 173_ ₁₉₈	Collected		Topock - Alluvium	GM	sı sı	M); brown (10YR 5/3); granules to very large bangular; some very fine to very coarse grai bangular; little silt; trace cobbles; trace bould ca; wet; strong cementation	e pebbles, angul ned sand, angul	lar to lar to		
174_ - 175_ - 176_			Deposits			74') dark grayish brown / dark yellowish brow le clay; wet; strong cementation; decrease in bbles and sand	granules to ver	y large		
_ 177 -						76') brown (7.5YR 5/3); trace clay; little mica				
178_ - 179_			Topock - Alluvium Deposits	SM	(S	M); brown (7.5YR 5/3); very fine grained to v gular; some small to very large pebbles, ang me silt; little clay; little mica; wet; moderate c	very coarse grain ular to subangul	ned,		



ARCAD	Design & Consultancy for natural and built assets		Well Constr	uction Log	S	heet: 1 of 7
	3/26/2019			570.1 ft amsl	Well ID: N	1W-N-129
Date Completed: <u>04/</u>				N/A		
	ascade		•	569.9 ft amsl	_ Client: <u>PG&E</u>	
-	onic Drilling		O (,	2102321.2	•	GW Remedy Phase I
	an O'Mara		· ,	<u>7615448.1</u>	Location: <u>PG&E</u>	Topock, Needles, California
_	Huellmantel / J. Pa			6-12 inches		D0000750 0054
	Maurer/G.Willford			115.88 ft bgs	_ Project Number	: RC000753.0051
	ean McGrane		velopment End Date:		_	
Total Depth: 133	33 ft bgs	vve	ell Completion:			
Groundwater Sample ID	Geologic Formation USCS Code	USCS		nstruction	Calculated Material Volumes	Material Volumes Installed
 1 2		PV	0.0 - 1.0') Concrete Pad (0.5 - 113.8') 2" /C Sch 80 Casing			(0.0 - 1.0') 8 bags Note: 2.5 x 2.5 ft concrete pad with 18" dia lockable vault, King Kon-Crete 4000 PSI
_		(2	2.0 - 3.0') Portland Cement 5% Bentonite	(0.0 - 5.0') 12" Borehole	(2.0 - 3.0') 5.5 gallons	(2.0 - 3.0') 3 gallons (-45%) Note: Topped off with Type I, II, and V and Hydrogel on 4/1/19.
3	NR	(3.	Bentonite 3.0 - 33.0') Portland Cement 5% Bentonite (17.5 - 18.5') Centralizer	(5.0 - 133.0') 6" Borehole	(3.0 - 33.0') 43.1 gallons	(3.0 - 33.0') 70 gallons (62%) Note: Portland cement type I, II, and V and Hydrogel - Wyoming bentonite.

Date Started:	9/-	4KCA	DIS for natur built ass	al and ets		Well Const	ruction Log		Sheet: 2 of 7			
Date Completed: 04/12/2019 Shatlow Well Elevation: Machining Co.								Well ID:	MW-N-129			
Dalling Method: Sonic Dilling		-										
Diller Name: Dan QMara Easting (NAD83): 76.1548.1 Location: PG&E Topock. Needles. California Diller Name: California Diller Diller Diller Diller Name: California Diller Dille												
Deling Asst: E. Huellmantel J.J. Paches	_		_			• ,		•				
Deptile Dep				صــــــــــــــــــــــــــــــــــــ	chaca			Location: PG&	E ropock, Needles, California			
Editor: Sean McGrane	_				acricco_			Project Numbe	er: RC000753 0051			
Total Depth: 133 ft bgs												
1					•							
1	_ [io P	1								
PVC Sch 80 Gesing PVC Sch 80 Gesing 22	Depth (ft)		Geolog Formati	epoo Code	USCS	Well C	onstruction					
	22			NR		(3.0 - 33.0') Portland Cement 5%			Note: Portland cement type I, II, and V and Hydrogel - Wyoming			
1	34 35 36 37 38								Note: Puregold & Enviro-Plug			

Date Started: Date Completed Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger: Editor: Total Depth:	Cascade Sonic Drilling Dan O'Mara E. Huellmante D. Maurer/G.' Sean McGrar 133 ft bgs	el / J. Pa Willford		Surface Elevation: Shallow Well Elevation: Deep Well Elevation: Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Date: Well Completion:	570.1 ft amsl N/A 569.9 ft amsl 2102321.2 7615448.1 6-12 inches 115.88 ft bgs 4/3/2019	Client: PG&I Project: Final Location: PG&I	GW Remedy Phase I E Topock, Needles, California	
Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger: Editor:	Cascade Sonic Drilling Dan O'Mara E. Huellmante D. Maurer/G.' Sean McGrar 133 ft bgs	el / J. Pa Willford ne		_Deep Well Elevation: _Northing (NAD83): _Easting (NAD83): _Borehole Diameter: _Water Level Start: _Development End Date:	569.9 ft amsl 2102321.2 7615448.1 6-12 inches 115.88 ft bgs	Project: <u>Final</u> Location: <u>PG&l</u>	GW Remedy Phase I E Topock, Needles, California	
Drilling Method: Driller Name: Drilling Asst: Logger: Editor:	Sonic Drilling Dan O'Mara E. Huellmante D. Maurer/G.' Sean McGrar 133 ft bgs	el / J. Pa Willford ne		_Northing (NAD83): _Easting (NAD83): _Borehole Diameter: _Water Level Start: _Development End Date:	2102321.2 7615448.1 6-12 inches 115.88 ft bgs	Project: <u>Final</u> Location: <u>PG&l</u>	GW Remedy Phase I E Topock, Needles, California	
Driller Name: Drilling Asst: Logger: Editor:	Dan O'Mara E. Huellmante D. Maurer/G. Sean McGrar 133 ft bgs	el / J. Pa Willford ne		_Easting (NAD83): _Borehole Diameter: _Water Level Start: _Development End Date:	7615448.1 6-12 inches 115.88 ft bgs	Location: <u>PG&I</u>	E Topock, Needles, California	
Drilling Asst: Logger: Editor:	E. Huellmante D. Maurer/G.\ Sean McGrar 133 ft bgs	Willford ne		_Borehole Diameter: _Water Level Start: _Development End Date:	6-12 inches 115.88 ft bgs		·	
Logger: Editor:	D. Maurer/G.\(\frac{1}{2}\) Sean McGrare 133 ft bgs	Willford ne		_Water Level Start: _Development End Date:	115.88 ft bgs	Project Numbe	r: DC000752 0054	
Editor:	Sean McGrar 133 ft bgs	ne	လု တူ	_ _Development End Date:	_	Project Number: RC000753.0051		
Total Depth:		SCS	χ, φ	_Well Completion:				
	Geologic ata	USCS Code	လ္ လူ					
Groundw Sample		_	USCS	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed	
		NR	3n	(40.0 - 105.0') Portland Cement 5% Bentonite	(5.0 - 133.0') 6" Borehole	(40.0 - 105.0') 74.2 gallons	(40.0 - 105.0') 200 gallons (170%) Note: Portland cement type I, II, and V and Hydrogel - Wyoming bentonite.	
58 59 60								

ARC	DIS for natural built asset	Consultancy Land es	Well Const	ruction Log	\$	Sheet: 4 of 7
Date Started:	03/26/2019		Surface Elevation:	570.1 ft amsl	Well ID: N	//W-N-129
Date Completed:			Shallow Well Elevation:			
Drilling Co.:	Cascade		Deep Well Elevation:	569.9 ft amsl	Client: PG&E	
Drilling Method:	Sonic Drilling		Northing (NAD83):	2102321.2	•	GW Remedy Phase I
Driller Name:	Dan O'Mara		Easting (NAD83):	7615448.1	Location: <u>PG&E</u>	Topock, Needles, California
Drilling Asst:	E. Huellmante			6-12 inches		D0000750 0054
Logger:	D. Maurer/G.V		Water Level Start:	115.88 ft bgs	Project Number	r: RC000753.0051
Editor:	Sean McGran	<u>e</u>	Development End Date:			
Total Depth:	133 ft bgs		Well Completion:		T	I
Groundwar Sample II		USCS Code USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
61		NR	(67.5 - 68.5') Centralizer (40.0 - 105.0') Portland Cement 5% Bentonite	(5.0 - 133.0') 6" Borehole	(40.0 - 105.0') 74.2 gallons	(40.0 - 105.0') 200 gallons (170%) Note: Portland cement type I, II, and V and Hydrogel - Wyoming bentonite.

9/-	ARCA	DIS for natura built asse	al and ts		Well Const	ruction Log		Sheet: 5 of 7
Date S		03/26/2019			_Surface Elevation:	570.1 ft amsl	Well ID:	MW-N-129
	-	04/12/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_ Deep Well Elevation:	569.9 ft amsl 2102321.2	Client: PG&	GW Remedy Phase I
Drilling Driller 1		Sonic Drilling Dan O'Mara			_Northing (NAD83): _Easting (NAD83):	7615448.1	•	E Topock, Needles, California
Drilling			ы/.I Ра	acheco	_ Borehole Diameter:	6-12 inches	Location. <u>F G&</u>	E Topock, Needles, California
Logger		D. Maurer/G.\		2011000	_Water Level Start:	115.88 ft bgs	Proiect Numbe	er: RC000753.0051
Editor:		Sean McGran			_ _Development End Date:	_	<u> </u>	
Total D	epth:	133 ft bgs			_Well Completion:			
Depth (ft)	Groundwat Sample ID		USCS	USCS	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
81			NR		(40.0 - 105.0') Portland Cement 5% Bentonite	— (5.0 - 133.0') 6" Borehole	(40.0 - 105.0') 74.2 gallons	(40.0 - 105.0') 200 gallons (170%) Note: Portland cement type I, II, and V and Hydrogel - Wyoming bentonite.
100								

9/-	ARCA	DIS Design & for natura built asse	l and rts		Well Consti	ruction Log	\$	Sheet: 6 of 7
Date S		03/26/2019			_Surface Elevation:	570.1 ft amsl	Well ID: N	лW-N-129
	=	04/12/2019			_Shallow Well Elevation:		Client DOS	<u></u>
Drilling		Cascade Sonic Drilling			_Deep Well Elevation: _Northing (NAD83):	569.9 ft amsl 2102321.2	Client: PG&E	: GW Remedy Phase I
Driller I		Dan O'Mara			Rorumg (NAD83):	7615448.1	-	E Topock, Needles, California
Drilling			= / J. Pa	acheco	_ Borehole Diameter:	6-12 inches		,
Logge	r:	D. Maurer/G.\	Willford		_Water Level Start:	115.88 ft bgs	Project Numbe	r: RC000753.0051
Editor:		Sean McGrar	<u>1e</u>		_Development End Date:			
Total E	Depth:	133 ft bgs			_Well Completion:		T	Т
Depth (ft)	Groundwat Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
101 102 103 104 105			NR		(40.0 - 105.0') Portland Cement 5% Bentonite		(40.0 - 105.0') 74.2 gallons	(40.0 - 105.0') 200 gallons (170%) Note: Portland cement type I, II, and V and Hydrogel - Wyoming bentonite.
		Topock - Fluvial Deposits	GP		(105.0 - 112.0') Bentonite seal pellets	— (5.0 - 133.0') 6" Borehole	(105.0 - 112.0') 1.5 bags	(105.0 - 112.0') 1.3 bags (-13%) Note: Puregold & Enviro-Plug medium chips
113 114		Fluvial Deposits	SM		(442.9. 420.01) 2#			
		Topock - Fluvial	GP		(113.8 - 129.0') 2" —	用 為		
115		Deposits	1		(20 5.01) 5010611			
116 117		Topock - Fluvial Deposits	SM		(112.0 - 133.0') Cemex #3 MESH (8x10)		(112.0 - 133.0') 5.6 bags	(112.0 - 133.0') 8 bags (43%) Note: Lapis Lustre Sand
118		Topock - Alluvium Deposits	SM					aca lovel CW = groundwater

9/	ARCA	DIS Design 8 for nature built ass	ral and ets		Well Const	ruction Log		Sheet: 7 of 7
Date S	Started:	03/26/2019			_Surface Elevation:	570.1 ft amsl	Well ID:	MW-N-129
l l	-	04/12/2019			_Shallow Well Elevation:			
Drilling		<u>Cascade</u>			_Deep Well Elevation:	569.9 ft amsl	Client: <u>PG&</u>	
_		Sonic Drilling			_Northing (NAD83):	2102321.2	•	GW Remedy Phase I
	Name:	Dan O'Mara E. Huellmant	al / I. D.		_Easting (NAD83): Borehole Diameter:	7615448.1 6-12 inches	Location: <u>PG&</u>	E Topock, Needles, California
Drilling Logge		D. Maurer/G.			_ Borenole Diameter. _Water Level Start:	115.88 ft bgs	Project Number	er: RC000753.0051
Editor:		Sean McGrai			_Development End Date:		1 10,000114411100	1.10000100.0001
Total [133 ft bgs			_Well Completion:			
		.2 5	T					
Depth (ft)	Groundwat Sample II		Code	USCS		onstruction	Calculated Material Volumes	Material Volumes Installed
<u> </u>					(113.8 - 129.0') 2" —			
121		Tanasla			(20-slot) Screen			
		Topock - Alluvium	SM					
122		Deposits						
-								
123	MW-N-VAS 121.0-126.0							
	(0.51) 2/16/2019							
124	14:09							
125	-							
5		Topock -						
126		Alluvium Deposits	ML					
					(112.0 - 133.0') Cemex #3 MESH	(5.0 - 133.0') 6"	(112.0 - 133.0') 5.6	(112.0 - 133.0') 8 bags (43%)
127					(8x10)	Borehole	bags	Note: Lapis Lustre Sand
128								
129		Topock -	SM					
		Deposits						
130					(129.5 - 130.5') —			
131		Topock -			(129.0 - 131.3')			
132	-	Fluvial Deposits	SM		Sump and End Cap			
133								
					End of Boring at 133.0 'bgs.			
134					Ü			
<u>-</u>								
135								
	-							
136	-							
	-							
137	1							
-	1							
138	1							
	1							
139	1							
140								
	viations: LI	SCS = Unified	Soil C	lassificat	tion System ft = feet has	= below ground surface :	amsl = above mean	sea level. GW = groundwater.

ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = No Recovery, blue water table symbol represents depth to water measured post development Note: water samples were collected from MW-Nd borehole

ARC	DIS Design & for natur built asso	& Consultancy ral and eets	Well Const	ruction Log	\$	Sheet: 1 of 13
Date Started:	01/07/2019		_Surface Elevation:	569.7 ft amsl	Well ID: N	MW-N-217, MW-N-237
Date Completed:			_Shallow Well Elevation:			
Drilling Co.:	Cascade		Deep Well Elevation:	569.5 ft amsl	Client: PG&E	
Drilling Method:	Sonic Drilling		_Northing (NAD83):	2102325.9	•	GW Remedy Phase I
Driller Name:	Dan O'Mara		Easting (NAD83):	<u>7615441.5</u>	Location: <u>PG&E</u>	Topock, Needles, California
Drilling Asst:	E. Huellmant		_Borehole Diameter: _Water Level Start:	4-12 inches 114.51 ft bgs	— — — — — — — — — — — — — — — — — — —	DC0007E2 00E4
Logger: Editor:	P. Knightly/D Sean McGrar		vvaler Level Start. Development End Date:	•	Project Number	r: RC000753.0051
Total Depth:	247 ft bgs	no e	Well Completion:		_	
than Groundwa Sample II		USCS Code USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
			(0.0 - 1.0') Concrete Pad (0.6 - 196.7') 2" PVC Sch 80 Casing	(0.5 - 226.7') 2" PVC Sch 80 Casing		(0.0 - 1.0') 9 bags Note: 2.5 x 2.5 ft concrete pad with 18" dia. lockable vault, King Kon-Crete 4000 PSI
			(1.0 - 3.0') Hole Collapse	(0.0 - 5.0') 12" Borehole		Note: Surounding native soil
_ 4	Topock - Fluvial Deposits	GW-GM	(3.0 - 7.0') Portland Cement 5% Bentonite		(3.0 - 7.0') 19 gallons	(3.0 - 7.0') 25 gallons (32%) Note: Topped off with Type I, II, and V with Hydrogel - Wyoming bentonite. on 4/1/19.
	Topock - Fluvial Deposits Topock - Fluvial Deposits	M	(7.0 - 107.0') Portland Cement 5% Bentonite	(5.0 - 241.0') 10" Borehole	(7.0 - 107.0') 395.8 gallons	(7.0 - 107.0') 500 gallons (26%) Note: Portland cement type I, II, and V and Hydrogel - Wyoming bentonite.

ARC	DIS Design & for natura built asse	Consultancy al and ets		Well Const	ruction Log	;	Sheet: 2 of 13
Date Started:	01/07/2019			_Surface Elevation:	569.7 ft amsl	Well ID: N	MW-N-217, MW-N-237
Date Completed:				_Shallow Well Elevation:			
Drilling Co.:	Cascade			_Deep Well Elevation:	569.5 ft amsl	Client: PG&E	
_	Sonic Drilling			_Northing (NAD83):	2102325.9	•	GW Remedy Phase I
Driller Name:	Dan O'Mara			_Easting (NAD83):	7615441.5	Location: <u>PG&E</u>	Topock, Needles, California
Drilling Asst:	E. Huellmante			_Borehole Diameter:	4-12 inches	<u> </u>	
Logger:	P. Knightly/D.		r	_Water Level Start:	114.51 ft bgs	Project Numbe	r: RC000753.0051
Editor:	Sean McGrar	ne		_Development End Date:			
Total Depth:	247 ft bgs			_Well Completion:		1	
Groundwar Sample II		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
21 22 23	Topock - Fluvial Deposits	GW-GM		(0.6 - 196.7') 2" PVC Sch 80 Casing	(0.5 - 226.7') 2" PVC Sch 80 Casing		
24 24 25 26 27	Topock - Fluvial Deposits	SP					
28 28 29 30		NR		(7.0 - 107.0') Portland Cement 5% Bentonite	(5.0 - 241.0') 10" Borehole	(7.0 - 107.0') 395.8 gallons	(7.0 - 107.0') 500 gallons (26%) Note: Portland cement type I, II, and V and Hydrogel - Wyoming bentonite.
31 32 33	Topock - Fluvial Deposits	GW					
34 35 36 	Topock - Fluvial Deposits	SP					
37 38 39	Topock - Fluvial Deposits	SM					
_	Topock - Fluvial	GW					
_ 40 _	Deposits						

ARC	Design & for natura built asse	Consultancy al and its		Well Const	ruction Log	:	Sheet: 3 of 13
Date Started:	01/07/2019			_Surface Elevation:	569.7 ft amsl	Well ID: I	MW-N-217, MW-N-237
Date Completed				_Shallow Well Elevation:			
Drilling Co.:	Cascade			_Deep Well Elevation:	569.5 ft amsl	Client: PG&I	
Drilling Method:	_			_Northing (NAD83):	2102325.9	•	GW Remedy Phase I
Driller Name:	Dan O'Mara			_Easting (NAD83):	7615441.5	Location: <u>PG&</u> I	Topock, Needles, California
Drilling Asst:	E. Huellmante			_Borehole Diameter:	4-12 inches		D0000750 0054
Logger:	P. Knightly/D.		<u>r </u>	_Water Level Start:	114.51 ft bgs	Project Numbe	r: RC000753.0051
Editor: Total Depth:	Sean McGrar 247 ft bgs	<u>1e</u>		_Development End Date: _Well Completion:	× Flush Stick-up		
Total Deptil.		1		_ weii Completion.	/ I lusti _ Stick-up		
Groundwa Sample I		Code	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
	Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits	GW		(7.0 - 107.0') Portland Cement 5% Bentonite	(5.0 - 241.0') 10" Borehole	(7.0 - 107.0') 395.8 gallons	(7.0 - 107.0') 500 gallons (26%) Note: Portland cement type I, II, and V and Hydrogel - Wyoming bentonite.
	Topock - Fluvial Deposits	SW					

Date Started: 1/107/2019 Surface Elevation: S80.11 ams Date Completed: S80.21 ams Date Completed: S80.11 ams S80.11 ams Date Office ARC	DIS Design & for natura built asse	Consultancy al and ets		Well Const	ruction Log		Sheet: 4 of 13	
Date Deep							Well ID: I	MW-N-217. MW-N-237
Dolling Nethods Sonic Drilling Northing (NADAS); 21023559								
Driller Name Dan O Mara Easting (NAD43); 761541.5 Location: PG&E Topock, Needles, California Ca	_				· · · · · · · · · · · · · · · · · · ·			
Deling Ass. E. Huellmartel / T. Wolfe	_	•					-	_
Logger P. Knight Mp. Maurer Water Level Start: 114.51 ft ft ft gs							Location: <u>PG&</u>	E Topock, Needles, California
Development End Date: 42/2019 Stan McGrane	_							
Topoda				r			Project Numbe	er: RC000753.0051
Security of the Construction Security of the Construction Security of the Construction Material Volumes Material Volu			ne		-			
Control Cont	Total Depth:			1 1	_Well Completion:	⊠ Flush Stick-up	Γ	1
Food	Groundwar Sample II	Geologic Formation	USCS	USCS	Well C	onstruction		
	62	Fluvial	GW		(0.6 - 196.7') 2" PVC Sch 80 Casing			
	69	Fluvial	SP		Portland Cement			Note: Portland cement type I, II, and V and Hydrogel - Wyoming

9/	ARCA	DIS Design & for natur built asso	Consultancy al and ets		Well Const	ruction Log	;	Sheet: 5 of 13
Date S		01/07/2019			_Surface Elevation:	569.7 ft amsl	Well ID: N	MW-N-217, MW-N-237
	-	03/03/2019			_Shallow Well Elevation:			·
Drilling 		Cascade			_ Deep Well Elevation:	569.5 ft amsl	Client: PG&E	
_		Sonic Drilling			Northing (NAD83):	2102325.9	•	GW Remedy Phase I
Driller I		Dan O'Mara	. / T \A	, ,,	_Easting (NAD83):	<u>7615441.5</u>	Location: <u>PG&E</u>	Topock, Needles, California
Drilling		E. Huellmant			_Borehole Diameter:	4-12 inches		D0000750 0054
Loggeı Editor:		P. Knightly/D		er	_Water Level Start:	114.51 ft bgs	Project Numbe	r: RC000753.0051
Total D		Sean McGran 247 ft bgs	ie		_Development End Date: _Well Completion:	✓ Flush Stick-up		
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
	Sample IE	Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits	SP SW SW		(0.6 - 196.7') 2" PVC Sch 80 Casing (7.0 - 107.0') Portland Cement 5% Bentonite	(5.0 - 241.0') 10" Borehole	(7.0 - 107.0') 395.8 gallons	(7.0 - 107.0') 500 gallons (26%) Note: Portland cement type I, II, and V and Hydrogel - Wyoming bentonite.

9/	ARCA	DIS Design for nature built as	& Consultancy ral and sets		Well Const	ruction Log	5	Sheet: 6 of 13
	Completed:	01/07/2019 03/03/2019			_Surface Elevation: _Shallow Well Elevation:	569.7 ft amsl 569.4 ft amsl 569.5 ft amsl	Well ID: N	MW-N-217, MW-N-237
Drilling		Cascade Sonic Drilling			_Deep Well Elevation: _Northing (NAD83):	2102325.9		= GW Remedy Phase I
Driller I		Dan O'Mara			_ Northing (NAD83):	7615441.5		E Topock, Needles, California
Drilling		E. Huellmant	el/T.V	/olfe	Borehole Diameter:	4-12 inches	Location. <u>r Cal</u>	- Topook, Necales, California
Logge		P. Knightly/D			_Water Level Start:	114.51 ft bgs	Proiect Number	r: RC000753.0051
Editor:		Sean McGra			_ _Development End Date:	_		
Total D		247 ft bgs			Well Completion:			
Depth (ft)	Groundwat Sample II		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
101		Topock - Fluvial Deposits	GW		(0.6 - 196.7') 2" PVC Sch 80 Casing (7.0 - 107.0') Portland Cement 5% Bentonite	(0.5 - 226.7') 2" PVC Sch 80 Casing	(7.0 - 107.0') 395.8 gallons	(7.0 - 107.0') 500 gallons (26%) Note: Portland cement type I, II, and V and Hydrogel - Wyoming bentonite.
108 109 110 111 111					(107.0 - 112.0') Bentonite seal chips	(5.0 - 241.0') 10" Borehole	(107.0 - 112.0') 3.7 bags	(107.0 - 112.0') 3 bags (-19%) Note: Enviroplug Medium Chips
113 114 115 116 117 118 119		Topock - Fluvial Deposits	GW-GM		(112.0 - 185.0') High—Solids Bentonite		(112.0 - 185.0') 288.9 gallons	(112.0 - 185.0') 360 gallons (25%) Note: Enviroplug
120		000 11:5	10 110	6 - - -			<u> </u>	sea level GW = groundwater

9/	ARCA	DIS Design & for nature built ass	al and ets		Well Const	ruction Log	S	Sheet: 7 of 13
	Started:	01/07/2019			_Surface Elevation:	569.7 ft amsl	Well ID: N	/W-N-217, MW-N-237
	-	03/03/2019			_Shallow Well Elevation:			
Drilling	-	Cascade			_ Deep Well Elevation:	569.5 ft amsl	Client: PG&E	
_	g Method: Name:	Sonic Drilling			_Northing (NAD83):	2102325.9	-	GW Remedy Phase I
	name: g Asst:	Dan O'Mara E. Huellmant		/ olfo	_Easting (NAD83): _Borehole Diameter:	7615441.5 4-12 inches	Location: PG&E	Topock, Needles, California
Logge	-	P. Knightly/D				114.51 ft bgs	— Proiect Number	:: RC000753.0051
Editor		Sean McGra		•	_Development End Date:			
		247 ft bgs			Well Completion:			
_		. <u>c</u>	T (0 =	(0.11				
Depth (ft)	Groundwat Sample ID		USCS	USCS		onstruction	Calculated Material Volumes	Material Volumes Installed
L -	_				(0.6 - 196.7') 2" ———————————————————————————————————	(0.5 - 226.7') 2" PVC Sch 80 Casing		
121				1397				
	-							
122	+			1397				
	1							
123	MW-N-VAS- 121.0-126.0	Topock -		1397				
- - -	(0.51) 2/16/2019	Alluvium Deposits	GM					
124	14:09			1397				
 125	1							
125	1			1397				
126	1							
				1397				
127				600				
L _								
128				A)				
_	1							
129	_							
	-							
130	+				(112.0 - 185.0') High— Solids Bentonite	(5.0 - 241.0') 10" Borehole	(112.0 - 185.0') 288.9 gallons	(112.0 - 185.0') 360 gallons (25%) Note: Enviroplug
	1							
131	1							
	1	Topock -						
132	1	Alluvium Deposits	GW-GN					
133	1							
134]							
L _								
135	1							
<u> </u>	_							
136	1							
<u> </u>	-							
137	1		+					
	-							
138	1	Topock -						
	1	Alluvium Deposits	SM					
139	1	Dehosits						
- - -	†							
140 Abbro	viotiona. II	SCS - Unifica	1 60il C	<u>ı ılıılı</u>	tion System ft - fact has	- below ground ourface of	mal = above mass	noo lovol CW = groundwater

9/	ARCA	DIS Design & for natura built asse	Consultancy al and ts		Well Consti	ruction Log	S	Sheet: 8 of 13
		01/07/2019			_Surface Elevation:	569.7 ft amsl	Well ID: N	//W-N-217, MW-N-237
	-	03/03/2019			_Shallow Well Elevation:			
Drilling		Cascade			_Deep Well Elevation:	569.5 ft amsl	Client: PG&E	
_		Sonic Drilling Dan O'Mara			_Northing (NAD83): _Easting (NAD83):	2102325.9 7615441.5	•	GW Remedy Phase I Topock, Needles, California
Drilling		E. Huellmante	۱/T ۱۷	/olfe	_ Easting (NAD63). _Borehole Diameter:	4-12 inches	Lucation. <u>PG&E</u>	ropock, Needles, Calliornia
Logge		P. Knightly/D.			_ Water Level Start:	114.51 ft bgs	— Proiect Number	r: RC000753.0051
Editor:		Sean McGran		•	_Development End Date:			
Total [247 ft bgs			_Well Completion:			
		<u>:</u> 5	(0 =	(0 ::				
Depth (ft)	Groundwate Sample ID		USCS	USCS		onstruction	Calculated Material Volumes	Material Volumes Installed
141	MW-N-VAS- 142.0-147.0 (<0.033 U) 2/16/2019 10:57	Topock - Alluvium Deposits	SM)	(0.6 - 196.7') 2" PVC Sch 80 Casing	(0.5 - 226.7') 2" PVC Sch 80 Casing	9	
148		Topock - Alluvium Deposits	GM		(112.0 - 185.0') High—Solids Bentonite	(5.0 - 241.0') 10" Borehole	(112.0 - 185.0') 288.9 gallons	(112.0 - 185.0') 360 gallons (25%) Note: Enviroplug
		Topock - Alluvium	GW	Kol q				
160				• • • • • • • • • • • • • • • • • • •	L			and lovel CW = groundwater

Driller Name: <u>Dan O'Mara</u> Easting (NAD83): <u>7615441.5</u> Location: <u>PG&E Topock, Needles, C</u>	N-237
Date Completed: 03/03/2019 Shallow Well Elevation: 569.4 ft amsi Drilling Co.: Cascade Deep Well Elevation: 569.5 ft amsl Client: PG&E Drilling Method: Sonic Drilling Northing (NAD83): 2102325.9 Project: Final GW Remedy Phase I Driller Name: Dan O'Mara Easting (NAD83): 7615441.5 Location: PG&E Topock, Needles, C Drilling Asst: E. Huellmantel / T. Wolfe Borehole Diameter: 4-12 inches Logger: P. Knightly/D. Maurer Water Level Start: 114.51 ft bgs Project Number: RC000753.0051	
Drilling Method:Sonic DrillingNorthing (NAD83):2102325.9Project:Final GW Remedy Phase IDriller Name:Dan O'MaraEasting (NAD83):7615441.5Location: PG&E Topock, Needles, CDrilling Asst:E. Huellmantel / T. WolfeBorehole Diameter:4-12 inchesLogger:P. Knightly/D. MaurerWater Level Start:114.51 ft bgsProject Number: RC000753.0051	
Driller Name: Dan O'Mara Easting (NAD83): 7615441.5 Location: PG&E Topock, Needles, C Drilling Asst: E. Huellmantel / T. Wolfe Borehole Diameter: 4-12 inches Logger: P. Knightly/D. Maurer Water Level Start: 114.51 ft bgs Project Number: RC000753.0051	
Drilling Asst: E. Huellmantel / T. Wolfe Borehole Diameter: 4-12 inches Logger: P. Knightly/D. Maurer Water Level Start: 114.51 ft bgs Project Number: RC000753.0051	
Logger: P. Knightly/D. Maurer Water Level Start: <u>114.51 ft bgs</u> Project Number: <u>RC000753.0051</u>	alifornia
Editor: <u>Sean McGrane</u> Development End Date: <u>4/2/2019</u>	
- · · - · · · · · · · · · · · · · · · ·	
Total Depth: 247 ft bgs Well Completion: ⊠ Flush Stick-up	
Groundwater Sample ID es	
Deposits	ons (25%) g

ARCADIS Design & Consultancy for natural and built assets					Well Const	ruction Log	\$	Sheet: 10 of 13
Date S	started:	01/07/201	9		_Surface Elevation:	569.7 ft amsl	Well ID: N	//W-N-217, MW-N-237
	completed:	03/03/201	9		_Shallow Well Elevation:	569.4 ft amsl		
Drilling	Co.:	Cascade			Deep Well Elevation:	569.5 ft amsl	Client: PG&E	
Drilling	Method:	Sonic Drill	ing		_Northing (NAD83):	2102325.9	Project: <u>Final (</u>	GW Remedy Phase I
Driller I	Name:	Dan O'Ma	ra		Easting (NAD83):	7615441.5	Location: <u>PG&E</u>	Topock, Needles, California
Drilling	Asst:	E. Huellm	antel / T.	Wolfe	_Borehole Diameter:	4-12 inches		
Logge		P. Knightly		rer	_Water Level Start:	114.51 ft bgs	Project Number	r: RC000753.0051
Editor:		Sean McC			Development End Date:			
Total D	Depth:	247 ft bgs			Well Completion:		I	T
Depth (ft)	Groundwat Sample ID		USCS	USCS		onstruction	Calculated Material Volumes	Material Volumes Installed
 181		Topoc Alluviu Depos	m GC		(0.6 - 196.7') 2" ———————————————————————————————————	— (0.5 - 226.7') 2" PVC Sch 80 Casing		
182 183 		Topoc Alluviu Depos	m GV		(112.0 - 185.0') High Solids Bentonite		(112.0 - 185.0') 288.9 gallons	(112.0 - 185.0') 360 gallons (25%) Note: Enviroplug
184 185		Topoc Alluviu Depos	m GC					
186 187								
188 189 190		Topoc Alluviu Depos	m SC		(185.0 - 194.5') Bentonite seal —	(5.0 - 241.0') 10"	(185.0 - 194.5') 8 bags	(185.0 - 194.5') 7.7 bags (-4%) Note: Pel-Plug (TR30) 3/8", added more bentonite pellets to avoid open borehole when removing 10 inch
		Topoc Alluviu Depos	m SC		pellets	` Boreholé		casing
194 195 196		Topoc Alluviu Depos	m GV		(192.0 - 221.0') Cemex #3 MESH — (8x10)			
197 198 199 200		Topoc Alluviu Depos	m GC		(196.7 - 216.7') 2" Sch 80 PVC (20-slot) Screen		(194.5 - 221.0') 27 bags	(194.5 - 221.0') 31 bags (15%) Note: Lapis Lustre Sand

ARCADIS Grand Gran	tural and assets	Well Collst	ruction Log	3	Sheet: 11 of 13
Date Started: <u>01/07/2019</u>		Surface Elevation:	569.7 ft amsl	Well ID: N	//W-N-217, MW-N-237
Date Completed: <u>03/03/2019</u>		Shallow Well Elevation:	569.4 ft amsl		
Drilling Co.: <u>Cascade</u>		Deep Well Elevation:	569.5 ft amsl	Client: <u>PG&E</u>	
Drilling Method: Sonic Drillin	-	Northing (NAD83):	2102325.9	•	GW Remedy Phase I
Driller Name: <u>Dan O'Mara</u>		Easting (NAD83):	7615441.5	Location: <u>PG&E</u>	Topock, Needles, California
	ntel / T. Wolfe	Borehole Diameter:	4-12 inches		
Logger: <u>P. Knightly/</u>		Water Level Start:	114.51 ft bgs	Project Number	:: RC000753.0051
Editor: <u>Sean McGr</u>	ane	Development End Date:			
Total Depth: 247 ft bgs		Well Completion:		1	T
Geologic Formation	USCS Code USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
	GC G	(196.7 - 216.7') 2" ———————————————————————————————————	(5.0 - 241.0') 10" Borehole	(194.5 - 221.0') 27 bags	(194.5 - 221.0') 31 bags (15%) Note: Lapis Lustre Sand

9/	ARCA	DIS Design & C for natura built asset	Consultancy Land S		Well Consti	ruction Log	5	Sheet: 12 of 13
Date S		01/07/2019			_Surface Elevation:	569.7 ft amsl	Well ID: N	/W-N-217, MW-N-237
	•	03/03/2019			_Shallow Well Elevation:			
Drilling	Co.:	Cascade			_Deep Well Elevation:	569.5 ft amsl	Client: PG&E	
_		Sonic Drilling			_Northing (NAD83):	2102325.9		GW Remedy Phase I
Driller N		Dan O'Mara			_Easting (NAD83):	7615441.5	Location: <u>PG&E</u>	Topock, Needles, California
Drilling		E. Huellmante			_Borehole Diameter:	4-12 inches	_	
Logger		P. Knightly/D.		-	_Water Level Start:	114.51 ft bgs	Project Number	r: RC000753.0051
Editor:		Sean McGran	е		_Development End Date:		<u> </u>	
Total D	epth:	247 ft bgs			_Well Completion:			
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
 221					(192.0 - 221.0') Cemex #3 MESH (8x10)		(194.5 - 221.0') 27 bags	(194.5 - 221.0') 31 bags (15%) Note: Lapis Lustre Sand
		Topock -			(221.0 - 225.0') Bentonite seal pellets		(221.0 - 225.0') 3.5 bags	(221.0 - 225.0') 3.5 bags (0%) Note: Pel-Plug (TR30) 3/8"
		Weathered Bedrock - conglomerate	GC			(226.7 - 236.7') 2" Sch 80 PVC (20-slot) Screen		
	MW-N-VAS- 228.0-233.0 (<0.17 U ppb 2/26/2019 16:30	Topock - Weathered Bedrock - conglomerate	SW		(225.0 - 241.0')	(5.0 - 241.0) 10 Borehole	(225.0 - 241.0') 17.8	(225.0 - 241.0') 22 bags (24%)
		Topock - Weathered Bedrock - conglomerate	GC		Cemex #3 MESH (8x10)	(236.7 - 239.0') Sump and End Cap	bags 17.6	Note: Lapis Lustre Sand
240_								

9/	4RC4	DIS Design for natural built as:	& Consultancy ural and sets		Well Const	ruction Log	\$	Sheet: 13 of 13
Date S	Started:	01/07/2019			_Surface Elevation:	569.7 ft amsl	Well ID: N	MW-N-217, MW-N-237
Date (Completed:	03/03/2019			_Shallow Well Elevation:	569.4 ft amsl		
Drilling	g Co.:	Cascade			_Deep Well Elevation:	569.5 ft amsl	Client: PG&E	
Drilling	g Method:	Sonic Drilling			_Northing (NAD83):	2102325.9	Project: <u>Final</u>	GW Remedy Phase I
Driller	Name:	Dan O'Mara			_Easting (NAD83):	7615441.5	Location: <u>PG&E</u>	Topock, Needles, California
Drilling	g Asst:	E. Huellmant	<u>iel / T. V</u>	/olfe	_Borehole Diameter:	4-12 inches		
Logge	∍r:	P. Knightly/D). Maure	r	_Water Level Start:	114.51 ft bgs	Project Numbe	r: RC000753.0051
Editor	•	Sean McGra	ne		_Development End Date:			
Total I	Depth:	247 ft bgs			_Well Completion:			
Depth (ft)	Groundwat Sample II		USCS Code	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
 241	- -	Topock - Weathered Bedrock -			(225.0 - 241.0') Cemex #3 MESH (8x10)	(5.0 - 241.0') 10" Borehole	(225.0 - 241.0') 17.8 bags	(225.0 - 241.0') 22 bags (24%) Note: Lapis Lustre Sand
242 	1 - -	conglomerat						
243 	† †				(244.0. 247.01)	(241.0 - 2 <mark>47.</mark> 0') 4"	(241.0 - 247.0') 1.2	(241.0 - 247.0') 1 bags (-17%) Note: Enviroplug Medium Chips,
244	-	Topock - Competent			(241.0 - 247.0') Bentonite seal chips	Borehole	bags	tagged bentonite at 240 drilled 10- inch casing to 241.
245		Bedrock - conglomerat		2		\sim \sim \sim		
L -								
246	_			120				
<u> </u>	_	Topock -						
247_		Bedrock -			5 1 (5)			
<u> </u>	_	metadiorite			End of Boring at 247.0 'bgs.			
248	_							
 	-							
249	_							
L -	-							
250	-							
<u> </u>	_							
251								
L _								
252								
_								
253	_							
- -	-							
254	1							
	-							
255	1							
256	1							
	1							
258								
259								
260								
Ahhre	viations: L	ISCS - Linifia	4 Soil C	laccificat	tion System ft = foot has	- below ground surface a	mel - above mean	sea level GW = groundwater

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log)				She	eet: 1 of	13
Date S			7/2019		Surface			569.7 ft ar			Borin	a No.:	MW-Nd	
		ted: <u>03/03</u>			Northing	• (,	2102325.9						
Drilling		<u>Casc</u>			Easting	•	3):	<u>7615441.5</u>			Client:	PG&E		
Drilling			-			-		247 ft bgs					roundwater Re	<u>emedy Phase</u>
Drill Ri			sonic track mo	<u>ount</u>				4-12 inche			Location:			
Driller			O'Mara		-			114.51 ft b	-				Topock, Needl	
Drilling			iellmantel / T.		Samplin	•				arrel	Project N	lumber: <u>I</u>	RC000753.005	51
Logge			nightly/D. Maur	<u>er</u>	Samplin	-		Continuou			-			
Editor:		Sean	McGrane		Conver	tea to v	/eii:		No					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	OSCS	USCS Class			Soil Descri	iption			Drilling Notes	Drilling Fluid
1	72			Topock - Fluvial Deposits	GW-GM		sand (0 5/4) so subang angular	6W-GM); yellow me light brown (ular to subroun to subangular;	uvial Deposits; vish brown / mor 7.5YR 6/4); grad; some fine to little silt; trace cer clasts compo	derate yel anules to v very coars cobbles, s	lowish brown(ery large pebb se grained sar ubangular to	10YR oles,	(0.0") Paul Knightly geologist on-site 0 to 107 ft bgs	
8 9	54			Topock - Fluvial Deposits	GM		dark grato subrecobbles	ayish brown (2.s ound; some silt;	Fluvial Deposits; 27 (22); granule little fine to very cround; some of	es to very y coarse o	large pebbles, grained sand; t	angular trace		
17 18 19 20	90	e: 11808 -	= Unified Soil (Topock - Fluvial Deposits	GW-GM		and sar 4/2); gr fine to v trace co compos	nd (GW-GM); d anules to very o rery coarse grai obbles, subangu red of metadioro	•	wn / dark y subangula angular to d; some co	yellowish brow ar to subround; subround; little parser clasts	n(10YR t; some e silt;	a sea lovel. Ch	N -
, יטטופי	· IGUOII	J. 3000 -	Jimica Juli (, woombal	on Oyali	oiii, it =	,,,,	- neiu	· ground st	iiiuo c ,	airioi – abt	SVC IIICAI	. Jour level, G	–

9/-	١RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 2 of	13
Date S					Surface	Elevati	on: <u>569.7 ft amsl</u>	Boring No.	· MW-Nd	
Date C	omple	ted: <u>03/03/</u>	2019		Northing	g (NAD8	3): <u>2102325.9</u>	Borning No.	. <u>19177-190</u>	
Drilling	Co.:	<u>Casca</u>	de		Easting	(NAD83	s): <u>7615441.5</u>	Client: PG&E		
Drilling	Meth	od: <u>Sonic</u>	Drilling		Total De	•	247 ft bgs	Project: Final G	<u>iroundwater Re</u>	medy Phase
Drill Ri			onic track mo				ter: <u>4-12 inches</u>			
Driller					-		/ater: 114.51 ft bgs		Topock, Needle	
Drilling	•		ellmantel / T. \		Samplin	-		Project Number:	RC000753.005	51
Logge			ghtly/D. Maure	er	Samplin	-				
Editor:		<u>Sean I</u>	<u> McGrane</u>		Convert	ted to W	ell: X Yes No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
21 22 23 24	90			Topock - Fluvial Deposits	GW-GM		22.8 - 27.0') Topock - Fluvial Deposits; Poorly of gravel (SP); reddish yellow (7.5YR 6/6); fine grained; little granules to very large pebbles, and title coarser clasts composed of metadiorote; dry	ined to medium gular to subangular;		
25 26 27				Topock - Fluvial Deposits	SP		25.6'); and granules to large pebbles, angular to coarser clasts composed of metadiorote; dry; de 26.2'); little granules to very large pebbles, anguncrease in sand 27.0 - 30.7') (NR); No recovery	crease in sand		
 28 29 30					NR					
31 32 33	87.6			Topock - Fluvial Deposits	GW		30.7 - 33.0') Topock - Fluvial Deposits; Well gra GW); dark grayish brown / dark yellowish brown o very large pebbles; little fine to very coarse gra subangular; trace cobbles; trace silt; little coarse netadiorote; dry	n(10YR 4/2); granules ained sand, angular to		
				Topock - Fluvial Deposits	SP		33.0 - 37.0') Topock - Fluvial Deposits; Poorly gravel (SP); reddish yellow (7.5YR 6/6); fine gra grained; little granules to very large pebbles, and title coarser clasts composed of metadiorote; dry and the coarser clasts composed of metadiorote; dry and the coarse of the coarse o	ined to medium jular to subangular; y		
37 38 39	96			Topock - Fluvial Deposits	SM		37.0 - 39.0') Topock - Fluvial Deposits; Well graverownish gray / pale yellowish brown(10YR 6/2); coarse grained, angular to subangular; little gran subangular to subround; little silt; trace clay; son composed of metadiorote; moist; weak cementat drilling fluid	fine grained to very ules to large pebbles, ne coarser clasts ion; moisture from	(37.0 - 47.0') Rough drilling, fromation collapse, drilling water was used could not determine quantity	(37.0') gal of water used
<u>40</u> Abbrey	/iation	s: USCS =	Unified Soil C	Topock - Fluvial Deposits	GW		39.0 - 41.0') Topock - Fluvial Deposits; Well gra GW); grayish brown (2.5Y 5/2); granules to ven angular to subround; little fine to very coarse gra feet, bgs = below ground surface, a	y large pebbles, ined sand, angular to	. ,	N =
Unnig,	/ IaliUi l	s. 0000 -	Orninea Soil C	กลออกเปลี่ย	ion Syste	5111, IL —	eer, bys - below ground sunace, a	amor – above mea	iii sea ievei, Gv	/v —

y / \	40 -	DIS	Design & Consultancy for natural and built assets		BO	ring	Log	SI.	eet: 3 of	13
	npleted	01/07/2 : 03/03/2	2019		Surface Northin	g (NAD	83): 2102325.9	Boring No.	: MW-Nd	
Orilling C		Casca			Easting	•	•	_ Client: PG&E		
Orilling M		Sonic I	-		Total D	-	247 ft bgs	-	Groundwater Re	medy Phas
rill Rig ⁻ riller Na		<u>Dan O'</u>	onic track mo 'Mara	ount			neter: <u>4-12 inches</u> Water: <u>114.51 ft bgs</u>	_ Location: 1	Topock, Needle	es Califorr
rilling A			Ilmantel / T. \		Samplii		_		•	
.ogger:			ghtly/D. Maure		Samplii	-		- , -		
Editor:		Sean N	<u>//cGrane</u>		Conver	ted to \	Vell: ⊠ Yes □ No			
Depth (ft)	(iii) S	Sieve ample ID	Groundwater Sample ID	Geologic Formation	OSCS	USCS Class	Soil Description		Drilling Notes	Drilling Flui
_ _41				Topock - Fluvial Deposits	GW	X	subangular; trace cobbles, angular to subround clasts composed of metadiorite; dry		(37.0 - 47.0') Rough drilling, fromation collapse, drilling	
	96			Topock - Fluvial	GW		(41.0 - 47.0') Topock - Fluvial Deposits; Well g (GW); dark gray (2.5Y 4/1); granules to very la subround; little fine to very coarse grained sant trace cobbles, angular to subround; trace silt; tr	rge pebbles, angular to d, angular to subround;	water was used could not determine quantity	
.45				Deposits						
_ _46										
47										
_48							(47.0 - 52.0') Topock - Fluvial Deposits; Well g (GW); dark grayish brown / dark yellowish brow to very large pebbles, subangular to round; little grained sand, subangular to subround; trace co round; trace silt; moist; moisture from drilling flu	vn(10YR 4/2); granules e very fine to coarse obbles, subangular to	(47.0 - 67.0') Drilling water was used could not determine quantity	
_49				Topock - Fluvial	GW					
_50 _ _51				Deposits						
-	20						(52.0 - 60.0') Topock - Fluvial Deposits; Well g	raded and with word		
_53							(SW); brown (7.5YR 5/3); fine grained to coars to subround; little granules to large pebbles, su silt; little coarser clast composed of conglomera composed of basalt; dry	e grained, subangular bangular to round: little		
_54										
_55				Topock -						
_56 _ _57				Fluvial Deposits	SW					
_58	20									
_59										
co I		1909 - 1	Unified Soil C	lassificati	on Syst	em ft =	feet, bgs = below ground surface,	amsl = above mea	n sea level G\	N =
\bbrevia	tions: l	J3C3 - 1	OHIIICU OOII C	านออกกษณก					41. OOU 10 VOI. 171	
							ne laboratory reporting limit, NR = N			

ARCADIS Design & Consultancy for natural and black that the same state of the same s	Boring Lo	g	Sheet: 4 of 13			
Date Started: 01/07/2019 Date Completed: 03/03/2019		569.7 ft amsl 2102325.9	_	g No.: <u>MW-Nd</u> PG&E		
Drilling Co.: Cascade Drilling Method: Sonic Drilling Drill Rig Type: Terrasonic track mount Driller Name: Dan O'Mara Drilling Asst: E. Huellmantel / T. Wolfe Logger: P. Knightly/D. Maurer Editor: Sean McGrane	_ Depth to First Water		Project: Final G Location: 1 PG&E	Groundwater Re	es, California	
Head (#) Sieve Sample ID S	USCS Code USCS Class	Soil Description		Drilling Notes	Drilling Fluid	
61	GW); round; round;	67.0') Topock - Fluvial Deposits; Well gr brown (7.5YR 5/3); granules to very larg some fine to medium grained sand; trace trace silt; and coarser clast composed of	e pebbles, angular to e cobbles, angular to conglomerate; dry	(47.0 - 67.0') Drilling water was used could not determine quantity		
	- SP	80.3') Topock - Fluvial Deposits; Poorly (10YR 5/3); very fine grained to medium large pebbles, subangular to round; trace round; trace silt; trace clay; trace coarser merate; dry to moist; moisture due to drill is weakly cemented	grained; little granules e cobbles, subangular clast composed of	(67.0 - 77.0') Slow drilling, core sample very hot		
Abbreviations: USCS = Unified Soil Classification	ation System, ft = feet	bas = below around surface	amsl = above mea	an sea level GV	N =	

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	eet: 5 of	13
Date S	Started	: <u>01/07/</u> 2	2019		Surface	Elevation:	569.7 ft amsl	Borin	a No .	: MW-Nd	
Date C	Comple	eted: <u>03/03/</u> 2	2019		Northin	g (NAD83):	2102325.9		9 110	<u> </u>	
Drilling	g Co.:	<u>Casca</u>	de		Easting	(NAD83):	<u>7615441.5</u>	_ Client:	PG&E		
Drilling	g Meth	od: <u>Sonic I</u>	Drilling		Total D	epth:	247 ft bgs	_ Project:	Final G	roundwater Re	emedy Phase
Drill Ri	ig Type	e: <u>Terras</u>	onic track mo	ount	Boreho	le Diameter:	4-12 inches	_ Location:	1		
Driller	Name	: <u>Dan O</u>	'Mara		Depth t	o First Wate	r: <u>114.51 ft bgs</u>	_	PG&E	<u>Topock, Needl</u>	<u>es, California</u>
Drilling	g Asst:	E. Hue	<u>llmantel / T. '</u>	Wolfe	Samplin	ng Method:	4 inch x 10 ft Core Barrel	_ Project N	umber: .	RC000753.00	51
Logge	r:	<u>P. Kniç</u>	ghtly/D. Maur	er	Samplin	ng Interval:	Continuous	_			
Editor:		<u>Sean N</u>	<u> </u>		Conver	ted to Well:	Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
	ш			0 [SP	27723					
					1 51	(80.3	- 92.2') Topock - Fluvial Deposits; Well gr	aded gravel wi	th sand		
81						to rou	; brown (7.5YR 5/3); granules to very large nd; little fine to medium grained sand; trac	e pebbles, sub e cobbles, sub	angular angular		
						to rou	nd; trace silt; dry				
82											
83											
	120										
84	120										
						20					
85											
00											
						. ? .					
00				Topock - Fluvial	GW						
07				Deposits							
87											
88											
-											
89											
-					4						
90											
91						. 9					
92	120										
_						(92.2	- 96.5') Topock - Fluvial Deposits; Well gr	aded sand with	gravel		
93						subro	brown (10YR 5/3); fine grained to coarse und; some granules to very large pebbles,	, subangular to	round;		
						trace	coarser clast composed of conglomerate;	dry			
94				Tanaak		******					
				Topock - Fluvial	sw	*					
95				Deposits							
96											
50											
				Topock -	GP		- 97.0') Topock - Fluvial Deposits; Poorly				
97				Fluvial Deposits	_	cobble	(GP); reddish brown (2.5YR 4/4) little brow es, subangular to round; little fine to coarso	e grained sand			
<u> </u>						angul	ar to subround; dry; cobbles of conglomera - 105.0') Topock - Fluvial Deposits; Well c	ate sandstone			
98				Topock -		sand	(GW); brown (10YR 5/3); granules to very	large pebbles,	.		
-	120			Fluvial	GW		und to round; little fine to coarse grained s und; trace cobbles, angular to round; trace		ar to		
99				Deposits			, , , , , , , , , , , , , , , , , , , ,	. ,			
-											
100	viati	o. 11000 - 1	Unified Call C	 	ion Ciri	om ft = f= : 1	hao = holow ===================================	omal – -!		n and level O	<u> </u>
Apprev	viation	s: USCS =	Unitied Soil C	Jassificat	ion Syste	em, rt = feet	, bgs = below ground surface,	amsi = abc	ove mea	n sea ievel, G	vv =

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Log	g		She	eet: 6 of	13
Date S	Started				Surface	Elevation:	569.7 ft amsl	Borine	a No .	MW-Nd	
Date 0	Comple	eted: <u>03/03/2</u>	2019		Northing	g (NAD83):	2102325.9	_		11111 114	
Drilling	g Co.:	Cascac	de		Easting	(NAD83):	7615441.5	_ Client:	PG&E		
Drilling	-		-		Total D		247 ft bgs	-		<u>roundwater Re</u>	emedy Phase
Drill R	• • •		onic track mo				4-12 inches	_ Location:			
Driller					-		: <u>114.51 ft bgs</u>			<u> Fopock, Needl</u>	
Drilling			<u>llmantel / T. '</u>		-	ng Method:	4 inch x 10 ft Core Barrel	_ Project Nu	umber:]	RC000753.00	51
Logge		-	<u>ıhtly/D. Maur</u>	<u>er </u>	-	ng Interval:	Continuous	_			
Editor		<u>Sean N</u>	/IcGrane		Conver	ted to Well:	X Yes				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
101 102 103 104 105 106	120			Topock - Fiuvial Deposits	GW	and sa very la	- 120.0') Top <mark>ock</mark> - Fluvial Deposits; Wel nd (GW-GM); dark grayish brown (2.5Y rge pebbles, angular to round; little fine to	4/2); small pebb	oles to		
106 107 108 109 110						(107.0 pebble	- 117.0') reddish brown(2.5YR 5/3); grans, subround to round; moist			(107.0') Derrick Maurer geologist on-site 107 to 247 ft bgs	
	120			Topock - Fluvial Deposits	GW-GM					(112.0 - 117.0') Rough drilling, drill rod broke and was retrived	
115 116 117						(117.0	- 120.0') reddish brown (2.5YR 4/4); wet			(117.0')	(117.0') 150 gal
118 119 120	120									Approximate depth to water table	of water used
Abbre	viation	s: USCS = l	Jnified Soil C	Classificati	ion Syste	em, ft = feet,	bgs = below ground surface,	amsl = abo	ve meai	n sea level, G\	N =

SA	RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log]		She	eet: 7 of	13
Date St	arted	01/07/	2019		Surface	Elevation	on:	569.7 ft amsl	Borin	a No .	MW-Nd	
	-	ted: <u>03/03/</u>			Northin	g (NAD8	33):	2102325.9			<u> </u>	
Drilling		<u>Casca</u>			_	(NAD83	3):	7615441.5	Client:	PG&E		
Drilling			<u>Drilling</u>		Total D	-		247 ft bgs	-		<u>roundwater Re</u>	emedy Phase
Drill Rig			onic track mo			e Diame			Location:			
Driller N					-			114.51 ft bgs			Topock, Needl	
Drilling			ellmantel / T. ' ghtly/D. Maur		-	ng Methong Interv		4 inch x 10 ft Core Barrel Continuous	. Project N	umber: <u>I</u>	<u> </u>	01
Logger: Editor:			McGrane	<u> </u>	-	ted to W			-			
	_ 1	<u>Ocan i</u>	VICCIANC		1		CII.					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	OSCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
	120		MW-N-VAS- 121.0-126.0 (0.51) 2/16/2019 14:09	Topock - Alluvium Deposits	GM	SPId!	(GM); re	127.0') Topock - Alluvium Deposits; Silt eddish brown (2.5YR 4/4); granules to veular to subround; little very fine to mediur	ery large pebbl	es,		
	36			Topock	CIM CIM		silt and medium grained	137.0') Topock - Alluvium Deposits; Wesand (GW-GM); reddish brown (2.5YR 4 pebbles, subangular to subround; some sand; little silt; wet	1/4); granules	to		
133 134 135 136 137	84			Alluvium Deposits	GW-GM		(132.0 -	137.0') granules to very large pebbles				
138 139 	120	s: USCS =	Unified Soil C	Topock - Alluvium Deposits	SM		(7.5YR to very l	.147.0') Topock - Alluvium Deposits; Silt 4/3); fine grained to medium grained; little arge pebbles, subangular to subround; tr	é silt; tràce gra race clay; wet	nules	n sea level. G	W =

9/	4R (CADIS	Design & Consultancy for natural and built assets		Bo	ring Lo	g		She	eet: 8 of	13
Date S			2019		Surface	Elevation:	569.7 ft amsl	Borin	na No.:	MW-Nd	
I	-	eted: <u>03/03/</u>				g (NAD83):	2102325.9	_			
Drilling	-	<u>Casca</u>			_	(NAD83):	7615441.5	_ Client:	PG&E		
Drilling			<u>Drilling</u>		Total D	-	247 ft bgs	_ Project:		roundwater Re	<u>∍medy Phase</u>
Drill R Driller	• • •		onic track mo	<u>ount</u>		e Diameter:	4-12 inches :: 114.51 ft bgs	_ Location		Fopock, Needl	es California
Drilling			ellmantel / T.	Wolfe	-	ng Method:	4 inch x 10 ft Core Barrel	Project N		•	
Logge	-		ghtly/D. Maur		-	ng Interval:	Continuous	,			<u> </u>
Editor		Sean I	McGrane		Conver	ted to Well:	Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
141 142 143 144 145 146 147	120		MW-N-VAS- 142.0-147.0 (<0.033 U) 2/16/2019 10:57	Topock - Alluvium Deposits	SM						
	240			Topock - Alluvium Deposits	GM		- 159.5') Topock - Alluvium Deposits; S brown (7.5YR 4/3); granules to very larground; some fine to medium grained san	e pebbles, sub d; little silt; little	angular e clay;	(147.0') 6-inch casing broke downhole and was retrieved	
160	L			Topock - Alluvium	GW	(159.5	- 160.0') Topock - Alluvium Deposits; V	/ell graded gra	vel with		
	viation	s: USCS =	Unified Soil (ion Svst	em. ft = feet.	bgs = below ground surface,	amsl = ab	ove mea	n sea level. G	

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	neet: 9 of	13
Date S	Started	: <u>01/07/</u>	2019		Surface	Eleva	tion: <u>569.7 ft amsl</u>	Boring No.	: MW-Nd	
		eted: <u>03/03/</u>			Northin			-		
Drilling		<u>Casca</u>			Easting	•	•	Client: PG&E		
Drilling			•			•	247 ft bgs	•	<u> Broundwater Re</u>	medy Phase
Drill Ri			onic track mo	<u>ount</u>			neter: 4-12 inches	Location: 1		
Driller							Water: <u>114.51 ft bgs</u>		Topock, Needle	
Drilling			ellmantel / T.		Samplin	•		Project Number:	RC000753.005	51
Logge			ghtly/D. Maur	<u>er</u>	Samplin	-		-		
Editor:		<u>Sean I</u>	<u>McGrane</u>		Conver	ed to V	Vell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
				Deposits	7		sand (GW); brown (7.5YR 4/3); granules to very subangular to subround; and fine to medium gra			
161							wet			
						P P	(160.0 - 167.5') Topock - Alluvium Deposits; Sil (GM); brown (7.5YR 4/3); granules to very large	pebbles, subangular		
162							to subround; some fine to medium grained sand	; little silt; wet		
102						dfo				
400						10 PIC				
163						139				
	240			Topock - Alluvium	GM					
164				Deposits	0	(3)				
-								*		
165						PJA				
						FXD				
166										
						P P				
167						13-13-C			(167.0 - 175.0')	
						ظِمْ			Rough drilling	
168						••••••	(167.5 - 170.0') Topock - Alluvium Deposits; Wogravel (SW); brown (7.5YR 4/3); fine grained to			
				Topock -			subangular to subround; some granules to very subangular to subround; trace silt; wet	large pebbles,		
169				Alluvium	SW		Substitution to Substituting, trace one, were			
				Deposits						
170										
,							(170.0 - 173.5') Topock - Alluvium Deposits; Sil	ty gravel with sand		
 171							(GM); brown (7.5YR 4/3); granules to very large to subround; some fine to medium grained sand	; little silt; wet		
_'''	96					PD D				
470				Topock - Alluvium	GM	13 PJC				
172				Deposits		3				
						60°C				
173						(9)			(173.0 - 178.0')	
							(173.5 - 175.0') Topock - Alluvium Deposits; Wo	ell graded sand with	Sample collected with	
174				Topock -	sw		gravel (SW); brown (7.5YR 4/4); fine grained to subangular to subround; some granules to very	coarse grained,	bailer	
				Alluvium Deposits	SW		subangular to subround; trace silt; wet	large pennies,		
175			MW-N-VAS-		-		(175.0 - 181.5') Topock - Alluvium Deposits; Cla	avov gravel with sand		
-			173.0-178.0 (<0.033 U)			18%	(GC); brown (10YR 5/3); granules to very large	pebbles, subangular to		
176			2/18/2019 09:20				subround; little fine to medium grained sand; little to wet	e ciay; trace slit; moist		
177										//== cn c==
L _	144			Topock - Alluvium	GC					(177.0') 250 gal of water used
178				Deposits		1				
179										
						W/K				
 180										
Abbre	viation	s: USCS =	Unified Soil (Classificat	ion Syste	em, ft =	feet, bgs = below ground surface,	amsl = above mea	an sea level, G\	N =

AR	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 10 of	13
Date Starte					e Elevat		Borin	a No.:	MW-Nd	
-	eted: <u>03/03/</u>				g (NAD	•				
Orilling Co.:	<u>Casca</u>	de		Easting) (NAD8	3): <u>7615441.5</u>	Client:	PG&E		
Orilling Metl		Drilling		Total D	•	247 ft bgs	-		<u>roundwater Re</u>	emedy Phas
Orill Rig Typ	e: <u>Terras</u>	onic track mo	ount l	Boreho	le Diam	eter: 4-12 inches	Location:	1		
Oriller Name	e: <u>Dan O</u>	<u>'Mara</u>	!	Depth t	o First	Vater: <u>114.51 ft bgs</u>	-	PG&E	<u> Fopock, Needl</u>	<u>es, Californi</u>
Orilling Asst	: <u>E. Hue</u>	ellmantel / T.	Wolfe :	Samplii	ng Meth	od: 4 inch x 10 ft Core Barrel	Project N	umber:]	RC000753.00	51
.ogger:	P. Knig	ghtly/D. Maur	er :	Samplii	ng Inter	/al: <u>Continuous</u>	=			
Editor:	<u>Sean I</u>	<u> McGrane</u>		Conver	ted to V	/ell: ⊠ Yes □ No				
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
			Topock - Alluvium Deposits	GC						
			Topock - Alluvium Deposits	GW		(181.5 - 183.5') Topock - Alluvium Deposits; We sand (GW); light gray (10YR 7/2); granules to w angular to subround; little fine to medium grainer to moist	ery large pebb	les.		
184_						(183.5 - 187.0') Topock - Alluvium Deposits; Cla (GC); brown (10YR 5/3); granules to very large subround; little fine to medium grained sand; little	pebbles, suba	ngular to		
185 - 186 - 187			Topock - Alluvium Deposits	GC						
188_ - 189_ -			Topock - Alluvium Deposits	sc		(187.0 - 190.0") Topock - Alluvium Deposits; Cla (SC); reddish brown / moderate brown(5YR 4/4) medium grained; little granules to large pebbles, subangular; little clay; trace silt; moist	; fine grained t			
.191 .191 .192 .193			Topock - Alluvium Deposits	SC		(190.0 - 193.5') Topock - Alluvium Deposits; Cla (7.5YR 4/3); fine grained to medium grained; dry increase in sand, decrease in gravel				
- 194_ - 195_ - 196_			Topock - Alluvium Deposits	GW		(193.5 - 197.0') Topock - Alluvium Deposits; We (GW); (7.5R 5/3); granules to very large pebbles subround; trace fine to medium grained sand; tra	s, angular to	el		
			Topock - Alluvium Deposits	GC		(197.0 - 217.0') Topock - Alluvium Deposits; Cla (GC); brown (7.5YR 4/3); granules to very large to subround; little fine to medium grained sand; I moist to wet	pebbles, suba	ngular		

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Log			She	et: 11 of	13
Date S	Started	: <u>01/07/</u> 2	2019		Surface	Elevation:	569.7 ft amsl	Borin	a No ·	MW-Nd	
Date C	Comple	eted: <u>03/03/</u> 2	2019		Northin	g (NAD83):	2102325.9		ig 110	IVIVV-IVG	
Drilling		<u>Casca</u>				(NAD83):	7615441.5	_ Client:	PG&E		
Drilling	-		•		Total D	=	247 ft bgs	_ Project:		oundwater Re	emedy Phase
Drill R			onic track mo	<u>ount</u>		le Diameter:	4-12 inches	_ Location:		- , , , , , ,	0 1:0 :
Driller				_\f	-		114.51 ft bgs	- Drainat N		opock, Needl	
Drilling Logge	-		ellmantel / T. ˈ ghtly/D. Maur		-	ng Method: ng Interval:	4 inch x 10 ft Core Barrel Continuous	_ Project N	iumber. <u>I</u>	RC000753.005	01
Editor:			McGrane	<u>Ci</u>	-	ted to Well:		_			
				, =	T						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
201 											
205											
206											
<u> </u>											(207.0') 70 gal of water used
208_	228			Topock - Alluvium	GC						
209				Deposits	\						
210_											
211_											
 212			MW-N-VAS-								
			210.0-215.0 (290) 2/21/2019 09:21								
215_											
_216										(216.0 - 217.0')	
217										Lost soil core down hole,	
_217				<u> </u>	 		- 230.5') Topock - Weathered Bedrock - vith sand (GC); reddish brown / moderat			tripped back in to retrieve	(217.0 - 217.0') 120 gal of water
218				T '		granule	s to very large pebbles, subangular to see to medium grained sand; trace silt; mo	ubround; some	e clay;		used
	240			Topock - Weathered	GC		5	10 1101			
219_				Bedrock - conglomerat							
<u> </u>											
220 Abbrev	viation	e: 11808 - 1	Unified Sail C	laccificati	on Sigt	em ft = foot	bgs = below ground surface,	amel = ah	Ne mos	a sea lovol C	N -
- nnie	vialiUil						pgs = pelow ground surface,				

9/	ARC	ADIS	for natural and built assets		Во	ring Lo	g		She	eet: 12 of	13
Date S	Started	: <u>01/07/</u>	2019		Surface	e Elevation:	569.7 ft amsl	Borii	na No :	MW-Nd	
Date 0	Comple	ted: <u>03/03/</u>	2019		Northin	g (NAD83):	2102325.9		ig 110	<u>ivivv ita</u>	
Drilling	g Co.:	<u>Casca</u>	de		Easting	j (NAD83):	<u>7615441.5</u>	_ Client:	PG&E		
Drilling	g Meth	od: <u>Sonic</u>	Drilling		Total D	epth:	247 ft bgs	_ Project:	<u>Final G</u>	<u>roundwater R</u>	<u>emedy Phase</u>
Drill R			onic track mo	ount			4-12 inches	_ Location			
Driller					-		: <u>114.51 ft bgs</u>	_		-	<u>les, California</u>
Drilling	-		ellmantel / T.		-	ng Method:	4 inch x 10 ft Core Barrel	_ Project N	Number: .	RC000753.00	51
Logge			ghtly/D. Maur	<u>er</u>	-	ng Interval:	Continuous	_			
Editor		<u>Sean I</u>	<u>McGrane</u>		Conver	ted to Well:	X Yes				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	epoo Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
	240 120	s: USCS =	MW-N-VAS- 228.0-233.0 (<0.17 U ppb) 2/26/2019 16:30	Topock - Weathered Bedrock - conglomerat Topock - Weathered Bedrock - conglomerat Topock - weathered Bedrock - conglomerat	SW GC	graded grained grained granule (231.0 gravel) granule little fin	- 231.0') Topock - Weathered Bedrock Is and with gravel (SW); reddish brown to very coarse grained, subangular to stor clasts composed of metadiorote; wet - 240.0') Topock - Weathered Bedrock with sand (GC); reddish brown / moders to very large pebbles, subangular to to the toler medium grained sand; trace silt; must be to medium grained sand; trace silt; must be substituted by the substitute of the subst	(5YR 4/3); med subround; som ibround; trace s - conglomerate ate brown(5YR subround; som oist to wet	dium le silt; trace e; Clayey 4/4); e clay;	n sea level. G	W=

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	g			She	eet: 13 of	13
Date S	Started	: <u>01/07/2</u>	2019		Surface	Elevat	tion:	<u>569.7 ft amsl</u>		Borin	a No.:	MW-Nd	
	-	eted: <u>03/03/2</u>	<u>2019 </u>		Northin	g (NAD	83):	2102325.9				<u>iiivv ita</u>	
Drilling	-	Cascac			Easting	•	33):	<u>7615441.5</u>		_ Client:	PG&E		
Drilling	-		-		Total D	-		247 ft bgs		-		<u>roundwater Re</u>	medy Phase
Drill R			onic track m		Borehol			4-12 inches		_ Location:			0 116 1
Driller					-			: <u>114.51 ft bgs</u>		-		Topock, Needl	
Drilling	-		Ilmantel / T.		Samplin	-			Core Barrel	_ Project N	iumber: <u>I</u>	RC000753.008	01
Logge Editor:		-	ıhtly/D. Mauı //cGrane		Samplir Convert	-		Continuous	No	-			
Laitor		<u>Ocan iv</u>	COTATIC		T		VCII.	<u> </u>	140				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class			Soil Description			Drilling Notes	Drilling Fluid
241 				Topock - Weathered Bedrock - conglomerate	50		sand w mediun	<i>i</i> ith gravel (SC); reden n grained; some cla	Weathered Bedrock - dish brown (5YR 4/3) y; little granules to me ace silt; moist to wet	; fine grained t	0		
243							gravel v	with sand (GM); red	Competent Bedrock - Idish brown (5YR 4/3); granules to v	ery		
	120			Topock -			large po sand; li	ebbles, subangular ittle silt; trace clay; c	to subround <mark>; littl</mark> e fine dry	e to med <mark>ium</mark> gr	ained		
				Competent Bedrock - conglomerate	Givi								
246_													
247				Topock - Bedrock -			(246.5		Bedrock - metadiorite;			(246.5 - 247.0') Drill bit	
				metadiorite	J			End	of Boring at 247.0 'bg	S.		broke/melted and had a 0.5 of bedrock in the	
248							10					core	
255													
256													
_257													
258													
260		11000	1 10 1 2 "	<u> </u>									
Abbre	viation	<u>s: USCS = l</u>	Jnified Soil (Jassificati	on Syste	em, ft =	teet,	bgs = below g	round surface,	amsl = abo	ove mear	n sea level, G\	/V =

groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = No Recovery, blue water table symbol represents depth to water measured during second VAS interval

9/	AKC	ADIS	for natural and built assets		Во	ring	Log	J		She	et: 1 of	7
Date S					Surface			570.1 ft amsl	Borir	na No.:	MW-Ns	
	•	ted: <u>03/26/2</u>			Northing		,	2102321.2	_	_		
Drilling		Cascac			Easting		3):	<u>7615448.1</u>	_ Client:	PG&E		
Drilling			•		Total De Borehol			133 ft bgs	_ Project:		V Remedy Ph	
Drill Ri Driller			onic track mou Mara					6-12 inches 115.88 ft bgs	_ Location:	PG&E I	ороск, мееа	es, California
Drilling			llmantel / J. P		Samplin			4 inch x 10 ft Core Barrel	Project N	Lumber: F	RC000753.00	 51
Logge			rer/G.Willford		Samplin			Screen Inteval	_ 1 10,00011		10000100.00	0 1
Editor:			/IcGrane		Convert				_			
	2			.i P								
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
							(0.0 - 10	06.0') (NR); No recovery cores not co /-Nd for lithology	llected, see B	oring		
_ 1 _							LOG IVIV	-iva ioi iitilology				
_ 2 _												
_ 3 _	72								9			
 _ 4 _												
5								$\sim 10^{-1}$				
						$ \setminus $						
6												
 _ 7 _												
8												
9					. . <							
10					NR							
					IVIX							
11	120											
-												
12												
13												
14												
15												
16												
						$\parallel \parallel$						
17												
18	120											
L _	.20											
19												
20					<u> </u>							I

	ARC	74DI2	built assets		ВО	ring Lo	9		neet: 2 of	7
	Date Started: 03/06/2019 Date Completed: 03/26/2019					Elevation:	570.1 ft amsl	Boring No	.: <u>MW-Ns</u>	
						g (NAD83):	2102321.2	_		
Drilling		Cascac				(NAD83):	7615448.1	Client: PG&E		
	g Metho		-		Total De	-	133 ft bgs		GW Remedy Ph	
	ig Type		onic track mo	<u>unt</u>		e Diameter:	6-12 inches	Location: PG&E	Topock, Need	les, California
	Name:	<u>Dan O'</u>					: 115.88 ft bgs	—		
Drilling			llmantel / J. P			g Method:	4 inch x 10 ft Core Barrel	Project Number	: RC000753.00	51
Logge			rer/G.Willford	<u></u>	-	g Interval:	Screen Inteval	_		
Editor	:	Sean IV	<u>IcGrane</u>		Convert	ed to Well:				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
21	-									
22										
23	120									
24										
25										
26										
27										
28										
29					•.					
30					NR					
31_	120									
32										
_33										
34										
	-									
35										
36										
-										
37										
38	120									
	-									
- 29]									
40	\doting =	. 11000 - 1	Initiad Cail Cl	oooific ati -	n Custs	ft = f = + !- :	ns = helow around surface amo	ol = obove ======	nee level CVV =	aroundsts :

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	 g		Sheet: 3 of	7
Drilling Drilling Drill Ri Driller	ate Completed: 03/26/2019 rilling Co.: Cascade rilling Method: Sonic Drilling rill Rig Type: Terrasonic track mount riller Name: Dan O'Mara rilling Asst: E. Huellmantel / J. Pacheco ogger: D. Maurer/G.Willford ditor: Sean McGrane				Northing Easting Total De Borehol Depth to Samplin Samplin	e Diameter: o First Water:	2102321.2 7615448.1 Client: PC 133 ft bgs Project: Fix 6-12 inches Location: PC er: 115.88 ft bgs		PG&E Final GW Remedy Phase I PG&E Topock, Needles, Californ umber: RC000753.0051	
Depth (ft)	Recovery (in)			Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
41	120				NR				(46.0 - 56.0') Rough drilling (46.0 - 56.0') Rough drilling	
60_							a = below ground surface, am			

	ARC	ADIO	built assets		ВО	ring Lo	9		Sneet: 4 of	/
	Started:					Elevation:	570.1 ft amsl	Boring I	No.: <u>MW-Ns</u>	
		ted: <u>03/26/2</u>				g (NAD83):	2102321.2	_		
Drilling		Cascac				(NAD83):	7615448.1		G&E	
	Metho		-		Total De	•	133 ft bgs	-	nal GW Remedy Ph	
	ig Type		onic track mo	<u>unt</u>		e Diameter:	6-12 inches	_ Location: <u>PC</u>	G&E Topock, Needl	es, California
	Name:	Dan O'					: 115.88 ft bgs			
Drilling			llmantel / J. P			g Method:	4 inch x 10 ft Core Barrel	_ Project Num	ber: RC000753.00	51
Logge Editor:			rer/G.Willford IcGrane	1	-	g Interval: ed to Well:	Screen Inteval	_		
Editor		Sean is	licGrane		Conven	eu lo vveii.				T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
_ 61_										
62										
63	120									
64										
65										
66									(66.0 - 76.0') Rough drilling	
67										
68										
69					•					
70_					NR					
71	120									
72										
73										
74										
75										
76										_
77										
	120									
79_ 										
80 Abbro	viations	·· IISCS - I	Inified Soil Cl	accification	n Svetom	ft = foot by	rs = helow ground surface amo	al – above mod	an soa lovel GW =	groundwater

	4K(74DI2	built assets		ВО	ring Lo	9		Sne	eet: 5 of	/
	Started:					Elevation:	570.1 ft amsl	Boring	a No.:	MW-Ns	
		ted: <u>03/26/2</u>				g (NAD83):	2102321.2	_			
Drilling		Cascac				(NAD83):	7615448.1		PG&E		
Drilling			-		Total De	-	133 ft bgs	•		N Remedy Ph	
Drill Ri			onic track mo	<u>unt</u>		e Diameter:	6-12 inches	_ Location: _.	<u>PG&E 1</u>	Fopock, Needle	es, California
Driller		<u>Dan O'</u>					: 115.88 ft bgs	_			
Drilling			<u>llmantel / J. P</u>			g Method:	4 inch x 10 ft Core Barrel	Project Nu	ımber: <u>I</u>	RC000753.00	51
Logge			rer/G.Willford	<u></u>	-	g Interval:	Screen Inteval	=			
Editor:		Sean N	1cGrane		Convert	ed to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
81											
82											
83	120										
_84											
_85											
86										(86.0 - 92.0') Drill rods	
87										chattering	
88						2					
89											
90					NR						
91	120										
92											
93											
94											
95											
06											
96											
97											
98	120										
======================================											
99											
100											
	viations	· 118C8 - 1	Inified Soil Cl	accification	n Svetem	ft = foot by	rs = helow around surface ams	el – above m	agan sa	a lovol GW =	groundwater

9/.	AKC	ADIS	for natural and built assets		Во	ring	Log		She	et: 6 of	7
Date Started: 03/06/2019 Date Completed: 03/26/2019					Surface	Elevation	on: <u>570.1 ft amsl</u>	Borin	a No ·	MW-Ns	
Date C	omple	ted: <u>03/26</u>	/2019		Northing	(NAD8	33): <u>2102321.2</u>		ı y 110	14144-143	
Drilling	Co.:	<u>Casca</u>	ade		Easting	(NAD83	3): <u>7615448.1</u>	Client:	PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	133 ft bgs	_ Project:	Final GV	V Remedy Ph	ase I
Drill Ri	g Type	: <u>Terra</u>	sonic track mo	unt	Borehol	e Diame	eter: <u>6-12 inches</u>	Location:	PG&E T	opock, Needle	es, California
Driller I	Name:	Dan C	O'Mara		Depth to	First W	/ater: 115.88 ft bgs	_		•	
Drilling	Asst:	E. Hu	ellmantel / J. P		Samplin		_	Project N	umber: F	RC000753.00	51
Logge			aurer/G.Willford		Samplin			_			
Editor:			McGrane		Convert	-					
	1			0.5	1		_				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
						\mathbb{N}					
101						\ /					
						$ \setminus / $					
102						$ \setminus / \mid$					
103	120				NR						
	.20					$ \land $					
104						$ / \setminus $					
						/					
105						/ \					
						/ \					
106				L	.L	<u> </u>				(100.0	
						101/97	(106.0 - 1 <mark>11.0') To</mark> pock - Fluvial Deposits; Po (GP); grayish bro <mark>wn</mark> (2.5Y 5/2); boulders, ang	gular; some ve	ery fine	(106.0 - 111.0') Rough drilling,	
107						P0 01	to fine grained sand, angular; little clay; dry; h possibly composed of basalt, pulverized into	nomogeneous	;	core very hot	
							fine to coarse grained sand		,,		
108											
	60			Topock - Fluvial	GP	600					
109	00			Deposits	GF						
						000					
110											
110						00					
111						60%					
111							(111.0 - 114.0') Topock - Fluvial Deposits; Sil	Ity sand with o	gravel		
140						1:1:4:4	(SM); pale yellow (2.5Y 7/3) trace (5R 7/1); very coarse grained, subangular to round; so	me silt: little c	ranules		
112				Topock -			to very large pebbles, subangular to round; tra subround to round; trace clay; dry; gravel com		red		
				Fluvial Deposits	SM		lithology	.,poodu oi			
113				Deposits			(113.0 - 114.0') dark brown (10YR 3/3); moist	t			
114				Topock -	GP		(114.0 - 114.5') Topock - Fluvial Deposits; Po	orly graded g	ravel		
-				Fluvial Deposits	L GP	المن المام	(GP); dark red (10R 3/6); boulders; compose	d of rhyolite			
115				Pehosits	1		(114.5 - 117.0') Topock - Fluvial Deposits; Sil (SM); dark brown (10YR 3/3) little light brown	(7.5YR 6/4);	very		
	144			Topock -			fine grained to very coarse grained, subangul silt; little granules to very large pebbles, suba	ar to round; s	ome		
116				Fluvial Deposits	SM		trace cobbles, subround to round; trace clay;	moist; weak	,		
<u> </u>				'			cementation; gravel composed of mixed lithol	iogy			
117				L	L				,		
							(117.0 - 123.0') Topock - Alluvium Deposits; (SM); brown (10YR 5/3) little reddish yellow (
118							grained to very coarse grained, angular to sul granules to large pebbles, angular to subrour	bround; some	.		
				Topock -	0.4		clay; moist; weak cementation	ia, suitie siil,	mue		
119				Alluvium Deposits	SM						
120											
					<u> </u>	<u> </u>					

9/	ARC	ADIS	for natural and built assets		Во	ring	Log			She	et: 7 of	7
	Started:				Surface	Elevati	on:	570.1 ft amsl	Borir	na No.:	MW-Ns	
	•	ted: <u>03/26/</u>			Northin			2102321.2	_			
Drilling		<u>Casca</u>			Easting	•	3):	7615448.1	_ Client:	PG&E		
_	Metho				Total D	-		133 ft bgs	_ Project:		V Remedy Pr	
	ід Туре		onic track mo	<u>unt</u>	Boreho			6-12 inches	_ Location	: <u>PG&E T</u>	opock, Need	les, California
	Name:	<u>Dan O</u>			-			115.88 ft bgs		. —	2000075000	\
Drilling			ellmantel / J. F		Samplin	-		4 inch x 10 ft Core Barrel	_ Project N	Number: <u>I</u>	RC000753.00	<u>)51</u>
Logge Editor:			urer/G.Willford McGrane	<u>u</u>	Samplin	-		Screen Inteval X Yes No	_			
Editor.		<u>Sean i</u>	VICGIANE		Conven		V CII.	△ Tes ☐ NO				1
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	nscs Code	USCS		Soil Description			Drilling Notes	Drilling Fluid
 121										.		
	144			Topock - Alluvium	SM							
122	144			Deposits	Sivi							
123			MW-N-VAS-									
			121.0-126.0				(123.0 (ML): b	- 128.0') Topock - Alluvium Deposits; rown (7.5YR 5/4); low plasticity; some	Sandy silt wit	th gravel verv		
124			(0.51) 2/16/2019 14:09				coarse	grained sand, angular to subround; li n pebbles, subangular to subround; li	ttle granules t	to		
			14.09				cemen	tation	olay, mole	a, rroun		
125												
				Topock - Alluvium	ML							
126				Deposits								
_127												
128	120						(120.0	- 130.0') Topock - Alluvium Deposits;	Cilty cond wit	th graval		
				T			(SM); g	rayish brown (10YR 5/2); very fine gra f, angular to subround; some silt; little	ained to very	coarse		
129				Topock - Alluvium	SM		large p	ebbles, angular to subround; little clay	granules to v y; trace cobbl	es,		
-				Deposits			subang	jular; dry				
130					4		(130.0	- 133.0') Topock - Fluvial Deposits; S	ilty sand with	gravel		
							(SM); li	ght brown (7.5YR 6/4) little gray (10Y I to very coarse grained, subangular t	R 6/1); very fi	ne		
131				Topock -			granule	es to very large pebbles, subangular to	o subround; s	ome silt;		
				Fluvial	SM			ay; moist to wet; weak cementation; qithology	gravei compos	sed of		
132				Deposits								
133								End of Boring at 133.0 'b	gs.			
134												
425												
135												
420												
136												
127												
137												
 138												
130												
 139												
100												
140												
	viations	: USCS = l	Jnified Soil Cl	lassificatio	n Systen	n, ft = fe	et, bg	s = below ground surface, am	sl = above	mean sea	a level, GW =	groundwater,

9 Α	RCAI	DIS Design & for natur built asset	Consultancy al and ets		Well Construction Log	5	Sheet: 1 of 7
Drilling	ompleted:_ Co.: <u>C</u> Method: <u>S</u> Iame: I Asst: <u>F</u>	Cascade Conic Drilling Cyler Alymer R. West/J. Ca Chris Boness Michael Andr	andelari i		Surface Elevation: N/A Shallow Well Elevation: N/A Deep Well Elevation: N/A Northing (NAD83): N/A Easting (NAD83): N/A Borehole Diameter: 10-12 inches Water Level Start: 21 ft bgs Development End Date 3/31/2019 Well Completion: Flush Stick-up	Client: PG&E Project: Final Location: PG&E	MW-B-33, MW-B-117 GW Remedy Phase I Topock, Needles, California r: RC000753.0051
Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction (0.0 - 18.0') 2" PVC — - (- 97.0') 2" PVC Sch	Calculated Material Volumes	Material Volumes Installed
1			NR		(1.0 - 14.1') Portland Cement 5% Bentonite (11.5 - 12.5') Centralizer (6.0 - 121.0') 10" Borehole	(1.9 - 14.1') 68.1 gallons	(1.0 - 14.1') 90 gallons (32%) Note: Used Type I,II, and V and Hydrogel. Mixed 5.5 batches of grout total.
15					(14.1 - 16.0') Bentonite seal chips	(14.1 - 16.0') 1.5 bags	(14.1 - 16.0') 1.75 bags (17%) Note: Puregold Medium Chips
16 17 18 19 20		Topock - Fluvial Deposits Topock - Fluvial Deposits	SM GP SM)	(16.0 - 37.0') Cemex — #3 MESH (8x10) (18.0 - 33.0') 2" Sch — 40 PVC (20-slot) Screen	(16.0 - 37.0') 20.2 bags	(16.0 - 37.0') 39 bags (93%) Note: Lapis Lustre Sand

9/	ARC4	DIS Design & for natura built asset	Consultancy al and ets		Well Construction Log	\$	Sheet: 2 of 7
Date S	Started:	03/17/2019			Surface Elevation: N/A	Well ID: N	MW-B-33, MW-B-117
Date 0	Completed	<u>.</u>			_ Shallow Well Elevation: <u>N/A</u>		
Drilling	g Co.:	Cascade			_ Deep Well Elevation: <u>N/A</u>	Client: PG&E	<u> </u>
Drilling	g Method:	Sonic Drilling			_ Northing (NAD83): N/A	Project: <u>Final</u>	GW Remedy Phase I
Driller	Name:	Tyler Alymer			_ Easting (NAD83): N/A	Location: PG&E	Topock, Needles, California
Drilling	g Asst:	R. West/J. Ca	andelar	ia	Borehole Diameter: <u>10-12 inches</u>		
Logge	r:	Chris Boness	i		_ Water Level Start: 21 ft bgs	Project Numbe	r: RC000753.0051
Editor	:	Michael Andr	ews		Development End Date <u>3/31/2019</u>		
Total [Depth:	121 ft bgs			_ Well Completion:		
Depth (ft)	Groundwat Sample II		USCS	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
		Topock - Fluvial	SM		(18.0 - 33.0') 2" Sch (-97.0') 2" PVC Sch 40 PVC (20-slot) 40 Casing		
21		Deposits	O.W.		Screen Screen		
- -		Topock -					
23		Fluvial Deposits	SP-SM				
		Deposits					
24							
<u> </u>							
25							
<u> </u>							
26		Topock - Alluvium	CH				
		Deposits					
27							
-2'-							
28							
 						(16.0 - 37.0') 20.2 bags	(16.0 - 37.0') 39 bags (93%) Note: Lapis Lustre Sand
29	MW-B-VAS	-					·
 - 	27-32 (7.7 J ppb)						
30	`1/6/2019´ 12:50				(6.0 - 121.0') 10"		
L _		Topock - Alluvium	SP-SM		Borehole		
31		Deposits					
			1				
32							
33							
34		-			(33.5 - 34.5') Centralizer		
35							
<u> </u>		Topock - Alluvium	SM		(33.0 - 35.4') Sump — : [] : [] : [] and End Cap		
36		Deposits					
L _					「探測 期		
37							
_ <u>_ </u>				\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			
	1			$ \setminus $			
38	1			$ \setminus / $		(07.0 05.0) 50.4	(07.0, 05.0) 54.1
	-		NR		(37.0 - 95.2') Bentonite seal pellets	(37.0 - 95.2') 59.1 buckets	(37.0 - 95.2') 51 buckets (-14%) Note: Pel Plug Pellets (TR30) 3/8"
39				$ / \setminus $			(11, 1, 1
<u> </u>				/ \			
40		11		<u> </u>			
IAhhra	viatione: I	ISCS = Unific	d Sail (laccific	eation System ft = feet has = helow around surface	amel = ahove me	an sea level GW =

Drilling Co.: Cascade Deep Well Elevation: N/A Client: PG&E Drilling Method: Sonic Drilling Northing (NAD83): N/A Project: Final GW Remedy Phase I Drilling Asst: Tyler Alymer Easting (NAD83): N/A Location: PG&E Topock, Needles, Califor Drilling Asst: R. West/J. Candelaria Borehole Diameter: 10-12 inches Project Number: RC000753.0051 Editor: Michael Andrews Development End Date3/31/2019 Project Number: RC000753.0051 Total Depth: 121 ft bgs Well Completion: Flush Stick-up Groundwater Sample ID 90 great Street	9/-	\RC4	DIS Design for na built	n & Consultancy atural and assets		Well Const	truction Log	:	Sheet: 3 of 7
Shallow Well Elevation N/A	Date S	Started:	03/17/2019			_ Surface Elevation:	N/A	Well ID: I	MW-R-33 MW-R-117
Dolling Method: Sonic Dolling Northing (NAD83): N/A		•	<u>. </u>			_ Shallow Well Elevation	n: <u>N/A</u>		· · · · · · · · · · · · · · · · · · ·
Driller Asstrict Chits Boness Chits						_ Deep Well Elevation:	N/A		
Drilling Asst: R. West/J. Candelaria Borehole Dimeter: 10-12 inches Candelaria Drivins Boness: Water Level Start: 2.1 ft.bgs Project Number: RC000753.0051	Drilling	Method:	Sonic Drilling	ng		_ Northing (NAD83):		Project: <u>Final</u>	GW Remedy Phase I
Control Chris Boness Chris Bo			Tyler Alyme	er		_ Easting (NAD83):	N/A	Location: PG&	E Topock, Needles, California
Editor: Michael Andrews Development End Date 3/31/2019 Second Populary 121 ft bgs	Drilling	y Asst:			ia				
Total Depth: 121 ft bgs								Project Numbe	er: <u>RC000753.0051</u>
### Count of the c				drews					
-42 - 43 - 44 - 45 - 46 - 46 - 47 - 40 - 47 - 40 - 40 - 47 - 40 - 40	Total [Depth:			1 1	_ Well Completion:	☐ Flush☐ Stick-up		1
41	Depth (ft)		Geologic Formation	USCS	USCS Class	Well			
	42	47-52 (<0.17 U ppl 1/9/2019		NR		(37.0 - 95.2') Bentonite seal pellets	(6.0 - 121.0') 10"	(37.0 - 95.2') 59.1 buckets	(37.0 - 95.2') 51 buckets (-14%) Note: Pel Plug Pellets (TR30) 3/8"

9/	ARCA	DIS Design 8 for nature built ass	Consultancy ral and ets		Well Const	ruction Log	;	Sheet: 4 of 7
Date (Drilling Driller Drilling Drilling Logge Editor	Completed g Co.: g Method: Name: g Asst: er:	Cascade Sonic Drilling Tyler Alymer R. West/J. C. Chris Boness Michael Andr	andelaria si	ā	_ Surface Elevation: _ Shallow Well Elevation: _ Deep Well Elevation: _ Northing (NAD83): _ Easting (NAD83): _ Borehole Diameter: _ Water Level Start: _ Development End Date _ Well Completion:	N/A N/A N/A 10-12 inches 21 ft bgs	Client: PG&F Project: Final Location: PG&F	WW-B-33, MW-B-117 GW Remedy Phase I Topock, Needles, California
		121 ft bgs are properties of the properties of	ews spoo	USCS	_ Well Completion:		Calculated Material Volumes (37.0 - 95.2') 59.1 buckets	Material Volumes Installed (37.0 - 95.2') 51 buckets (-14%) Note: Pel Plug Pellets (TR30) 3/8"
77 78 79 80					(77.5 - 78.5') — Centralizer			

ARC4	DIS Design & for natura built asse	Consultancy al and ets		Well Const	ruction Log	S	heet: 5 of 7
Pate Completed Prilling Co.: Prilling Method: Priller Name: Prilling Asst:	Cascade	andelaria i		Surface Elevation: Shallow Well Elevation: Deep Well Elevation: Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Dat Well Completion:	N/A n:N/A N/A N/A N/A N/A 10-12 inches 21 ft bgs	Client: PG&E Project: Final (//W-B-33, MW-B-117 GW Remedy Phase I Topock, Needles, Californ RC000753.0051
Groundwat Sample IE		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
		NR		(37.0 - 95.2') Bentonite seal pellets	— (6.0 - 121.0') 10" Borehole	(37.0 - 95.2') 59.1 buckets	(37.0 - 95.2') 51 buckets (-14% Note: Pel Plug Pellets (TR30) 3
_ 96 _ 97 _ 98	Topock - Alluvium Deposits	SM		(95.2 - 121.0') Cemex #3 MESH (8x10)	—(97.0 - 117.0') 2" Sci 40 PVC (20-slot) Screen	n (95.2 - 121.0') 28.7 bags	(95.2 - 121.0') 30 bags (5%) Note: Lapis Lustre Sand
_ 99							
 100 bbreviations: l					ogs = below ground surfa		
 100 bbreviations: l	b = parts per l						ean sea level, GW = levels and VAS samples

9/-	ARC4	DIS Design & for natur built asset	Consultancy al and ets		Well Const	truction Log	\$	Sheet: 6 of 7		
Date S	Started:	03/17/2019			_ Surface Elevation:	N/A	Well ID: N	MW-B-33, MW-B-117		
	Completed				_ Shallow Well Elevation	n: <u>N/A</u>				
Drilling		Cascade			_ Deep Well Elevation:	N/A	Client: PG&E			
_		Sonic Drilling			_ Northing (NAD83):	N/A	•	GW Remedy Phase I		
	Name:	Tyler Alymer			_ Easting (NAD83):	N/A	Location: <u>PG&E</u>	Location: PG&E Topock, Needles, California		
Drilling		R. West/J. Ca		<u>ia</u>	_ Borehole Diameter:	<u>10-12 inches</u>				
Logge		Chris Boness			_ Water Level Start:	21 ft bgs	Project Numbe	r: RC000753.0051		
Editor:		Michael Andr	ews		_ Development End Dat					
Total [Depth:	121 ft bgs			_ Well Completion:	☐ Flush☐ Stick-up		I		
Depth (ft)	Groundwat Sample II		USCS	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed		
	MW-B-VAS	Topock - Alluvium Deposits	SM							
105 106 107	102-107 (<0.17 U ppt 1/10/2019 13:15	Topock - Alluvium Deposits	SM				3			
108 		Topock - Alluvium Deposits	SW-SM				O '			
110 111 		Topock - Alluvium Deposits	GW		(95.2 - 121.0') Cemex #3 MESH (8x10)	(6.0 - 121.0') 10" Borehole	(95.2 - 121.0') 28.7 bags	(95.2 - 121.0') 30 bags (5%) Note: Lapis Lustre Sand		
		Topock - Alluvium Deposits	GM							
118 119 					(117.5 - 118.5') — Centralizer	(117.0 - 119.3') Sump and End Cap				

9/	RCAD	Design & C for natural built asset	Consultancy Land S		Well Construction Log	;	Sheet: 7 of 7
Drilling	ompleted: Co.: Ca Method: Sc Name: Ty Asst: R. : Ch	s/17/2019 ascade onic Drilling der Alymer West/J. Ca nris Bonessi chael Andre		a	Surface Elevation: N/A Shallow Well Elevation:N/A Deep Well Elevation: N/A Northing (NAD83): N/A Easting (NAD83): N/A Borehole Diameter: 10-12 inches Water Level Start: 21 ft bgs Development End Date 3/31/2019 Well Completion: Flush Stick-up	Client: PG&I Project: Final Location: PG&I	WW-B-33, MW-B-117 GW Remedy Phase I Topock, Needles, California RC000753.0051
Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
					(95.2 - 121.0') Cemex #3 MESH (8x10) End of Boring at 121.0 bgs.	(95.2 - 121.0') 28.7 bags	(95.2 - 121.0') 30 bags (5%) Note: Lapis Lustre Sand
139 140					potion System ft - fact has - holey, ground curface		

ARC	DIS Design & Of for natura built asset	Consultancy l and ts		Well Construction Log	S	Sheet: 1 of 18
Date Completed Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger: Editor:	ate Completed: rilling Co.: Cascade rilling Method: Sonic Drilling riller Name: Nick Petrone rilling Asst: T. Alymer/ J. Candelaria ogger: G. Willford / C. Bonessi ditor: Sean McGrane otal Depth: 357 ft bgs			Surface Elevation: N/A Shallow Well Elevation: N/A Deep Well Elevation: N/A Northing (NAD83): N/A Easting (NAD83): N/A Borehole Diameter: 6-12 inches Water Level Start: 21 ft bgs Development End Date 4/15/2019 Well Completion: Flush Stick-up	Client: PG&E Project: Final (MW-B-267, MW-B-337 GW Remedy Phase I Topock, Needles, California r: RC000753.0051
Groundwat Sample II		USCS	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
1	Topock - Fill	SM		(0.0 - 317.0') 2" PVC Sch 80 Casing — (0.0 - 10.0') 12" Borehole (0.0 - 14.0') Portland Cement 5% Bentonite	(0.0 - 14.0') 68.1 gallons	(0.0 - 14.0') 135 gallons (98%) Note: Type I, II and V with Benseal. Used 18 bags Portland with 1 bag bentonite.
15 16 17	Topock - Fluvial Deposits	GM		(10.0 - 341.0') 10" Borehole (14.0 - 20.0')	(14.0 - 20.0') 3.7 bags	(14.0 - 20.0') 17 bags (359%)
18 19 	Topock - Fluvial Deposits	GM		Bentonite seal chips Bentonite seal chips		Note: Enviroplug Medium Chips

9/	ARC ⁴	DIS Design & for natural built asset	Consultancy al and ets		Well Construction	on Log	Sheet: 2 of 18		
Date S	Started:	03/05/2019			_ Surface Elevation: <u>N/A</u>		Well ID: I	WW-B-267, MW-B-337	
	Completed				_ Shallow Well Elevation: <u>N/A</u>				
Drilling	-	Cascade			_ Deep Well Elevation: <u>N/A</u>		Client: <u>PG&I</u>		
_	•	Sonic Drilling			_ Northing (NAD83): N/A		-	GW Remedy Phase I	
	Name:	Nick Petrone			_ Easting (NAD83): N/A	.	Location: PG&I	E Topock, Needles, California	
Drilling	-	T. Alymer/ J.			_ Borehole Diameter: 6-12 inc			D0000750 0054	
Logge Editor:		G. Willford / G. Sean McGrar		essi	_ Water Level Start: 21 ft bg		Project Numbe	r: RC000753.0051	
Total D		357 ft bgs	<u>ie</u>		_ Development End Date <u>4/15/2019</u> _ Well Completion: ☐ Flush☐ Stick-up		=		
Total E	Бор ин.				_ vvoii completion.				
Depth (ft)	Groundwat Sample II		Code	USCS	Well Construction		Calculated Material Volumes	Material Volumes Installed	
 21		Topock - Fluvial Deposits	GM		(0.0 - 317.0') 2" PVC— Sch 80 Casing	— (-247.0') 2" PVC Sch 80 Casing			
22		Topock - Fluvial Deposits	sc						
23 24		Topock - Alluvium Deposits	СН					0	
25 26 27		Topock - Alluvium Deposits	SM				5/1		
28	MW-B-VAS 27-32 (7.7 J ppb) 1/6/2019 12:50	Topock -	SM	AND	(20.0 - 235.0') High — Solids Grout	(10.0 - 341.0') 10" Borehole	(20.0 - 235.0') 874.7 gallons	(20.0 - 235.0') 950 gallons (9%) Note: Used 56 - 50 lbs bags of Aqua Guard high solids grout mix	
32 33		Topock - Alluvium Deposits	SC						
34 35 36 37 38 39		Topock - Alluvium Deposits	SM						
40 Abbres	viatione: I	ISCS - Unific	d Soil (<u>11.41.11.11</u> Naccific	ation System ft = feet has = hel	ow ground surface s	amel – ahove m	oan soa lovol. GW =	

9/-	ARC	DIS Design & for natura built asse	Consultancy I and ts		Well Const	ruction Log	5	Sheet: 3 of 18
Date S	Started:	03/05/2019			_ Surface Elevation:	N/A	Well ID: N	MW-B-267, MW-B-337
Date C	Completed				_ Shallow Well Elevatior	n: <u>N/A</u>		2 207, 2 007
Drilling		Cascade			_ Deep Well Elevation:	N/A	Client: PG&E	
_		Sonic Drilling			_ Northing (NAD83):	N/A	•	GW Remedy Phase I
	Name:	Nick Petrone			_ Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, California
Drilling		T. Alymer/ J.			_ Borehole Diameter:	6-12 inches		
Logge		G. Willford / C		ssi	_ Water Level Start:	21 ft bgs	Project Numbe	r: RC000753.0051
Editor:		Sean McGran	<u>ie</u>		_ Development End Date			
Total [Jeptn:	357 ft bgs	I		_ Well Completion:	☐ Flush☐ Stick-up	<u> </u>	
Depth (ft)	Groundwat Sample II		USCS	USCS		Construction	Calculated Material Volumes	Material Volumes Installed
41 42 43 44		Topock - Alluvium Deposits	SM		(0.0 - 317.0') 2" PVC— Sch 80 Casing	(-247.0') 2" PVC Sch 80 Casing		
45 46 47 48 49 50 51 51	MW-B-VAS 47-52 (<0.17 U ppl 1/9/2019 10:15	Topock - Alluvium Deposits	SM		(47.5 - 48.5') Centralizer (20.0 - 235.0') High Solids Grout	(10.0 - 341.0') 10" Borehole	(20.0 - 235.0') 874.7 gallons	(20.0 - 235.0') 950 gallons (9%) Note: Used 56 - 50 lbs bags of Aqua Guard high solids grout mix
5354555657585960		Topock - Alluvium Deposits	SM					

9/-	ARCA	DIS Design of for nature built ass	& Consultancy ral and sets		Well Construction Log	Sheet: 4 of 18		
Date S Date C Drilling Drilling	Started: Completed g Co.: g Method: Name:	03/05/2019	<u> </u>	aria	Surface Elevation: N/A Shallow Well Elevation: N/A Deep Well Elevation: N/A Northing (NAD83): N/A Easting (NAD83): N/A Borehole Diameter: 6-12 inches	 Client: <u>PG&I</u> Project: <u>Final</u>	MW-B-267, MW-B-337 GW Remedy Phase I Topock, Needles, California	
Logge Editor: Total [r:	G. Willford / Sean McGra 357 ft bgs	C. Bone		Water Level Start: 21 ft bgs Development End Date4/15/2019 Well Completion: ☐ Flush☐ Stick-up	Project Numbe 	r: RC000753.0051	
Depth (ft)	Groundwat Sample ID		Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed	
61 62		Topock - Alluvium Deposits	SM		(0.0 - 317.0') 2" PVC Sch 80 Casing Sch 80 Casing			
63 64		Topock - Alluvium Deposits	ML				0	
 65		Topock - Fluvial Deposits	GM					
66 67 68 69 70 71 72	MW-B-VAS 67-72 (<0.17 U ppt 1/9/2019 14:55	Бороско	SM		(20.0 - 235.0') High	(20.0 - 235.0') 874.7 gallons	(20.0 - 235.0') 950 gallons (9%) Note: Used 56 - 50 lbs bags of Aqua Guard high solids grout mix	
73		Topock - Alluvium Deposits	GM					
78 79 		Topock - Alluvium Deposits	SM		potion System ft – fact has – below ground surface			

9/-	ARC4	DIS Design & Control for natura built asset	Consultancy al and ts		Well Const	ruction Log	;	Sheet: 5 of 18	
		03/05/2019			_ Surface Elevation:	N/A	Well ID: N	MW-B-267, MW-B-337	
	Completed	<u>:</u>			_ Shallow Well Elevation	:N/A		W B 207, W B 007	
Drilling	g Co.:	<u>Cascade</u>			_ Deep Well Elevation:	N/A	Client: PG&E		
Drilling	Method:	Sonic Drilling			_ Northing (NAD83):	N/A	Project: <u>Final</u>	GW Remedy Phase I	
Driller	Name:	Nick Petrone			_ Easting (NAD83):	N/A	Location: PG&	Topock, Needles, California	
Drilling	Asst:	T. Alymer/ J.	<u>Candel</u>	aria	_ Borehole Diameter:	6-12 inches			
Logge	r:	G. Willford / C	C. Bone	ssi	_ Water Level Start:	21 ft bgs	Project Numbe	r: RC000753.0051	
Editor:		Sean McGran	ne		_ Development End Date	4/15/2019			
Total [Depth:	357 ft bgs			_ Well Completion:	☐ Flush☐ Stick-up			
Depth (ft)	Groundwat Sample II		USCS	USCS Class		Construction	Calculated Material Volumes	Material Volumes Installed	
81		Topock - Alluvium Deposits	SM		(0.0 - 317.0') 2" PVC— Sch 80 Casing	(-247.0') 2" PVC Sch 80 Casing			
88 89 90 91		Topock - Alluvium Deposits	GM		(20.0 - 235.0') High Solids Grout	(10.0 - 341.0') 10" Borehole	(20.0 - 235.0') 874.7 gallons	(20.0 - 235.0') 950 gallons (9%) Note: Used 56 - 50 lbs bags of Aqua Guard high solids grout mix	
92 93 94 95 96		Topock - Alluvium Deposits	SM						
98 99 100		Topock - Alluvium Deposits	ML						

A	RCA	DIS Design & for natura built asse	Consultancy Il and ts		Well Const	ruction Log	Sheet: 6 of 18		
Date St		03/05/2019				N/A	Well ID: I	MW-B-267, MW-B-337	
	ompleted				_ Shallow Well Elevation				
Drilling		<u>Cascade</u>			•	N/A	Client: PG&E		
Drilling	Method:	Sonic Drilling			_ Northing (NAD83):	N/A	Project: <u>Final</u>	GW Remedy Phase I	
Driller N		Nick Petrone			O (,	N/A	Location: PG&I	<u> Topock, Needles, California</u>	
Drilling		T. Alymer/ J.				6-12 inches			
Logger:		G. Willford / C		ssi		21 ft bgs	Project Numbe	r: RC000753.0051	
Editor:		Sean McGrar	ne		_ Development End Date				
Total D	al Depth: 357 ft bgs			<u> </u>	_ Well Completion:	☐ Flush☐ Stick-up	T	T	
Depth (ft)	Groundwat Sample ID		nscs Code	USCS		Construction	Calculated Material Volumes	Material Volumes Installed	
		Topock - Alluvium Deposits	ML		(0.0 - 317.0') 2" PVC————————————————————————————————————	(- 247.0') 2" PVC Sch 80 Casing			
 104	MW-B-VAS 102-107 (<0.17 U ppt 1/10/2019 13:00	Topock - Alluvium Deposits	SM				(5)	9	
		Topock - Alluvium Deposits	SM		(107.5 - 108.5') Centralizer (20.0 - 235.0') High Solids Grout	(10.0 - 341.0) 10" Borehole	(20.0 - 235.0') 874.7 gallons	(20.0 - 235.0') 950 gallons (9%) Note: Used 56 - 50 lbs bags of Aqua Guard high solids grout mix	

9/	\RC4	DIS Design & for natura built asse	Consultancy al and ts		Well Const	ruction Log	:	Sheet: 7 of 18
	Started:	03/05/2019			_ Surface Elevation:	N/A	Well ID: I	MW-B-267, MW-B-337
	Completed				_ Shallow Well Elevation			<u> </u>
Drilling	J Co.:	Cascade			_ Deep Well Elevation:	N/A	Client: PG&I	
Drilling	Method:	Sonic Drilling			_ Northing (NAD83):	N/A	Project: <u>Final</u>	GW Remedy Phase I
Driller	Name:	Nick Petrone			_ Easting (NAD83):	N/A	Location: PG&I	<u> Topock, Needles, California</u>
Drilling	Asst:	T. Alymer/ J.	<u>Candel</u>	aria	_ Borehole Diameter:	6-12 inches		
Loggei		G. Willford / C	C. Bone	ssi	_ Water Level Start:	21 ft bgs	Project Numbe	r: <u>RC000753.0051</u>
Editor:		Sean McGran	ne		_ Development End Date			
Total E	Depth:	357 ft bgs	<u> </u>		_ Well Completion:	☐ Flush☐ Stick-up	T	T
Depth (ft)	Groundwat Sample II		Code	USCS		Construction	Calculated Material Volumes	Material Volumes Installed
		Topock - Alluvium Deposits	SM		(0.0 - 317.0') 2" PVC————————————————————————————————————	(-247.0') 2" PVC Sch 80 Casing		
123 124 125 126		Topock - Alluvium Deposits	GM					9
127 128 129		Topock - Alluvium Deposits	SM					
130 131 132 133 134		Topock - Alluvium Deposits	GM		(20.0 - 235.0') High — Solids Grout	(10.0 - 341.0') 10" Borehole	(20.0 - 235.0') 874.7 gallons	(20.0 - 235.0') 950 gallons (9%) Note: Used 56 - 50 lbs bags of Aqua Guard high solids grout mix
135 136 137 138 139 140		Topock - Alluvium Deposits	SM					

9/	\RC4	DIS Design & for natura built asse	Consultancy al and its		Well Const	ruction Log	Sheet: 8 of 18		
Date S	Started:	03/05/2019			_ Surface Elevation:	N/A	Well ID: I	MW-B-267, MW-B-337	
	Completed				_ Shallow Well Elevatior				
Drilling	g Co.:	Cascade			_ Deep Well Elevation:	N/A	Client: PG&I		
Drilling	Method:	Sonic Drilling			_ Northing (NAD83):	N/A	Project: <u>Final</u>	GW Remedy Phase I	
Driller	Name:	Nick Petrone			_ Easting (NAD83):	N/A	Location: PG&I	<u> Topock, Needles, California</u>	
Drilling	y Asst:	T. Alymer/ J.			_ Borehole Diameter:	6-12 inches			
Logger		G. Willford / C		ssi	_ Water Level Start:	21 ft bgs	Project Numbe	er: RC000753.0051	
Editor:		Sean McGrar	ne		_ Development End Date				
Total D	Depth:	357 ft bgs			_ Well Completion:	☐ Flush☐ Stick-up	T	T	
Depth (ft)	Groundwat Sample II		USCS	USCS Class		Construction	Calculated Material Volumes	Material Volumes Installed	
141	MW-B-VAS	Topock - Alluvium Deposits	SM		(0.0 - 317.0') 2" PVC— Sch 80 Casing	(-247.0') 2" PVC Sch 80 Casing			
145 146 147	142-147 (<0.17 U ppt 1/15/2019 14:25	Topock - Alluvium Deposits	SM				6		
148 149 150 151 152		Topock - Alluvium Deposits	SM		(20.0 - 235.0') High Solids Grout	(10.0 - 341.0') 10" Borehole	(20.0 - 235.0') 874.7 gallons	(20.0 - 235.0') 950 gallons (9%) Note: Used 56 - 50 lbs bags of Aqua Guard high solids grout mix	
153		Topock - Alluvium Deposits	GM						
154 155 156 157		Topock - Alluvium Deposits	SM						
158 159 		Topock - Alluvium Deposits	GM			ngs = below ground surface			

Date Started: 03/05/2019	ARC	CAD	Design & C for natural built assets	onsultancy and s		Well Const	ruction Log		Sheet: 9 of 18
Shallow Well Elevation N/A Cilient: PG&E			/05/2019					Well ID: I	MW-B-267. MW-B-337
Definition Martine Social Colliding Morthing (NADB3): NA	-								
Driller Mark Driller Asset Logation Caption _									
Deling Ass. T. Alyment J. Candelarian Borelois Dismeters 6-12 inches	_		-			- , ,		-	-
Company Comp						- ,		Location: <u>PG&</u>	E Topock, Needles, California
Sean McCrane	_		-					— — — — — — — — — — — — — — — — — — —	
Total Depth:					SSI		_	Project Numbe	er: <u>RC000753.0051</u>
Second				U		· · · · · · · · · · · · · · · · · · ·			
1-	Total Deptil.	<u>55</u>				_ well completion.	Trushi Stick-up	T	<u> </u>
161	Oepth (ff) Sam		Geologic Formatior	USCS	USCS Class				
			Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits	GP ML	$D \sim C$	(167.5 - 168.5') Centralizer	Sch 80 Casing (10.0 - 341.0') 10"		Note: Used 56 - 50 lbs bags of Aqua

9/	\RC4	DIS Design & for natura built asse	Consultancy al and rts		Well Constr	uction Log	Sheet: 10 of 18		
Date S	Started:	03/05/2019				N/A	Well ID: I	MW-B-267, MW-B-337	
	Completed				_ Shallow Well Elevation: <u>h</u>				
Drilling		Cascade				V/A	Client: PG&I		
_	lling Method: <u>Sonic Drilling</u>				_	V/A	•	GW Remedy Phase I	
	ller Name: <u>Nick Petrone</u>				O (,	V/A	Location: <u>PG&</u>	Topock, Needles, California	
Drilling		T. Alymer/ J.				6-12 inches	_		
Logge				SSİ		21 ft bgs	Project Numbe	r: RC000753.0051	
Editor:		Sean McGrar	<u>ne</u>		_ Development End Date		_		
Total E	Jeptn:	357 ft bgs			_ Well Completion:	☐ Flush☐ Stick-up			
Depth (ft)	Groundwat Sample II		Code	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed	
181 182 183		Topock - Alluvium Deposits	SM		(0.0 - 317.0') 2" PVC————————————————————————————————————	(- 247.0') 2" PVC Sch 80 Casing			
184 185 186 187	MW-B-VAS 182-187 (<0.17 U ppt 2/13/2019 10:30	Topock - Alluvium Deposits	SM				5		
188		Topock - Alluvium Deposits	SM		(20.0 - 235.0') High ————————————————————————————————————	(10.0 - 341.0') 10" Borehole	(20.0 - 235.0') 874.7 gallons	(20.0 - 235.0') 950 gallons (9%) Note: Used 56 - 50 lbs bags of Aqua Guard high solids grout mix	
193 194 195		Topock - Alluvium Deposits	SM						
196 197		Topock - Alluvium Deposits	SM						
198		Topock - Alluvium Deposits	SM			as = below ground surface			

9/-	ARC4	DIS Design & for natura built asse	Consultancy al and ts		Well Const	ruction Log	;	Sheet: 11 of 18	
Date S	Started:	03/05/2019			_ Surface Elevation:	N/A	Well ID: N	MW-B-267, MW-B-337	
	Completed				_ Shallow Well Elevation				
Drilling	g Co.:	<u>Cascade</u>				N/A	Client: PG&E		
_	rilling Method: Sonic Drilling				_ Northing (NAD83):	N/A	•	Project: Final GW Remedy Phase I	
		Nick Petrone			_ Easting (NAD83):	N/A	Location:PG&	<u> Topock, Needles, California</u>	
Drilling		T. Alymer/ J.			_ Borehole Diameter:	6-12 inches			
Logge		G. Willford / C		ssi	_ Water Level Start:	21 ft bgs	Project Numbe	r: RC000753.0051	
Editor:		Sean McGran	ne		_ Development End Date				
Total [Depth:	357 ft bgs	<u> </u>		_ Well Completion:	☐ Flush☐ Stick-up	I	Ι	
Depth (ft)	Groundwat Sample ID		USCS Code	USCS		Construction	Calculated Material Volumes	Material Volumes Installed	
201 		Topock - Alluvium Deposits	SM		(0.0 - 317.0') 2" PVC————————————————————————————————————	(- 247.0') 2" PVC Sch 80 Casing			
203 				$\left \right $					
			NR	$\left \begin{array}{c} \\ \\ \end{array} \right $					
206 							(S)		
 _208									
209 210	MW-B-VAS 207-212 (<0.17 U ppb 2/14/2019 10:55)			(20.0 - 235.0') High Solids Grout	(10.0 - 341.0') 10" Borehole	(20.0 - 235.0') 874.7 gallons	(20.0 - 235.0') 950 gallons (9%) Note: Used 56 - 50 lbs bags of Aqua Guard high solids grout mix	
211 _212		Topock - Alluvium Deposits	SM						
214 215									
216 217 		Topock - Alluvium Deposits	SM						
219 220									

ARC	ADIS Design & for natura built asset	Consultancy Il and ts		Well Const	ruction Log	5	Sheet: 12 of 18
Date Started:	03/05/2019			Surface Elevation:	N/A	Well ID: N	MW-B-267, MW-B-337
Date Complete				_ Shallow Well Elevatior	n: <u>N/A</u>		
Drilling Co.:	<u>Cascade</u>			_ Deep Well Elevation:	N/A	Client: PG&E	
Drilling Method	: Sonic Drilling			Northing (NAD83):	N/A	Project: <u>Final</u>	GW Remedy Phase I
Driller Name:	Nick Petrone			_Easting (NAD83):	N/A	Location: PG&E	Topock, Needles, California
Drilling Asst:	T. Alymer/ J.	<u>Candela</u>	aria	Borehole Diameter:	6-12 inches		
Logger:	G. Willford / C	C. Bones	ssi	Water Level Start:	21 ft bgs	Project Numbe	r: RC000753.0051
Editor:	Sean McGran	ie		Development End Date	e <u>4/15/2019</u>		
Total Depth:	357 ft bgs			Well Completion:	☐ Flush☐ Stick-up		
Groundw Sample		Code	USCS Class	Well (Construction	Calculated Material Volumes	Material Volumes Installed
	Topock - Alluvium Deposits	SM		(20.0 - 235.0') High Solids Grout	(10.0 - 341.0') 10" Borehole	(20.0 - 235.0') 874.7 gallons	(20.0 - 235.0') 950 gallons (9%) Note: Used 56 - 50 lbs bags of Aqua Guard high solids grout mix
	Topock - Alluvium Deposits	SM					
236 237 	Topock - Alluvium Deposits	ML		(235.0 - 245.1') Bentonite seal pellets (237.5 - 238.5') Centralizer		(235.0 - 245.1') 9.6 buckets	(235.0 - 245.1') 10 buckets (4%) Note: Pel-Plug (TR30) 3/8", doubled seal from 5 to 10 feet due to casing joints to eliminate an open borehole

9/	ARC	DIS Design & for natura built asse	Consultancy all and ts		Well Const	truction Log	Ş	Sheet: 13 of 18
Date S	Started:	03/05/2019			_ Surface Elevation:	N/A	Well ID: N	MW-B-267, MW-B-337
	Completed	<u>.</u>			_ Shallow Well Elevation	n: <u>N/A</u>		W B 207, W B 007
Drilling	g Co.:	<u>Cascade</u>			_ Deep Well Elevation:	N/A	Client: PG&E	<u> </u>
Drilling	Method:	Sonic Drilling			_ Northing (NAD83):	N/A	Project: <u>Final</u>	GW Remedy Phase I
Driller	Name:	Nick Petrone			_ Easting (NAD83):	N/A	Location: <u>PG&</u> E	Topock, Needles, California
Drilling	g Asst:	T. Alymer/ J.	Candel	aria	_ Borehole Diameter:	6-12 inches		
Loggei	r:	G. Willford / C	C. Bone	ssi	_ Water Level Start:	21 ft bgs	Project Numbe	r: RC000753.0051
Editor:		Sean McGrar	ne		_ Development End Dat	e <u>4/15/2019</u>		
Total [Depth:	357 ft bgs			_ Well Completion:	☐ Flush☐ Stick-up		,
Depth (ft)	Groundwat Sample II		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
241 242 243 244 245 246		Topock - Alluvium Deposits	ML		(0.0 - 317.0') 2" PVC — Sch 80 Casing (235.0 - 245.1') — Bentonite seal pellets	— (-247.0') 2" PVC Sch 80 Casing	(235.0 - 245.1') 9.6 buckets	(235.0 - 245.1') 10 buckets (4%) Note: Pel-Plug (TR30) 3/8", doubled seal from 5 to 10 feet due to casing joints to eliminate an open borehole
247	MW-B-VAS 247-252 (<0.83 U ppt 2/17/2019 11:25		ML		(245.1 - 271.0')	(247.0 - 267.0') 2" Sch 80 PVC (20-slot) Screen (10.0 - 341.0') 10" Borehole	(245.1 - 271.0') 26.5	(245.1 - 271.0') 34 bags (28%)
		Topock - Alluvium Deposits	МН		Cemex #3 MESH (8x10)	has = below ground surface	bags	Note: Lapis Lustre Sand

ARC	ADIS Design & C for natural built asset	Consultancy l and cs	Well Cons	truction Log	5	Sheet: 14 of 18
Date Started:	03/05/2019		_ Surface Elevation:	N/A	Well ID: N	MW-B-267, MW-B-337
Date Complete	d:		_ Shallow Well Elevation	n: <u>N/A</u>		
Drilling Co.:	Cascade		_ Deep Well Elevation:	N/A	Client: PG&E	
•	: Sonic Drilling			N/A		GW Remedy Phase I
Driller Name:	Nick Petrone		_ Easting (NAD83):	N/A	Location: PG&E	Topock, Needles, California
Drilling Asst:	T. Alymer/ J. 0	<u>Candelaria</u>	_ Borehole Diameter:	6-12 inches		
Logger:	G. Willford / C	C. Bonessi	_ Water Level Start:	21 ft bgs	Project Numbe	r: RC000753.0051
Editor:	Sean McGran	e	_ Development End Dat	e <u>4/15/2019</u>		
Total Depth:	357 ft bgs		_ Well Completion:	☐ Flush☐ Stick-up		
Groundw Sample		USCS Code USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
	ob)	MH ML	(245.1 - 271.0') Cernex #3 MESH (8x10) (267.5 - 268.5') Centralizer	— (247.0 - 267.0') 2" Sch 80 PVC (20-slot) Screen — (267.0 - 269.3') Sump and End Cap — (10.0 - 341.0') 10" Borehole	(245.1 - 271.0') 26.5 bags	(245.1 - 271.0') 34 bags (28%) Note: Lapis Lustre Sand
2772 2773 2774 2775 2775 2775 2775 2775 2775 2775	Topock - Alluvium Deposits	© C A	(271.0 - 314.9') — Bentonite seal pellets	bgs = below ground surfac	(271.0 - 314.9') 44.1 buckets	(271.0 - 314.9') 42 buckets (-5%) Note: Pel-Plug (TR30) 3/8" 3/5/19 seal installation not complete, approximatly 25 more ft added on 3/6/19

9/-	ARCA	DIS Design & for natura built asse	Consultancy all and ts		Well Const	truction Log	:	Sheet: 15 of 18
		03/05/2019			_ Surface Elevation:	N/A	Well ID: I	MW-B-267, MW-B-337
	Completed				_ Shallow Well Elevation			
Drilling	J Co.:	<u>Cascade</u>			_ Deep Well Elevation:	N/A	Client: PG&I	
Drilling	Method:	Sonic Drilling			_ Northing (NAD83):	N/A	Project: <u>Final</u>	GW Remedy Phase I
Driller	Name:	Nick Petrone			_ Easting (NAD83):	N/A	Location: <u>PG&</u> I	E Topock, Needles, California
Drilling		T. Alymer/ J.			_ Borehole Diameter:	6-12 inches		
Logge				ssi	_ Water Level Start:	21 ft bgs	Project Numbe	er: RC000753.0051
Editor:		Sean McGran	ne		_ Development End Dat			
Total [Depth:	357 ft bgs			_ Well Completion:	☐ Flush☐ Stick-up		1
Depth (ft)	Groundwat Sample ID		USCS	USCS Class		Construction	Calculated Material Volumes	Material Volumes Installed
		Topock - Alluvium Deposits	ML		(0.0 - 317.0') 2" PVC — Sch 80 Casing			
283 284 285 286		Topock - Alluvium Deposits	ML					9
	MW-B-VAS 287-292 (<0.17 U ppt 2/20/2019 12:15		ML		(271.0 - 314.9') — Bentonite seal pellets	(10.0 - 341.0') 10" Borehole	(271.0 - 314.9') 44.1 buckets	(271.0 - 314.9') 42 buckets (-5%) Note: Pel-Plug (TR30) 3/8" 3/5/19 seal installation not complete, approximatly 25 more ft added on 3/6/19
293 294 295		Topock - Weathered Bedrock - conglomerate	GM					
296 297		Topock - Weathered Bedrock - conglomerate	ML					
298 		Topock - Weathered Bedrock - conglomerate	SM					
		10.00						

9/-	ARCA	DIS Design & Of for natura built asset	Consultancy Il and ts		Well Construction Log	5	Sheet: 16 of 18
Date C Drilling Drilling Driller Drilling					Surface Elevation: N/A Shallow Well Elevation: N/A Deep Well Elevation: N/A Northing (NAD83): N/A Easting (NAD83): N/A Borehole Diameter: 6-12 inches Water Level Start: 21 ft bgs Development End Date 4/15/2019 Well Completion: Flush Stick-up	Client: PG&E Project: Final Location: PG&E	GW Remedy Phase I Topock, Needles, California
Depth (ft)	Groundwate Sample ID	logic attion	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
		Topock - Weathered Bedrock - conglomerate Topock - Weathered Bedrock - conglomerate	GM		(0.0 - 317.0') 2" PVC—Sch 80 Casing (271.0 - 314.9') Bentonite seal pellets — (10.0 - 341.0') 10" Borehole	(271.0 - 314.9') 44.1 buckets	(271.0 - 314.9') 42 buckets (-5%) Note: Pel-Plug (TR30) 3/8" 3/5/19 seal installation not complete, approximatly 25 more ft added on 3/6/19
315 316 317 318 319 320_ 320	MW-B-VAS- 317-322 (<0.17 U ppb 2/21/2019 11:00		SM	,	(314.9 - 341.0') Cemex #3 MESH	(314.9 - 341.0') 26.5 bags	(314.9 - 341.0') 31.5 bags (19%) Note: Lapis Lustre Sand
Abbrev	/iations: U	ISCS = Unified	d Soil (Classific	ation System, ft = feet, bgs = below ground surface	, amsl = above m	ean sea level, GW =

ARCADIS Design & Consultancy One struction Log Sheet: 17	of 18
Date Started: 03/05/2019 Surface Elevation: N/A Well ID: MW-B-267	MW-R-337
Date Completed:Shallow Well Elevation:N/A	, IVIVV-D-007
Drilling Co.: <u>Cascade</u> Deep Well Elevation: <u>N/A</u> Client: <u>PG&E</u>	
Drilling Method: Sonic Drilling Northing (NAD83): N/A Project: Final GW Remedy	Phase I
Driller Name: <u>Nick Petrone</u> Easting (NAD83): <u>N/A</u> Location: <u>PG&E Topock, Ne</u>	edles, California
Drilling Asst: <u>T. Alymer/ J. Candelaria</u> Borehole Diameter: <u>6-12 inches</u>	
Logger: <u>G. Willford / C. Bonessi</u> Water Level Start: <u>21 ft bgs</u> Project Number: <u>RC000753.</u>)051
Editor: <u>Sean McGrane</u> Development End Date <u>4/15/2019</u>	
Total Depth: 357 ft bgs Well Completion: Flush Stick-up	
Sample ID Sample	al Volumes stalled
- MW-B-VAS- 317-322 (<0.17 U ppb) 2/21/2019 11:00 Topock - Weathered Bedrock - conglomerate Screen ML	
323	
329	
Weathered Bedrock - (314.9 - 341.0') (314.9 - 341.0') 26.5 (314.9 - 341.0') 26.5 (314.9 - 341.0')	
Cemex #3 MESH	') 31.5 bags (19%) is Lustre Sand
337	
Centralizer Weathered SC	
conglomerate	
(337.0 - 339.3') — L	
Abbreviations: USCS - Unified Sail Classification System # - fact large - below ground surface, amal - above more and level	

9	ARCAI	DIS Design & for natura built asse	Consultancy Il and ts		Well Cons	tructio	n Log		Sheet: 18 of 18	
Date S	Started: <u>(</u>	3/05/2019			_ Surface Elevation:	N/A		Well ID:	MW-B-267, MW-B-33	
Date 0	Completed:_				_ Shallow Well Elevatio	n: <u>N/A</u>			B 207, IIIVI B 00	
Drilling	g Co.: <u>(</u>	Cascade			_ Deep Well Elevation:	N/A		Client: PG&	<u>E</u>	
Drilling	g Method: S	Sonic Drilling			_ Northing (NAD83):	N/A		Project: Final	GW Remedy Phase I	
Driller	Name: 1	lick Petrone			_ Easting (NAD83):	N/A		Location: PG&	E Topock, Needles, Californ	
Drilling	g Asst:	. Alymer/ J.	Candel	aria	_ Borehole Diameter:	6-12 inch	nes		·	
Logge	-	G. Willford / C			_ Water Level Start:	21 ft bgs		Project Numbe	er: RC000753.0051	
Editor		Sean McGran			_ Development End Date	_				
	_	357 ft bgs			_ Well Completion:		Stick-up	_		
Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Well	Construction		Calculated Material Volumes	Material Volumes Installed	
341 342 343 	MW-B-VAS- 339-344 (<0.33 U ppb) 2/27/2019 12:28	Topock -	sc		(314.9 - 341.0') Cemex #3 MESH (8x10)		(10.0 - 341.0') 10" Borehole	(314.9 - 341.0') 26.5 bags	(314.9 - 341.0') 31.5 bags (19% Note: Lapis Lustre Sand	
344 345 346 347		Topock - Weathered Bedrock - conglomerate	sc					6		
348 349 350 351		Topock - Weathered	SC		(341.0 - 357.0') Bentonite seal chips		(341.0 - 357.0') 6" Borehole	(341.0 - 357.0') 4.4 bags	(341.0 - 357.0') 4.5 bags (2%) Note: Enviroplug Medium Chips	
_352		Bedrock - conglomerate								
_353										
	1									
_354	MW-B-VAS- 352-357									
	(<0.33 U ppb)									
_355	` 2/28/2019 ´ 15:05									
_356										
		Topock - Weathered								
]	Bedrock -	sc							
357		conglomerate		<i>V.T.Y.K.</i> A	End of Boring at			ı	1	
	-				357.0 'bgs.					
_358	-									
_359										
]									
	1									
360 Abbre	viations: 11	SCS - Unific	4 8011 0	laccific	ation System. ft = feet.	hae - hala	w ground surface	amel = above =	nean sea level CIM -	
abbre	vialions: U	505 = Unille	นอดแน	Jassilic	alion System. It = feet.	pas = perc	ow around surface	e. amsi = above m	iean sea ievel. Gvv =	

The dead of the de	9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	et: 1 of	18
Northing (No.) Sample District Cascade Easting (NADES) NA_ Sample District Eastern Eas	Date S	tarted:	01/04/	2019		Surface	Elevation:	N/A	Borin	a No :	MW_Rd	
Drilling Method: Sonic Drilling Card Period Total Depth: 357 ft.bgs Project: Find GWR benedy Phase Location: Drilling Asst: Transachic track mount. Nick Petrone. Drilling Asst: T. Alymer J. Candelaria. Sampling Method: 4 finds x.10 ft.Core Barrel. Sean McGrane. Converted to Well: ☑ Yes ☐ No Converted to Well: ☑ Yes ☐ No Delting Notes Drilling Notes Sana McGrane. Topock - Fill Shi Topock - Fill Shi Topock - Fill Shi Topock - Fill Grid Shi Tripock - Fill Grid Deposits. Shi gravel with sand (CAI). (CLEY) 1-17. Topock - Fill Grid Shi Tripock - Fill Grid Deposits. Shi gravel with sand (CAI). (CLEY) 1-17. Topock - Fill Grid Shi Tripock - Fill Grid Deposits. Shi gravel with sand (CAI). (CLEY) 1-17. Topock - Fill Grid Shi Tripock - Fill Grid Deposits. Shi gravel with sand (CAI). (CLEY) 1-17. Topock - Fill Grid Shi Tripock - Fill Grid Deposits. Shi gravel with sand (CAI). (CLEY) 1-17. Topock - Fill Grid Shi Tripock - Fill Grid Deposits. Shi gravel with sand (CAI). (CLEY) 1-17. Topock - Fill Grid Shi Tripock - Fill Grid Deposits. Shi gravel with sand (CAI). (CLEY) 1-17. Topock - Fill Grid Shi Tripock - Fill Grid Deposits. Shi gravel with sand (CAI). (CLEY) 1-17. Topock - Fill Grid Shi Tripock - Fill Grid Deposits. Shi gravel with sand (CAI). (CLEY) 1-17. Topock - Fill Grid Shi Tripock - Fill Grid Deposits. Shi gravel with sand (CAI). (CLEY) 1-17. Topock - Fill Grid Shi Tripock - Fill Grid Deposits. Shi gravel with sand (CAI). (CLEY) 1-17. Topock - Fill Grid Shi Tripock - Fill Grid Deposits. Shi gravel with sand (CAI). (CLEY) 1-17. Topock - Fill Grid Shi Tripock - Fill Grid Deposits. Shi gravel with sand (CAI). (CLEY) 1-17. Topock - Fill Grid Shi Tripock - Fill Grid Deposits. Shi gravel with sand (CAI). (CLEY) 1-17. Topock - Fill Grid Shi Tripock - Fill Grid Deposits. Shi gravel with sand (CAI). (CLEY) 1-17. Topock - Fill Grid Shi Tripock - Fill	Date C	omple	ted: <u>03/05/</u>	2019	I	Northin	g (NAD83):	N/A	Boili	ı y 110	IVIVV-DU	
Delific Name: Derivative Delific Name:	Drilling	Co.:	<u>Casca</u>	de		Easting	(NAD83):	N/A	_ Client:	PG&E		
Delife Name: Nick Petrone Depth to First Water 21 ft bgs Indignated A line in the Second Se	Drilling	Metho	d: <u>Sonic</u>	Drilling		Total D	epth:	357 ft bgs	_ Project:	Final G\	N Remedy Ph	ase I
Drilling Assis: T. Alymer J. Candelaria. Sampling Interval: Continuous Continuous Sampling Interval: Continuous Continuous Sampling Interval: Continuous Continuous Sampling Interval: Continuous Continuous Sampling Interval: Continuous Continuous Continuous Continuous Sampling Interval: Continuous Continuous Sampling Interval: Continuous Continuous Sampling Interval: Continuous Continuous Sampling Interval: Continuous Continuous Sampling Interval: Conti	Drill Ri	д Туре	: <u>Terras</u>	onic track mo	ount l	Boreho	le Diameter	6-12 inches	_ Location:	PG&E T	opock, Needl	es, California
Comparison Com	Driller I	Name:	Nick P	etrone	I	Depth t	o First Wate	r: <u>21 ft bgs</u>	_			
Editor: Sean McGrane Converted to Well: Z Yes No Sean McGrane Converted to Well: Z Yes No Solid Description Dailing Notes Defining Flaid Search Dailing Notes Defining Flaid Dailing Notes Defining Flaid Search Dailin	Drilling	Asst:	T. Alyr	ner/ J. Cande	elaria \$	Samplir	ng Method:	4 inch x 10 ft Core Barrel	Project N	lumber: <u>F</u>	RC000753.00	51
Sieve Sample ID Groundwater Sample ID Ground	Logger	:	G. Will	lford / C. Bor	nessi S	Samplir	ng Interval:	Continuous	_			
1 Copock - Fill 200 12.07 (apock - Fill Stay graved with same (SM); very pale budden and with sit (SM); very pale draining water used subround; little sit, dry, trace organics (0.0 - 7.07) Soft (0.0 - 207.07) M cdilling (0.0 - 207.07) M cdillin	Editor:		Sean I	<u> McGrane</u>	(Conver	ted to Well:					
1 Copock - Fill 200 12.07 (apock - Fill Stay graved with same (SM); very pale budden and with sit (SM); very pale draining water used subround; little sit, dry, trace organics (0.0 - 7.07) Soft (0.0 - 207.07) M cdilling (0.0 - 207.07) M cdillin	Depth (ft)	Recovery (in)			Geologic	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
Topock - Fill GM Topock - Fill Top	_ 3 4	39.6			Topock - Fill	SM	brow	(10YR 8/3); very fine grained to fine grain				(0.0 - 297.0') No water used
to very coarse grained sand, angular; dry; 1.5 Meta-Diorite Boulder 14	_ 9 _ _ 9 _ _ 10 _ _ 11 _ 	120			2	2	0 (12.0 medi	- 13.5') Topock - Fill; Silty gravel with sam	d (GM); (GLE)	(1 4/1); medium		
Topock - Fluvial Deposits (3.5 - 17.0') Topock - Fluvial Deposits; Silty gravel with sand (GM); dark olive brown (2.5Y 3/3); granules to very large pebbles, angular to round; some silt; trace cobbles, angular to subround; dry; gravel composed of mixed lithology Topock - Fluvial Deposits (17.0 - 21.5') Topock - Fluvial Deposits; Silty gravel with sand (GM); dark grayish brown / dark yellowish brown (10YR 4/2); granules to very large pebbles, angular to subround; some very fine to very coarse grained sand, angular to subround; some very fine to very coarse grained sand, angular to subround; some silt; little clay; dry					Topock - Fill	GM						
dark olive brown (2.5Y 3/3); granules to very large pebbles, angular to round; some very fine to very coarse grained sand, angular to subround; some self; trace cobbles, angular to subround; dry; gravel composed of mixed lithology Topock - Fluvial Deposits	_13_						· 9 D					
17	 15				Fluvial	GM	dark	live brown (2.5Y 3/3); granules to very lar ; some very fine to very coarse grained sa und; some silt; trace cobbles, angular to s	ge pebbles, ar and, angular to	igular to		
	 17 18	108			Fluvial	GM	dark large	rayish brown / dark yellowish brown(10YF pebbles, angular to subround; some very t	R 4/2); granule fine to very coa	s to very		
<u> </u>	20				<u> </u>	<u>L</u> _	PLYA					

d: <u>01/04/</u> leted: <u>03/05/</u>	2019							
2424 U3/UE/			Surface			- Boring N	lo.: <u>MW-Bd</u>	
			Northing		*		<u> </u>	
<u>Casca</u>			Easting	•	•	_ Client: PG8		
	-			•	G	-		
						_ Location. FG	XL TOPOCK, Needi	es, Callio
						 _ Project Numb	er: RC000753.00	51
-			-	-		_ ,		
<u>Sean l</u>	<u> McGrane</u>		Conver	ted to \	/ell: ⊠ Yes □ No			
Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling FI
		Topock - Fluvial Deposits	GM				(21.0')	(0.0 - 297.0 water us
		Topock - Fluvial Deposits	sc		reddish yellow (7.5YR 6/6); very fine grained to angular to subround; some granules to very la to subround; little silt; little clay; moist; gravel c	o very coarse grained, rge pebbles, subangul	c); depth to water table	
		Topock - Alluvium Deposits	СН		(22.5 - 24.0') Topock - Alluvium Deposits; Fat reddish yellow (5YR 6/8); high plasticity; little c subround; trace very fine grained sand, suban	obbles, subangular to		
		Topock - Alluvium	SM		brown (7.5YR 5/3); fine grained to very coarse subround; some silt; little granules to medium	grained, angular to	ī);	
		Deposits	J.VI			Di		
		1			brown (7.5YR 5/3); very fine grained to very co to round; some granules to large pebbles, ang	oarse grained, angular	·	
	MW-B-VAS- 27-32 (7.7 J ppb) 1/6/2019	Topock - Alluvium Deposits	SM					
	.2.50	Q	3					
1		Topock - Alluvium Deposits	SC		(SC); light brown (7.5YR 6/4); fine grained to value angular to round; some clay; little granules to r	rery coarse grained, nedium pebbles,	,]	
					(33.0 - 44.5') Topock - Alluvium Deposits; Silty brown (7.5YR 5/3); very fine grained to very co to round; little granules to medium pebbles, an	sand with gravel (SM) parse grained, angular	1);	
		Topock - Alluvium Deposits	SM					
ns: LISCS =	Unified Soil C	lassificati	on Syste	<u> </u>	feet has = helow around surface	amsl = ahove n	nean sea level G	<u> </u> W =
					-			
	•					atou valuo, Ni	it ito recovery, i	J.GO Wale
	ne: Terras e: Nick P :: T. Alyr G. Wil Sean I Sieve Sample ID	De: Terrasonic track mode: Nick Petrone T. Alymer/ J. Cander G. Willford / C. Bone Sean McGrane Sieve Sample ID MW-B-VAS-27-32 (7.7 J ppb) 1/6/2019 12:50 This: USCS = Unified Soil Corr, ppb = parts per billion, Use the content of the content	De: Terrasonic track mount De: Nick Petrone T. Alymer/ J. Candelaria G. Willford / C. Bonessi Sean McGrane Sieve Sample ID Sieve Sample ID Groundwater Sample ID Topock - Fluvial Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits	Depth to Sample ID Sieve Sample ID Sieve Sample ID MW-B-VAS-27-32 (7.7 J ppb) 1/2:50 MW-B-VAS-21-32 (7.7 J ppb) 1/2:5	Depth to First V Sampling Methors Sean McGrane Sieve Sample ID Topock - Fluvial Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits Scantal Individual Deposits Topock - Alluvium Deposits	Borehole Diameter: 6-12 inches Depth to First Water: 21 ft bgs T. A. Alymori J. Candelaria G. Willford / C. Bonessi Sean McGrane Sieve Sample ID Groundwater Sample ID Topock-Fluvial Deposits Topock-Alluvium Deposits SM Topock-Alluvium Deposits SM Topock-Alluvium Deposits SM Topock-Alluvium Deposits SM Topock-Alluvium Deposits SM Topock-Alluvium Deposits SM Topock-Alluvium Deposits SM Topock-Alluvium Deposits SM Topock-Alluvium Deposits SM Topock-Alluvium Deposits SM Topock-Alluvium Deposits SM Topock-Alluvium Deposit	Depth to First Water: 6-12 Inches Location: PGs Depth to First Water: 21 ft bgs T. Alymer/ J. Candelaria G. Willford / C. Bonessi Seam McGrane Converted to Well: Sampling Interval: Continuous C	Berhole Diameter: 6:12 Inches

ARG	ADIS	Design & Consultancy for natural and built assets		Bor	ing Lo			She	eet: 3 of	18
Date Started					Elevation:	N/A	Borir	na No.:	MW-Bd	
Date Comple					(NAD83):	N/A	_			
Drilling Co.:	<u>Casca</u>			_	(NAD83):	N/A	_ Client:	PG&E		
Drilling Meth		<u>Drilling</u>		Total De	-	357 ft bgs	_ Project:		W Remedy Pl	
Drill Rig Typ		onic track mo			Diameter:	6-12 inches	_ Location	: PG&E	Fopock, Need	ies, California
Driller Name Drilling Asst:		etrone ner/ J. Cande		-	First Water g Method:	4 inch x 10 ft Core Barrel	– Droiget N	lumbor: I	DC000753 00	<u> </u>
Logger:	-	lford / C. Bon		-	g Interval:	Continuous	_ F10Ject i	iuiiibei. <u>I</u>	10000733.00	J I
Editor:		<u>исга / О. Вон</u> ИсGrane			ed to Well:		_			
	<u> </u>		,	T T						
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
			Topock - Alluvium Deposits	SM						(0.0 - 297.0') No water used
		MW-B-VAS- 47-52 (<0.17 U ppb) 1/9/2019 10:15	Topock - Alluvium Deposits	SM	brown very c pebble little si	52.0') Topock - Alluvium Deposits; Silty 7.5YR 5/3) little grayish brown (10YR 5 arse grained, angular to round; little gra; angular to subround; little cobbles, sul ; little clay; wet	/2); very fine g nules to very le pangular to sul	rained to urge pround;		
53					brown round:	62.0') Topock - Alluvium Deposits; Silty 7.5YR 4/4); very fine grained to very fin some silt; little granules to very large pel y; trace cobbles, subangular to subroun	e grained, ang obles. angular	ular to to round:		
56 ₁₂₀ 575859			Topock - Alluvium Deposits	SM						

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	She	eet: 4 of	18
Date S	Started	: <u>01/04</u>	/2019		Surface	Eleva	ion: <u>N/A</u>	Boring No.:	MW-Rd	
Date C	Comple	ted: <u>03/05</u>	/2019		Northing	g (NAC	83): <u>N/A</u>	_ Borning No	IVIVV-DU	
Drilling	Co.:	Casca	ade		Easting	(NAD	3): <u>N/A</u>	_ Client: PG&E		
Drilling	Meth	od: <u>Sonic</u>	Drilling		Total De	•	357 ft bgs	_ Project: Final G	W Remedy Pl	hase I
Drill Ri			sonic track mo			-	eter: 6-12 inches	•	-	
Driller			Petrone				Water: 21 ft bgs		•	•
Drilling			mer/ J. Cande		Samplin		_	Proiect Number:	RC000753.00	 151
Logge		-	llford / C. Bon		Samplin	-		_ · · · , - · · · · · · · · · · · · · · · · · ·		
Editor:			McGrane		Convert			_		
			1		1					I
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
 61 62	120			Topock - Alluvium Deposits	SM					(0.0 - 297.0') No water used
63 63 64				Topock - Alluvium Deposits	ML		(62.0 - 64.5') Topock - Alluvium Deposits; Sand brown (7.5YR 4/3); medium plasticity; some ver grained sand, angular to round; little granules to angular to subround; little clay; moist	y fine to medium		
 65				Topock - Fluvial Deposits	GM		(64.5 - 65.5') Topock - Fluvial Deposits; Silty gr brown (7.5YR 4/4); granules to very large pebbl subround; some very fine to very coarse graine round; some silt; little cobbles, subangular to su	les, angular to d sand, angular to		
66 67 68 69	120		MW-B-VAS-	Topock - Alluvium Deposits	SM		moist (65.5 - 72.0') Topock - Alluvium Deposits; Silty brown (7.5YR 4/4); very fine grained to very cordittle granules to very large pebbles, angular to subangular to subround; trace clay; moist to we	sand with gravel (SM); arse grained; some silt; subround; little cobbles,		
 70 71 			67-72 (<0.17 U ppb) 1/9/2019 14:55	Deposits	S		(72.0 - 77.0') Topock - Alluvium Deposits; Silty	graval with good (CM):		
 73 74							(12.5 47.5) Topick - Ailylum Deposits, Silicy light brown (7.5YR 6/4); granules to very large pround; some very fine to very coarse grained so some silt; trace clay; moist to wet	pebbles, angular to		
75 76 77	120			Topock - Alluvium Deposits	GM					
77 78 79 				Topock - Alluvium Deposits	SM		(77.0 - 88.0') Topock - Alluvium Deposits; Silty strong brown (7.5YR 5/6); very fine grained to v angular to round; little small to medium pebbles little silt; trace clay; wet; majority of pebbles are composed of mixed lithology.	very coarse grained, , angular to subround;		
80	viation	. HSCS -	Unified Soil C	 laccificati	ion Systa	m ft -	feet has = helow around surface	amel = abovo mas	n soa lovol. C	<u> </u>

AK	CADIS	Design & Consultancy for natural and built assets		Borir	ng Lo	g		She	et: 5 of	18
Date Starte	ed: <u>01/04/</u> 2	2019		Surface Ele	vation:	N/A	Borin	a No.:	MW-Bd	
-	leted: <u>03/05/</u>			Northing (N	•	N/A	_			
Orilling Co.				Easting (NA		N/A	_ Client:	PG&E		
Orilling Me		-		Total Depth		357 ft bgs	Project:		N Remedy Pr	
Orill Rig Ty	-	onic track mo		Borehole D		6-12 inches	_ Location:	PG&E T	opock, Need	<u>les, Californi</u>
Driller Nam				Depth to Fi		_	-			
Orilling Ass	-	ner/ J. Cande		Sampling M		4 inch x 10 ft Core Barrel	_ Project N	lumber: <u>F</u>	RC000753.00	51
_ogger:		ford / C. Bon		Sampling Ir		Continuous	-			
Editor:	<u>Sean N</u>	<u>/////////////////////////////////////</u>		Converted	o Well:			1		
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code USCS	Class	Soil Description			Drilling Notes	Drilling Fluid
										(0.0 - 297.0') N water used
_81 ₁₂₀										
_82	_									
. 4					4周					
_83					43		YU			
4			l							
_84			Topock - Alluvium	SM :						
4			Deposits							
_85										
_86										
_87 ₁₂₀										
] .20										
_88										
						91.0') Topock - Alluvium Deposits; Silty (7.5YR 4/3); granules to small cobbles, a				
_89					some	very fine to very coarse grained sand, and ce clay; moist; gravel composed mostly o	gular to round;			
			Topock - Alluvium	GM 6		oo diay, mood, gravor composed moody o				
_90		ľ	Deposits	SIM Pol	26					
				1	\triangleright					
_91), 					
					(91.0 -	97.0') Topock - Alluvium Deposits; Silty: brown (7.5YR 4/6); very fine grained to v	sand with grav	el (SM);		
92					angula	r to round; some granules to very large pand; some silt; trace cobbles, angular to si	ebbles, angula	r to		
	7					nd; some silt; trace cobbles, angular to si avel composed of mixed lithology	upangular; trac	be ciay,		
_93										
_ _94			Topock -							
			Alluvium Deposits	SM :						
60					## T					
_95										
_96										
					43					
_97	-				(97.0 -	102.0') Topock - Alluvium Deposits; San	ıdy silt with gra	ivel		
4					. (ML); s	strong brown (7.5YR 5/6) trace red (10R strong brown (7.5YR 5/6) trace red (10R strong brown)	5/8); medium p	olasticity;		
_98			Topock -		granul	es to medium pebbles, subangular to sub	round; trace cl	ay;		
- 120			Alluvium	ML [:]	moist;	iron oxide staining				
_99			Deposits							
4										
	1				:1:1				1	

Sample ID Sample ID Set NO NO NO NO NO NO NO NO NO NO NO NO NO	
Date Complete: Date	
Orilling Method: Sonic Drilling Type: Terrasonic track mount Sonic Drilling Asst: Nick Petrone Depth to First Water: 21 ft bgs Sieve Willford / C. Bonessi Sampling Method: Sampling Method: Sampling Method: Sampling Interval: Continuous Project Number: RC000753.0051 RC00075	
Drill Rig Type: Terrasonic track mount Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles	ا ۵
Depth to First Water: 21 ft bgs T. Alymer/ J. Candelaria G. Willford / C. Bonessi Editor: Sean McGrane Crountwater Sample ID Topook- Alluvium Deposits ML Topook- Alluvium Deposits MW-B-VAS- 102-107 1102 1103 1104 1107 1107 1107 1108 1109	
Sampling Asst: Sampling Method: Sampling Method: Sampling Method: Sampling Interval: Continuous	, , , , , , , , , , , , , , , , , , , ,
Editor: Sean McGrane Converted to Well: Yes No Soil Description Drilling Notes Soil Description Drilling Notes Topook-Alluvium Deposits: Silty sand (SM); strong brown (7.5YR 5/6); very fine grained to very coarse grained, subangular to subround, strace day, wet 102	
Sieve Sample ID Groundwater Sample ID Ground	
Topock-Alluvium Deposits ML 102	
Topock - Alluvium Deposits ML	Drilling F
103. 120 104. 105. 106. 107. 108. 108. 109. 109. 109. 109. 109. 109. 109. 109	.0 - 297. water u
MW-B-VAS- 102-105 105 106 107 108 108 109 1100 1100 1100 1100 1100 11	
106_ 107_ 108_ 1109_ 110_ 110_ 110_ 110_ 110_ 110_ 11	
107	
108	
110_	
111_	
Alluvium Deposits SM	
115_	
116	
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW	
groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue able symbol represents depth to water measured during the first VAS interval	e wate

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	neet: 7 of	18
Date S					Surface			Boring No.	: MW-Bd	
		eted: <u>03/05/2</u>			Northing	• •	•			
Drilling		<u>Casca</u>			Easting	•	•	_ Client: PG&E		
Drilling			•			•	357 ft bgs		SW Remedy Pl	
Drill R			onic track mo				ter: 6-12 inches	_ Location: <u>PG&E</u>	Topock, Need	<u>les, California</u>
Driller					=		/ater: 21 ft bgs		D0000750.00	- 4
Drilling		-	ner/ J. Cande		Samplin	-		_ Project Number:	RC000753.00	51
Logge			ford / C. Bon	iessi	Samplir Convert	-		_		
Editor:		<u>Sean N</u>	<u>/////////////////////////////////////</u>		Conven	ed to vi	eli. 🛆 fes 🗌 No	T		
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
 121 122				Topock - Alluvium Deposits	SM					(0.0 - 297.0') No water used
	120			Topock - Alluvium Deposits	GM		122.0 - 126.0') Topock - Alluvium Deposits; Si GM); strong brown (7.5YR 5/6) trace very dark ranules to very large pebbles, angular to subro ery coarse grained sand, angular to subround obbles, subangular to subround; trace clay; m 126.0 - 129.0') Topock - Alluvium Deposits; Si SM); strong brown (7.5YR 5/6); very fine grain rained, angular to subround; some granules to	c gray (7.5YR 3/1); ound; some very fine to ; some silt; little oist		
127 128 129 130				Topock - Alluvium Deposits	SM		ngular to subround; some silt; trace cobbles, s noist to wet 129.0 - 134.0') Topock - Alluvium Deposits; Si GM); strong brown (7.5YR 5/6) some very dar ranules to very large pebbles, angular to suba o very coarse grained sand, angular to subrou	subangular; trace clay; ilty gravel with sand k gray (10YR 3/1); ingular; some very fine nd; some silt; trace		
 _131 _132 _133 _134	120		•	Topock - Alluvium Deposits	GM		obblės, angula <mark>r, trace clay;</mark> moist; moderate co			
135 136 137 138 139	120			Topock - Alluvium Deposits	SM		134.0 - 144.0') Topock - Alluvium Deposits; Si SM); strong brown (7.5YR 5/6); very fine grain rained, angular to round; some silt; little granu ubangular to subround; trace cobbles, subang	ned to very coarse les to medium pebbles,		
140	i ati ana	11000 - 1	Linificat Cail C	<u> </u> : :: :+:	an Cuat	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	act has - below ground surface			\\\ -

AR	CADIS	Design & Consultancy for natural and built assets		Bo	ring L	.og	8	Sheet: 8 of	18
Date Start		/2019			Elevatio		Boring No	.: <u>MW-Bd</u>	
	pleted: <u>03/05</u>				g (NAD83		_		
Orilling Co Orilling Me		age : Drilling		Total D	(NAD83)	N/A 357 ft bgs	Client: <u>PG&I</u> Project: <u>Final</u>	<u>=</u> GW Remedy Pl	haca I
Drill Rig Ty		sonic track m			•	er: 6-12 inches		•	
Oriller Nan	-	Petrone				iter: 21 ft bgs	200011011. <u>1 001</u>	<u>- 10000K, 11000</u>	ioo, oaiio
Orilling As		mer/ J. Cando		=	ng Metho	_	Project Number	r: RC000753.00	51
ogger:		illford / C. Bor		-	ng Interva				
Editor:	<u>Sean</u>	McGrane		Conver	ted to We	I: ⊠ Yes □ No			
Depth (ft) Recovery	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fl
						. •			(0.0 - 297.0 water us
_142			Topock - Alluvium Deposits	SM					
			Верозка						
_143									
·	,	MW-B-VAS-							
 _145		142-147 (<0.17 U ppb) 1/15/2019			(7 SI	14.0 - 147.0') Topock - Alluvium Deposits; 5YR 5/4); very fine grained to very coarse bround; some silt; little granules to medium and; trace clay; moist to wet	grained, angular to		
		14:25	Topock - Alluvium	SM		ind, trace day, most to wet			
_146			Deposits						
							/ W		
_147	\blacksquare					17.0 - 152.5') Topock - Alluvium Deposits;	Silty sand with gravel	-	
					(5	M); light brown (7.5YR 6/4)(4); very fine grained, angular to subround; some silt; little	ained to very coarse		
_148						obles, subangular to round; trace clay; moi			
_149									
_149			Tanada						
_150			Topock - Alluvium	SM					
			Deposits						
_151									
_152 ₁₂₀)								
					0 1 1	2.5 - 154.0') Topock - Alluvium Deposits;	Silty sand with gravel	-	
_153			Topock - Alluvium	GM		M); light brown (7.5YR 6/4); granules to very fine to very coarse grained sand, angula	ry large pebbles; some		
			Deposits	Givi		ce clay; moist	to subround, some siit,		
_154						54.0 - 157.0') Topock - Alluvium Deposits;	Silty sand (SM); brown	11	
					SI	5YR 5/4); very fine grained to very coarse pround; some silt; little granules to medium			
_133			Topock -	l cM	rc	ınd; trace clay; wet			
_156			Alluvium Deposits	SM					
_157						77.0 400.00 T	0:11		
					[0] [M	57.0 - 160.0') Topock - Alluvium Deposits; M); dark brown (10YR 3/3) little reddish brown	own (2.5YR 4/4);		
_158			T !		1997 v	anules to small cobbles, subangular to sub y coarse grained sand, angular to subrour			
- 120			Topock - Alluvium	GM		ist			
_159			Deposits		1983				
					600				
_160_l Abbreviatio	ons: USCS =	Unified Soil (L Classificati	on Svst	<u>ਾਨ। ਨਾ \</u> em, ft = fo	et, bgs = below ground surface	, amsl = above me	an sea level. G	iW =
						aboratory reporting limit, J - es			
		s depth to wat						- · · ·	

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 9 of	18
Date S	Started	: <u>01/04</u>	/2019		Surface	Elevat	ion: <u>N/A</u>	Borin	a No .	MW-Bd	
		eted: <u>03/05</u>	/2019		Northing	g (NAD	83): <u>N/A</u>	_		INTY-DG	
Drilling	g Co.:	<u>Casca</u>	ade		Easting	(NAD8	3): <u>N/A</u>	_ Client:	PG&E		
Drilling	g Meth	od: <u>Sonic</u>	Drilling		Total De	epth:	357 ft bgs	-		N Remedy Pl	
Drill Ri			sonic track mo	ount			eter: <u>6-12 inches</u>	_ Location:	PG&E T	opock, Need	<u>les, California</u>
Driller			Petrone				Water: <u>21 ft bgs</u>	_			
Drilling		•	mer/ J. Cande		Samplin	-		_ Project N	umber: <u>F</u>	RC000753.00	51
Logge			<u>llford / C. Bon</u>	<u>essi</u>	Samplin	_		_			
Editor:		<u>Sean</u>	McGrane		Convert	ed to V	Vell: ⊠ Yes □ No				T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
	120			Topock - Alluvium Deposits	SM) 	(160.0 - 167.0") Topock - Alluvium Deposits; Si (7.5YR 5/4); very fine grained to very coarse gr subround; some silt; little granules to medium p round; trace clay; wet	ained, angular ebbles, subang	to ular to		(0.0 - 297.0') No water used
	120			Topock - Alluvium Deposits Topock - Alluvium Deposits	GP		(167.0 - 168.0') Topock - Alluvium Deposits; Pc (GP); (GLEY2 6/1); small cobbles to large cobb fine to medium grained sand, angular to subang pulverized metadiorite boulder (168.0 - 173.0') Topock - Alluvium Deposits; Sa (ML); reddish brown / moderate brown(5YR 4/4 some very fine to coarse grained sand; little gra subangular to subround; little clay; moist to wet	les, angular, tra gular, trace silt, andy silt with gr); medium plas inules to small p	ace very dry; avel icity; bebbles,		
174 175 176 177 178 179 180	120			Topock - Alluvium Deposits	SM		(SM); reddish brown / moderate brown (5YR 4/4 very coarse grained, angular to subround; some pebbles, angular to subround; some silt; trace of	l); very fine gra e granules to la	ned to		

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	started:	01/04/			Surface		•	Boring No	o.: <u>MW-Bd</u>	
	-	ted: <u>03/05/</u> <u>Casca</u>			Northing		· ·	Client: PG&I		
Orilling	Metho		<u>Drilling</u>		Easting Total D	•	357 ft bgs		<u>=</u> GW Remedy Pl	hace I
-	g Type		sonic track m			•	eter: 6-12 inches	•	-	
	Name:		etrone				Vater: 21 ft bgs			
Drilling	Asst:	T. Alyı	mer/ J. Cand		Samplir		_	Project Numbe	r: <u>RC000753.00</u>	51
_oggei			lford / C. Bor		Samplir	•		_		
Editor:		<u>Sean</u>	<u>McGrane</u>		Conver	ted to V	/ell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description		Drilling Notes	Drilling Fl
 181				Topock -				•		(0.0 - 297.0 water use
 182 				Alluvium Deposits	SM		-2			
_183 _184	120		MW-B-VAS- 182-187				(183.0 - 187.0') Topock - Alluvium Deposits; (SM); grayish brown (10YR 5/2) trace red (2. grained to very coarse grained, angular to su large pebbles, angular to subround; some silt	5YR 4/6); very fine bround; some granules to		
 _185			(<0.17 U ppb) 2/13/2019 10:30	Topock - Alluvium Deposits	SM			1		
_186								1/3/		
_187							(187.0 - 192.0') Topock - Alluvium Deposits;		-	
 _188 				1			(SM); yellowish red / light brown(5YR 5/6); vecoarse grained, angular to subround; some gpebbles, subangular to subround; little silt; trasubangular; trace clay; wet	ranules to very large		
_189 _190				Topock - Alluvium Deposits	SM					
 _191				0	3		7			
	114						(192.0 - 195.0') Topock - Alluvium Deposits; (SM); brown (7.5YR 5/3); very fine grained to			
_193 _194				Topock - Alluvium Deposits	SM		angular to subround; some granules to very l to subround; little silt; trace cobbles, angular i wet	arge pebbles, subangular o subangular; trace clay;		
10					<u></u>		(195.0 - 197.0') Topock - Alluvium Deposits;	Silty sand (SM): light		
_ _196				Topock - Alluvium Deposits	SM		reddish brown (5YR 6/3); very fine grained to angular to subround; some silt; little granules subangular to round; trace clay; moist	very coarse grained,		
_197					1		(407.0 202.0') Tanaak Alleniina Danit	Silty cand with arrayal	_	
 _198	60			Topock - Alluvium	SM		(197.0 - 202.0') Topock - Alluvium Deposits; (SM); light reddish brown / light brown(5YR 6 coarse grained, angular to subround; little gra subangular to subround; little silt; trace cobblic clay; moist	/4); fine grained to very nules to large pebbles,		
_199				Deposits						
<u>200 </u>	/iations	: USCS =	Unified Soil (L Classificati	on Syste	em, ft =	feet, bgs = below ground surface	e, amsl = above me	ean sea level, G	W =
							e laboratory reporting limit, J - es			
			depth to wat				, , ,	·		

9/-	ARCADIS Design & Consultancy for natural and built assets				Во	ring Lo	g	Sheet: 11 of 18				
Date S						Elevation:	N/A	Borir	na No.:	MW-Bd		
	-	eted: <u>03/05/</u>				g (NAD83):	N/A	_		<u> 24</u>		
Drilling		<u>Casca</u>				(NAD83):	N/A	_ Client:	PG&E			
Drilling					Total De	-	357 ft bgs	_ Project:		<u>W Remedy Ph</u>		
Drill Ri			onic track mo				6-12 inches	_ Location	: <u>PG&E</u>	Topock, Needl	es, California	
Driller			etrone		-	o First Water	-					
Drilling		-	mer/ J. Cande		-	ng Method:	4 inch x 10 ft Core Barrel	_ Project N	lumber:]	RC000753.005	51	
Logge			lford / C. Bon	essi	-	ng Interval:	Continuous	_				
Editor:		<u>Sean i</u>	<u>McGrane</u>		Conven	ed to Well:	X Yes					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid	
201 	60			Topock - Alluvium Deposits	SM					(202.0207.01)	(0.0 - 297.0') No water used	
 203 _204_						(202.0	- 207.0') (NR)	No		(202.0 - 207.0') No Core Recovery. Driller noted core barrel was full during core extraction.		
					NR							
205												
206_												
_207	60					/	A					
	60		MW-B-VAS- 207-212 (<0.17 U ppb) 2/14/2019 10:55	Topock - Alluvium Deposits	SM	reddish angula	- 215.0') Topock - Alluvium Deposits; S n brown (5YR 6/3); very fine grained to v r to subround; some silt; little granules to gular to round; trace clay; wet	very coarse gra	ined,			
213												
-												
214												
	60											
215					1	(215.0	- 220.0') Topock - Alluvium Deposits; S	ilty sand with o	ravel			
						(SM); v	yellowish red / light brown(5YR 5/6); ver grained, angular to subround; some silt	y fine grained to	o very			
216						: : : mediur	n pebbles, angular to subangular; trace	cobbles, angula	ar to			
-						subano	gular; trace clay; moist; gravel composed	JOI II IIXEU IIINOI	ogy			
_217				Topock -								
-				Alluvium	SM							
218				Deposits								
-	114											
219												
-												
220		11000	1 1 1 1 1 1 1 1 1	<u> </u>	<u> </u>	<u> </u>	has - bolow ground surface					

/-	AKC	ADIS	Design & Consultancy for natural and built assets		Bo	ring	Log	\$	Sheet: 12 of	18
	tarted:	01/04/2			Surface			Boring No	o.: <u>MW-Bd</u>	
	-	ed: <u>03/05/2</u> <u>Casca</u>			Northin		•	_		
Drilling Drilling	Metho				Easting Total D	•	357 ft bgs		<u>-</u> GW Remedy Ph	nase I
-	g Type:		onic track mo			-	ter: 6-12 inches	-	E Topock, Needl	
	Name:	Nick P					/ater: 21 ft bgs	_		•
_	Asst:	-	ner/ J. Cande		Samplir	-		_ Project Numbe	r: RC000753.00	51
_ogger			ford / C. Bon	essi	Samplin	-		_		
Editor:		<u>Sean N</u>	<u>/////////////////////////////////////</u>		Conver	ted to v	ell: X Yes No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Flu
- _221_ - _222_							220.0 - 227.0') Topock - Alluvium Deposits; \$ SM); yellowish red (5YR 4/6); fine grained to ingular to subround; some granules to large publicum, some cobbles, angular to subangul noist to wet	very coarse grained, ebbles, angular to		(0.0 - 297.0 water use
	111			Topock -	SM		100	0		
224_	114			Alluvium Deposits	SIM				9)	
225 226										
227								/X,		
228_					NR		227.0 - 229.0') (NR)		(227.0 - 229.0') No core recovery. Driller noted core barrel was full during	
229							229.0 - 237.0') Topock - Alluvium Deposits; S SM); yellowish red (5YR 4/6); fine grained to		core extraction.	
							omy, yellowish red (5 rk 4/6), life granules in ingular to subround; some silt; little granules in o subangular; trace cobbles, angular to subal	o large pebbles, angular		
_231				Q						
_232 	96			Topock - Alluvium	SM					
234				Deposits						
235_										
236										
237				<u> </u>			237.0 - 242.0') Topock - Alluvium Deposits; \$		(237.0 - 242.0')	
	60			Topock - Alluvium Deposits	ML		ML); reddish brown (2.5YR 4/4); low plasticity nedium grained sand, angular to subround; lit bebbles, angular to subround; little clay; moist ementation	r; some very fine to tle granules to medium	Rough drilling. End cap found in core	
_239										
240										
Abbrev							eet, bgs = below ground surface			
		-	•				e laboratory reporting limit, J - est	imated value, NR	= no recovery, b	lue wate
able s	ymbol r	epresents	depth to wate	er measur	ed durir	g the f	st VAS interval			

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g	SI	neet: 13 of	18
Date S						Elevation:	N/A	Boring No.	: MW-Bd	
		eted: <u>03/05/</u>				g (NAD83):	N/A			
Drilling		<u>Casca</u>				(NAD83):	N/A	_ Client: PG&E		
Drilling			•			•	357 ft bgs	•	<u>GW Remedy Ph</u>	
Drill Ri			onic track mo				6-12 inches	_ Location: <u>PG&E</u>	Topock, Needle	<u>es, California</u>
Driller					-	First Wate	_			
Drilling			ner/ J. Cande		-	ng Method:	4 inch x 10 ft Core Barrel	_ Project Number:	RC000753.005	01
Logge			lford / C. Bon McGrane	essi	-	ng Interval: ed to Well:	Continuous	_		
Editor:		<u>Sean r</u>	vicGrane		Conven	ed to vveii.	△ res 🗀 No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	nscs Code	USCS	Soil Description		Drilling Notes	Drilling Fluid
 241 	60			Topock - Alluvium Deposits	ML				(237.0 - 242.0') Rough drilling. End cap found in core	(0.0 - 297.0') No water used
242						I (ML):	0 - 254.0') Topock - Alluvium Deposits; Sa reddish brown (2.5YR 4/4); medium plast Im grained sand, angular to subround; littl	icity: some very fine to	(242.0 - 252.0') Drill rods chattering	
243 -						pebbl	es, angular to round; little clay; trace cobb ngular; moist; weak cementation; iron oxide	les, angular to	,	
_244								\ \		
245										
246										
_247	120									
 248				Topock -						
240				Alluvium Deposits	ML					
 249			MW-B-VAS-							
243			247-252 (<0.83 U							
 250			ppb) 2/17/2019							
230			11:25							
					W)					
						(251)	0 - 251.2'); core slightly saturated			
									(252.0 - 254.0') Rough drilling	
253									i toagir ariiii ig	
254										
						[:]: [:]: [(254.	0 - 269.0') Topock - Alluvium Deposits; Sa I (MH); reddish brown (2.5YR 4/4); high p	andy elastic silt with lasticity; some very		
255						fine to	o coarse grained sand, angular to subroun pebbles, subangular to subround; little cla	nd: little granules to		
							g, g,	9 ,=		
256	120									
	0									
_257				Topock - Alluvium	МН					
				Deposits						
258										
						(050	51): como granulos to vany larga mabble -	subangular ta		
259						subro	5'); some granules to very large pebbles, s und; little clay; trace cobbles, subround; n	nedium to high		
-						plastic	жу			
260		11000	1 1 1 1 1 1 1 1				has - holow ground surface			

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring L	og		She	eet: 14 of	18
Date S					Surface	Elevation	<u>N</u> /A	Borin	na No.:	MW-Bd	
Date C	Comple	eted: <u>03/05/2</u>	2019			g (NAD83)	: <u>N/A</u>			<u> </u>	
Drilling	-	Casca				(NAD83):	<u>N/A</u>	Client:	PG&E		
Drilling			-		Total De	-	357 ft bgs	Project:		W Remedy Ph	
Drill Ri			onic track mo	ount				Location	: <u>PG&E</u>]	<u> Fopock, Needl</u>	es, California
Driller					-		ter: 21 ft bgs				
Drilling		-	ner/ J. Cande		-	ng Method		Project N	lumber:]	RC000753.00	51
Logge			ford / C. Bon	essi	-	ng Interval					
Editor:		Sean N	//cGrane		Conven	ed to Wel	: ⊠ Yes □ No				I
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
											(0.0 - 297.0') No water used
261	120										
	120										
262											
263											
264											
				Topock - Alluvium	МН						
265				Deposits	"""						
266			MW-B-VAS-								
			264-269 (<0.33 U							(266.0 - 269.0') Drill rods	
_267	120		ppb) 2/18/2019							chattering	
	120		14:00								
268											
269											
						MI) C	9.0 - 272.0') Topock - Alluvi <mark>um De</mark> posits; Gra .); dark red (2.5 <mark>YR 3/6); l</mark> ow plasticity; some g	granules to la	rge		
270_						19 1 sar	bles, subangula <mark>r to round; little very</mark> fine to ve d, angular to subround; little clay; moist to dry		ained		
				Topock - Alluvium	ML	cer	nentation				
271				Deposits							
						0 0 (27	1'); strong cementation; dry at 271-271.4				
272						1909					
						[] (MI	2 <mark>.0 - 2</mark> 82.0') Topock - Alluvium Deposits; Silty); reddish brown (2.5YR 4/4); low plasticity; s	ome granule	s to very		
273							e pebbles, angular to subround; some very fii ned sand, angular to subround; little clay; trad		arse		
						sub	angular to subround; moist				
274											
275										(275.0276.01)	
				_						(275.0 - 276.0') Drill rods	
276	120			Topock - Alluvium	ML					chattering	
				Deposits							
_277											
278											
279											
280			1 10			<u> </u>	ot has - below ground ourfood a	<u> </u>		L	

9/	١RC	ADIS	Design & Consultancy for natural and built assets		Bo	ring Lo	g		She	eet: 15 of	18
	started					Elevation:	N/A	Borin	a No.:	MW-Bd	
	-	ted: <u>03/05/</u>				g (NAD83):	N/A	_			
Orilling		<u>Casca</u>			_	(NAD83):	N/A	_ Client:	PG&E		
	Metho		•			•	357 ft bgs	_ Project:		W Remedy Ph	
	g Type		onic track m			le Diameter:	6-12 inches	_ Location:	PG&E	<u> Fopock, Needl</u>	es, California
	Name:				-	o First Wate	-				
_	Asst:	-	mer/ J. Cand		-	ng Method:	4 inch x 10 ft Core Barrel	_ Project N	umber:]	RC000753.00	51
_oggei			lford / C. Bor		-	ng Interval:	Continuous	-			
Editor:		<u>Sean I</u>	<u>McGrane</u>		Conver	ted to Well:	X Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
- _281_	120			Topock - Alluvium	ML						(0.0 - 297.0') No water used (162.0 - 292.0') 700 gal of water
_				Deposits							used (162.0 - 292.0') 700 gal of water
_282						(ML); ı	- 288.0') Topock - Alluvium Deposits; Sa eddish brown (2.5YR 4/4); medium plasti	city; some ver	y fine to		used (162.0 - 292.0')
283_							grained sand, angular to round; little grains, angular to subround; little clay; moist	nules to mediu	m		700 gal of water used (162.0 - 292.0')
											700 gal of water used (162.0 - 292.0')
-				Topock -			<i>y. ())</i>	•			700 gal of water used
285_				Alluvium Deposits	ML						(162.0 - 292.0') 700 gal of water
- 286_				2 opcomo							used (162.0 - 292.0')
200_											700 gal of water used
_ 287											
201	120										
- 288_											
200_							- 293.0') Topock - Alluvium Deposits; Sa				
- 289_			MW-B-VAS-			coarse	eddish brown (2.5YR 4/ <mark>4); m</mark> edium plasti grained sand, angular to s <mark>ub</mark> round; little	granules to me	edium		
209			287-292 (<0.17 U				s, subangular to su <mark>bround; littl</mark> e clay; trac strong cement <mark>ation</mark>	ce cobbles, sub	oround;		
- 290			ppb) 2/20/2019								
290			12:15	Topock -							
 291				Alluvium Deposits	ML						
29 [
202											
292_							Ť			(292.0 - 297.0')	
202										Drill rods chattering	
293_						(293.0	- 295.0') Topock - Weathered Bedrock -	conglomerate	Silty		
- 294_				Topock - Weathered		D P Dobble	(GM); reddish brown (2.5YR 4/4); mediu s, subangular to subround; little very fine	to coarse grai			
∠94				Bedrock -	GM	sand, suban	angular to subround; little silt; little clay; tr gular to subround; dry	ace cobbles,			
20.F	60			conglomerate		6 PJd	. ,				
295_						(295.0	- 298.0') Topock - Weathered Bedrock -	conglomerate			
700						plastic	ly elastic silt with sand (ML); reddish brow ty; some granules to large pebbles, angu	lar to subround	d; little		
296_				Topock -			ne to coarse grained sand, angular to sub				
				Weathered Bedrock -	ML	1.10.19					
297				conglomerate	1					(297.0 - 301.0')	(297.0 - 307.0')
						[- 4-]				`Rough drilling	200 gal of water used
298_				T .		[298.0]	- 299.5') Topock - Weathered Bedrock -	conglomerate:	Silty		
-	120			Topock - Weathered	SM	sand v	ith gravel (SM); brown (7.5YR 5/4); fine of angular to subround; little granules to s	grained to very			
299_				Bedrock - conglomerate	1		gular to subround; little silt; little clay; moi:				
4				55giornorate		0 1/200 5	- 301.5') Topock - Weathered Bedrock -	conglomerate	Silty		
			1		GM	10 N 6 1 (200.0	333 / Topook Trodutored Bedrock -	23 Igiornolate,	J.1.13		1

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	g		She	eet: 16 of	18
Date S					Surface			N/A	Borin	na No.:	MW-Bd	
	•	eted: <u>03/05/2</u>			Northin	• `	,	<u>N/A</u>				
Drilling		Casca			Easting		33):	N/A	Client:	PG&E		
Drilling	-		-			•		357 ft bgs	Project:		W Remedy Ph	
Drill R Driller			onic track mo					6-12 inches : 21 ft bgs	Location	PG&E	Topock, Needl	es, Calitornia
Drilling			ner/ J. Cande		Samplin			4 inch x 10 ft Core Barrel	Project N	lumher: I	RC000753 004	 51
Logge		-	ford / C. Bon		Samplin	-		Continuous	, i rojocci	iambor.	1.0000100.00	<i>-</i>
Editor			/lcGrane		Conver	-			•			
	2			.º 5	Τ.							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS		Soil Description			Drilling Notes	Drilling Fluid
 301				Topock - Weathered Bedrock - conglomerate	GM e		pebbles	with sand (GM); yellowish red (5YR 4/6); s, subangular to round; little fine to very core to subround; little silt; trace cobbles, ang et	oarse grained	sand,	(297.0 - 301.0') Rough drilling	(297.0 - 307.0') 200 gal of water used
302							elastic some g subang	- 313.5') Topock - Weathered Bedrock - silt with gravel (MH); yellowish red (5YR 4 granules to large pebbles, angular to subro jular to subround; some very fine to very or to subround; little clay; moist; moderate c	1/6); high plas ound; some c coarse graine	sticity; obbles, d sand,		
303 _304_	120						primaril	ly composed of metadiorite.				
305												
306												
_307				Topock -								(307.0 - 322.0')
308_				Weathered Bedrock - conglomerate	IVIII							400 gal of water used
309												
310								10			(310.0 - 318.0')	
 311					V						Rough drilling	
312												
 313												
 314	180							- 320.0') Topock - Weathered Bedrock - o				
							grained	ith gravel (SM); yellowish red / light browr I to very coarse grained, angular to subrou phblos, subangular to subround; little silt;	und; little grar	rules to		
 315								ebbles, subangular to subround; little silt; s, subangular to subround	iittie ciay; trac	æ		
316												
				Topock -								
_317				Weathered Bedrock -	SIVI							
				conglomerate	e							
318			MW-B-VAS- 317-322									
-			(<0.17 U									
319			ppb) 2/21/2019 11:00									
320			l) .c. r.		<u>10.40466</u>	٠.	has = helevy ground surface.				•

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Bo	ring Lo	g		She	eet: 17 of	18
	tarted					e Elevation:	N/A	Borin	a No.:	: MW-Bd	
	-	ted: <u>03/05/</u>				g (NAD83):	N/A	_			
Prilling		<u>Casca</u>			-	(NAD83):	N/A	_ Client:	PG&E		
	Metho		<u>Drilling</u>		Total D	•	357 ft bgs	_ Project:		W Remedy Pr	
	g Type		onic track m			le Diameter:		Location	PG&E	Topock, Needl	les, Californi
	Name:		etrone		-	o First Wate	<u> </u>	— Danis at N		D00007F0 00	
	Asst:	-	<u>ner/ J. Cande</u> Iford / C. Bor		•	ng Method:	4 inch x 10 ft Core Barrel	Project N	iumber:	RC000753.00	51
.oggei Editor:			<u>lford / C. Bor</u> McGrane		-	ng Interval: ted to Well:	Continuous	_			
.uitoi.		<u>Sean i</u>	VICGIANE		T	Ted to Well.	∴ res □ No				T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
_ .321	180		MW-B-VAS- 317-322 (<0.17 U ppb) 2/21/2019	Topock - Weathered Bedrock - conglomerate	ML	silt wit	1 - 322.0") Topock - Weathered Bedrock in gravel (ML); reddish brown (2.5YR 4/4 very fine to coarse grained sand, angula es to medium pebbles, subangular to st iss, subround; moist; strong cementation	4); medium plasi ar to subround; l ubround; little cla	ticity; ittle		(307.0 - 322.0' 400 gal of wate used
322			11:00								
323_						Grave little g	- 337.0') Topock - Weathered Bedrock lly silt with sand (ML); reddish brown (2 anules to medium pebbles, subangular coarse grained sand, angular to subrou	.5YR 4/4); low p to subround; litt	asticity; e very	(322.0 - 335.5') tight hard drilling	(322.0 - 337.0' 300 gal of wate used
- 324_						CODDIE	ss, subround; moist				
325_						000					
326_								B			
327_				.07			(C	11			
328				11.		(328')	4-6" dry layer				
329_	180			Topock - Weathered	ML	000					
330_	100			Bedrock - conglomerate			10,				
331_						(3311)	4-6" dry layer				
332											
.333_						(333')	4-6" dry layer				
334_											
335_						(335')	4-6" dry layer				
336_										(335.5 - 337.0') Soft drilling	
337_				L	L						
]					sand v	- 344.0') Topock - Weathered Bedrock vith gravel (SC); red (2.5YR 4/6) to redo	lish brown (2.5Y	R 4/4);		(337.0 - 347.0' No water used
338_				Topody		//// very fi	ne grained to very coarse grained, suba clay; little granules to medium pebbles,	ıngular to sùbroı	und;		
_	120			Topock - Weathered	sc		It; trace cobbles, subround; dry to moist				
339_	0			Bedrock - conglomerate	1						
340										<u> </u>	
- 340		s: USCS =	Unified Soil (conglomerate		em, ft = feet,	bgs = below ground surface	, amsl = abo	ove mea	n sea level, G	W =

9/	1RC	CADIS	Design & Consultancy for natural and built assets		Bo	ring L	_og	Sh	neet: 18 of	18
	Started	: <u>01/04/2</u>	2019			Elevatio	•	Boring No.	: MW-Bd	
		eted: <u>03/05/2</u>				g (NAD83				
Drilling Drilling	g Co.: g Meth	Cascad			Total D	(NAD83)): <u>N/A</u> 357 ft bas	Client: <u>PG&E</u> Project: <u>Final C</u>	GW Remedy Ph	nase I
	ig Type		onic track mo			•	ter: 6-12 inches	•	•	
	Name						ater: 21 ft bgs			
Drilling	g Asst:	T. Alyn	ner/ J. Cande	elaria	Samplin	ng Metho	d: 4 inch x 10 ft Core Barrel	Project Number:	RC000753.005	51
Logge			ford / C. Bon		•	ng Interva		_		
Editor	:	Sean N	<u>McGrane</u>		Conver	ted to We	ell: 🗵 Yes 🗌 No			T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
341 342 343 344	- 120		MW-B-VAS- 339-344 (<0.33 U ppb) 2/27/2019 12:28	Topock - Weathered Bedrock - conglomerate	50					(337.0 - 347.0') No water used
345 346 347				Topock - Weathered Bedrock - conglomerate	SC	si gi	344.0 - 347.0') Topock - Weathered Bedrock - and (SC); reddish brown(2.5YR 4/3); very fine rained, subangular to subround; little clay; trace looderate cementation; clay and sand are interb	grained to fine e silt; moist to dry; edded		
	400			Topock - Weathered Bedrock - conglomerate	50	Si bi	347.0 - 356.0') Topock - Weathered Bedrock - and with gravel (SC); reddish brown (2.5YR 4/s) rown(2.5YR 4/s); very fine grained to very coaubangular to subround; some granules to very subround; little silt; little clay; dry to moist; more subround; little silt; little clay; dry to moist; more subround; little silt; little clay; dry to moist; more subround; little silt; little clay; dry to moist; more subround; little silt; little clay; dry to moist; more subround; little silt; little clay; dry to moist; more subround; little silt; little clay; dry to moist; more subround; little silt; little clay; dry to moist; more subround; little silt; little clay; dry to moist; more subround; little silt; little clay; dry to moist; more subround; little silt; little clay; dry to moist; more subround; little silt; little clay; dry to moist; more subround; little silt; little clay; dry to moist; more subround; little silt; little clay; dry to moist; more subround; little silt; lit	4) to reddish rse grained, large pebbles, angular	(347.0 - 356.0') Rough drilling	(347.0 - 357.0') 400 gal of water used
353 354 355 356	108		MW-B-VAS- 352-357 (<0.33 U ppb) 2/28/2019 15:05							
357				Topock - Weathered Bedrock - conglomerate	30	s:	356.0 - 357.0') Topock - Weathered Bedrock - and (SC); reddish brown(2.5YR 4/3); very fine rained, subangular to subround; little clay; trace ebbles, subangular to subround; trace silt; mois	grained to medium e small to medium st; weak cementation	(356.0 - 357.0') Soft drilling	
-						_	End of Boring at 357.0 'bg	s		
358 _359_ 										
	viation	s: USCS = I	Unified Soil (Classificati	on Syst	em, ft = fe	eet, bgs = below ground surface,	amsl = above mea	an sea level, G	W =
							Jahoratory reporting limit L_ estir			

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring L	og	S	heet: 1 of	7
Date S	Started	: 03/13/2	2019		Surface	e Elevatio	n: <u>N/A</u>	Boring No	· MW-Bs	
	-	eted: <u>03/16/2</u>				g (NAD83		_		
Drilling	-	Cascac				(NAD83)		_ Client: PG&E		
Drilling			_		Total D	-	121 ft bgs	-	GW Remedy P	
Drill R			ongyear Tra					_ Location: <u>PG&E</u>	. Topock, Need	<u>lles, California</u>
Driller		•					iter: 21 ft bgs	- <u>-</u> 		
Drilling	-		st/J. Candela		-	ng Metho		_ Project Number	: RC000753.00	151
Logge Editor:		Chris B	onessi I Andrews		-	ng Interva ted to We		_		
Editor		IVIICITAE	Anulews		T		I. A fes No		1	_
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description 0 - 17.0') No recovery (NR); No recovery, d		Drilling Notes	Drilling Fluid (0.0 - 121.0') No
	84						V-Bd log for lithology			water used
91011121314151617	120	No sieve samples collected		?	NR					
 18 19	120			Topock - Fluvial Deposits	SM	br sı si	7.0 - 19.0') Topock - Fluvial Deposits; Silty sown (10YR 5/3); very fine grained to very copround; some small to very large pebbles, at; trace cobbles, subangular to subround; tra	arse grained, angular to ngular to subround; little ice clay; dry		
<u> </u>				Topock - Fluvial	GP	101 \cdot (C	9.0 - 19.5') Topock - Fluvial Deposits; Poorly LEY2 6/1); small cobbles to large cobbles, a	ingular; trace very fine		
20				Deposits	SM	to	medium grained sand, angular to subangula	ar; trace silt; dry; trace		

ate Started: 03/13		Boring	•			
	/2019	Surface Eleva	·	Boring No.	: MW-Bs	
ate Completed: 03/16		Northing (NAI	•			
illing Co.: <u>Casca</u>			83): <u>N/A</u> 121 ft bgs		SW Remedy Ph	
•	Drilling Longyear Track Mo	Total Depth:	•	•	,	
	Alymer		Water: 21 ft bgs	Location. <u>PG&E</u>	ropock, iveedi	es, Callio
	est/J. Candelaria	<u> </u>	<u> </u>	— Proiect Number:	RC000753 005	 51
•	Bonessi	Sampling Inte			7.00007.00.00.	<u> </u>
	ael Andrews	Converted to		_		
Sieve Sample ID	Groundwater Oo Sample ID	USCS Code USCS Class	Soil Description		Drilling Notes	Drilling FI
21_	Top Flu	oock - uvial SM	boulder composed of metadiorite (19.5 - 21.0') Topock - Fluvial Deposits; Silty brown (10YR 5/3); very fine grained to very of subround; some small to very large pebbles,	oarse grained, angular to	Ţ	(0.0 - 121.0 water us
22	Flu	ock - uvial posits	silt; trace cobbles, subangular to subround; tr (21.0 - 25.0') Topock - Fluvial Deposits; Poor and gravel (SP-SM); dark gray (10YR 4/1); v coarse grained, angular to subround; some g pebbles, angular to subround; little cobbles, s little silt; trace clay; dry to wet	race clay; dry ty graded sand with silt ery fine grained to very ranules to very large	(22.0') Approximate depth to water table	
26	Allu	oock - tvium posits CH	(25.0 - 27.0') Topock - Alluvium Deposits; Fa yellowish red / light brown(5YR 5/6) and dark plasticity; little small to large pebbles, subang very fine to coarse grained sand, subangular trace cobbles, subangular to subround; and o (26.5'); trace silt; medium stiff; decrease in pe precent	gray (10YŘ 4/1); high ular to subround; little to subround; little silt; ay lens; wet		
28	MW-B-VAS- 27-32 (7.7 J ppb) 1/6/2019		(27.0 - 34.0') Topock - Alluvium Deposits; Pc and gravel (SP-SM); yellowish brown / mode brown(10YR 5/4); very fine grained to very or subround; some small to very large pebbles, silt; trace cobbles, subangular to subround; w	rate yellowish parse grained, angular to angular to subround; little	(27.0 - 37.0') Lost soil core in hole	
31	12:50 Top	ock - vium posits				
34	Allu	oock - ivium posits SM	(34.0 - 37.0') Topock - Alluvium Deposits; Sil yellowish brown / moderate yellowish brown(' grained to very coarse grained, angular to su very large pebbles, angular to subround; little subangular to subround; wet	10YR 5/4); very fine bround; some small to		
37 - 38 - 120 39		NR NR	(37.0 - 97.0') No recovery (NR); No recovery see MW-Bd log for lithology	, did not collect cores,	(37.0 - 67.0') Lost clean out run cores throughout interval, loose material	
			V			
40						
40	Unified Soil Classi	fication System, ft	= feet, bgs = below ground surface	e, amsl = above mea	an sea level, G\	W =
		•	= feet, bgs = below ground surface he laboratory reporting limit, NR =			

1	4K(ADIS	for natural and built assets		Во	ring Lo	g		She	eet: 3 of	7
Date S	Started	: 03/13/2	2019		Surface	Elevation:	N/A	Borii	ua No .	MW-Bs	
Date 0	Comple	ted: <u>03/16/</u> 2	2019		Northing	g (NAD83):	N/A	_		<u>IIIIV-D3</u>	
Drilling	-	Casca				(NAD83):	N/A	_ Client:	PG&E		
Drilling	-		•		Total De	•	121 ft bgs	_ Project:		W Remedy Ph	
Drill R			<u>ongyear Tra</u>	<u>ck Mount</u>			10-12 inches	_ Location	i: <u>PG&E</u>]	Topock, Need	les, California
Driller Drilling		•	aymer st/J. Candela	rio.		First Water	8 inch x 10 ft Core Barrel	– Project N		RC000753.00	<u> </u>
Logge	-		Bonessi	IId		ig Method: ig Interval:	Screen intervals	_ Project i	vuilibei. j	XC000733.00	31
Editor			el Andrews			ed to Well:	∀es	_			
					1						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
41	120									(37.0 - 67.0') Lost clean out run cores throughout interval, loose material	(0.0 - 121.0') No water used
	240	No sieve samples collected	MW-B-VAS- 47-52 (<0.17 U ppb) 1/9/2019 10:15		NR		has = below around surface				

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	eet: 4 of	7
	Started					Elevation:	N/A	Borii	na No.:	MW-Bs	
		ted: <u>03/16/2</u>				g (NAD83):	N/A	_			
Drilling		Cascad				(NAD83):	N/A	_ Client:	PG&E	W/D DI	
	g Meth		•		Total D	-	121 ft bgs	_ Project:		W Remedy Ph	
	ig Type Name		<u>ongyear Tra</u> lymer			e Diameter: o First Water	10-12 inches	_ Location	i. <u>PG&E</u>	Topock, Needl	es, Calliornia
	g Asst:	•	st/J. Candela		-	ng Method:	8 inch x 10 ft Core Barrel	- Proiect N	Vumber	RC000753 005	51
Logge	_	Chris E			-	ng Interval:	Screen intervals	_	tarribor.		
Editor			l Andrews			ed to Well:					
	2			. <u>.</u> 2 F							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
616263646565666666	- 240									(37.0 - 67.0') Lost clean out run cores throughout interval, loose material	(0.0 - 121.0') No water used
	216	No sieve samples collected	MW-B-VAS- 67-72 (<0.17 U ppb) 1/9/2019 14:55	Vascificati	NR System	om ft = fact	has = below around surface	amel - ah	ove mea	n sea level G	N =

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	9		She	et: 5 of	7
Date S	Started	03/13/2			Surface	Elevation:	N/A	Borine	a No:	MW-Bs	
	-	ted: <u>03/16/2</u>				g (NAD83):	N/A			<u> </u>	
Drilling		Casca				(NAD83):	N/A		PG&E		
Drilling			-		Total D	•	121 ft bgs	-		W Remedy Pl	
	ig Type		ongyear Tra	ck Mount			10-12 inches	_ Location:	PG&E 1	<u> Fopock, Need</u>	les, California
l l	Name	-			-	o First Water	_	-			
	g Asst:		st/J. Candela	ırıa	•	ng Method:	8 inch x 10 ft Core Barrel	_ Project Nu	ımber: <u>I</u>	RC000753.00	51
Logge Editor			Bonessi I Andrews			ng Interval: ted to Well:	Screen intervals	_			
Luitor		IVIICITAE	Andrews		T	led to vveii.					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
81 82 83 84	216										water used
00											
86											
87											
88											
5					NR						
89											
90	120	No sieve									
	120	collected									
91											
92											
				•							
93											
94											
<u> </u>											
95											
<u> </u>											
96	-										
97				<u> </u>		(97.0 -	104.0') Topock - Alluvium Deposits; Silty	v sand with grav			
	144					(SM); t	prown (7.5YR 5/3); very fine grained to ver to subround; some small to very large p nd; little silt; trace clay; wet; moderate ce	ery coarse grain	ied,		
98				Topock -		subrou	nd; little silt; trace clay; wet; moderate ce	mentation	aidi to		
-				Alluvium	SM						
99				Deposits							
100 Abbre	viation	e: 11808 = 1	Inified Soil (l Naccificati	ion Syst	<u> </u>	bas = below ground surface.	amel = aho	ve mear	l L sea level G	\\/ -

	ADIS	built assets		DU	ring	-09			6 of	7
Date Started:	03/13/			Surface			Borina	No.: MW	/-Bs	
Date Complet				Northing			_		<u> </u>	
Orilling Co.:	<u>Casca</u>			Easting	•			G&E	aadu Dh	
rilling Metho rill Rig Type		<u>Drilling</u> Longyear Tra		Total De	•	•	-	inal GW Ren G&E Topock	-	
riller Name:		<u>Longyear fra</u> Alymer				ater: <u>21 ft bgs</u>	Location. E	GAL TOPOCE	i, inecui	es, Callio
Orilling Asst:		st/J. Candela		Samplir		•	 Project Nun	nber: RC000	753.005	 51
ogger:		Bonessi		Samplir	-		,			
Editor:	Michae	el Andrews		Convert	ed to W	ell: ⊠ Yes □ No				
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling) Notes	Drilling Flu
			Topock - Alluvium Deposits	SM			0			(0.0 - 121.0 water us
		MW-B-VAS- 102-107 (<0.17 U ppb) 1/10/2019 13:15	Topock - Alluvium Deposits	SM		04.0 - 107.0") Topock - Alluvium Deposits; M); brown (7.5YR 4/3); very fine grained to gular to subround; some small to very larg abround; some silt; trace clay; wet; moderat	very coarse grain <mark>ec</mark> e pebbles, subangula	1,		
108			Topock - Alluvium Deposits	SW-SM		07.0 - 109.0") Topock - Alluvium Deposits; t (SW-SM); (7.5R 5/3); medium grained to gular to subangular; little silt; trace granule ngular to subangular; wet 09.0 - 112.0") Topock - Alluvium Deposits; SW); (7.5R 5/3); granules to large pebbles,	very coarse grained, s to medium pebbles Well graded gravel angular to subangula	Loose losi forr collaps tripping bi	- 117.0') material, it core, mation sed upon g out core arrel	
110_ - 111_ - 112_ ₁₂₀	No sieve samples collected	•	Topock - Alluvium Deposits	GW		le medium to very coarse grained sand, an t; wet				
113			Topock -		DAY	12.0 - 117.0") Topock - Alluvium Deposits; M); (7.5R 4/3); granules to very large pebt abround; some fine to very coarse grained subround; some silt; wet	oles, subangular to	d		
115			Alluvium Deposits	GM						
- 118 - 48 - 48						17.0 - 121.0'); No recovery, did not collect r lithology	cores, see MW-Bd k	og		
100										
bbreviations	: USCS =	Unified Soil C	Classification	on Syste	em, ft =	eet, bgs = below ground surface	e, amsl = above	mean sea l	evel, G\	W =
						laboratory reporting limit, NR =				
	ppp = part	o pei billion. (J - 1101 aci							

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	She	eet: 7 of	7
	Started				Surface	Elevat	tion: <u>N</u> /A	Boring No.:	MW-Bs	
Date 0	Comple	ted: <u>03/16/2</u>	<u> 2019 </u>		Northing	g (NAD	983): <u>N/A</u>	Borning Ho.	<u> </u>	
Drilling	g Co.:	Cascac	<u>le</u>		Easting	(NAD8	33): <u>N/A</u>	Client: PG&E		
Drilling	g Meth		•		Total De	-	<u>121 ft bgs</u>	Project: Final G	<u>W Remedy Pl</u>	nase I
Drill R			<u>ongyear Tra</u>	ck Mount				Location: PG&E	<u> Topock, Need</u>	<u>les, California</u>
	Name	•			-		Water: <u>21 ft bgs</u>			
	g Asst:		st/J. Candela	ria	Samplin	-		Project Number:	RC000753.00	51
Logge		Chris B			Samplin					
Editor	:	Michae	el Andrews		Convert	ed to V	Vell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
121	48	No sieve samples collected					End of Boring at 121.0 'bgs			(0.0 - 121.0') No water used
_ 122_							End of Boiling at 12 1.0 bgs			
123								0		
124_										
125_										
126										
					A					
127										
<u> </u>										
128										
129										
{ 										
130										
131			4							
132										
<u> </u>				•						
133										
134					Ì					
<u>-</u>										
135										
<u>-</u>										
136										
<u> </u>										
137										
<u> </u>										
138										
139										
<u> </u>										
140	<u> </u>									
Abbre	viation	s: USCS = l	Jnitied Soil (Jassificati	on Syste	em, ft =	feet, bgs = below ground surface, a	amsl = above mea	n sea level. G	vv =

	4RC4		for natural and built assets		DU	mıg	Log		She	eet: 1 of	8
	started:	11/02/		•	Surface		•	Borin	g No.:	MW-E	
	completed:				Northing	• •	,	_		<u> </u>	
Orilling		Casca			Easting	•	•	_ Client:	PG&E		
-	Method:		Drilling		Total De	•	150 ft bgs	Project:		roundwater Re	emedy Pha
	g Type: Name:		nic Truck Mou		Borehol			_ Location:		Topock, Needl	aa Califor
	Asst:		<u>Vasquez</u> ninguez/C. Al		Depin և Samplin		Vater: 47.9 ft bgs od: 4 inch X 10 ft Core Barrel	- Droiget N		•	
_ogge		Conno			Samplin	•		_ FTOJ e CCIN	umber.	KC000733.00	JI
Editor:			McGrane		Convert	•		_			
Depth (ft)	Recovery (in)	Sieve ample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fl
1 - 2 - 3 - 4	72			Topock - Fluvial Deposits	SW-SM		(0.0 - 4.5') Topock - Fluvial Deposits; Well gr and gravel (SW-SM); brown (7.5YR 4/3); fine grained, angular to subround; some small to angular to subround; little silt; trace cobbles, subrounded; dry	grained to co very large pet	arse		(0.0 - 27.0' water us
- 5 _ - 6 _ - 7 _ - 8 _				Topock - Fluvial Deposits	SP-SM		(4.5 - 8.0') Topock - Fluvial Deposits; Poorly and gravel (SP-SM); brown (7.5YR 4/3); fine grained, subangular to round; some small to angular to subround; little silt; trace cobbles, subangular; trace coarse grained grained sar round; dry	grained to me very large pet angular to	dium obles,	(7.0 - 15.0') Rough drilling, had to let core	-
- 0 - 9 - 10 - 11 - 12	sa	o sieve mples llected		Topock - Fluvial Deposits	GM		(8.0 - 12.5') Topock - Fluvial Deposits; Silty g yellowish brown / moderate yellowish brown to very large pebbles, angular to subround; sr grained sand, subangular to round; some silt subround to round; dry	10YR 5/4); gra	anules arse	barrel cool down, drilled through a boulder, which was pulverized into a fine powder	
13 14 15				Topock - Fluvial Deposits	SM		(12.5 - 15.0') Topock - Fluvial Deposits; Silty brown / moderate yellowish brown(10YR 5/4) medium grained, angular to subround; little g pebbles, angular to round; little silt; trace cob subrounded; dry	; very fine gra ranule to large	ined to		
16 16 17 	93.6			Topock - Fluvial	GP-GM		(15.0 - 32.0') Topock - Fluvial Deposits; Poor silt (GP-GM); light brownish gray / pale yellov 6/2); granules to very large pebbles, angular cobbles, angular to subangular; little silt; tract to subround; trace fine to medium grained sa subrounded; dry; boulder 10 inch rock cores metadiorite	vish brown(10 to subangular e boulders, ar nd, angular to	YR ; some ngular	(15.0 - 26.0') Rough drilling, drilled like solid rock	
_18 _19 				Deposits							
۸ hbro	viations: L	SCS = l	Jnified Soil Cl	assification	System	n, ft = fe	eet, bgs = below ground surface, ams	sl = above ı	nean se	a level, GW =	groundwa

9/	AKC	ADIS	for natural and built assets		Во	ring	Log		She	eet: 2 of	8
Date S		•			Surface			Borin	na No.:	MW-E	
		ted: <u>11/17/2</u>			Northing	• `	•				
Drilling		<u>Cascac</u>			Easting	•	•	Client:	PG&E		
Drilling			•		Total De	-	150 ft bgs	Project:		<u>oundwater Re</u>	medy Phase
Drill Ri	• • •		<u>ic Truck Mou</u> ,	<u>ınt </u>	Borehol			_ Location:			0 1:0 :
Driller			/asquez		-		Vater: 47.9 ft bgs	- Duningt N		Topock, Needle	
Drilling		<u>IN. Dorr</u> Connor	ninguez/C. Al	verez	Samplin	-		_ Project iv	iumber: <u>i</u>	RC000753.005	01
Logge Editor:			IcGrane		Samplin Convert	-		_			
		Ocarriv					VGII.				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
	93.6	No sieve samples collected		Topock - Fluvial Deposits	GP-GM			9		(26.0') Core barrel drifting during drilling advance 6-inch casing to stablize the borehole to stop the core barrel from drifting causing core barrel to drill crooked	(27.0 - 37.0') No water used
32							(200 A CAT) Transly Flygid Dansity City				
33				Topock - Fluvial Deposits	SM		(32.0 - 34.5') Topock - Fluvial Deposits; Silty (SM); pale brown (107R 6/3); very fine graine angular to subround; and granule to very larg subround; little silt; trace cobbles, angular to	d to medium e pebbles, an	grained, gular to		
3535 36	51.6			Topock - Fluvial Deposits	SM		(34.5 - 37.0') Topock - Fluvial Deposits; Silty (SM); light yellowish brown (10YR 6/4); fine g grained, angular to round; and granules to sn to subangular; little cobbles, angular to subro clay; dry	rained to coa nall pebbles,	rse angular		
3738	48			Topock - Fluvial Deposits	GM		(37.0 - 42.5') Topock - Fluvial Deposits; Silty (GM); light yellowish brown (10YR 6/4); grant pebbles, angular to round; some fine to coars angular to round; some silt, trace cobbles, an trace boulders, subround; dry; boulder 10 inc composed of basalt with yelliwish green olivir texture	ules to very la se grained sa gular to suba h rock core	irge nd, ingular;		(37.0 - 117.0') No water used
40 Abbro	viations	e: 11808 - 11	Inified Sail Cl	assification	n Svoton	Po[4]	eat has - helow around ourfood and	al = above	mean ac		aroundwatar
eraare'	viations	s. USUS = U	miliea Soll Cl	assificatioi	ıı Systen	1, 11 = 16	eet, bgs = below ground surface, ams	si = above	mean sea	a ievel, GVV = (groundwater,

ppb = parts per billion, blue water table symbol represents depth to water measured during the first VAS interval

9/-	ARC	ADIS	for natural and built assets		Во	ring	Lo	9		She	et: 3 of	8
Date S						e Elevati		501.1 ft amsl	Borir	ng No.:	MW-E	
	-	ted: <u>11/17/</u>				g (NAD	,	2102331.3	_			
Drilling		<u>Casca</u>			_	(NAD8	3):	7615837.1	_ Client:	PG&E		
Drilling					Total D	•		150 ft bgs	_ Project:		oundwater Re	medy Phase
Drill Ri			<u>nic Truck Mou</u>	<u>ınt </u>		le Diam		4-12 inches	_ Location			
Driller			Vasquez		-			47.9 ft bgs	-		opock, Needl	
Drilling			minguez/C. Al	<u>verez</u>	-	ng Meth		4 inch X 10 ft Core Barrel	_ Project N	Number: <u>F</u>	RC000753.00	51
Logge		Conno			-	ng Interv ted to W		Continuous	_			
Editor:		<u>Sean i</u>	McGrane		Conver	Ted to v	veli.					I
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS		Soil Description			Drilling Notes	Drilling Fluid
41	48			Topock - Fluvial Deposits	GM							(37.0 - 117.0') No water used
43 44 45				Topock - Alluvium Deposits	SM		(SM); I	47.0') Topock - Alluvium Deposits; Si ight yellowish brown (10YR 6/4); fine of the angular to subround; some granules s, angular to subangular; little silt; trad	grained to coa to very large	rse		
 46 47								54.5') Topock - Alluvium Deposits; Si				
48 49 50 51 52	120	No sieve samples collected		Topock - Alluvium Deposits	ML		angula	(7.5YR 6/4); low plasticity; little fine to r to subangular; little clay; trace granus, angular to subround; moist				
53 54 55 56 57			MW-E-VAS- 52-57 (7000 ppb) 11/5/2018 17:40	Topock - Alluvium	GM		(GM); to suba	64.0') Topock - Alluvium Deposits; Si pale brown (10YR 6/3); granules to lar angular; some fine to medium grained gular; some silt; trace clay; dry	ge pebbles, a	angular	(57.0') Core hot	
58 59 60	120	· 11808 - 1	Unified Soil Cl	Deposits			et ha	s = below ground surface, am	sl = ahovo	mean sea	and dry	groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwate ppb = parts per billion, blue water table symbol represents depth to water measured during the first VAS interval

9/	AKC	ADIS	for natural and built assets		Во	ring	Log	1		She	et: 4 of	8
	Started:					Elevatio		501.1 ft amsl	Borin	a No.:	MW-E	
	•	ted: <u>11/17/</u>				g (NAD8	,	2102331.3				
Drilling		<u>Casca</u>			_	(NAD83		7615837.1	Client:	PG&E	d D.	
1	Metho g Type		Drilling nic Truck Mou		Total D	epīn: le Diame		150 ft bgs 4-12 inches	Project: Location:		<u>oundwater Re</u>	emedy Phase
	Name:		Vasquez					47.9 ft bgs	Location.		opock Need	les, California
Drilling			minguez/C. Al		-	ng Metho		4 inch X 10 ft Core Barrel	Project N		RC000753.00	
Logge		Conno	•		-	ng Interva		Continuous	,	_		
Editor:		Sean N	McGrane		Conver	ted to We	ell:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
						٥٦٦						(37.0 - 117.0') No water used
61						25						
L _												
62				Topock - Alluvium	GM	25						
-				Deposits								
63						PIN						
-	120											
64							64.0 - 6	67.0') Topock - Alluvium Deposits; San	ndv silt (ML):	reddish		
							orown (5YR 5/4); no plastic <mark>ity; some fine to</mark> co ular to subround; little granule to mediu	oarse grained um pebbles.	l sand, angular		
65				Topock -				ngular; trace clay; moist	,			
66				Alluvium Deposits	ML							
00												
67							•					
-						1:1:1:1:10	orown (37.0') Topock - Alluvium Deposits; Silty 5YR 5/4); very fine grained to coarse g	rained. andu	lar to		
68							subrour subang	nd; some silt; little granule to large peb ular; wet	bles, angulai	r to		
69												
70_		No sieve										
		samples collected										
72	108											
<u> </u>												
73				Topock -								
				Alluvium Deposits	SM							
74_				Dehosits								
75												
[-/3-												
77												
78												
	102											
79												
80 Abbres	viations	: IISCS - I	Inified Soil Cl	assification	System	n ft = fec	at has	s = below ground surface, ams	l = ahove	mean sec	level CM -	aroundwater
								er measured during the first VA			. 13 (31, 37)	g. our lawator,
í !	<u> r</u>	., ., .,				1 •		J === === + + + + + + + + + + + + + + +				

9/	ARC	ADIS	for natural and built assets		Во	ring	Log		Shee	et: 5 of	8
	Started:				Surface			Borin	a No.:	MW-E	
		ted: <u>11/17/</u>			Northing	- '	•	_			
Drilling		Casca			Easting		•		PG&E		
1	Metho		Drilling	4	Total De	-	150 ft bgs			<u>oundwater Re</u>	emedy Phase
	ig Type Name:	·	<u>nic Truck Μοι</u> Vasquez	ınt	Borehol		eter: <u>4-12 inches</u> Vater: 47.9 ft bgs	Location:		onack Naadl	es, California
Drilling			<u>wasquez</u> minguez/C. Al	verez	Samplin		_	_		C000753.00	
Logge			or Mills	170102	Samplin	-		_ 1 10,000110	umbon. <u>r</u>		01
Editor			McGrane		Convert	-					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
 81 											(37.0 - 117.0') No water used
02								O			
83				Topock -							
	102			Alluvium Deposits	SM						
84			MW-E-VAS- 82-87.0	Doposito				•			
85			(200 ppb) 11/6/2018								
			10:12								
86											
87							(87.0 - 94.5') Topock - Alluvium Deposits; Sal	ndveilt (MI): r	raddish		
							brown (5YR 5/4); low plasticity; some fine to angular to subangular; some clay; little granu	coarse grained			
88							pebbles, angular to subangular; wet	ile to medium			
	-										
89	-										
90		No sieve			1						
		samples collected		Topock -							
91				Alluvium Deposits	ML						
92	105.6										
93											
55											
94											
							(0.1.5.07.0) 7				
95	.						(94.5 - 97.0') Topock - Alluvium Deposits; Silt brown (5YR 5/4); medium grained to coarse of	grained, angul	ar to 📗		
	-			Topock -	014		subround; some silt; little granule to medium subangular; wet	pebbles, angu	ılar to		
96				Alluvium Deposits	SM						
	-										
97							(97.0 - 109.5') Topock - Alluvium Deposits; S	ilt with sand (N	ИL);		
_ 98_	-						reddish brown (5YR 5/4); no plasticity; little grapebbles, angular to subangular; little fine to c				
90	104			Topock -			angular to subround; wet				
99	104.4			Alluvium Deposits	ML						
100											
Abbre	viations	: USCS =	Unified Soil Cl	assificatio	n Systen	f, ft = fe	et, bgs = below ground surface, ams	sl = above r	nean sea	level, GW =	groundwater,

pbb = parts per billion, blue water table symbol represents depth to water measured during the first VAS interval

	1110	ADIS	Design & Consultancy for natural and built assets		DU	ring	<u>.</u> 09		0	eet: 6 of	8
	tarted:		2/2018		Surface			Borin	g No.:	MW-E	
	-	ed: <u>11/17</u>			Northin						
rilling		Casca			Easting	•		Client:	PG&E		
-	Metho		Drilling		Total D	-	150 ft bgs	Project:		oundwater Re	emedy Phase
-	y Type:		nic Truck Mou		Boreho		-	Location:			0 116
	Name:		Vasquez		-		iter: 47.9 ft bgs	— Drain at N		Topock, Needl	
_	Asst:		minguez/C. Al or Mills		Samplir Samplir	•		Project N	umber: <u>i</u>	RC000753.00	<u> </u>
ogger ditor:			McGrane		Conver	•					
1101.	_	<u>ocan</u>	Woording		T		ii.				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
101_											(37.0 - 117.0') No water used
4											
102											
103											
	104.4										
04								•			
05				Topock - Alluvium	ML						
05_				Deposits							
06_											
07_											
08_											
_											
109											
-		N					09.5 - 118.0') Topock - Alluvium Deposit	te: Silty eand with	aravel		
110		No sieve samples					M); reddish brown (5YR 5/4); fine graine gra	ed to coarse grain	ned,		
-		collected					igular to subangular, and siit, little grand igular to subangular; wet; some green st ections the core	taining observed	in		
111							ctions the core				
12	102										
- 13											
13_				- .							
114			M/M/ E \/A C	Topock - Alluvium	SM						
			MW-E-VAS- 112.0-117.0	Deposits							
15			(3100 ppb) 11/6/2018 15:22								
			15.22								
116											
117											(447.0 107.0
											(117.0 - 127.0 No water used
18							10.0 100.0\\ Tanaak All	to: Candus: 14 /8 41	\.		
4	108						18.0 - 122.0') Topock - Alluvium Deposit ddish brown (5YR 5/3); no plasticity; sor	ne fine to coarse			
19				Topock - Alluvium	ML		ained sand, angular to subround; little g ngular to subangular; moist; very weathe	ranuie to large pe red	eddies,		
- 1				Deposits							
\dashv	J			1							

/-	ARCA		built assets		В	ring Lo	9		She	eet: 7 of	0
	Started:	11/02/2				Elevation:	501.1 ft amsl	Borin	g No.:	MW-E	
Date C Drilling	Completed:	11/17/2 Casca				g (NAD83): (NAD83):	2102331.3 7615837.1	_	PG&E		
-	Method:	Sonic I			Total D	•	150 ft bgs	_ Olicini. _ Project:		roundwater Re	medy Phas
_	g Type:		nic Truck Mo			le Diameter:	4-12 inches	_ Location:	1		
	Name:		√asquez		=	o First Water	_			Topock, Needle	
Jrilling ₋ogge	Asst:	N. Don Conno	<u>ninguez/C. A</u> r Mills		-	ng Method: ng Interval:	4 inch X 10 ft Core Barrel Continuous	_ Project N	umber:	RC000753.00	51
Editor:			McGrane		•	ted to Well:		_			
Depth (ft)	Recovery (in)	Sieve ample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Flui
				Topock - Alluvium Deposits	ML						(117.0 - 127. No water use
_						∴ ∴ ∴ (SM);	- 127.0') Topock - Alluvium Deposits; ight reddish brown / light brown (5YR)	6/4); very fine of	rained		
123_						∷ ∷ ∷ large i	rse grained, angular to subround; and bebbles, angular to subangular; trace or gree pebbles to small cobbles of metar	cobbles; wet; tr	ace 1-4		
- _124	108			Topock - Alluvium	SM		ige pessies to small despites of mean	Jones			
_125				Deposits			100				
_126											
127				<u> </u>			- 137.0') Topock - Weathered Bedroo				(127.0 - 150.
_ _128						coarse	and (S <mark>M); red</mark> dish brown (5YR 5/4); ve grained, angular to subround; some : bebbles, angular to subangular; wet				No water use
_						i i i i i i i i i i i i i i i i i i i	bebbies, angular to subangular, wet				
129_											
_ _130		sieve mples									
_		lected									
131 -				Topock -							
132_	120			Weathered Bedrock -	SIVI						
_ _133				conglomerat	e						
_ _134											
_135											
_136											
_											
_137				Topock -		(137.0	- 138.5') Topock - Weathered Bedroc	k - conglomera	ate;	(137.0') Rough	
138			MW-E-VAS-	Weathered Bedrock -	SM	graine	and (SM); reddish brown / moderate b d to coarse grained, angular to subrou e to medium pebbles, angular to suba	nd; some silt;	; tine little	drilling	
	114		137-142 (7300 ppb)	conglomerat	te				ator C''		
_139			11/7/2018 15:20	Topock - Weathered Bedrock -	ML		- 139.5') Topock - Weathered Bedroc reddish brown / moderate brown(5YR	4/4); no plastic	ity;		
				conglomerat	ie SM	fine gr	granule to medium pebbles, angular to ained sand, angular to subround; dry; ck, cemented	subangular; tr very weathered	ace d		
140 Abbrev	viations: II	SCS = I	Inified Soil C	lassification		1.1.1.1.1	s = below ground surface, am	sl = ahove :	mean se	a level GW = 4	aroundwate

9/	AKC	ADIS	for natural and built assets		Во	ring	Log			She	eet: 8 of	8
Date S	Started:	11/02/	2018		Surface	Elevat	ion:	501.1 ft amsl	Borin	a No .	MW-E	
	•	ted: <u>11/17/</u>	2018		Northin	g (NAD	83):	2102331.3			<u> </u>	
Drilling	-	<u>Casca</u>	de		Easting	(NAD8	33):	7615837.1	Client:	PG&E		
_	Metho		•		Total De	-		150 ft bgs	Project:		<u>roundwater Re</u>	medy Phase
	ig Type		nic Truck Mou		Borehol			4-12 inches	Location:			
	Name:		Vasquez					47.9 ft bgs	D!4 N		Fopock, Needle	
	Asst:		ninguez/C. A		Samplin	_			Project N	iumber: <u>i</u>	RC000753.00	01
Logge Editor:		Conno	McGrane		Samplir Convert	-		Continuous				
Luitor		<u>ocan r</u>	VICOIAIIC		T		V CII.					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS		Soil Description			Drilling Notes	Drilling Fluid
141			MW-E-VAS- 137-142 (7300 ppb) 11/7/2018	Topock - Weathered Bedrock - conglomerat	SM		Silty sa grained	 - 142.0') Topock - Weathered Bedrock nd (SM); reddish brown (5YR 5/4); fine I, angular to subangular; some silt; little s, angular to subangular; wet 	grained to c	oarse		(127.0 - 150.0') No water used
142			15:20	congiomerat								
							(142.0 brown	- 150.0') Topock - Competent Bedrock (7.5YR 5/4); dry; strong cementation; ha	- conglomera ard, friable	ate;	(142.0') Rough drilling	
143								(· · · · · · · · · · · · · · · · · · ·				
-	114						}					
144												
913:37	-											
145		No sieve samples										
E.G.	-	collected		Topock -								
ୁଁ146	-			Competent Bedrock -								
- TE 50	-			conglomerat	е							
147 <u>_</u>								V ,) Y				
¥ 440	-											
ਮੂ148	-											
	36											
- ITG												
ម្លែ <u> </u>												
&								End of Boring at 150.0 'bgs	3.			
A												
- 19\TOF												
152												
=======================================												
153												
SING LC												
្គែ154 ្ទុ	-											
7FF -	-											
<u>155</u>	-											
#												
MENT NO.												
୍ଥି157												
GRANE												
NUSER												
ğ159												
40F												
160_												
·								s = below ground surface, ams			a level, GW =	groundwater,
gpb =	parts p	er billion, blu	ue water table	symbol re	present	s depth	to wat	er measured during the first VA	S interval			

DIS Design 8 for natur built ass	Consultancy ral and ets		Well Const	ruction Log		Sheet: 1 of 8
11/18/2018			_ Surface Elevation:	501.1 ft amsl	Well ID:	MW-E-70, MW-E-142
: 04/02/2019				: <u>501.0 ft amsl</u>		
Cascade				500.9 ft amsl	Client: PG&	
•				2102331.3	•	Groundwater Remedy Phase
-			- '			
_	z/C. Alv	erez				E Topock, Needles, California
				_	Project Numbe	er: RC000753.0051
	ne		•		<u> </u>	
	1		_ well Completion.	Flush Slick-up		
Geologic Formation	USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
			(0.0 - 1.0') Concrete Pad	(0.5 - 122.0') 2" PVC Sch 40 Casing		(0.0 - 1.0') 12 bags Note: 3.5 x 3.5 ft concrete pad with 18" dia lockable vault, King Kon-Crete 4000 PSI
Topock			(1.0 - 2.0') Cement —			(1.0 - 2.0') 8 bags Note: King Kon-Crete 4000 PSI
Fluvial Deposits	SW-SM		(2.0 - 4.5') Portland Cement 5% Bentonite (0.4 - 50.0') 2" PVC —	(0.0 - 6.0') 12" Borehole	(2.0 - 4.5') 13.9 gallons	(2.0 - 4.5') 12 gallons (-14%) Note: Top off grout with Type I,II, ar V and Hydrogel on 4/1/19.
Topock - Fluvial Deposits	SP-SM		Sch 40 Casing			
Topock - Fluvial Deposits	GM		(4.5 - 46.0') Portland		(4.5 - 46.0') 212.2	(4.5 - 46.0') 190 gallons (-10%) Note: Used Type I,II, and V and
Topock - Fluvial Deposits	SM	0 7 ()	Bentonite	(6.0 - 144.0') 10" Borehole	gallons	Hydrogel. Mixed 5.5 batches of gro total.
Topock - Fluvial Deposits	GP-GM					
	11/18/2018 :04/02/2019 Cascade Sonic Drilling Steve Vasque N. Domingue Connor Mills Sean McGrar 150 ft bgs ter D Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits	11/18/2018 :04/02/2019 Cascade Sonic Drilling Steve Vasquez N. Dominguez/C. Alve Connor Mills Sean McGrane 150 ft bgs ter D Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits GM Topock - Fluvial Deposits GM Topock - Fluvial Deposits GM	11/18/2018 : 04/02/2019 Cascade Sonic Drilling Steve Vasquez N. Dominguez/C. Alverez Connor Mills Sean McGrane 150 ft bgs Topock - Fluvial Deposits Surface Elevation: Shallow Well Elevation: Shallow Well Elevation: Shallow Well Elevation: Deep Well Elevation: Northing (NAD83): Easting (NAD83): Borehole Diameter: Water Level Start: Development End Date Well Completion: Topock - Fluvial Deposits Surface Elevation: 501.1 ft amsl 34/02/2019 Shallow Well Elevation: 501.0 ft amsl Deep Well Elevation: 500.9 ft amsl Deep Well Elevation: 500.9 ft amsl Deep Well Elevation: 500.9 ft amsl Deep Well Elevation: 500.9 ft amsl Deep Well Elevation: 500.9 ft amsl Deep Well Elevation: 500.9 ft amsl Deep Well Elevation: 500.9 ft amsl Deep Well Elevation: 500.9 ft amsl Deep Well Elevation: 500.9 ft amsl Deep Well Elevation: 500.9 ft amsl Deep Well Elevation: 500.9 ft amsl Deep Well Elevation: 500.9 ft amsl Deep Well Construction Deep Well Elevation: 500.9 ft amsl Deep Well Elevation: 500.9 ft amsl Deep Well Elevation: 500.9 ft amsl Deep Well Construction Deep Well Elevation: 500.9 ft amsl Deep Well Elevation: 500.9 ft amsl Deep Well Elevation: 500.9 ft amsl Deep Well Construction Deep Well Elevation: 500.9 ft amsl Deep	11/18/2018		

77 11 10	ADIS Design & for nature built asset	ets		Well Const	delion Log		Sheet: 2 of 8
Date Started:	11/18/2018			_ Surface Elevation:	501.1 ft amsl	Well ID:	MW-E-70, MW-E-142
ate Completed	I: <u>04/02/2019</u>			_ Shallow Well Elevation:	501.0 ft amsl		*
rilling Co.:	Cascade				500.9 ft amsl	Client: PG&	
-	Sonic Drilling			_ Northing (NAD83):	2102331.3		Groundwater Remedy Phas
riller Name:	Steve Vasque			_ Easting (NAD83):	<u>7615837.1</u>	Location: <u>1</u>	
rilling Asst:	N. Domingue:	z/C. Alv	erez		4-12 inches		E Topock, Needles, Californ
ogger:	Connor Mills				47.9 ft bgs	Project Numbe	er: RC000753.0051
ditor:	Sean McGran	ie		_ Development End Date			
otal Depth:	150 ft bgs			_ Well Completion:			
Groundwa Sample		USCS	USCS	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
- 21 21 22 22 23 24 25 26 27 28 29 30 31 32 33 34 35 34 35 36 37 38 38 39	Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits	GP-GM SM	\\ \cdot \cd	(4.5 - 46.0') Portland Cement 5% Bentonite (31.5 - 32.5') Centralizer	(6.0 - 144.0') 10" Borehole	(4.5 - 46.0') 212.2 gallons	(4.5 - 46.0') 190 gallons (-10% Note: Used Type I,II, and V and Hydrogel. Mixed 5.5 batches of gr total.

	DIS Design & for natura built asse	ts		Well Const	ruction Log	•	Sheet: 3 of 8
ate Started:	11/18/2018			_ Surface Elevation:	501.1 ft amsl	Well ID: N	MW-E-70, MW-E-142
ate Completed:	04/02/2019			_ Shallow Well Elevation:	501.0 ft amsl		
rilling Co.:	Cascade			_ Deep Well Elevation:	500.9 ft amsl	Client: PG&E	
rilling Method:	-			_ Northing (NAD83):	2102331.3	•	<u> Groundwater Remedy Phase</u>
	Steve Vasque			_ Easting (NAD83):	7615837.1	Location: <u>1</u>	
-	N. Dominguez	z/C. Alv	erez_	_ Borehole Diameter:	4-12 inches		E Topock, Needles, California
00	Connor Mills			_ Water Level Start:	47.9 ft bgs	Project Numbe	r: RC000753.0051
	Sean McGran	e		_ Development End Date			
otal Depth:	150 ft bgs	1		_ Well Completion:		1	<u> </u>
Groundwat Sample IE		USCS Code	USCS Class		Construction	Calculated Material Volumes	Material Volumes Installed
	Topock - Fluvial Deposits	GM		(0.4 - 50.0') 2" PVC — Sch 40 Casing	— (0.5 - 122.0') 2" PVC Sch 40 Casing		(4.5. 46.01) 400 millions (400%)
-44 — -44 — -45 — -46 —	Topock - Alluvium Deposits	SM		(4.5 - 46.0') Portland Cement 5% Bentonite		(4.5 - 46.0') 212.2 gallons	(4.5 - 46.0') 190 gallons (-10%) Note: Used Type I,II, and V and Hydrogel. Mixed 5.5 batches of gro total.
- 47 <u>-</u> -				(46.0 - 48.0') — Bentonite seal chips		(46.0 - 48.0') 1.63 bags	(46.0 - 48.0') 2.5 bags (53%) Note: Puregold Medium Chips
-48	Topock - Alluvium Deposits	ML		(50.0 - 70.0') 2" Sch — 40 PVC (20-slot) Screen	(6.0 - 144.0') 10" Borehole		
.53 .54 MW-E-VAS- .52-57 (7000 ppb) .11/5/2018				(48.0 - 74.0') Cemex		(48.0 - 74.0') 29.3 bags	(48.0 - 74.0') 45 bags (54%) Note: Lapis Lustre Sand
_55	Topock -	GM					
 _58 _59	Alluvium Deposits	GM					

ARC	DIS for natura built asset	al and ets		Well Const	ruction Log		Sheet: 4 of 8
Date Started:	11/18/2018			_ Surface Elevation:	501.1 ft amsl	Well ID: N	MW-E-70, MW-E-142
Date Completed	: <u>04/02/2019</u>			_ Shallow Well Elevation:	: <u>501.0 ft amsl</u>		
Drilling Co.:	Cascade			_ Deep Well Elevation:	500.9 ft amsl	Client: PG&E	
Drilling Method:				_ Northing (NAD83):	2102331.3	Project: <u>Final</u>	Groundwater Remedy Phase
Driller Name:	Steve Vasque			_ Easting (NAD83):	7615837.1	Location: <u>1</u>	
Drilling Asst:	N. Dominguez	z/C. Alv	erez	_ Borehole Diameter:	4-12 inches		Topock, Needles, California
Logger:	Connor Mills			_ Water Level Start:	47.9 ft bgs	Project Numbe	r: RC000753.0051
Editor:	Sean McGran	ie		_ Development End Date			
Total Depth:	150 ft bgs			_ Well Completion:			
Groundwa Sample I		USCS	USCS Class	Well (Construction	Calculated Material Volumes	Material Volumes Installed
61	Topock - Alluvium Deposits Topock - Alluvium Deposits	GM ML	7.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0	(48.0 - 74.0') Cemex	— (0.5 - 122.0') 2" PVC Sch 40 Casing	(48.0 - 74.0') 29.3 bags	(48.0 - 74.0') 45 bags (54%) Note: Lapis Lustre Sand
74	Deposits			(74.0 - 120.0') Bentonite seal pellets		(74.0 - 120.0') 51 bags	(74.0 - 120.0') 49 bags (-4%) Note: Pel Plug Pellets (TR30) 3/8"
Abbreviations: \	JSCS = Unified	Soil C	lassificat	tion System, ft = feet, bgs	s = below ground surface, a	amsl = above mean	sea level, GW = groundwater,

ppb = parts per billion, blue water table symbol represents depth to water measured during the first VAS interval

1	4KC3	DIS for natura built asse	al and ets		Well Const	truction Log		Sheet: 5 of 8
Date S		11/18/2018			_ Surface Elevation:	501.1 ft amsl	Well ID: I	MW-E-70, MW-E-142
	-	04/02/2019			_ Shallow Well Elevation			·
Drilling		Cascade			_ Deep Well Elevation:	500.9 ft amsl	Client: PG&	
_		Sonic Drilling			_ Northing (NAD83):	2102331.3	•	Groundwater Remedy Phase
Driller I		Steve Vasque			_ Easting (NAD83):	7615837.1	Location: <u>1</u>	T. T
Drilling		N. Dominguez	Z/C. AIV	erez	_ Borehole Diameter: _ Water Level Start:	4-12 inches		E Topock, Needles, California er: RC000753.0051
Loggei Editor:		Sean McGran			_ vvaler Level Start. _ Development End Date	47.9 ft bgs	Project Numbe	I. KC000733.0031
Total D		150 ft bgs	iC .		_	∑ Flush Stick-up		
Total 2					_ Trail Completion.			
Depth (ft)	Groundwa Sample II		USCS	USCS Class	Well (Construction	Calculated Material Volumes	Material Volumes Installed
81 82 83 84 85 86 87	MW-E-VAS 82-87.0 (200 ppb) 11/6/2018 10:12		SM			— (0.5 - 122.0') 2" PVC Sch 40 Casing		
		Topock - Alluvium Deposits	ML		(74.0 - 120.0') Bentonite seal pellets	— (6.0 - 144.0') 10" Borehole	(74.0 - 120.0') 51 bags	(74.0 - 120.0') 49 bags (-4%) Note: Pel Plug Pellets (TR30) 3/8"
95 96 97		Topock - Alluvium Deposits	SM					
98 99		Topock - Alluvium Deposits	ML					
100			<u> </u>	<u> </u>			<u> </u>	
Abbrev	viations: し	ISCS = Unified	Soil C	lassificat	tion Svstem. ft = feet. bas	s = below ground surface.	amsl = above mean	sea level, GW = groundwater,

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwate ppb = parts per billion, blue water table symbol represents depth to water measured during the first VAS interval

9/-	4RC4	DI	S Design & C for natural built asset	consultancy land s			Well Const	ruction Lo	og			Sheet: 6 of 8
Date S			8/2018				_ Surface Elevation:	501.1 ft amsl		Well	ID:	MW-E-70, MW-E-142
	completed:						_ Shallow Well Elevation			_		
Drilling			cade				_ Deep Well Elevation:	500.9 ft amsl		_ Client:	PG8	
Drilling Driller I			ic Drilling	-			_ Northing (NAD83): _ Easting (NAD83):	2102331.3 7615837.1		-		I Groundwater Remedy Phase
Drilling			<u>/e Vasque:</u>)ominguez		oro7		_ Easting (NADos). _ Borehole Diameter:	4-12 inches		Location		E Topock, Needles, California
Logge			nor Mills	/C. AIV	CICZ		_ Borenole Blameter. _ Water Level Start:	47.9 ft bgs		- Project N		er: <u>RC000753.0051</u>
Editor:			n McGran	 е			_ Development End Date	-		_1 10,0001	·	or. <u>140000100.0001</u>
Total D			ft bgs				Well Completion:		ck-up	_		
_			is E		T.,							
Depth (ft)	Groundwat Sample II		Geologic Formation	USCS	USCS	188	Well	Construction		Calculate Vaterial Volu		Material Volumes Installed
	-		Q.G					(0.5	100.01).011			
L -									122.0') 2" h 40 Casing			
101												
- -												
102												
										U		
103											7	
<u> </u>												
104			_							•		
105			Topock - Alluvium	ML								
103			Deposits									
106												
107												
108												
 -												
109												
H							(74.0 - 120.0')			(74.0 120	O'\ E1	(74.0, 400.0!) 40 hags (40/.)
110							Bentonite seal pellets		144.0') 10" rehole	(74.0 - 120. bags	0)51	(74.0 - 120.0') 49 bags (-4%) Note: Pel Plug Pellets (TR30) 3/8"
- - -							penets					
111_						X						
112												
113												
<u> </u>			Topock -									
114	MW-E-VAS		Alluvium Deposits	SM								
-	112.0-117.0 (3100 ppb) 11/6/2018											
115	11/6/2018 15:22											
116												
- - -												
117												
118												
119			Topock - Alluvium	ML	[:]:	$\cdot \cdot $						
			Deposits	141								
120		1055		0 " -		<u>: : </u>						
Abbrev	viations: L	JSCS	= Unified	Soil Cl	assil	ica	tion System, tt = feet, bas	s = below around	surface, ams	i = above	mean	sea level. GW = groundwater.

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater ppb = parts per billion, blue water table symbol represents depth to water measured during the first VAS interval

- ARU-	DIS Design & C for natura built asset	Consultancy Il and ts		Well Constructio	n Log		Sheet: 7 of 8
Date Started:	11/18/2018			_ Surface Elevation: 501.1 ft a		Well ID:	MW-E-70, MW-E-142
ate Completed:	:04/02/2019			_ Shallow Well Elevation: 501.0 ft a	msl L	- TTGII 1D.	······································
rilling Co.:	Cascade			Deep Well Elevation: 500.9 ft a	msl (Client: PG&	<u>E</u>
rilling Method:	Sonic Drilling			Northing (NAD83): 2102331.	11	Project: Final	Groundwater Remedy Phas
riller Name:	Steve Vasque	Z		_ Easting (NAD83): <u>7615837.</u>	<u>1</u>	Location: 1	
rilling Asst:	N. Dominguez	Z/C. Alv	erez	Borehole Diameter: 4-12 inche	es	PG&	E Topock, Needles, Californ
ogger:	Connor Mills			_ Water Level Start: 47.9 ft bgs		Project Number	er: RC000753.0051
ditor:	Sean McGran	e		_ Development End Date: <u>12/14/201</u>			
otal Depth:	150 ft bgs	1		_ Well Completion: X Flush[Stick-up		
Groundwar Sample II		Code	USCS Class	Well Construction	Ma	Calculated aterial Volumes	Material Volumes Installed
	Topock - Alluvium Deposits	ML		(120.5 - 121.5')	(0.5 - 122.0') 2" PVC Sch 40 Casing		
	Topock - Alluvium Deposits	SM			(122.0 - 142.0') 2" Sch 40 PVC (20-slot) Screen		
	Topock - Weathered Bedrock - conglomerate	SM		(120.0 - 144.0') Cemex #3 MESH (8x10)	(6.0 - 144.0') 10" (12 Borehole	20.0 - 144.0') 29.3 bags	(120.0 - 144.0') 26 bags (-11% Note: Lapis Lustre Sand
38	conglomerate	SM ML					
		SM	1. 1. 1. 1.	그 바람이라네 -	1		

9/	ARCA	DIS for natura built asset	Consultancy Land ts		Well Const	ruction Log	\$	Sheet: 8 of 8
		11/18/2018			_Surface Elevation:	501.1 ft amsl	Well ID: N	MW-E-70, MW-E-142
	-	04/02/2019			_ Shallow Well Elevation:			
Drilling		Cascade			_ Deep Well Elevation:	500.9 ft amsl	Client: PG&E	
_		Sonic Drilling			Northing (NAD83):	2102331.3	-	Groundwater Remedy Phase
		Steve Vasque			_ Easting (NAD83):	7615837.1	Location: 1	T
Drilling		N. Dominguez Connor Mills	<u> ⁄/C. Alv</u>	erez	_ Borehole Diameter: _ Water Level Start:	4-12 inches 47.9 ft bgs		E Topock, Needles, California r: RC000753.0051
Logge Editor:		Sean McGran			_ vvaler Level Start. _ Development End Date	_	Floject Nullibe	1. <u>NC000733.0031</u>
Total [150 ft bgs	<u>. </u>		_	∑ Flush Stick-up		
					- · ·			
Depth (ft)	Groundwat Sample II		Code	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed
	MW-E-VAS 137-142 (7300 ppb) 11/7/2018 15:20	Topock -	SM		(120.0 - 144.0') Cemex #3 MESH — (8x10)	(122.0 - 142.0') 2" Sch 40 PVC (20-slot) Screen (6.0 - 144.0') 10" Borehole (142.0 - 142.3') Sump and End Cap	(120.0 - 144.0') 29.3 bags	(120.0 - 144.0') 26 bags (-11%) Note: Lapis Lustre Sand
145 146 147 148 149		Topock - Competent Bedrock - conglomerate			(144.0 - 150.0') — Bentonite seal chips	(144.0 - 150.0') 4" Borehole	(144.0 - 150.0') 1.1 bags	(144.0 - 150.0') 1.5 bags (36%) Note: Puregold Medium Chips
150 151					End of Boring at 150.0 'bgs.			
152								
153								
<u> </u>								
154								
<u> </u>	-							
155	•							
156								
H								
157								
158								
150								
159								
160								
	viations: U	ISCS = Unified	Soil C	lassificat	ion System, ft = feet, bgs	s = below ground surface, a	ımsl = above mean	sea level, GW = groundwater,

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwate ppb = parts per billion, blue water table symbol represents depth to water measured during the first VAS interval

ARCA		Design & Consultancy for natural and built assets				Log	<u> </u>		She		7
Date Started:	01/03/2			Surface			N/A	Borin	g No.:	MW-F	
Date Completed:				Northing	- '		N/A				
Orilling Co.:	Cascad			Easting	•	,	N/A	Client:	PG&E	M Dama - I - D'	
-	Sonic E	-		Total De Borehol			131 ft bgs	-		W Remedy Ph	
Orill Rig Type: Oriller Name:		<u>ic Truck Mou</u> ′asquez					<u>4-12 inches</u> <u>47.9 ft bgs</u>	Location:	<u>ruae</u>	Topock, Need	ies, Calli ol
Orilling Asst:		ya/ O. Florez		Samplin			4 inch x 10 ft Core Barrel	Proiect N	umher.	RC000753 00	51
ogger:		l Andrews		Samplin	-		Continuous		J., 1001.	0000100.00	
Editor:		lcGrane		Convert	-			-			
	Sieve nple ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling F
			<u>იწ</u>			(0.0 - 5.	0') (NR); No recovery airknifed for utili	ity clearance.			(0.0 - 97.5 water us
_ 3				NR			00	O			
5 _						(5.0 - 7.	5') Topock - Alluvium Deposits; Well	graded gravel	with		
_ 6			Topock - Alluvium	GW-GM		pebbles grained	sand (GW-GM); brown (7.5YR 4/3); g s, angular to subround; some very fine sand, angular to subangular; little silt to subround; dry	to very coars	е		
7			Deposits								
_ 8						silt and grained	7.0') Topock - Alluvium Deposits; Wel gravel (SW-SM); brown (7.5YR 4/3); f , angular to subround; and granules to to subround; trace cobbles, angular tr	ine grained to very large pe	coarse bbles,		
9 _						silt; trac	to subjournd, trace cobbles, angular to se clay; dry to moist; iron oxide staining ing and decreasing granule to pebbles kide staining	g; areas with	some		
_10				2		(10.3');	dark brown/ black 1" layer, possibly ch	narcoal, coal o	or		
-11						graphite					
-12 _{— 112.8} - -13_			Topock - Alluvium Deposits	SW-SM							
.14						•					
						•					
_16						• •					
_17						•					
_18			Topock -			silt and coarse pebbles	22.0') Topock - Alluvium Deposits; We gravel (SW-SM); brown (7.5YR 4/4); f grained, angular to subround; some g s, angular to subangular; trace silt; trace silt; iron oxide staining	fine grained to ranules to lar	very ge		
_19			Alluvium Deposits	SW-SM		0 0 0					
20				<u> </u>		•					l .
114 19 			Alluvium Deposits assification	-), ft = f	eet, bgs		sl = above ı	nean se		grour

_		DIS	built assets		20	ring					7
Date S	tarted:	01/03/2			Surface		n: <u>N/A</u>	Borin	a No	: MW-F	
	ompleted:				Northing					· ······	
Drilling		Cascac			Easting	•		_ Client:	PG&E		
_	Method:	Sonic [•		Total De	•	131 ft bgs	_ Project:		W Remedy Ph	
_	g Type:		<u>ic Truck Μοι</u>		Borehol			_ Location:	PG&E	Topock, Need	les, Califor
Oriller N			/asquez		-		ater: 47.9 ft bgs			5000075000	
Drilling			ya/ O. Florez		Samplin	-		_ Project N	umber:	RC000753.00	51
₋ogger Editor:	•		l Andrews //cGrane		Samplin Convert	•		_			
Luitoi.		<u>Sean N</u>	logiane		T	Led to v	- I les INO		1		_
Depth (ft)		Sieve mple ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fl
 _21				Topock - Alluvium Deposits	SW-SM					(21.0 - 31.0')	(0.0 - 97.5') water use
22										Rough drilling	
							22.0 - 30.5') Topock - Alluvium Deposits; V ilt (SW-SM); brown (7.5YR 4/3); fine grain	Vell graded sar	nd with		
23							rained, angular to <mark>subang</mark> ular; little granul	es to large pebl	oles,		
	114						ingular to <mark>subangular; trace silt; trace clay; noist</mark>	uace mica, dry	, 10		
_24	117										
.]											
_25											
. 4											
_26				Topock -							
- 4				Alluvium Deposits	SW-SM						
_27											
				1							
_28											
_29											
_30							10				
							30.5 - 37.0') Topock - Alluvium Deposits; S SM); (7.5R 4/3); very fine grained to very co	Bilty sand with g	ravel		
_31							o subround; some granules to large pebble	es, angular to			1
							ubangular; trace cobbles, angular; trace si taining	lt; trace clay; ir	on oxide		
_32	120										
_33											
55				Tona-li							
_34				Topock - Alluvium	SM						
				Deposits							
_35											
_36											
.]											
_37							27.0 40.00 7				
.]							37.0 - 46.0') Topock - Alluvium Deposits; S SM); (7.5R 4/3); very fine grained to very co	parse grained,	angular		
_38							o subangular; and granules to very large peubangular; little silt; trace cobbles, angula	ebbles, angular r to subangular	to trace		
-	72			Topock - Alluvium	SM		lay; dry to moist; weak cementation	Š			
_39				Deposits							
- 4											
40		000								1	<u> </u>
					-		t, bgs = below ground surface, an				groundwa
r	Jaus per b	mon, NF	 - 110 LECOAE 	ı v. biue Wa	iter ladio	≠ SYMD0	represents depth to water measure	rea auring th	ie ilist V	as interval	

	ARCA		for natural and built assets			ring l	- J				
Date St		01/03/				Elevation		Borin	a No:	MW-F	
	ompleted:					g (NAD83	,				
Drilling		<u>Casca</u>			-	(NAD83)		Client:	PG&E		
_	Method:		<u>Drilling</u>		Total D	•	131 ft bgs	Project:		N Remedy Ph	
_	g Type:		nic Truck Mou			le Diamet		Location:	PG&E	Fopock, Needl	<u>es, Calito</u>
Oriller N Orilling			Vasquez aya/ O. Florez		-	o First wa ng Method	ter: 47.9 ft bgs : 4 inch x 10 ft Core Barrel	 I Project N	umbor:	RC000753.00	 51
ogger.			el Andrews			ng Interva		riojectiv	umber. I	NC000133.00	J I
Editor:	•		McGrane		-	ted to We					
$\overline{}$	>				Ī						
Depth (ft)		Sieve mple ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description	on		Drilling Notes	Drilling F
											(0.0 - 97.5 water us
_41											
42	72										
										(42.0 - 45.0') Drill rods	1
_43				Topock -	CM.					chattering	
				Alluvium Deposits	SM						
_44											
_]											
_45	48										
. 4											
_46							6.0. 49.51) Tanak Allunium Danasi	to Cilty and (CM)	braven		
4							6.0 - 48.5') To <mark>po</mark> ck - <mark>Alluvi</mark> um Deposit 5YR 4/3); fine <mark>grained to ve</mark> ry coarse	grained, angular to	round:		
_47				Topock -		tr	le granules to large pebbles, angular ace clay; trace mica; moist to wet	to subangular; little	silt;		
				Alluvium Deposits	SM						
_48									1	<u> </u>	
							8.5 - 52.0') Topock - Alluvium Deposit	te: Silty sand with a	ravel		
_49	MW	-F-SS-				1:4:1:1(9	M); reddish brown (5YR 4/3); very fine	e grained to very co	arse		
		7-52 3/2019				i a	ained, angular to subround; <mark>some</mark> gra igular to subangu <mark>la</mark> r; some silt; t <mark>rac</mark> e i				
_50		4:48		Topock - Alluvium	SM	"	oist				
				Deposits	SM						
_51			•								
_52	120					(5	2.0 - 58.0') Topock - Alluvium Deposit	ts; Silty sand with g	ravel	(52.0')	
						(S	M); dark reddish brown (5YR 3/3); finalined, angular to subround; some silt	e grained to very co ; little small to large	arse	Approximate depth to water	
_53						p p	bbles, angular to subangular; wet			table	
₅₄ -											
_54	5	-F-SS- 2-57	MW-F-VAS- 52-57								
_55	1/8	3/2019 4:48	(2500 ppb) 1/6/2019	Topock -	0						
	'		11:32	Alluvium Deposits	SM						
_56											
_57											
.]											
_58		F 60									
	60 5	7-F-SS- 7-62				:- :- :- (9	8.0 - 61.0') Topock - Alluvium Deposii M); reddish brown (5YR 4/3); very fine	e grained to very co	arse	(58.0 - 61.0') Core dry	
_59	1/0	3/2019 4:58		Topock - Alluvium	SM	: . : : g	ained, angular to subround; some silt bbles, angular to subangular; little cla	; little granules to la	rge		
				Deposits			eak cementation	,, =, wi y t	,		
60											
					-		, bgs = below ground surface, epresents depth to water mea				groundwa
\nh						- >////////////////////////////////////				> IIIIHIVAI	

7	71.70	ADIS	for natural and built assets			ring	3				
Date S	Started:	01/03/	/2019		Surface			- Borin	a No .	MW-F	
Date C	Complet	ed: <u>01/09/</u>	/2019		Northin	g (NAD	83): <u>N/A</u>			171 # V = 1	
Orilling	Co.:	<u>Casca</u>	ıde		Easting	(NAD8	3): <u>N/A</u>	Client:	PG&E		
_	Metho		Drilling		Total D	-	131 ft bgs	Project:		W Remedy Ph	
	g Type:		<u>nic Truck Mo</u>	unt	Boreho			Location:	PG&E	<u> Topock, Needl</u>	es, Califor
	Name:		Vasquez		-		Vater: 47.9 ft bgs	_			
Drilling			aya/ O. Florez	<u></u>	Samplin	-		Project N	umber:	RC000753.00	51
Logge			el Andrews		Samplin	-		<u> </u>			
Editor:		<u>Sean i</u>	<u>McGrane</u> ⊤		Conver	tea to v	/ell: Yes No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling FI
 61	60	MW-F-SS- 57-62 1/8/2019		Topock - Alluvium Deposits	SM		(61.0 - 69.5') Topock - Alluvium Deposits; \$	Silty sand with g	ravel	(58.0 - 61.0') Core dry	(0.0 - 97.5') water use
		14:58					(SM); dark reddish brown (5YR 3/3); very fir coarse grained, angular to subround; some	ne grained to ve	ry		
62							very large pebbles, angular to subangular; v	wet			
 63											
_03											
64											
_	60	MW-F-SS- 62-67									
65		1/8/2019 15:04		Topock -						(05.0.00.01)	
				Alluvium Deposits	SM					(65.0 - 68.0') Drill rods	
_66				'						chattering	
) •		
67											
68											1
_69		MW-F-SS- 67-72									
		1/8/2019					(69.5 - 82.0') Topock - Alluvium Deposits; S	Silty sand with g	ravel		
70		15:08					(SM); reddish brown (5YR 4/3); fine grained grained, subangular to round; some silt; little				
71							pebbles, angular to subangular; wet				
			•								
_72	100.8										
_	100.0										
73											
-											
74		MW-F-SS-					(741): some granulas to varilarge pahili	angular to sub-	mauler:		
-		72-77 1/8/2019		Topock -	2		(74'); some granules to very large pebbles, trace cobbles, angular to subround; decrea	angular to suba se in sand	ıı ıyular;		
75		15:10		Alluvium Deposits	SM						
76											
77											
78		MW-F-SS-									
	60	77-82 1/8/2019									
79		15:12									
 80											
		11000 - 1				<u> </u>	et, bgs = below ground surface, an			1 1 0)4/	aroundus

	AKC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sh	eet: 5 of	7
	tarted:	01/03/			Surface		•	Borin	a No.	: MW-F	
	omplet				Northin	- '	•	_		- <u>••</u>	
Orilling		<u>Casca</u>			Easting	•	•	_ Client:	PG&E		
_	Method		<u>Drilling</u>		Total D	•	131 ft bgs	_ Project:		W Remedy Pr	
_	g Type:		nic Truck Moi		Boreho			_ Location:	PG&E	Topock, Need	les, Califor
Oriller N Orilling			Vasquez		Samplir		ater: 47.9 ft bgs d: 4 inch x 10 ft Core Barrel	- Droiget N		RC000753.00	E 1
ogger۔			aya/ O. Florez el Andrews		Samplir	•		_ Project iv	umber.	KC000755.00	31
Editor:	•		McGrane		Conver	•		_			
					1	T					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fl
_ 81	60	MW-F-SS- 77-82 1/8/2019 15:12		Topock - Alluvium Deposits	SM						(0.0 - 97.5' water use
_82							82.0 - 87.5') Top <mark>ock - Alluvium</mark> Deposits; W	ell graded sar	nd with		
_83							ilt and gravel (S <mark>W</mark> -SM); reddish brown (5YF grained to very coar <mark>se grai</mark> ned, angular to ro o large pe <mark>bbles; little silt;</mark> trace cobbles, an <mark>c</mark>	und; some gra	nules		
 _84			MA/ 5 1/20				447 .44				
	60	MW-F-SS- 82-87 1/8/2019	MW-F-VAS- 82-87 (110 ppb)	Topock -	0.44.55						
_85		15:14	1/7/2019 09:05	Alluvium Deposits	SW-SM				7		
_86											
·											
_87											
				Topock -	SM		87.5 - 88.0') Topock - Alluvium Deposits; Si	ty sand with g	ravel		
_88				Alluvium Deposits			SM); reddish brown (5YR 4/3); very fine grai rained, angular to subround; some silt; little	granules to la	arse arge		
89							ebbles, angular to subangula <mark>r; l</mark> ittle clay; tra 88.0 - 95.0') Topock - Alluvium Deposits; Sil		ravel		
_09		MW-F-SS- 87-92					SM); reddish brown (5YR 4/3); very fine grai grained, angular to subround; some granules	ned to very co	arse		
90		1/8/2019 15:16		1			pebbles, angular to subangular; little silt; little	e clay; trace m	ica; wet		
90		15.10								(90.0 - 98.0') Soft drilling	
91										Cont drining	
			•	Topock - Alluvium	SM						
_92	120			Deposits	Sivi						
.]	120										
_93											
_94		MW-F-SS-									
		92-97 1/8/2019									
_95		15:20					95.0 - 99.0') Topock - Alluvium Deposits; Sil	tv sand with o	ravel		
							SM); dark reddish brown (5YR 3/3); very fine coarse grained, angular to subangular; some	grained to ve	ery		
_96							arge pebbles, angular to subround; little cob subround; little silt; wet	bles, angular	to		
-				Topock -			oubround, illie sill, wel				
_97				Alluvium Deposits	SM						
				Dehosits							(97.5 - 107
_98		MW-F-SS-	MW-F-VAS- 102-107								250 gal of v used
	120	97-102 1/8/2019	(1800 ppb) 1/7/2019								
_99		15:22	12:15	Topock -			99.0 - 102.0') Topock - Alluvium Deposits; S				
				Alluvium Deposits	SM		SM); reddish brown (5YR 4/3); very fine grai grained, angular to round; some granules to				
<u>100 </u>	iations.	USCS =	Unified Soil C	•	Svsten	<u></u> Ո. ft = f	t, bgs = below ground surface, am	• •		ea level. GW =	aroundwa
							represents depth to water measure				J. 54114W

	4110	ADIS	for natural and built assets			ring L	· · · ·				
	Started:	01/03/				Elevation		Boring	No.:	MW-F	
		ed: <u>01/09</u>				g (NAD83				<u></u>	
Orilling		Casca			-	(NAD83)			G&E		
_	Method		Drilling		Total D	•	131 ft bgs	-		V Remedy Ph	
	g Type: Name:		<u>nic Truck Mo</u> Vasquez			le Diameto	r: <u>4-12 inches</u> ter: 47.9 ft bgs	Location: <u>F</u>	G&E I	opock, Needl	es, Callion
Orilling			aya/ O. Florez		-	ng Method		Proiect Nu	mber: F	RC000753.00	 51
Logge			el Andrews		-	ng Interval		,			
Editor:		Sean	McGrane		Conver	ted to We	: ⊠ Yes ☐ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Descriptio	n		Drilling Notes	Drilling Flu
 101 		MW-F-SS- 97-102 1/8/2019 15:22	MW-F-VAS- 102-107 (1800 ppb) 1/7/2019 12:15	Topock - Alluvium Deposits	SM		gular to subangular; little silt; trace cla sist	ay; trace mica; wet to			(97.5 - 107 250 gal of w used
102						(1	02.0 - 111.0') Topock - Alluvium Depo	sits; Silty sand with g	ravel	(102.0 - 111.0')	1
103 104	120	MW-F-SS-				aı	M); dark brown (7.5YR 3/2); very fine of gular to round; some silt; little granule gular to subangular; little clay; dry to re mentation	es to large pebbles,	ined,	Dry	
105		102-107 1/8/2019 15:24									
106				Topock -				46		(105.3 - 107.5') Sluff settled out of water	
				Alluvium Deposits	SM					column, material too wet and fine to	
_107				Jopan Land						remove with core barrel	
108										have to flush casing	(107.5 - 13 No use
100										(107.0 - 111.0') Drill rods	No used
_109	48	MM 5 00								chattering	
- 4	10	MW-F-SS- 107-112									
_110		1/8/2019 15:26									
_111			•			1111111	11.0 - 118.0') Topock - Alluvium Depo	sits; Sandy silt with g	ravel	(111.0 - 117.0')	-
						[·[:]·]·] pl	L); dark reddish brown / moderate bro sticity; some very fine to very coarse	grained sand, angula	r to	Soft drilling	
112						ro	und; little granules to large pebbles, a	ngular to subangular;	wet		
 113											
_114	72		MW-F-VAS-								
-		MW-F-SS- 112-117 1/8/2019	112-117 (740 ppb)	Topock - Alluvium	ML						
_115		15:29	1/8/2019 10:07	Deposits							
_116											
_117											1
 118											
119	120	MW-F-SS- 117-122 1/8/2019 15:32		Topock - Alluvium	GM	Ve	[8.0 - 120.0") Topock - Alluvium Depo M); dark reddish brown / moderate bro y large pebbles, subangular to round; arse grained sand, subangular to rour gular to subangular; trace clay; trace i	own(5YŘ 3/4); granul ; some very fine to ve nd; little silt; trace col	es to ry		
				Deposits		lo Distribution	guiai to subangular, trace clay, trace l	nnoa, wet			
120	diations:	LISCS =	Linified Soil C	laccification	System	rol 0 1	bgs = below ground surface,	amel = abovo m	aan saa	alevel GW -	aroundwaf

9/	ARC	ADIS	for natural and built assets		Во	ring	Log	g		She	et: 7 of	7
Date S	Started	01/03/	2019		Surface	Elevation	n:	N/A	Borin	a No.:	MW-F	
	•	ted: <u>01/09/</u>				g (NAD8		N/A				
Drilling		<u>Casca</u>			_	(NAD83	3):	N/A	Client:	PG&E		
_	g Metho ig Type		<u>Drilling</u> nic Truck Moi		Total De	eptn: le Diame	tor:	131 ft bgs 4-12 inches			N Remedy Ph opock, Needl	
	Name:		Vasquez					47.9 ft bgs	Location	FGAE I	ороск, мееці	es, Calliottia
Drilling			aya/ O. Florez		-	ng Metho		4 inch x 10 ft Core Barrel	Project N	lumber: f	RC000753.00	 51
Logge			el Andrews		-	ng Interva		Continuous		_		
Editor:		Sean I	McGrane		Convert	ted to W	ell:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
121		MW-F-SS- 117-122 1/8/2019		Topock - Weathered Bedrock -	SIVI		Silty sa to very	 122.0') Topock - Weathered Bedrock and (SM); dark reddish brown (2.5YR 3/ coarse grained, subangular to round; ses to large pebbles, angular to subangu o wet 	(4); very fine some silt; littl	grained e		(107.5 - 131.0') No used
122		15:32		conglomerat	ie							
122							sand w grained granule	 - 131.0') Topock - Competent Bedrock vith gravel (SM); dark reddish brown (2.4 do very coarse grained, angular to sub est to very large pebbles, angular to sub ay; dry; moderate cementation; portions 	5YR 3/4); ve pround; some angular: son	ry fine e ne silt:	(122.0 - 127.0') Drill rods chattering (122.0 - 131.0') Dry	
 124	120											
125												
126				Topock -								
				Competent Bedrock -								
127				conglomerat	te						(127.0 - 131.0')	_
128											Drill rods chattering	
129	48											
130 131	<u>.</u>				2			70.				
131			1			<u> </u>		End of Boring at 131.0 'bgs	S.		1	1
132						5	3					
133						2						
134												
135												
136												
137												
138												
139												
140												
								s = below ground surface, ams				groundwater,
ppb =	parts p	er billion, NF	≺ = no recove	ery, blue wa	ater table	e symbo	ı repre	esents depth to water measure	a during th	ne first VA	AS interval	

Date Completed: Shallow Well Elevation: N/A	MW-F-58, MW-F-102 GW Remedy Phase I Topock, Needles, California
Date Completed: Shallow Well Elevation: N/A	<u>=</u> GW Remedy Phase I
Drilling Method: Sonic Drilling Northing (NAD83): N/A Project: Final Driller Name: Steve Vasquez Easting (NAD83): N/A Location: PG&E Drilling Asst: L. Amaya/ O. Florez Borehole Diameter: 4-12 inches Logger: Michael Andrews Water Level Start: 47.9 ft bgs Project Number Editor: Sean McGrane Development End Date: 2/28/2019 Total Depth: 131 ft bgs Well Completion: Flush Stick-up Groundwater Sample ID Groundwater	GW Remedy Phase I
Driller Name: Steve Vasquez Drilling Asst: L. Amaya/ O. Florez Borehole Diameter: 4-12 inches Logger: Michael Andrews Editor: Sean McGrane Total Depth: 131 ft bgs Groundwater Sample ID Groundwater Sample ID Development End Date: 2/28/2019 Well Completion: Flush Stick-up Calculated Material Volumes Well Construction Calculated Material Volumes	
Drilling Asst: L. Amaya/ O. Florez Logger: Michael Andrews Editor: Sean McGrane Total Depth: 131 ft bgs Groundwater Sample ID Groundwater Sample ID Drilling Asst: L. Amaya/ O. Florez Borehole Diameter: 4-12 inches Water Level Start: 47.9 ft bgs Development End Date: 2/28/2019 Well Completion: Flush Stick-up Calculated Material Volumes Well Construction Calculated Material Volumes	E Topock, Needles, California
Logger: Michael Andrews Water Level Start: 47.9 ft bgs Project Number Editor: Sean McGrane Development End Date:2/28/2019 Total Depth: 131 ft bgs Well Completion: Flush Stick-up Groundwater Sample ID Stick St	
Editor: Sean McGrane Development End Date: 2/28/2019 Total Depth: 131 ft bgs Well Completion: Flush Stick-up Groundwater Sample ID Stick	
Total Depth: 131 ft bgs	r: RC000753.0051
Groundwater Sample ID Groundwater Sample ID	
(0.0 - 48.0') 2" PVC — — (- 92.0') 2" PVC	T
(0.0 - 48.0') 2" PVC — (- 92.0') 2" PVC	Material Volumes Installed
Sch 40 Casing Sch 40 Casing	(5.5 - 37.0') 160 gallons (-3%) Note: Type I, II, and V with Hydrogel 4.1.19.

	DIS Design & for natura built asse	al and rts		Well Const	ruction Log		Sheet: 2 of 7
ate Started:	01/10/2019			_ Surface Elevation:	N/A	Well ID:	MW-F-58, MW-F-102
ate Completed:				_ Shallow Well Elevation:	N/A		
rilling Co.:	Cascade			_ Deep Well Elevation:	N/A	Client: PG&	<u>E</u>
Orilling Method:	Sonic Drilling			_ Northing (NAD83):	N/A	Project: Final	GW Remedy Phase I
-	Steve Vasque	Z		_ Easting (NAD83):	N/A	•	E Topock, Needles, Californ
	L. Amaya/ O.			_ Borehole Diameter:	4-12 inches		
-	Michael Andre			_ _ Water Level Start:	47.9 ft bgs	Project Number	er: RC000753.0051
••	Sean McGran			_ _ Development End Date	_		
	131 ft bgs			_	☐ Flush☐ Stick-up		
Groundwat Sample ID		USCS	USCS Class	Well (Construction	Calculated Material Volumes	Material Volumes Installed
	Topock - Alluvium Deposits	SW-SM		(0.0 - 48.0') 2" PVC ———————————————————————————————————	(-92.0') 2" PVC Sch 40 Casing		
- 23 —	Topock - Alluvium Deposits	SW-SM		(5.5 - 37.0') Portland Cement 6% Bentonite	(5.0 - 108.0') 10" Borehole	(5.5 - 37.0') 164.4 gallons	(5.5 - 37.0') 160 gallons (-3% Note: Type I, II, and V with Hydro
	Topock - Alluvium Deposits	SM					
-37 - -38 - -39	Topock - Alluvium Deposits	SM		(37.0 - 46.0') — Bentonite seal chips		(37.0 - 46.0') 7.33 bags	(37.0 - 46.0') 6 bags (-18%) Note: Puregold Medium Chips changed depth of bentonite sea 37 ft bgs reduce open boreho space with casing at correct he for water to displace during grou sea level, GW = groundwa

ARCAD	built asse	Consultancy al and its		Well Const	luction Log	3	Sheet: 3 of 7
	/10/2019				N/A	Well ID: N	//W-F-58, MW-F-102
ate Completed:				_ Shallow Well Elevation:			
	scade			•	N/A	Client: PG&E	
rilling Method: So	-			_	N/A		GW Remedy Phase I
	eve Vasque			_	N/A 4.12 inches	Location: PG&E	Topock, Needles, Californ
-	Amaya/ O. I				4-12 inches	— Project Number	DC000752 0051
	chael Andre an McGran			_ water Lever Start. _ Development End Date:	47.9 ft bgs	Project Number	:: RC000753.0051
	1 ft bgs	<u> </u>		_ Development End Date. _ Well Completion:	☐ Flush☐ Stick-up		
				_ Well completion.	1 lusti Ottok-up		
Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
	Topock - Alluvium Deposits	SM		(0.0 - 48.0') 2" PVC — Sch 40 Casing (37.0 - 46.0') — Bentonite seal chips	— (-92.0') 2" PVC Sch 40 Casing	(37.0 - 46.0') 7.33 bags	(37.0 - 46.0') 6 bags (-18%) Note: Puregold Medium Chip changed depth of bentonite sea 37 ft bgs reduce open boreho space with casing at correct he for water to displace during grou
46	Topock - Alluvium Deposits	SM		(48.0 - 58.0') 2" Sch 40 PVC (20-slot)			
49	Topock - Alluvium Deposits	SM		Screen	(5.0 - 108.0') 10" Borehole		
53	Topock - Alluvium Deposits	SM		(46.0 - 62.0') Cemex #3 MESH (8x10)		(46.0 - 62.0') 17.59 bags	(46.0 - 62.0') 19.75 bags (12% Note: Lapis Lustre Sand
58	Topock - Alluvium Deposits	SM		(59.0 - 60.0') Centralizer	A ASSOCIATION		sea level, GW = groundwa

9/	ARCA		esign & Consultancy r natural and uilt assets		Well Const	ruction Log	\$	Sheet: 4 of 7
Date S		01/10/201	9		_ Surface Elevation:	N/A	Well ID: N	//W-F-58, MW-F-102
	ompleted:				_ Shallow Well Elevation:			
Drilling		<u>Cascade</u>			_ Deep Well Elevation:	N/A	Client: PG&E	
_		Sonic Drilli	-		Northing (NAD83):	N/A	-	GW Remedy Phase I
Driller N Drilling		Steve Vas L. Amaya/	-		_ Easting (NAD83): _ Borehole Diameter:	N/A 4-12 inches	Location: PG&E	E Topock, Needles, California
Logger		<u>L. Amaya/</u> <u>Michael Ar</u>			_ Borenole Diameter. _ Water Level Start:	47.9 ft bgs	— Project Numbe	r: <u>RC000753.0051</u>
Editor:		Sean McG			_ Water Level Start. _ Development End Date	_		1. 110000733.0031
Total D		131 ft bgs			_ Well Completion:	☐ Flush☐ Stick-up		
	<u>'</u>				'			
Depth (ft)	Groundwat Sample II		USCS	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed
 61		Topoci Alluviu Depos	m SM		(58.0 - 60.5') Sump — and End Cap (46.0 - 62.0') Cemex — #3 MESH (8x10)	(- 92.0') 2" PVC Sch 40 Casing	(46.0 - 62.0') 17.59 bags	(46.0 - 62.0') 19.75 bags (12%) Note: Lapis Lustre Sand
62		Topoci Alluviu Depos Topoci Alluviu Depos	m SM its SM		#3 MESH (8x10) (62.0 - 90.0') Bentonite seal pellets	— (5.0 - 108.0') 10" Borehole		Note: Lapis Lustre Sand (62.0 - 90.0') 25.8 buckets (-17%) Note: Pel Plug Pellets (TR30) 3/8"
_ 80							<u> </u>	<u> </u>

9/	ARCA	DIS Design & for natura built asse	Consultancy Il and ts		Well Const	truction Log	S	Sheet: 5 of 7
Date S	tarted:	01/10/2019			_ Surface Elevation:	N/A	Well ID: N	//W-F-58, MW-F-102
	ompleted:				_ Shallow Well Elevation			
Drilling		Cascade			_ Deep Well Elevation:	N/A	Client: PG&E	
		Sonic Drilling			_ Northing (NAD83):	N/A		GW Remedy Phase I
Driller N		Steve Vasque			_ Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, California
Drilling		L. Amaya/ O.			_ Borehole Diameter:	4-12 inches		D0000750 0054
Logger		Michael Andre			_ Water Level Start:	47.9 ft bgs	Project Number	r: RC000753.0051
Editor: Total D		Sean McGran 131 ft bgs	<u>e</u>		_ Development End Date _ Well Completion:	e: <u>2/28/2019</u> ☐ Flush☐ Stick-up		
Total D	ериі.				_ Well Completion.	Tidsh Stick-up		
Depth (ft)	Groundwat Sample ID		USCS	Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
 81 82		Topock - Alluvium Deposits	SM			— (-92.0') 2" PVC Sch 40 Casing		
83 84 85 86 87	MW-F-VAS- 82-87 (110 ppb) 1/7/2019 09:05	Topock - Alluvium Deposits	SW-SM		(62.0 - 90.0') Bentonite seal pellets		(62.0 - 90.0') 30.96 buckets	(62.0 - 90.0') 25.8 buckets (-17%) Note: Pel Plug Pellets (TR30) 3/8"
88 89 90		Topock - Alluvium Deposits	SM			(5.0 - 108.0') 10") ,	
9192939495		Topock - Alluvium Deposits	SM		(90.0 - 105.3')	(92.0 - 102.0') 2" Sch 40 PVC (20-slot) Screen	(90.0 - 105.3') 19.55	(90.0 - 105.3') 19 bags (-3%)
95 96 97 98 99	MW-F-VAS- 102-107 (1800 ppb) 1/7/2019 12:15	Topock - Alluvium Deposits Topock - Alluvium	SM		Cèmex #3 MEŚH (8x10)		bags	Note: Lapis Lustre Sand
100	• • • • •	Deposits				s = below ground ourfood ar	L	

,,	Design & C for natura built asset	Consultancy Il and ts		Well Construction	Log Sheet: 6 of 7
	1/10/2019			Surface Elevation: N/A	Well ID: MW-F-58, MW-F-102
ate Completed:_				Shallow Well Elevation: N/A	
rilling Co.: <u>C</u>	ascade			_ Deep Well Elevation: N/A	Client: PG&E
rilling Method: Se	onic Drilling			Northing (NAD83): N/A	Project: Final GW Remedy Phase I
riller Name: <u>S</u> t	teve Vasque	Z		_ Easting (NAD83): N/A	Location: PG&E Topock, Needles, Californ
-	Amaya/ O. I			Borehole Diameter: 4-12 inches	
ogger: <u>M</u>	ichael Andre	ws		_ Water Level Start: 47.9 ft bgs	Project Number: <u>RC000753.0051</u>
ditor: <u>S</u>	ean McGran	<u>e</u>		Development End Date: 2/28/2019	
otal Depth: <u>13</u>	31 ft bgs			Well Completion: Flush Flush	Stick-up
Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Well Construction	Calculated Material Volumes Installed
- MW-F-VAS- 102-107 (1800 ppb) 1/7/2019 - 12:15	Topock - Alluvium Deposits	SM		l liniii linii is	(90.0 - 105.3') 19.55 (90.0 - 105.3') 19 bags (-3%
103 - 104 - 105				(8x10) (103.0 - 104.0') Centralizer (5.0	D - 108.0') 10" Borehole 02.0 - 104.8') p and End Cap
106 _ 107 _ 108	Topock - Alluvium Deposits	SM			
- 109 - 110 - 111				SUC G	
112					(107.5 - 124.0') 5 (-25%) Note: Puregold Medium Chip
114 MW-F-VAS- 112-117 (740 ppb) 1/8/2019 10:07	Topock - Alluvium Deposits	ML		(107.5 - 124.0') Bentonite seal chips (108	8.0 - 124.0') 7" Borehole (107.5 - 124.0') 6.68 volume used less than the calculation because not chippe 106 as planned due to sluff
117					
_ 119 _	Topock - Alluvium Deposits	GM			

AR	CAE	for natura built asset	and s		well Const	ruction Log		Sheet: 7 of 7
Date Starte	ed: <u>01</u>	/10/2019			_ Surface Elevation:	N/A	Well ID: N	/W-F-58, MW-F-102
Date Comp					_ Shallow Well Elevation			<u> </u>
rilling Co.		ascade			_ Deep Well Elevation:	N/A	Client: PG&E	
-		onic Drilling			Northing (NAD83):	N/A	•	GW Remedy Phase I
Driller Nam		eve Vasque			_ Easting (NAD83):	N/A	Location: <u>PG&E</u>	Topock, Needles, Californ
rilling Ass		Amaya/ O. I			_ Borehole Diameter:	4-12 inches		
.ogger:		chael Andre			_ Water Level Start:	47.9 ft bgs	Project Number	r: RC000753.0051
Editor:		ean McGran	<u>e</u>		_ Development End Date			
otal Depth	1. <u>13</u>	11 ft bgs		1 1	_ Well Completion:	☐ Flush☐ Stick-up		
	undwater imple ID	Geologic Formation	USCS	Class	Well (Construction	Calculated Material Volumes	Material Volumes Installed
		Topock - Weathered Bedrock - conglomerate	SM		(107.5 - 124.0') Bentonite seal chips	(108.0 - 124.0') 7' Borehole	" (107.5 - 124.0') 6.68	(107.5 - 124.0') 5 (-25%) Note: Puregold Medium Chips volume used less than the calculation because not chipped 106 as planned due to sluff.
_123 _124								0
		Tanaak			ck.			
		Topock - Competent Bedrock - conglomerate	SM		440.0 404.00		' (124.0 - 131.0') 1.91	(124.0 - 131.0') 1.6 bags (-16 ⁹
_128					(124.0 - 131.0') Bentonite seal chips	(124.0 - 131.0') 6' Borehole	bags	Note: Puregold Medium Chip
_129 _130								
131								
- 4			Ì		End of Boring at 131.0 'bgs.			
_132								
- 4								
_133								
- 4								
_134								
- 4								
_135								
. 4								
_136								
_137								
_138								
- 4								
_139								
- 4								
140	1101	20 - 11 '6' '	0.10	l'C ·	: Ot- # 5 1 :	- halan		
						s = below ground surface esents depth to water mea		sea level, GW = groundwa
	oer billo	ווכ. ואל = no	TECOVE	ı v. DIUC	water table symbol rebre	sems deom to water mea	asureo dunno ine ilist	v ao inierval

ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 1 of	5
Date Started:	02/13/2			Surface			Borin	a No.:	MW-G	
Date Complete	ed: <u>02/17/2</u>	2019		Northin	g (NAD	83): <u>N/A</u>	. —		<u> </u>	
Drilling Co.:	Casca	de		Easting	•	•	Client:	PG&E		
Drilling Method		•		Total De	•	87 ft bgs	-		W Remedy Ph	
Drill Rig Type:	<u>Proson</u>	<u>iic Truck Mo</u>	unt	Borehol	e Dian	neter: 10-12 inches	Location:	PG&E	<u> Fopock, Needl</u>	es, California
Driller Name:		<u>Vasquez</u>		Depth to	o First	Water: <u>50 ft bgs</u>	-			
Drilling Asst:		ya/ O. Flore		Samplir	-		. Project N	umber: J	RC000753.00	51
Logger:		/IcGrane		Samplir	•		-			
Editor:	<u>Craig F</u>	Prunier		Convert	ted to \	Vell: ⊠ Yes □ No				
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
			Topock - Fill	NR		(0.0 - 4.0') Topock - Fill; No recovery (NR); Han clearance cuttings not logged (4.0 - 8.5') Topock - Fill; Well graded sand with s (SW-SM); brown (7.5YR 4/3); very fine grained grained, angular to subround; little granules to late subangular; little silt; little clay; coarser clasts	silt and gravel to very coarse rge pebbles, a			(0.0 - 72.0') 50 gal of water used
6			Topock - Fill	SW-SM		metadiorite; dry (7.75'); some granules to very large pebbles, and (8.5 - 15.5') Topock - Fill; Clayey sand with grav				
9			Topock - Fill	sc		(8.5 - 19.5) I opock - Fili; Clayey sand with gravery fine grained to very coarse grained, angula granules to very large pebbles, angular to subar clay; coarser clasts composed of metadiorite; dr. (10.5'); trace cobbles, subangular; iron oxide state (11'); some granules to very large pebbles, angular.	r to subangula ngular; little silt y ining	r; little ; little		
13						(13'); little granules to very large pebbles, angula	Ū		(15.0 - 17.0') Lost 2 ft of down	
201 16 1 16 1 17 1 17 1 17 1 17 1 17 1 17			Topock - Fill	sc		(15.5 - 18.0') Topock - Fill; Clayey sand with grabrown / moderate brown(5YR 4/4) and reddish beine grained to very coarse grained, angular to signanules to very large pebbles, angular to subar clay; trace cobbles, subangular; some coarser conglomerate; little coarser clasts composed of its composed of its coarser clasts.	orown (5YR 5/4 ubangular; son gular; little silt last composed metadiorote; di	1); very me ; little I of ry	(17.0 - 24.0') Recovered 15 to 18 ft. bgs, 18 to 24 ft. fell out of	
- 84 - 19			Topock - Alluvium Deposits Topock - Alluvium Deposits	ML SC		(18.0 - 18.5') Topock - Alluvium Deposits; Sand low plasticity; some very fine to very coarse grai subround; little granules to large pebbles, angule clay; coarser clasts composed of metadiorite; (18.5 - 24.0') Topock - Alluvium Deposits; Claye (SC); brown (7.5YR 4/3); very fine grained to ve angular to subround; some granules to large pet	ned sand, ang ar to subangula pist ey sand with gr ry coarse grain	ular to ar; little ravel ned,	core barrel, ran 6 inch casing to 18 ft. and recovered 6 ft. of drill run 3, total recovery 7 ft.	(18.0 - 18.5') 5 gal of water used
2						feet, bgs = below ground surface, a				
ទ្ធី groundwater, រុ	opb = parts	per billion,	NR = no re	covery,	blue w	ater table symbol represents depth	to water m	easured	I during the fire	st VAS
interval										·

	<u>ADIS</u>			Во			1		
oate Started:	02/13/2				Elevat		Boring No.	: <u>MW-G</u>	
Date Complet Drilling Co.:	ed: <u>02/17/2</u> <u>Casca</u>				g (NAD: (NAD8	•	_		
Drilling Co Drilling Metho				∟asւուց Total D		3): <u>N/A</u> 87 ft bgs	_ Project: Final (ase I
Orill Rig Type:		nic Truck Mou			•	eter: 10-12 inches	•	•	
Oriller Name:		Vasquez				Vater: <u>50 ft bgs</u>			
Orilling Asst:	L. Ama	aya/ O. Flores	<u> </u>	Samplir	ng Meth	od: 4 inch x 10 ft Core Barrel	_ Project Number:	RC000753.005	51
.ogger:		<u> </u>		-	ng Inter		_		
ditor:	<u>Craig F</u>	Prunier	'	Conver	ted to V	′ell: ⊠ Yes □ No			
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
21			Topock - Alluvium Deposits	sc		subangular; little silt; little clay; coarser clasts cometadiorite; dry (21'); trace cobbles, angular to subangular (22'); no cobbles	omposed of	(17.0 - 24.0') Recovered 15 to 18 ft. bgs, 18 to 24 ft. fell out of core barrel, ran 6 inch casing to 18 ft. and recovered 6 ft. of drill run 3, total recovery 7 ft.	(0.0 - 72.0') 5 gal of water used
_24			Topock - Alluvium Deposits	SM		(24.0 - 25.0') Topock - Alluvium Deposits; Sity forown (7.5YR 4/3); very fine grained to very co to subround; little granules to large pebbles, an little silt; little clay; coarser clasts composed of r	arse grained, angular gular to subangular:		
			Topock - Alluvium Deposits	SM		dry (25.0 - 29.3') Topock - Alluvium Deposits; Silty forown (7.5YR 5/4); very fine grained to very co to subangular; some granules to very large peb subangular; little silt; trace clay; coarser clast oc conglomerate; coarser clasts composed of meta	arse <mark>graine</mark> d, angular bles, angular to omposed of		
_28			Deposits			(29.3 - 35.0') Topock - Alluvium Deposits; Silty	sand with gravel (SM);		
_30			Q	3		reddish brown (5YR 5/4); very fine grained to very fine grained to very fine grained to very fine grained to very fine graines to large peb subround; little silt; little clay; coarser clast come coarser clasts composed of metadiorote; dry (30'); trace clay; increase in sand	bles, angular to	(30.0 - 37.0') Top 0.5 ft of core slough.	
_32			Topock - Alluvium Deposits	SM		(33.25'); some granules to very large pebbles, a	angular to subround;		
_34						trace cobbles, subangular; no clay (35.0 - 37.0') Topock - Alluvium Deposits; Silty	sand with gravel (SM):		
			Topock - Alluvium Deposits	SM		(7.5R 5/4); very fine grained to very coarse gra subround; some granules to very large pebbles some silt; trace cobbles, subround; trace clay; of conglomerate; dry	ined, angular to , angular to subround;		
38			Topock - Alluvium Deposits	SM		(37.0 - 43.0') Topock - Alluvium Deposits; Silty reddish brown (5YR 4/3); very fine grained to vangular to subround; some granules to very lar subround; little silt; trace clay; coarser clasts cocoarser clast composed of conglomerate; dry	ery coarse grained, ge pebbles, angular to	(37.0 - 43.0') Top 0.5 ft. of core is slough	
40 Abbreviations	USCS =	Unified Soil C	Classification	n Syst	em, ft =	feet, bgs = below ground surface,	amsl = above me	an sea level, G\	N =
						ter table symbol represents depth			

	4171	CADIS	Design & Consultancy for natural and built assets		DU	ring	Log		heet: 3 of	5
	Started				Surface			Boring No	.: MW-G	
	•	eted: <u>02/17</u>			Northin		•			
_	Co.:	Casca			Easting	•	•			
_	Meth				Total D	•	87 ft bgs	•	GW Remedy Ph	
	д Тур		nic Truck Mo		Boreho			Location: <u>PG&</u>	Topock, Needl	es, Califori
	Name		Vasquez		•		Vater: 50 ft bgs	— — — — — — — — — — — — — — — — — — —	DC0007E3 004	<u> </u>
_	, Asst:		aya/ O. Flore McGrane		Sampliı Sampliı	-		Project Number	: RC000/53.00:	<u> </u>
ogge ditor:			Prunier		Conver	-		<u> </u>		
uitoi.		<u>Oraig</u>	Tunici	_	T	T	CII. E ICS E INO			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Flui
- .41 - .42_	78			Topock - Alluvium Deposits	SM				(37.0 - 43.0') Top 0.5 ft. of core is slough	(0.0 - 72.0') gal of wate used
- 43 -							(43.0 - 48.0") Topock - Alluvium Deposits; Si reddish brown (5YR 4/3); very fine grained to angular to subround; some granules to very	very coarse grained,		
_44 - _45	48						subangular; little silt; trace clay; coarser clast metadiorite; dry	s composed of	2	
_ .46	40			Topock - Alluvium Deposits	SM					
47							(47'); trace cobbles, subangular; moist to wet		(47.0 - 50.0')	
_							,g,		Vadose zone moist to wet	
.48							(48.0 - 55.0') Topock - Alluvium Deposits; Si	ty sand with gravel (SM):	- Moist to wet	
_							reddish brown (5YR 4/3); very fine grained to	very coarse grained,		
49_		MW-G-SS-					sub <mark>ang</mark> ular to round; some silt; little granules to subround; trace cobbles, subangular; trace	to large pebbles, angular clay; coarser clasts		
_		47.0-52.0					composed of metadiorite; moist to wet			
50_	78	2/16/2019 15:55					(50)		Y (50.01)	
_							(50'); wet; no cobbles		(50.0') Approximate	
51_									depth to water table	
				Topock - Alluvium	SM					
52_				Deposits						
.53										
.54		MW C CC	MW-G-VAS-							
		MW-G-SS- 52.0-57.0	52.0-57.0 (680 ppb)							
55	48	2/16/2019 16:00	(680 ppb) 2/13/2019 16:28]	
			10.20				(55.0 - 57.0') Topock - Alluvium Deposits; Si reddish brown / moderate brown(5YR 4/4); vo	ery fine grained to very		
_56				Topock - Alluvium	SM		coarse grained, angular to subround; some g pebbles, angular to subround; little silt; little c			
				Deposits			composed of metadiorite; wet	ay, coareer claste		
.57				L	<u>L</u>					
				Topock - Alluvium	ML		(57.0 - 57.8') Topock - Alluvium Deposits; Sa red / light brown(5YR 5/6); medium plasticity;	ndy silt (ML); yellowish little granules to medium	(57.0 - 67.0') Rough drilling,	
.58_		100/ 0.55		Deposits	 		pebbles, angular; little very fine to very coars to subangular; little clay; wet; very stiff		drilled like rock,	
- -59	120	MW-G-SS- 57.0-62.0 2/16/2019 16:05		Topock - Alluvium Deposits	ML		(57.8 - 62.0') Topock - Alluvium Deposits; Sared (5YR 4/6); low plasticity; and very fine to sand, angular to subround; little granules to I subround; little distribution (ittle clay; dry to moist; hard; weak	very coarse grained arge pebbles, angular to	with moist to dry sediments	
60										
	viation	s: USCS =	Unified Soil (Classification	on Syst	em, ft =	feet, bgs = below ground surface	e, amsl = above me	ean sea level, G	W =
round	dwater	, ppb = par	ts per billion,	NR = no re	covery,	blue w	ter table symbol represents dept	h to water measur	ed during the firs	st VAS

ITC	<i>J</i> ADI3	Design & Consultancy for natural and built assets		ВО	ring	Log		Sheet: 4 of	5
							Boring No	o.: MW-G	
						•			
				_	•	,			
		-			•	<u> </u>	•	•	
							_ Location. FGXL	_ TOPOCK, NEEdi	es, Callioni
		•		•		G	 _ Project Numbei	r: RC000753.005	51
		•		-	-		_ ,		
	<u>Craig</u>	Prunier		Converted to Well: X Yes No					
Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
	MW-G-SS- 57.0-62.0 2/16/2019 16:05		Topock - Alluvium Deposits	ML				(57.0 - 67.0') Rough drilling, drilled like rock, core was hot with moist to dry sediments	(0.0 - 72.0') 5 gal of water used
2				ML		reddish brown / moderate brown(5YR 4/4); low fine to very coarse grained sand, angular to su to large pebbles, angular to subround; little cla	/ plast <mark>icity; some</mark> very lbround; <mark>littl</mark> e granules y; coarser clasts		
	62.0-67.0 2/16/2019 16:10		Topock - Alluvium Deposits	CL		(CL); brown (7.5YR 4/3); medium plasticity; so coarse grained sand, angular to subround; little	ome very fine to very e granules to very large		
			Topock - Alluvium	ML				(67.0 - 69.5') Wet zone that	
	MW-G-SS-	MW-G-VAS-	Deposits Topock - Alluvium Deposits	SM		sand, angular to subround; little granules to ve angular to round; little clay; trace cobbles, ang composed of metadiorite; moist; very stiff (67.8 - 69.0") Topock - Alluvium Deposits; Silty brown (7.5YR 4/3); very fine grained to very co	ery large pebbles, ular; coarser clasts y sand with gravel (SM); parse grained, angular	might produce water, attempt to collect sample	
60	67.0-72.0 2/16/2019 16:15	67.0-72.0 (920 ppb) 2/14/2019 16:42	Q	2		subround; little clay; wet (69.0 - 76.0') Topock - Alluvium Deposits; Sar brown (5YR 5/4); low plasticity; some very fine sand, angular to subround; little granules to ve angular to round; little clay; coarser clasts commoist; very stiff (69.5'); trace cobbles, subangular to subround	ndy silt (ML); reddish to very coarse grained ry large pebbles, posed of metadiorite; ; coarser clast	(69.5 - 72.0') Drilled like rock core hot and dry	
	MW-G-SS- 72.0-77.0 2/17/2019 16:15		Topock - Alluvium Deposits	ML		(72'); moist to wet; weak cementation		(72.0 - 86.0') Used water to flush fines out of casing for well install	(72.0 - 86.0 600 gal of wa used
120			Topock - Alluvium Deposits	SM		reddish brown / moderate brown(5YR 4/4); ver coarse grained, angular to subround; little gran	y fine grained to very nules to large pebbles,		
	MW-G-SS- 72.0-77.0 2/17/2019 16:15	MW-G-VAS- 77.0-82.0 (600 ppb) 2/15/2019 12:12	Topock - Alluvium Deposits	SM		reddish brown (2.5YR 4/4); very fine grained to angular to subround; little granules to very larg subangular; little silt; coarser clasts composed	o very coarse grained, le pebbles, angular to of metadiorite; wet		
				SM		·			
ation	s: USCS =	Unified Soil C	Classification			feet, bgs = below ground surface,	amsl = above me	ean sea level, G\	
						ater table symbol represents depth			
	arted proposed and arted proposed arted proposed arted proposed arted proposed arter are arter arter are arter are arter arter are arter are arter are arter are arter are arter are arter are arter are arter are are arter are are arter are are are are are are are are are a	arted: 02/13/ completed: 02/17/ Co.: Casca Method: Sonic Type: Proso lame: Steve Asst: L. Am. Sean Craig MW-G-SS- 57.0-62.0 2/16/2019 16:10 MW-G-SS- 62.0-67.0 2/16/2019 16:15 MW-G-SS- 72.0-77.0 2/17/2019 16:15	arted: 02/13/2019 co.: Cascade Method: Sonic Drilling Type: Prosonic Truck Mot lame: Steve Vasquez Asst: L. Amaya/ O. Floret Sean McGrane Craig Prunier MW-G-SS- 57.0-62.0 2/16/2019 16:10 MW-G-SS- 62.0-67.0 2/16/2019 16:15 MW-G-SS- 772.0-77.0 2/16/2019 16:15 MW-G-SS- 772.0-77.0 2/16/2019 16:15 MW-G-VAS- 67.0-72.0 (920 ppb) 2/14/2019 16:42 MW-G-SS- 77.0-72.0 (920 ppb) 2/14/2019 16:42 MW-G-SS- 77.0-72.0 (920 ppb) 2/14/2019 16:15 MW-G-VAS- 77.0-82.0 (920 ppb) 2/14/2019 16:15	arted: 02/13/2019 co.: Cascade Method: Sonic Drilling Type: Prosonic Truck Mount Jame: Steve Vasquez Asst: L. Amaya/ O. Flores Sean McGrane Craig Prunier Sieve Sample ID	Amage: Section Color Color	Surface Elevation	artect: 02/13/2019 Surface Elevation: N/A Northing (NAD83): N/A Namethod: Soin Drillling Total Depth: 87 ft bgs Borehole Diameter: 10-12 inches Steve Vasquez Depth to First Water: 50 ft bgs Asst: Lamaya/ D. Flores Sampling Method: 4 inch x 10 ft Core Barrel Sam McGane Sampling Interval: Continuous Caig Prunier Converted to Well: Yes No MW-G-SS- 67-0-72-0 2/16/2019 16:10 MW-G-SS- 62-0-67-0 2/16/2019 16:10 MW-G-SS- 62-0-67-0 2/16/2019 16:10 MW-G-SS- 62-0-70 2/16/2019 16:10 MW-G-SS- 67-0-72 0/16/2019 1	Solitions Soliti	artiect: 02/17/2019

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 5 of	5
Date S					Surface			Boring	ı No.:	MW-G	
	-	eted: <u>02/17/2</u>			Northin		•	_			
Drilling		Cascad			Easting	•	•		PG&E		
Drilling			-		Total D	•	87 ft bgs	-		N Remedy Ph	
Drill Ri			nic Truck Mou Vasquez		Borehol		neter: <u>10-12 inches</u> Water: <u>50 ft bgs</u>	_ Location:]	PG&E I	opock, Needle	es, California
Drilling			<u>vasquez</u> iya/ O. Flores		Samplir		_	- Project Nu	ımher: F	RC000753 009	 51
Logge			луал от потос ЛсGrane		Samplir	•		_ 1 10,000110		10000700.000	
Editor:		<u>Craig F</u>			Convert	-		_			
	2			.2 5	1.						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
81	120	MW-G-SS- 72.0-77.0 2/17/2019	MW-G-VAS- 77.0-82.0 (600 ppb)	Topock - Alluvium Deposits Topock -	SM		reddish brown (2.5YR 4/4); very fine grained to some granules to large pebbles, angular to subr clay; coarser clasts composed of metadiorite; we (81.0 - 82.0') Topock - Weathered Bedrock - co	round; some silt; et	trace	(72.0 - 86.0') Used water to flush fines out of casing for well	(72.0 - 86.0') 600 gal of water used
_ 82_		16:15	2/15/2019 12:12	Weathered Bedrock - conglomerate	SM		with gravel (SM); reddish brown (2.5YR 4/4); ve coarse grained, angular to subround; some grar angular to subround; little silt, little clay; trace co	ery fine grained to nules to large pe	o very bbles,	install	
83							moist (82.0 - 87.0') Topock - Competent Bedrock - co brown (2.5YR 4/4); dry; weak cementation; friab	onglomerate; red ble	dish	(83.0 - 87.0')	
84				Topock -						Core barrel was geting hung up in hole, possible indication of	
85	60			Competent Bedrock - conglomerate			$\langle \cdot \cdot \langle \cdot \rangle$			bedrock	
86									ľ		
 87								V			
<u> </u>				4			End of Boring at 87.0 'bgs	5.			
88											
-											
89											
90_											
90											
91			•	0							
92											
93						2					
94					•						
 95											
93_											
96											
97											
-											
98											
99											
100					_				_		
	viation	s: USCS = I	Jnified Soil (Classification	on Syste	em, ft =	feet, bgs = below ground surface,	amsl = abov	/e mear	n sea level, G\	N =

	ADIS Design & for natura built asse	ts	Well Construction Log		
Date Started:	02/17/2019		Surface Elevation: N/A	Well ID: N	/IW-G-57, MW-G-82
Date Completed			Shallow Well Elevation: <u>N/A</u>		·
Orilling Co.:	Cascade		Deep Well Elevation: N/A	Client: PG&E	
Orilling Method:	•		Northing (NAD83): N/A	•	GW Remedy Phase I
Oriller Name:	Steve Vasque		Easting (NAD83): N/A	Location: <u>PG&E</u>	Topock, Needles, Californ
Orilling Asst:	L. Amaya/ O.		Borehole Diameter: <u>10-12 inches</u>		
.ogger:	Sean McGrar		Water Level Start: 50 ft bgs	Project Number	r: RC000753.0051
Editor:	Craig Prunier		Development End Date <u>3/2/2019</u>		
otal Depth:	87 ft bgs		Well Completion:		
Groundwa Sample I		USCS Code USCS	Well Construction	Calculated Material Volumes	Material Volumes Installed
	Topock - Fill	NR	(0.0 - 47.4') 2" PVC — (- 67.0') 2" PVC Sc 40 Casing (0.0 - 4.0') 12" Borehole	h	0
	Topock - Fill	SW-SM	(0.0 - 13.0') Portland Cement 5% Bentonite	(0.0 - 13.0') 50 gallons	(0.0 - 13.0') 55 gallons (10%) Note: Used Type I,II, and V and Hydrogel. Mixed 5.5 batches of gri total.
	Topock - Fill	sc	(4.0 - 87.0') 10" Borehole		
- 10 — - 14 — - — _ 15 —					
16	Topock - Fill	sc	(13.0 - 41.3') Portland Cement 5% Bentonite	(13.0 - 41.3') 164 gallons	(13.0 - 41.3') 165 gallons (1%) Note: Used Type I,II, and V and Hydrogel. Mixed 5.5 batches of gr total.
_ 18	Topock -	ML .	(17.5 - 18.5') Centralizer		
-	Alluvium Deposits	17/7			
_19	Topock - Alluvium	sc ///			
	Deposits				
1		l (///			
20	HECE - Heigh	4 6 2 1 0 1 - 1	fination Custom ft - fast has - 1-1	200 amel - al	
			fication System, ft = feet, bgs = below ground surfa no recovery, blue water table symbol represents de		

ARCA	DIS Design & C for natura built asset	Consultancy Il and ts	Well Construct	tion Log	S	heet: 2 of 5
Date Completed:_ Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger: Editor: Griller Completed:_ Grilling Co.: Grilling Co.: Gri	Pate Completed: Drilling Co.: Cascade Drilling Method: Sonic Drilling Driller Name: Steve Vasquez Drilling Asst: L. Amaya/ O. Flores Ogger: Sean McGrane		Water Level Start: 50 ft Development End Date <u>3/2/2</u>	-	Client: PG&E Project: Final G Location: PG&E	IW-G-57, MW-G-82 GW Remedy Phase I Topock, Needles, Californ :RC000753.0051
Groundwatel Sample ID	. <u>ie</u> 6	USCS Code USCS			Calculated Material Volumes	Material Volumes Installed
 _ 21 _ 22 _ 23	Topock - Alluvium Deposits	sc	(0.0 - 47.4') 2" PVC ———————————————————————————————————	—(- 67.0') 2" PVC Sch 40 Casing		
_ 24 - – _ 25	Topock - Alluvium Deposits	SM				
	Topock - Alluvium Deposits	SM				
	Topock - Alluvium Deposits	SM	Portland Cement 5% Bentonite	(4.0 - 87.0') 10" Borehole	(13.0 - 41.3') 164 gallons	(13.0 - 41.3') 165 gallons (19 Note: Used Type I,II, and V a Hydrogel. Mixed 5.5 batches of total.
	Topock - Alluvium Deposits	SM				
 _ 38 _ 39 	Topock - Alluvium Deposits	SM				
			ification System, ft = feet, bgs = l			
roundwater nnh	= parts per b	oillion, NR =	no recovery, blue water table syr	npoi represents depth	า to water measure	ea during the first VAS

ARCAD	for natura built asse	Consultancy Il and ts		Well Construc	Juon Log	,	Sheet: 3 of 5
	/17/2019			_ Surface Elevation: <u>N/A</u>		Well ID: I	MW-G-57, MW-G-82
ate Completed:				_ Shallow Well Elevation: <u>N/A</u>			·
_	scade			_ Deep Well Elevation: N/A		Client: PG&I	
rilling Method: Sc	-			_ Northing (NAD83): N/A		•	GW Remedy Phase I
	eve Vasque			_ Easting (NAD83): N/A		Location: <u>PG&I</u>	E Topock, Needles, Californ
-	Amaya/ O.				12 inches		D0000750 0054
••	an McGran				t bgs	Project Numbe	r: RC000753.0051
	aig Prunier ft bgs			_ Development End Date <u>3/2/</u> _ Well Completion:	- Flush⊡ Stick-up		
лаг Deptii. <u>от</u>		I		_ well Completion.	-iusii Stick-up		<u> </u>
Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Well Constru		Calculated Material Volumes	Material Volumes Installed
41	Topock - Alluvium Deposits	SM		(0.0 - 47.4') 2" PVC ———————————————————————————————————	(-67.0') 2" PVC Sch 40 Casing	(13.0 - 41.3') 164 gallons	(13.0 - 41.3') 165 gallons (1%) Note: Used Type I,II, and V and Hydrogel. Mixed 5.5 batches of gru total.
42	Ворожно			(41.3 - 45.0') Bentonite seal chips		(41.3 - 45.0') 2.79 bags	(41.3 - 45.0') 3 bags (8%) Note: Puregold Medium Chips
	Topock - Alluvium Deposits	SM		(47.4 - 57.4') 2" Sch — — — — — — — — — — — — — — — — — — —		3	
	Topock - Alluvium Deposits	SM		(45.0 - 61.0') Cemex	(4.0 - 87.0') 10" Borehole	(45.0 - 61.0') 15.05	(45.0 - 61.0') 18 bags (20%)
3 — 4 — MW-G-VAS- 52.0-57.0 (680 ppb) 2/13/2019 5 — 16:28				#3 MESH (8x10)		bags	Note: Lapis Lustre Sand
66	Topock - Alluvium Deposits	SM					
4	Alluvium Deposits	ML					
58	Topock - Alluvium Deposits	ML		(57.9 - 58.9') Centralizer			
60				(57.4 - 59.9') Sump —		<u> </u>	
browintiana, LICA	JS = Unifie	d Soil (Jassific	ation System, ft = feet, bgs =	: below ground surface	e, amsl = above m	ean sea level, GW =
				recovery, blue water table s			and during the first \/^O

9 ARC	built asse	Consultancy al and its	well cons	struction Log	5	heet: 4 of 5
Date Started:	02/17/2019		Surface Elevation:	N/A	Well ID: N	/W-G-57, MW-G-82
ate Completed			Shallow Well Elevati			
Orilling Co.: Orilling Method:	Cascade Sonia Drilling		Deep Well Elevation Northing (NAD83):	: <u>N/A</u> N/A	Client: PG&E	GW Remedy Phase I
Oriller Name:	Steve Vasque		Easting (NAD83):	N/A	•	Topock, Needles, Califor
Orilling Asst:	L. Amaya/ O.		Borehole Diameter:	10-12 inches	Location. <u>r Oal</u>	. Topock, Necales, Gallor
.ogger:	Sean McGrar		Water Level Start:	50 ft bgs	Project Number	::RC000753.0051
Editor:	Craig Prunier		Development End D	_		
otal Depth:	87 ft bgs		Well Completion:	☐ Flush☐ Stick-up		
Groundwar Sample II		USCS Code USCS	We Class	ell Construction	Calculated Material Volumes	Material Volumes Installed
 _ 61 	Topock - Alluvium Deposits	ML	and End Cap (45.0 - 61.0') Cemex #3 MESH (8x10)	(- 67.0') 2" PVC Sch 40 Casing	(45.0 - 61.0') 15.05 bags	(45.0 - 61.0') 18 bags (20%) Note: Lapis Lustre Sand
- 62 - 63 - 64	Topock - Alluvium Deposits	ML	(61.0 - 65.0') Bentonite seal pellets		(61.0 - 65.0') 3.81 buckets	(61.0 - 65.0') 4 buckets (5% Note: Pel Plug Pellets (TR30) 3
_65 66 _67	Topock - Alluvium Deposits	CL			3	
	Topock - Alluvium	ML :		(67.0 - 82.0') 2" Sch 40 PVC (20-slot)		
_ 68	Deposits			Screen		
	Topock - Alluvium	SM				
_69 _ MW-G-VAS	Deposits					
67.0-72.0 (920 ppb) 2/14/2019 16:42 				(4.0 - 87.0') 10" Borehole		
	Topock - Alluvium Deposits	ML	(65.0 - 86.0') Cemex #3 MESH (8x10)		(65.0 - 86.0') 22.07 bags	(65.0 - 86.0') 26 bags (18% Note: Lapis Lustre Sand
-77	Topock - Alluvium Deposits	SM				
78 MW-G-VAS 77.0-82.0 79 (600 ppb) 79 12:12	Topock - Alluvium	SM				
80 Abbreviations: I	ISCS = Unific	SM ∷ : d Soil Clas	sification System ft - foo	t, bgs = below ground surfac	e amel = above mo	ean sea level GW -
งมมา ธงเสนเบเเร่. 🤚	USUS – UIIIIE					
	b = parts ner l	oillion. NR	= no recovery, blue water	table symbol represents dep	oth to water measure	ed during the first VAS

9/	ARCA	DIS Design & C for natura built asset	Consultancy Il and ts		Well Constr	uction Log		Sheet: 5 of 5
		02/17/2019				N/A	Well ID:	MW-G-57, MW-G-82
	Completed:				_ Shallow Well Elevation: <u>N</u>			·
Drilling	-	<u>Cascade</u>				V/A	Client: PG&	
1	-	Sonic Drilling			• ,	<u>\/A</u>	•	GW Remedy Phase I
		Steve Vasque			O (,	V/A	Location: <u>PG&</u>	E Topock, Needles, California
	-	L. Amaya/ O.				10-12 inches		D0000750 0054
Logge Editor		Sean McGran Craig Prunier			_ Water Level Start: <u>5</u> _ Development End Date <u>3</u>	50 ft bgs	Project Numb	er: <u>RC000753.0051</u>
		87 ft bgs			•	☐ Flush☐ Stick-up		
Total	Г				_ vveii Gompiction.			<u> </u>
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
 81	MW-G-VAS- 77.0-82.0	Deposits	SM			(67.0 - 82.0') 2" Sch 40 PVC (20-slot) Screen		
82	(600 ppb) 2/15/2019 12:12	Topock - Weathered Bedrock -	SM					
_ 02 _		conglomerate						
83					(82.5 - 83.5')		(65.0 - 86.0') 22.07	(65.0 - 86.0') 26 bags (18%)
L _					Centralizer	(4.0 - 87.0') 10"	bags	Note: Lapis Lustre Sand
84		Topock -				Borehole		
<u> </u>		Competent Bedrock -				(82.0 - 84.5') Sump		
85		conglomerate						
-								
86								
					(86.0 - 87.0') Bentonite seal chips		(86.0 - 87.0') 1.5 bags	(86.0 - 87.0') 1.5 bags (0%) Note: Puregold Medium Chips
87					End of Boring at 87.0			
					'bgs.	· · ·		
88								
89	•							
69								
90								
91					CIL			
			•					
92								
93								
_								
94								
95								
96								
97								
<u> </u>								
98								
<u> </u>								
99								
<u> </u>								
100 Abbre	viations: I	ISCS = Unifie	d Soil (Classific	ation System, ft = feet, bg	rs = helow around surface	e amsl = ahove m	nean sea level GW =
LINDIG	viduolis. C		~ OOII (J14331116	anon oyotom, it – ieet, by	Jo Polow ground sunact	o, amoi – above II	15411 564 16761, 677 -

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	St	neet: 1 of	17
Date S					Surface			Boring No.	: MW-U	
	-	ted: <u>05/10/2</u>			Northin					
Drilling	-	<u>Casca</u>			Easting	•	•	_ Client: PG&E		
Drilling	•		•		Total De	-	327 ft bgs	•	<u>GW Remedy Ph</u>	
Drill Ri	• • •		nic Truck Mou		Borehol			_ Location: <u>PG&E</u>	Topock, Needl	<u>es, California</u>
Driller					-		Water: <u>131.45 ft bgs</u>			
Drilling			aya/ O. Flores		Samplir	_		_ Project Number:	RC000753.005	51
Logge		-	Willford		Samplin	-		_		
Editor:		<u>Sean N</u>	<u> McGrane</u>		Convert	ed to V	Well: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
 _ 1 _ _ 2 _ 	36			Topock - Fill	SM		(0.0 - 3.0') Topock - Fill; Silty sand with gravel (5/3); very fine grained to very coarse grained, a some granules to large pebbles, angular to sub clay; trace cobbles, angular, small cobbles; dry; mixed lithology, possible highway fill	ingular to subround; round; little silt; little		
3 4 5 6	0				NR		(3.0 - 7.0') (NR); No recovery see "Drilling Note	ss" for reason	(3.0 - 7.0') Loose material fell out of core barrel	
- 7 8 9 11 12 13 14 14 14 14	120	No Sieve Samples Collected		Topock - Fill	SM		(7.0 - 14.5') Topock - Fill; Silty sand with gravel (10YR 5/2) with brown (10YR 5/3); very fine gragrained, angular to subangular; some granules angular to subangular; little silt; little clay; dry; g mixed lithology, possible highway fill	ained to very coarse to medium pebbles,	(7.0 - 17.0') Soft drilling	
15 16 17 18 19 20	72			Topock - Alluvium Deposits	SM		(14.5 - 22.0') Topock - Alluvium Deposits; Silty brown (7.5YR 4/4) some brown (10YR 5/3); ver coarse grained, angular to subangular; some gr pebbles, angular to subangular; little silt; little cl composed of mixed lithology	ry fine grained to very ranules to medium	(17.0 - 27.0') Soft drilling	

ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	5	Sheet: 2 of	17
: 04/10/ eted: 05/10/	2019 2019 de Drilling nic Truck Mou Ramos aya/ O. Flores Willford	unt	Surface Northing Easting Total D Boreho Depth t Samplir Samplir	Elevang (NAC) (NAD) epth: le Dian o First ang Meting Inter	ion: 587.7 ft amsl 33): 2101958.7 3): 7613300.8 327 ft bgs eter: 6-12 inches Water: 131.45 ft bgs od: 4 inch x 10 ft Core Barrel val: Continuous			
Sieve Sample ID	Groundwater Sample ID		Code	USCS	Soil Description		Drilling Notes	Drilling Flu
		Topock - Alluvium Deposits Topock - Alluvium Deposits	SM GP		(GLEY1 8/) with (GLEY2 7/1); granite boulder, (22.5 - 26.0') Topock - Alluvium Deposits; Silt pale brown (10YR 6/3); very fine grained to ve	angular to subangular y sand with gravel (SM); ry coarse grained,	(17.0 - 27.0') Soft drilling	
		Topock - Alluvium Deposits	SM		subround; little silt; trace cobbles, angular, sm. trace clay; dry; gravel composed of mixed lithough the composed lithough the	all to large cobbles; logy		
		Topock - Alluvium Deposits	GM		pale brown (10YR 6/3); granules to large cobb subround; some very fine to very coarse grain subround; little silt; little clay; dry; gravel comp mainly metadiorite	les, angular to ed sand, angular to osed of mixed lithology,	(27.0 - 37.0') Rough drilling	
No Sieve Samples Collected		10	NR		6		(28.0 - 37.0) Air pocket built up in core barrel, causing the core to pore out of the top of the core barrel into the mud tube when the joint of the 20ft core barrel joint was unscrewed	
		Topock - Alluvium Deposits	SM		pale brown (10YR 6/3); very fine grained to verangular to subround; little granules to medium	ry coarse grained, pebbles, angular to		
		Topock - Alluvium Deposits	GM			oles, angular to ed sand, angular to osed of mixed lithology,		
	od: 05/10/ Casca od: Sonic e: Prosoi : Eddie L. Ama Grant Sean I Sieve Sample ID	cascade od: Sonic Drilling e: Prosonic Truck Mou Eddie Ramos L. Amaya/ O. Flores Grant Willford Sean McGrane Sieve Sample ID Roundwater Sample ID	reted: 05/10/2019 Cascade od: Sonic Drilling e: Prosonic Truck Mount : Eddie Ramos L. Amaya/ O. Flores Grant Willford Sean McGrane Sieve Sample ID Groundwater Sample ID Topock Alluvium Deposits Sieve Sample ID No Sieve Samples Collected Northing Cascade Easting Total D. Easting Tot	Sieve Sample ID No Sieve Samples Collected	etect: 05/10/2019 Cascade Calcade Cascade Cas	Sieve Sumple ID Topock-Alluvium Deposits Topock-Alluvium Deposits No Sieve Samples Collected NR No Sieve Samples Collected NR NR NR NR NR NR Cient: Sasting (NAD83): 2101958.7 Ciented: Easting (NAD83): 7613300.8 Cienter: PG& Cienter: PG& Cienter: PG& Cienter: Project: Final Location: PG& Cienter: Project: Pinal Location: PG& Cienter: PG& Cienter: PG& Cienter: Project: Pinal Location: PG& Cienter: PG& Cienter: PG& Cienter: PG& Cienter: Project: PG& Cienter:	Sieve Serve Serv	

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	eet: 3 of	17
Date S	Started	: <u>04/10/</u>	2019		Surface	Elevation:	587.7 ft amsl	Borin	a No .	: MW-U	
Date C	Comple	eted: <u>05/10/</u>	2019		Northin	g (NAD83):	2101958.7	_		<u> </u>	
Drilling		<u>Casca</u>	de		Easting	(NAD83):	7613300.8	_ Client:	PG&E		
Drilling	y Meth		-		Total D	epth:	327 ft bgs	_ Project:	Final G	W Remedy Ph	ase I
Drill Ri			nic Truck Mou				6-12 inches	_ Location:	PG&E	Topock, Needl	<u>es, California</u>
Driller			Ramos		-		r: <u>131.45 ft bgs</u>	_			
Drilling			aya/ O. Flores	3	-	ng Method:	4 inch x 10 ft Core Barrel	_ Project N	lumber:	RC000753.005	51
Logge			Willford		-	ng Interval:	Continuous	_			
Editor:		<u>Sean I</u>	<u>McGrane</u>		Conver	ed to Well:	⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
4142434445464747	120			Topock - Alluvium Deposits	GM	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				(47.0 50.0)	
48 49 50 51 52 53 54 55	108	No Sieve Samples Collected		Topock - Alluvium Deposits	SM	light to grains very locomp	- 55.0') Topock - Alluvium Deposits; Silty rown (7.5YR 6/4) some pale brown (10YF dot to very coarse grained, angular to subrarge pebbles, angular to subround; little si osed of mixed lithology	R 6/3); very fine ound; some gralt; little clay; dry	e anules to y; gravel	(47.0 - 56.0') Rough drilling	
56 57 58 59 60	96			Topock - Alluvium Deposits	GM	subai subai comp	rown (7.5ÝR 6/3); granules to small cobb igular; little very fine to very coarse graine igular; little silt; little clay; dry; iron oxide stosed of mixed lithology, red staining on m	ed sand, angula aining; gravel etadiorite clasts	5	(56.0 - 87.0') Rough drilling	

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	og	S	heet: 4 of	17
Date S	Started	: <u>04/10/2</u>	2019		Surface	Elevation:	587.7 ft amsl	Boring No	.: MW-U	
	-	ted: <u>05/10/2</u>				g (NAD83):	2101958.7	_		
Drilling		Casca			_	(NAD83):	7613300.8	_ Client: <u>PG&E</u>		
Drilling			-		Total D	-	327 ft bgs	-	<u>GW Remedy Ph</u>	
Drill Ri			<u>iic Truck Mou</u>				: <u>6-12 inches</u>	_ Location: <u>PG&E</u>	Topock, Needl	<u>es, California</u>
Driller					-		er: <u>131.45 ft bgs</u>		50000==000	
Drilling			aya/ O. Flores	<u> </u>	-	ng Method:	4 inch x 10 ft Core Barrel	_ Project Number	: RC000753.00	51
Logge			<u>Willford</u>		-	ng Interval:	Continuous	_		
Editor:		<u>Sean N</u>	<u>//cGrane</u>		Conver	ted to Well:	X Yes		T	T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
61 62 63 64	96			Topock - Alluvium Deposits Topock - Alluvium	GM		- 63.8') Topock - Alluvium Deposits; Poo	rly graded gravel (GP);	(56.0 - 87.0') Rough drilling	
65 66 67	36			Deposits Topock - Alluvium Deposits	GM	cobb sand sear (63. brov cobb	brown (10YR 6/3) and (10YR 2.5/1); large les, angular to subround; little medium to v, angular to subround; trace silt; dry; iron c of metadiorite, reddish-yellow staining on reddish-	ery coarse grained oxide staining; gravel gravel with sand (GM); b); granules to small o very coarse grained dry; gravel composed		
68 69 70 71 72	108	No Sieve Samples Collected			0	(70.	r-82.0') Topock - Alluvium Deposits; Silty brown (7.5YR 6/4); very fine grained to ve lar to subround; some small to large pebbl bund; little silt; little clay; dry; weak cement	ry coarse grained, es, subangular to		
73 74 75 76 77 78				Topock - Alluvium Deposits	SM					
80	114	a. LISOS = I	Initiad Call	Nonific 4	ion Comt		t has = helow around surface	omal walkers		A/ -

, , , , , ,	CADIS	Design & Consultancy for natural and built assets		Во	rıng	Log	Sh	eet: 5 of	17		
Date Starte				Surface		DOI	ng No.	: <u>MW-U</u>			
•	leted: <u>05/10/</u>			Northin	• •	83): <u>2101958./</u>					
Orilling Co.:				Easting	,	•	PG&E				
Orilling Meth		Drilling		Total D	•	327 ft bgs Project		W Remedy Ph			
Drill Rig Typ Driller Name		nic Truck Mou Ramos				eter: <u>6-12 inches</u> Locatio Vater: <u>131.45 ft bgs</u>	n: <u>PG&E</u>	Topock, Needl	es, Calitor		
orilling Asst		aya/ O. Flores		Samplir		_	Number:	RC000753 009	 51		
Jogger:		Willford		Samplir	-	•	rainber.	10000700.000	<i>.</i>		
Editor:		McGrane		Conver	•						
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Flu		
_81	81			SM				(56.0 - 87.0') Rough drilling			
83 		No Sieve Samples Collected	Topock - Alluvium Deposits	SM		(82.0 - 87.0") Topock - Alluvium Deposits; Silty sand (SM); gray (7.5YR 6/2) little pale brown (10YR 6/3); very fine grait coarse grained, angular to subround; little granules to large angular to subround; little silt; little clay; dry; iron oxide stain and gravel composed of mixed lithology, trace red staining clasts	ned to very pebbles, ng; sand in gravel				
	Samples		Topock - Alluvium Deposits	GM		(87.0 - 93.0') Topock - Alluvium Deposits; Sitty gravel with s pinkish gray (7,5YR 6/2); granules to small cobbles, angula subangular; some very fine to very coarse grained sand, an subround; some silt, little clay; dry; iron oxide staining; grave composed of mixed lithology, trace red staining on some of clasts	to gular to	(87.0 - 117.0') Rough drilling			
.93 94 95 96 97						Topock - Alluvium Deposits	SM		(93.0 - 98.0') Topock - Alluvium Deposits; Silty sand with gipinkish gray (7.5YR 6/2); very fine grained to very coarse gangular to subround; some small to large pebbles, angular subangular; little silt; little clay; dry; weak cementation; gravicomposed of mixed lithology	rained,	
400			Topock - Alluvium	GM		(98.0 - 107.0') Topock - Alluvium Deposits; Silty gravel with (GM); pinkish gray (7.5YR 6/2) and light brown (7.5YR 6/4) to small cobbles, angular to subangular; some very fine to v grained sand, angular to subround; some silt; little clay; dry; cementation; gravel composed of mixed lithology	granules ery coarse		2000 gal water use		
98_ - 98_ 			Deposits								
98 _99_ 	ns: USCS =	Unified Soil (·	on Syst	em, ft :	feet, bgs = below ground surface, amsl = a	bove mea	nn sea level, G'	W =		
_98 99 100 Abbreviation groundwate	r, ppb = part	s per billion, l	Classification	ected a	bove t						

	111	ADIS	Design & Consultancy for natural and built assets		BO	ring	Log		heet: 6 of	17
	Started:				Surface			Boring No	.: <u>MW-U</u>	
	•	ted: <u>05/10/</u>			Northin		*			
_	Co.:	<u>Casca</u>			Easting	•	3): <u>7613300.8</u> <u>327 ft bgs</u>	_ Client: PG&E		I
_	Metho		nic Truck Mou		Total D Borebo	•	eter: 6-12 inches	-	GW Remedy Ph Topock, Needle	
	Name:		Ramos				Vater: 131.45 ft bgs	_ Location. <u>r Oct</u>	- Topock, Necal	cs, Callion
	Asst:		aya/ O. Flores		Samplir		_	 _ Project Number	: RC000753.005	51
.ogge		Grant \	<u>Willford</u>		Samplir	-		_		
ditor:		Sean N	<u>//cGrane</u>		Conver	ted to V	Vell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Flui
101								6	(87.0 - 117.0') Rough drilling	(97.0 - 267. 2000 gal o water used
_102							.6	3		
_ _104	132			Topock - Alluvium Deposits	GM					
_ _105 _							000			
_106 _ _ _107							7 1/3			
_ _108							(107.0 - 114.2') Topock - Alluvium Deposits; S (SM); light brown (7.5YR 6/4) some pinkish gr. fight grained to very coarse grained, angular to granules to very large pebbles, angular to subr clay; trace cobbles, angular to subangular, sm	ay (7.5YR 6/2); very subround; some ound: little silt: little		
_ _109					0		oxide staining; gravel composed of mixed lithol on gravel clasts	ogy some red staining		
_110 - _111_		No Sieve Samples Collected		Topock - Alluvium Deposits	SM					
112_	90			Бороско						
_ _113										
_114							(114.2 - 117.0') Topock - Alluvium Deposits; S		-	
_115				Topock - Alluvium	ML		(ML); dark grayish brown / dark yellowish brow plasticity, no dilatency; some very fine to very angular to subround; little granules to very larg subround; little clay; dry; when moist soil has logravel composed of mixed lithology	coarse grained sand, e pebbles, angular to		
_116 - _117				Deposits					(116.0 - 132.0') Driller noted material is getting	
118	120			Topock - Alluvium Deposits	SM		(117.0 - 124.5') Topock - Alluvium Deposits; S (SM); light brown (7.5YR 6/4) some pinkish gr. fingrained to very coarse grained, angular to granules to very large pebbles, angular to subiclay; trace cobbles, angular to subangular, sm oxide staining; gravel composed of mixed lithol on gravel clasts	ay (7.5YR 6/2); very subround; some round; little silt; little all cobbles; dry; iron	compressed in core barrel	
<u>120 </u> \bbre\	viations	s: USCS =	■ Unified Soil C	L Classification	on Syst	em, ft =	feet, bgs = below ground surface,	amsl = above me	an sea level, G\	N =
							e laboratory reporting limit, J - est			

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet: 7 of	17
	Started				Surface			Boring N	o.: <u>MW-U</u>	
	•	eted: <u>05/10/</u>			Northin		•			
-	g Co.:	Casca			Easting Total D	,	•	Client: <u>PG8</u> Project: <u>Fina</u>	k <u>⊏</u> I GW Remedy Ph	000 l
-	g Meth ig Type		Drilling nic Truck Mo			•	327 ft bgs neter: 6-12 inches	-	E Topock, Needl	
	Name		Ramos				Water: <u>131.45 ft bgs</u>	Location. <u>r Go</u>	KE TOPOCK, NEEdi	es, Callion
	g Asst:		aya/ O. Flore		Sampli		_	 Project Numbe	er: RC000753.005	51
.ogge	-		Willford		Sampli	ng Inte		_		
Editor	:	<u>Sean</u>	McGrane		Conver	ted to \	Well: ⊠ Yes ☐ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Flui
								6	(116.0 - 132.0') Driller noted material is getting compressed in	(97.0 - 267.0 2000 gal o water used
- _122_ -				Topock - Alluvium Deposits	SM		+6	3	core barrel (117.0 - 127.0') Soft drilling (117.0 - 127.0') Soft drilling	
123 - _124_	120									
- _125							(124.5 - 132.0') Topock - Alluvium Deposits; S (GM); pinkish gray (7.5YR 6/2) and light brow to small cobbles, angular to subround; some v	n (7.5YR 6/4); granules very fine to very coarse		
- _126 -							grained sand, angular to subround; some silt; cementation; iron oxide staining; gravel composome red staining on gravel clasts			
127									(127.0 - 132.0')	
400						199			Rough drilling	
128_				Topock - Alluvium	GM	600				
- 129_				Deposits						
.120	36					15 P				
 130	30	No Sieve Samples								
_		Collected				15 P.1<				
131_										
_						13 P.K				
132_							(132.0 - 137.0') Topock - Alluvium Deposits; (Silty sand with gravel	(132.0 - 137.0')	
-							(SM); brown (7.5YR 4/2) some light gray (7.5)	YR 7/1); very fine pround: some granules t	Rough drilling	
133_							very large pebbles, angular to subangular; little cobbles, angular, small cobbles; dry to moist	e silt; little clay; trace		
- 134										
	60			Topock - Alluvium	SM					
135_	00			Deposits	Join					
_										
136_										
_							(136.5'); wet		(136.5')	
_137							(137.0 - 141.5') Topock - Alluvium Deposits; \$		Approximate depth to water	
- _138_			MW-U-VAS- 137-142	Topock -			(SM); brown (7.5YR 5/2) some light gray (7.5' grained to very coarse grained, angular to sub to large pebbles, angular to subround; little silt composed of mixed lithology	angular; little granules	table	
- _139_ _			(1.4 ppb) 4/12/2019 11:30	Alluvium Deposits	SM					
140										
							_			
			•					umated value, NF	k = no recovery, I	olue wate
139 140 \bbre round	dwater	, ppb = part	137-142 (1.4 ppb) 4/12/2019 11:30 Unified Soil (s per billion,	Alluvium Deposits Classificati U = not de	tected a	above t	(137.0 - 141.5') Topock - Alluvium Deposits; (SM); brown (7.5YR 5/2) some light gray (7.5' grained to very coarse grained, angular to sub to large pebbles, angular to subround; little silt	YR 7/1); very fine pangular; little granules ;; little clay; wet; gravel , amsl = above m	Approximate depth to water table	

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 8 of	17
Date S	Started	: <u>04/10/</u>	2019		Surface	Eleva	ion: <u>587.7 ft amsl</u>	Boring No.	· MW-II	
Date C	Comple	ted: <u>05/10/</u>	2019		Northing	g (NAC	83): <u>2101958.7</u>	_ Borning itto.	. <u>IVIV O</u>	
Drilling	Co.:	<u>Casca</u>	de		Easting	(NAD	33): <u>7613300.8</u>	_ Client: PG&E		
Drilling	Meth	od: <u>Sonic</u>	Drilling		Total De	epth:	327 ft bgs	_ Project: Final G	W Remedy Ph	ase I
Drill Ri	ig Туре	e: <u>Prosor</u>	nic Truck Mou	unt	Borehol	e Dian	eter: <u>6-12 inches</u>	Location: PG&E	Topock, Needl	es, California
Driller	Name	<u>Eddie</u>	Ramos		Depth to	First	Water: <u>131.45 ft bgs</u>			
Drilling	Asst:	L. Ama	aya/ O. Flores	5	Samplin	ig Metl	nod: 4 inch x 10 ft Core Barrel	_ Project Number:	RC000753.005	51
Logger	r:		Willford		Samplin	ig Inte	val: <u>Continuous</u>	_		
Editor:		Sean I	McGrane		Convert	ed to \	Vell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
 141			MW-U-VAS- 137-142 (1.4 ppb) 4/12/2019 11:30	Topock - Alluvium Deposits	SM		444 5 440 00 T	Ò		(97.0 - 267.0') 2000 gal of water used
142				Topock - Alluvium	GM		(141.5 - 142.0') Topock - Alluvium Deposits; Sil (GM); greenish gray (5GY 6/1) some brown (7.5)	5YR 5/2); large		
L -				Deposits	-1		pebbles to small cobbles, angular to subangular coarse grained sand, angular to subangular, little	le silt; trace clay; wet;		
143							iron oxide staining; gravel composed of metadio on gravel clasts	orite, some red staining		
L -							(142.0 - 146.0') Topock - Alluvium Deposits; Sil			
144				Topock - Alluvium	SM		(7.5YR 5/2) some pinkish gray (7.5YR 6/2); ver coarse grained, angular to subround; little granu	iles to large pebbles,		
				Deposits			subangular to subround, little silt; trace cobbles, cobbles; trace clay; wet; homogeneous	, subangular, small		
145										
146										
							(146.0 - 149.0') Topock - Alluvium Deposits; Sil (SM); brown (7.5YR 5/2); very fine grained to ve	ty sand with gravel		
147							angular to subround; some granules to very large	ge pebbles, angular to		
'_				Topock -		💖	subround; some silt; little clay; trace cobbles, an moist; weak cementation; iron oxide staining; gr			
 148				Alluvium Deposits	SM		mixed lithology, some red staining on metadiorit	e gravel clasts		
140										
149						1 P	(149.0 - 153.5') Topock - Alluvium Deposits; Gr	ravelly silt with sand		
├ -	180	No Sieve	. •				(ML); brown (7.5YR 5/2); medium plasticity, no granules to very large pebbles, angular to subro	dilatency; little ound; little very fine to		
150		Samples Collected					very coarse grained sand, angular to subround; angular, small cobbles; moist; weak cementation	trace cobbles,	(150.0 - 157.0')	
		Collected				[· 4 •],	core was slightly moist; not dry but had low mois	sture content, low to	`Rough drilling´	
151				Topock - Alluvium	ML		medium plasticity, gravel composed of mixed lith metadiorite, some red staining on gravel clasts	nology, mostly		
				Deposits	IVIL					
152						Pa/9/				
153										
├ ┤					+	<u> </u>	(153.5 - 157.0') Topock - Alluvium Deposits; Sil	ty sand with gravel		
154							(SM); brown (7.5YR 5/2) some pinkish gray (7.5	5YR 6/2); very fine		
							grained to very coarse grained, angular to subrovery large pebbles, subangular to subround; littl			
155				Topock -			subangular, small cobbles; trace clay; wet; homestaining; gravel composed of mixed lithology, more	ogeneous; iron oxide		
				Alluvium Deposits	SM		staining, graver composed or mixed intrology, me	ostry metadionte		
156				Берозііз						
157										
							(157.0 - 166.0') Topock - Alluvium Deposits; Sil		(157.0 - 177.0')	
 158							(SM); brown (7.5YR 5/2) some light reddish bro 6/4); very fine grained to very coarse grained, a	ngular to subround;	Soft drilling	
130				Topock -			some granules to very large pebbles, angular to trace clay; wet; iron oxide staining; sand and gra			
450	120			Alluvium Deposits	SM		mixed lithology, mainly metadiorite, some red sta			
159				2 0000113						
<u> </u>										
160 Abbres	viation	e: 11808 -	Initiad Soil C	Laccificati	on Systa	m ft -	feet has = helow around surface	amel = ahove mos	n sea level C	Λ/ —

9/	4RC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g	S	heet: 9 of	17
Date 0	-	eted: 05/10/2	2019		Northing	Elevation: g (NAD83):	587.7 ft amsl 2101958.7	Boring No	<u> </u>	
Drilling	g Co.: g Meth	Cascad od: Sonic [Total De	(NAD83):	7613300.8 327 ft bgs	_ Client: <u>PG&E</u> _ Project: <u>Final (</u>	: GW Remedy Ph	
	ig Type		ic Truck Mou	unt		•	6-12 inches	•	•	
	Name						:: <u>131.45 ft bgs</u>			
Drilling	g Asst:	L. Ama	ya/ O. Flores	S	-	ng Method:	4 inch x 10 ft Core Barrel	_ Project Number	: RC000753.00	51
Logge		Grant \			-	ng Interval:	Continuous	_		
Editor	:	Sean N	<u>//cGrane</u>		Convert	ed to Well:				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS	Soil Description		Drilling Notes	Drilling Fluid
161162163164165166167	120			Topock - Alluvium Deposits Topock - Alluvium Deposits	SM	(GM); large of graine	-167.0') Topock - Alluvium Deposits; S greenish gray (5GY 6/1) some red (2.5y sobbles, angular to subangular; little mict d sand, angular to subangular; little silt;	R 4/8); large pebbles to lium to very coarse race clay; dry to moist;	(157.0 - 177.0') Soft drilling	(97.0 - 267.0') 2000 gal of water used
	- 120	No Sieve Samples Collected		Topock - Alluvium Deposits	SM	on gra (167.0 (SM); (7.5Yf subroi little si mostly	bas = below ground surface	itity sand with gravel 1) some pinkish gray rained, angular to angular to subround; sed of mixed lithology, I clasts		

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Lo	g		She	eet: 10 of	17
Date S			/2019		Surface			587.7 ft amsl	Borin	a No:	MW-U	
		ted: <u>05/10</u>	/2019		Northing	g (NAE	083):	2101958.7			<u> </u>	
Drilling	Co.:	Casca	ade		Easting	(NAD	33):	7613300.8	Client:	PG&E		
Drilling						-		327 ft bgs	-		W Remedy Ph	
Drill Ri	д Туре	e: <u>Proso</u>	nic Truck Mo	unt	Borehol	e Dian	neter:	6-12 inches	Location	PG&E	Fopock, Needl	es, California
Driller	Name	<u>Eddie</u>	Ramos		Depth to	o First	Water	: <u>131.45 ft bgs</u>	_			
Drilling	Asst:	L. Am	aya/ O. Flore	<u>s</u>	Samplin	ng Met	hod:	4 inch x 10 ft Core Barrel	Project N	lumber:]	RC000753.005	51
Logge			Willford		Samplin	-		Continuous	-			
Editor:		<u>Sean</u>	<u>McGrane</u>		Convert	ed to \	Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS		Soil Description			Drilling Notes	Drilling Fluid
_ 181_				Topock - Alluvium Deposits	SM							(97.0 - 267.0') 2000 gal of water used
182 _183_			MW/11//AC				(SM); I grained angula	- 187.0') Topock - Alluvium Deposits; Silight reddish brown (5YR 6/3); very fine gid, angular to subround; some granules to r to subround; little cobbles, angular to sus; little silt; wet	rained to very very large pel	coarse obles,		
184			MW-U-VAS- 181-186 (0.112 J ppb) 4/13/2019 12:00	Topock - Alluvium	SM							
105				Deposits								
_185												
100												
186												
187							(187.0	- 201.0') Topock - Alluvium Deposits; Sil	ty sand with g	ravel	(187.0 - 227.0')	
							grained	eddish ye <mark>llow (5YR 6/6) with light brown</mark> I to very coarse grained, angular to subro	ound; little sma	ll to	Soft drilling	
188							large p	ebbles, subangular to subround; little silt; gular, small cobbles; wet; iron oxide staini	trace cobbles	,		
400								ninantly metadiorite with some red staining				
189												
 190		No Sieve										
190		Samples Collected										
101							:					
191							:					
 192												
192							:					
							:					
	040			Topock -	614							
 194	240			Alluvium Deposits	SM		:					
							:					
195												
196							:					
197							:					
198							-					
199												
L -]					
200							:					

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 11 of	17
Date S	Started	: <u>04/10/</u>	2019		Surface	Eleva	tion: <u>587.7 ft amsl</u>	Boring No.	· MW-U	
Date C	Comple	ted: <u>05/10/</u>	2019		Northin	g (NAC	983): <u>2101958.7</u>	_ Borning No.	. <u>14144 O</u>	
Drilling	g Co.:	<u>Casca</u>	de		Easting	(NAD	33): <u>7613300.8</u>	_ Client: PG&E		
Drilling	g Meth				Total D	epth:	327 ft bgs	_ Project: Final G	W Remedy Ph	ase I
Drill Ri			nic Truck Mou				neter: 6-12 inches	_ Location: <u>PG&E</u>	Topock, Needl	<u>es, California</u>
Driller			Ramos				Water: <u>131.45 ft bgs</u>			
Drilling			aya/ O. Flores		Samplir	-		_ Project Number:	RC000753.005	51
Logge			Willford		Samplin			_		
Editor:		<u>Sean I</u>	<u> McGrane</u>		Conver	ted to \	Well: ⊠ Yes □ No	T		
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description		Drilling Notes	Drilling Fluid
				Topock - Alluvium	SM				(187.0 - 227.0') Soft drilling	(97.0 - 267.0') 2000 gal of
201				Deposits			(201.0 - 206.0') Topock - Alluvium Deposits; Sil	ty gravel with sand		water used
							(CL-ML); light reddish brown / light brown(5YR)	6/4) with pinkish gray /		
202							grayish orange pink(5YR 7/2); low plasticity, no granules to very large pebbles, angular to subar	ngular: some clay: little		
							very fine to coarse grained sand, angular to sub medium stiff; moderate cementation; gravel com	pround; moist; soft to posed of mostly		
203				Tanaak			metadiorite, low-medium plasticity			
-	240			Topock - Alluvium	CL-ML					
204				Deposits						
205							00			
206							(206.0 - 210.0') Topock - Alluvium Deposits; Sil	ty sand with gravel		
							(SM); light reddish brown (5YR 6/3) and brown grained to very coarse grained, angular to subro	(7.5YR 5/4); very fine bund: some granules to		
_207							very large pebbles, angular to subround; little co subangular, small cobbles; little silt; wet			
				Topock -						
208				Alluvium Deposits	SM					
200				·						
209										
 210		No Sieve								
210		Samples Collected				TKI	(210.0 - 212.0') Topock - Alluvium Deposits; Po			
 211_				Topock -		641	silt and sand (GP-GM); reddish brown (5YR 5/4 small cobbles, angular to subangular; little very	fine to very coarse		
				Alluvium Deposits	GP-GM	624	grained sand, angular to subangular; little silt; m staining	noist; iron oxide		
 212	400					12/14				
	120						(212.0 - 214.0') Topock - Alluvium Deposits; Sa gravel (CL-ML); pinkish gray (7.5YR 6/2) some			
213_				Topock - Alluvium	CL-ML		5/4); medium plasticity, no dilatency; some very grained sand, angular to subround; some silt; lit	fine to very coarse		
				Deposits	CL-IVIL		pebbles, subangular to subround; moist; mediur			
214							cementation			
_							(214.0 - 217.0') Topock - Alluvium Deposits; Sil (GM); light reddish brown / light brown(5YR 6/4); granules to small		
215							cobbles, angular to subround; some very fine to sand, angular to subround; some silt; little clay;			
				Topock - Alluvium	GM		cementation; iron oxide staining	,		
216				Deposits		PIE				
_217					1	PHS	(047.0.007.0)\ T All D			
							(217.0 - 227.0') Topock - Alluvium Deposits; Cla (SC); reddish brown (5YR 5/4) little reddish brown	wn(2.5YR 4/3); very		
218							fine grained to very coarse grained, angular to s granules to very large pebbles, angular to subro	ound; little silt; little		
	120			Topock - Alluvium	sc		clay; trace cobbles, angular to subangular, sma moderate cementation; iron oxide staining; grav			
219				Deposits			metadiorite, some red staining on gravel clasts			
-										
220						1///				

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	eet: 12 of	17
Date S	Started	: 04/10/			Surface	Elevation:	587.7 ft amsl	Borin	a No .	MW-U	
Date C	Comple	ted: <u>05/10/</u>	<u> 2019 </u>		Northin	g (NAD83):	2101958.7		9 110	<u> </u>	
Drilling	J Co.:	<u>Casca</u>	ıde		Easting	(NAD83):	7613300.8	_ Client:	PG&E		
Drilling	y Meth	od: <u>Sonic</u>	Drilling		Total D	epth:	327 ft bgs	_ Project:	Final G	<u>W Remedy Ph</u>	ase I
Drill Ri			<u>nic Truck Mo</u>				6-12 inches	_ Location:	PG&E	Topock, Needle	<u>es, California</u>
Driller			Ramos				r: <u>131.45 ft bgs</u>	_			
Drilling			aya/ O. Flores		-	ng Method:	4 inch x 10 ft Core Barrel	_ Project N	umber:]	RC000753.005	51
Logge			Willford		-	ng Interval:	Continuous	_			
Editor:		<u>Sean</u>	McGrane T		Conver	ted to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
								Ó		(187.0 - 227.0') Soft drilling	(97.0 - 267.0') 2000 gal of water used
 223							* 5				
 224	120		MW-U-VAS-	Topock - Alluvium Deposits	sc						
224			222-227 (<0.033 U	·							
225			ppb) 4/14/2019 14:05								
 226							50				
_227						0 (227	0 - 238.5') Topock - Alluvium Deposits; Si	lty aravel with s	and		
					0	(GM) subro subro cobbl	or 236.5) royout * Aliuvilin Deposits, on reddish brown (5YR 5/4); granules to sm und; some very fine to very coarse graine und; little silt; trace cobbles, angular to sules; trace clay; wet; iron oxide staining; gra adiorite, some red staining on gravel class	all cobbles, and d sand, suband bangular, small vel composed	gular to gular to		
		No Sieve Samples					0				
		Collected									
231											
	120					5P1d					
	120			Topock -		LAG!					
				Alluvium	GM	6 PIZ					
				Deposits		G G					
234											
 22E											
235											
 236											
_237											
238											
	240					0 0 (238	S 250 0') Topock Allending Democks Ci	lty cand with	avol		
239				Topock - Alluvium Deposits	SM	(SM)	5 - 250.0') Topock - Alluvium Deposits; Si reddish brown (5YR 5/4); very fine graine d, angular to subround; little granules to v ar to subround; little silt; little clay; trace co	ed to very coars very large pebb	se les,		
240						small	cobbles; wet; iron oxide staining; gravel co	omposed of mo	stly		
Abbrev	viation:	s: USCS =	Unified Soil C	Classification	on Syste	em. ft = feet	bgs = below ground surface,	amsl = abo	ve mea	n sea level. G\	N =

, ,	RCADIS	Design & Consultancy for natural and built assets		DU	mig	Log		She	et: 13 of	17
Date Start		0/2019		Surface			Borin	g No.:	MW-U	
	pleted: 05/10			Northin		•	_			
Orilling Co Orilling Me				Easting Total D	•	•	_ Client: _ Project:	PG&E	A/ Domody/Dh	
Orill Rig Ty		Drilling Onic Truck Mou			•	327 ft bgs eter: 6-12 inches	•		N Remedy Pha opock, Needle	
riller Nan		Ramos				Water: 131.45 ft bgs	_ Location.	IGALI	ороск, пессия	es, Californ
rilling As		naya/ O. Flore:		Samplir		_	- _ Project N	umber: <u>I</u>	RC000753.005	51
.ogger:		t Willford		Samplir	-		-			
ditor:	<u>Sean</u>	McGrane		Conver	ted to	Vell: ⊠ Yes □ No				
Depth (ft) Recovery	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description	•		Drilling Notes	Drilling Fluid
241_ 242_ 243_ 244_ 245_ 246_ 247_ 248_ - 248	0		Topock - Alluvium Deposits	SM		metadiorite, some red staining on gravel clasts			(237.0 - 257.0') Core barrel became locked up after drilling 237 ftbgs to 257 ft bgs. To free up the core barrel Cascade had to flush water in while advancing the 6" outer casing to free up the core barrel. While flushing in the 6" casing the casing became sandlocked. Drillers had to retreat casing to 97' bgs and re-advance casing to 257' bgs to free up the core barrel.	(97.0 - 267.0 2000 gal o water used
249	No Sieve Samples Collected		((250.0 - 253.5') Topock - Alluvium Deposits; Sa (CL-ML); light brown (7.5YR 6/3); low plasticity,	no dilatency; s	ome		
251_ - 252_			Topock - Alluvium	CL-ML		very fine to coarse grained sand, angular to sub granules to medium pebbles, subangular to sub very soft to soft; weak cementation; gravel com lithology, mostly metadiorite	round; wet to n	noist;		
253_			Deposits							
_ 					111111	(253.5 - 257.0') Topock - Alluvium Deposits; Si brownish gray / pale yellowish brown(10YR 6/2 very coarse grained, angular to subround; little pebbles, subangular to subround; little silt; little); very fine grain granules to larg	ned to e		
255			Topock - Alluvium Deposits	SM		weak cementation; gravel composed of mixed li		,		
256_										
4										
257				-		(257.0 - 264.0') Topock - Alluvium Deposits; Si	ty sand with an		(257.0 - 267.0')	
258 - 120 259	0	MW-U-VAS- 257-262 (0.0896 J ppb) 4/16/2019 14:05	Topock - Alluvium Deposits	SM		(SM); reddish brown (5YR 5/4) some reddish ye fine grained to very coarse grained, angular to s granules to very large pebbles, angular to subro clay; trace cobbles, subangular, small cobbles; staining; gravel composed of mostly metadiorite gravel clasts	ellow (5YR 6/8) subround; little bund; little silt; li wet; iron oxide	; very ttle	Soft drilling	
<u>260 ∣</u> ∖bbreviati	ons: USCS =	Unified Soil (Classification	on Syste	em. ft :	feet, bgs = below ground surface,	amsl = abo	ve mear	ı sea level. GV	V =
						ne laboratory reporting limit, J - esti				
roundwa						, p		,		

/ -	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Log]		Sheet: 14 of	17
Date S	started	: 04/10/2	2019		Surface	Elevation:	587.7 ft amsl	- Boring I	No.: <u>MW-U</u>	
Date C	omple	ted: <u>05/10/</u> 2	2019		Northin	g (NAD83):	2101958.7	Borning	10 <u>IVIVV-0</u>	
Drilling	Co.:	<u>Casca</u>	de		Easting	(NAD83):	7613300.8	_ Client: PG	8&E	
Drilling	Meth	od: <u>Sonic l</u>	Drilling		Total D	epth:	327 ft bgs	_ Project: Fin	al GW Remedy Ph	ase I
Drill Ri	д Туре	e: <u>Prosor</u>	nic Truck Mou	unt	Boreho	le Diameter:	6-12 inches	_ Location: PG	&E Topock, Needle	es, California
Driller	Name:	<u>Eddie</u>	Ramos		Depth t	o First Water	131.45 ft bgs			
Drilling	Asst:	L. Ama	aya/ O. Flores	S	Samplir	ng Method:	4 inch x 10 ft Core Barrel	_ Project Num	ber: <u>RC000753.005</u>	51
Loggei	r:	Grant \	Willford		Samplir	ng Interval:	Continuous	_		
Editor:		<u>Sean N</u>	<u> McGrane</u>		Conver	ted to Well:	Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
	120		MW-U-VAS- 257-262 (0.0896 J ppb) 4/16/2019 14:05	Topock - Alluvium Deposits	SM	(ML); ru granule very co cobbles iron oxi	273.0') Topock - Alluvium Deposits; Gr ddish brown (5YR 5/4); low plasticity, no s to very large pebbles, angular to subround, arse grained sand, angular to subround, angular, small cobbles; moist; stiff; mo le staining; gravel composed of mixed li rite, some red staining on gravel clasts	o dilatency; some ngular; little very find ; little clay; trace derate cementation;	e to	(97.0 - 267.0') 2000 gal of water used
_267 268 269 270 271 272 273	120	No Sieve Samples Collected		Topock - Alluvium Deposits	ML				(267.0 - 295.0') Soft drilling	
2/3							277.0') Topock - Alluvium Deposits; Si			
 274						(2.5ÝR subrou	ark reddish brown / moderate brown(5Y 5/6); very fine grained to very coarse gr nd; some granules to very large pebbles	ained,́ angular to , angular to subrour		
 275 				Topock - Alluvium Deposits	SM	little silt of mixe	wet; weak cementation; iron oxide stair I lithology, mostly metadiorite, some red rery saturated 273-275 ft bgs	ning; gravel compose		
_276 _277_										
 278 				Topock - Alluvium Deposits	МН	gravel (granule coarse	. 279.0') Topock - Alluvium Deposits; Sa MH); red (2.5YR 5/6); medium plasticity medium pebbles, angular to subang grained sand, angular to subround; little ementation; iron oxide staining; mediun	, no dilatency; little jular; little very fine t clay; moist; stiff;		
279 				Topock - Alluvium Deposits	ML	(ML); r	285.0') Topock - Alluvium Deposits; Gi ddish brown (5YR 5/4); low plasticity, nosto very large pebbles, angular to suba	o dilatency; some		

ate S						ອ	Log			
	Started				Surface			Boring N	o.: <u>MW-U</u>	
	•	eted: <u>05/10/</u>			Northin	• •	•			
rilling		<u>Casca</u>			Easting	•	•	Client: PG		
-	Metho				Total D	•	327 ft bgs	•	al GW Remedy Ph	
	g Type		nic Truck Mou					Location: PG	&E Topock, Needl	es, Californ
	Name:		Ramos aya/ O. Flores		Depin և Samplir		Water: 131.45 ft bgs hod: 4 inch x 10 ft Core Barrel	Droject Numb	or: DC000752 00	 5.1
ogger.	Asst:		Willford		Samplir Samplir	•		Project Numb	er. <u>RC000755.00</u>	<u> </u>
ditor:			McGrane		Convert	-				
		<u>ocan i</u>	I		T		VVCII. E. 163 E. 140			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
_ 281_							very coarse grained sand, angular to subround; l cobbles, angular, small cobbles; moist; stiff; mod iron oxide staining; gravel composed of mixed lith metadiorite, some red staining on gravel clasts	erate cementation;	(267.0 - 295.0') Soft drilling	
- 282_				Topock -						
				Alluvium Deposits	ML		19			
285 -							(285.0 - 287.0') Topock - Alluvium Deposits; Silt (SM); reddish brown (5YR 5/4) with light brown (7.5YR 6/3); very fin		
286_ -				Topock - Alluvium Deposits	SM		grained to very coarse grained, angular to subrou very large pebbles, angular to subround; little silt moderate cementation; iron oxide staining; grave lithology, mostly metadiorite, some red staining o	; wet to moist; I composed of mixe		
287							(287.0 - 291.0') Topock - Alluvium Deposits; Silt (SM); red (2.5YR 5/6) with reddish brown (5YR 5 to very coarse grained, angular to subround; son	5/3); very fine graine	od	
288_			MW-U-VAS-	Topock -	7		large pebbles, angular to subround; little silt; wet; iron oxide staining; gravel composed of mixed litt metadiorite, some red staining on gravel clasts	weak cementation;		
289_		No Sieve	287-292 (<0.033 U ppb) 4/17/2019	Alluvium Deposits	SM		0			
- 291_		Samples Collected	14:50							
	120						(291.0 - 295.0') Topock - Alluvium Deposits; Gra (ML); reddish brown (5YR 5/4) with red (2.5YR 5 dilatency; some granules to very large pebbles, a little very fine to very coarse grained sand, angul	i/6); low plasticity, no angular to subangula	ar:	
- 293_	120			Topock - Alluvium	ML		clay; trace cobbles, angular, small cobbles; mois to very stiff; strong cementation; iron oxide staini of mixed lithology, mostly metadiorite, some red s clasts	t to dry; medium stift ng; gtravel compose	f	
- 294_				Deposits						
- 295_							(295.0 - 297.0') Topock - Alluvium Deposits; Silt	y gravel with sand	(295.0 - 297.0')	
- 296_ -				Topock - Alluvium Deposits	GM		(GM); red (2.5YR 5/6) some pinkish gray / grayis 7/2); granules to very large pebbles, angular to s plasticity; some very fine to very coarse grained subround; little silt; little clay; dry; strong cementa staining	sh orange pink(5YR ubangular; low sand, angular to	Rough drilling	
297							(297.0 - 303.0') Topock - Alluvium Deposits; Sar	ndv elastic silt with	(297.0 - 307.0')	-
- 298 - 299	120			Topock - Alluvium Deposits	МН		gravel (MH); red (2.5YR 5/6) some reddish brow plasticity, no dilatency; little granules to medium subangular; little very fine to coarse grained san subround; little clay; trace cobbles, angular, sma moist; soft to medium stiff; strong cementation; ir medium to high plasticity, trace angular cobbles metadiorite or possibly basalt (aphanitic)	n (5YR 5/4); mediur pebbles, angular to d, angular to Il to large cobbles; on oxide staining;		
300	.: _ 4:	-: U000	115:5:10 20	Nessiei v	0: 1		foot has a belevi and	maal		MA/ -
							= feet, bgs = below ground surface, a			
			•				he laboratory reporting limit, J - estin irst VAS interval	iated value, Ni	≺ = no recovery,	biue water

ted: pleted	04/10/2	2019		C					
•	. OF 14 OF			Surface			 Boring N 	o.: <u>MW-U</u>	
				Northin		•			
).:	Casca			Easting	•	•	_ Client: PG8		
ethod:		Drilling		Total D	•	327 ft bgs	•	I GW Remedy Ph	
ype: ne:		nic Truck Mou Ramos				eter: <u>6-12 inches</u> Vater: <u>131.45 ft bgs</u>	_ Location: PG8	E Topock, Needle	es, Califor
				•		<u> </u>	- Project Numb	er: PC000753 005	 51
δι.		•		-	-		_ Froject Numb	er. <u>NC000733.000</u>	<i>)</i>
				-	-		_		
			1					1	
E) S	Sieve ample ID	Groundwater Sample ID	Geolog Formati	OSCS	USCS	Soil Description		Drilling Notes	Drilling Flu
							7	(297.0 - 307.0') Soft drilling	
			Topock -	l					
			Deposits	MH					
				L					
						(303.0 - 307.0') Topock - Alluvium Deposits; S (SM); dark reddish brown / moderate brown (5)	ilty sand with gravel R 3/4) some red		
٠						(2.5YR 5/6); very fine grained to very coarse grained to very grained to very coarse grained to very grained to	ained, angular to	.	
						little silt; wet to moist; weak cementation; iron o	xide staining; gravel		
			Topock - Alluvium	SM		gravel clasts	e, some red staining o	"	
			Deposits						
								(22222	
								(307.0 - 315.5') Soft drilling	
						pink(5YR 7/2); very fine grained to very coarse	grained, angular to		
						little silt; little clay; trace cobbles, angular, smal	cobbles; wet to moist	;	
			Topock - Alluvium	sc					
			Deposits						
0		Ĭ							
				+		(315.0 - 317.0') Topock - Alluvium Deposits; S	andy elastic silt with		
			Topock -			gravel (CL-ML); red (2.5YR 5/6) some reddish	brown (5YR 5/3); high	(315.5 - 317.0')	
			Alluvium	CL-ML		subangular; some clay; little very fine to very co	parse grained sand,	Rough drilling	
			Deposits			cementation	y Jun, Juong		
\dashv				+		(317.0 - 323.0') Topock - Alluvium Deposits: G	ravelly silt with sand	(317.0 - 322.0')	
						(ML); red (2.5YR 4/8) some pinkish gray(5YR	6/2); low plasticity, no	Soft drilling	
		MW-U-VAS- 317-322	Topock -			very fine to very coarse grained sand, angular	to subround; little clay		
)		(<0.17 U)	Alluvium	ML	6/4/	iron oxide staining; gravel composed of mixed I	thology mostly		
		11:05	Dehosira			metadiorite, some red staining on gravel clasts, core (GLEY 1 6/2)	some greenish gray i	" []	
					600				
ons. I	JSCS =	Unified Soil (Classification	on Syste	<u>ra lol`</u> em ft =	feet, bas = below around surface	amsl = above m	nean sea level G\	N =
						_			
		•				, , ,		, .	
	No Sc Cc	Sieve Sample ID No Sieve Samples Collected	Grant Willford Sean McGrane Sieve Sample ID No Sieve Samples Collected MW-U-VAS- 317-322 (<0.17 U) 4/24/2019 11:05 MW-U-VAS- 317-322 (<0.17 U) 4/24/2019 11:05	Grant Willford Sean McGrane Sieve Sample ID Groundwater Sample ID Topock-Alluvium Deposits No Sieve Samples Collected No Sieve Samples Collected Topock-Alluvium Deposits Grant Willford Sean McGrane Convert Convert Sieve Sample ID Sieve Sample ID Topock - Alluvium Deposits No Sieve Samples Collected No Sieve Samples Collected Topock - Alluvium Deposits Grant Willford Sean McGrane Groundwater Sample ID Sieve Sample ID Topock- Alluvium Deposits No Sieve Samples Collected Topock- Alluvium Deposits SM Topock- Alluvium Deposits SC Deposits Topock- Alluvium Deposits	Sampler D Sampler D Sampler D Solid Description Solid Description Solid Description Topock-Alluvium Deposits, SM Topock-Alluvium Deposits, SM Topock-Alluvium Deposits, SM Solid Description Topock-Alluvium Deposits, SM SM SM SM SM SM SM SM SM SM	Sample ID Sieve Sample ID Groundwater See Supplied Interval: Sieve Sample ID Groundwater See Supplied ID Groundwater See Supplied ID Groundwater See Supplied ID Groundwater See Supplied ID Groundwater Supplied ID	Sampling Interval: Continuous Converted to Well: Yes No Converted to Well: Yes No Sieve Sample ID Groundwater \$\frac{3}{2} \frac{3}{2} \fra		

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 17 of	17
Date S	Started	: <u>04/10/2</u>	2019		Surface	Elevat	ion: <u>587.7 ft amsl</u>	Borir	na No.:	MW-U	
	-	eted: <u>05/10/2</u>			Northin		•			<u> </u>	
Drilling	-	Cascac			Easting			Client:	PG&E		_
Drilling	-		-		Total D	-	327 ft bgs	Project:		W Remedy Ph	
Drill R Driller			<u>ic Truck Mou</u> Pomos				eter: <u>6-12 inches</u> Water: <u>131.45 ft bgs</u>	Location	: PG&E	Fopock, Needle	es, California
Drilling			ya/ O. Flores		Samplir		-	Project N	Jumber: I	RC000753.005	
Logge	-		Willford		Samplir	_		. 1 10,0001	tarribor.	10000100.000	, ,
Editor			/lcGrane		Conver	-					
	>			.2 F	1						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
			MW-U-VAS- 317-322					A		(317.0 - 322.0') Soft drilling	
321	60		(<0.17 U) 4/24/2019	Topock -							
322			11:05	Alluvium Deposits	ML					(200 0 207 01)	
-							46			(322.0 - 327.0') Rough drilling	
323		No Sieve Samples					(323.0 - 326.7') Topock - Competent Bedrock - ored (2.5YR 6/8) some red (10R 4/8); moist to dry	conglomerate	; light		
324		Collected					cementation; Friable, highly fractured	,, moderate			
	60			Topock - Competent							
325				Bedrock - conglomerate			AU -				
				Conglorneral	-						
326											
327				Topock -			(326.7 - 327.0') Topock - Bedrock - metadiorite;	Hard, Highly	fractured		
				Bedrock - metadiorite			and pulverized rock End of Boring at 327.0 'bgs	<u> </u>			
328											
329					U						
							NO) Y				
330											
331											
332			•								
333											
-											
334_											
335											
336											
-											
_337											
338											
339_											
340											
Abbre	viation	s: USCS = l	Jnified Soil C	Classificati	on Syste	em, ft =	feet, bgs = below ground surface, a	amsl = ab	ove mea	n sea level, G\	v =

9/-	ARC4	DIS Design & for natura built asse	Consultancy all and ts		Well Const	truction Log	:	Sheet: 1 of 17
Date S	Started:	04/10/2019			_ Surface Elevation:	587.7 ft amsl	Well ID: I	MW-U-183, MW-U-273
		:05/10/2019			_ Shallow Well Elevation			
Drilling		Cascade			_ Deep Well Elevation:		Client: PG&I	
_		Sonic Drilling			_ Northing (NAD83):	2101958.7	•	GW Remedy Phase I
		Eddie Ramos			_ Easting (NAD83):	7613300.8	Location: <u>PG&I</u>	<u> E Topock, Needles, California</u>
Drilling		L. Amaya/ O.			_ Borehole Diameter:	6-12 inches		
Logge		Grant Willford			_ Water Level Start:	131.45 ft bgs	Project Numbe	er: RC000753.0051
Editor:		Sean McGran	ne		_ Development End Dat			
Total [Depth:	327 ft bgs	1		_ Well Completion:		T	T
Depth (ft)	Groundwat Sample ID		USCS	USCS Class		Construction	Calculated Material Volumes	Material Volumes Installed
1 _ 1 _		Topock - Fill	SM		(0.0 - 1.0') Concrete Pad	(0.5 - 253.2') 2" PVC Sch 80 Casing	Ò	(0.0 - 1.0") 7 bags Note: 2.5 x 2.5 ft concrete pad with 18 dia lockable vault, King Kon-Crete 4000 PSI
2 3		Тороск-Тііі	OW		(0.6 - 163.2') 2" PVC Sch 80 Casing	(0.0 - 4.0') 12" Borehole		
_ 4 _								
5 6			NR	X				
 7								
_ 8 _ _ 8 _								
9 			•					
_ 10 _ 11 _		Topock - Fill	SM		(1.0 - 135.0') Portland Cement 6% Bentonite		(1.0 - 135.0') 512.6 gallons	(1.0 - 135.0') 1250 gallons (144%) Note: Type I, II and V and Benseal
 12						(4.0 - 276.0') 10" Borehole		
13								
14 								
15								
16								
17		Topock - Alluvium Deposits	SM					
18								
19								
U				<u> </u>			'	

9/-	ARC ⁴	DI	S Design & C for natural built asset	Consultancy l and ts		Well Const	ruction Log	\$	Sheet: 2 of 17
Date S	Started:	04/1	0/2019			_ Surface Elevation:	587.7 ft amsl	Well ID: N	MW-U-183, MW-U-273
	Completed					_ Shallow Well Elevatior			
Drilling	-	Caso				_ Deep Well Elevation:		Client: PG&E	
_	g Method:		_			_ Northing (NAD83):	2101958.7		GW Remedy Phase I
	Name:		<u>e Ramos</u>			_ Easting (NAD83):	7613300.8	Location: <u>PG&E</u>	Topock, Needles, California
Drilling	-		maya/ O.			_ Borehole Diameter:	6-12 inches		
Logge			nt Willford			_ Water Level Start:	131.45 ft bgs	Project Numbe	r: RC000753.0051
Editor:			<u>n McGran</u>	ie		_ Development End Date		<u> </u>	
Total [Jepin:	321	ft bgs			_ Well Completion:			
Depth (ft)	Groundwa Sample II		Geologic Formation	Code	USCS		Construction	Calculated Material Volumes	Material Volumes Installed
 21 			Topock - Alluvium Deposits	SM		(0.6 - 163.2') 2" PVC — Sch 80 Casing	(0.5 - 253.2') 2" PVC Sch 80 Casing		
22			Topock - Alluvium	GP					
23			Deposits						
24			Topock - Alluvium	SM					
 25			Deposits	Olvi					
26 			Topock - Alluvium	GM					
27			Deposits						
 28					$\setminus \setminus$				
 29					$\left\ \cdot \right\ $				
						(4.0, 405.0)			
30						(1.0 - 135.0') Portland Cement 6% Bentonite	(4.0 - 276.0') 10" Borehole	(1.0 - 135.0') 512.6 gallons	(1.0 - 135.0') 1250 gallons (144%) Note: Type I, II and V and Benseal
31									
 32				NR	$ \ \ \ \ $				
					$ \ / \ $				
33					$ / \setminus $	(32.5 - 33.5') Centralizer			
34					$ \cdot $				
 35									
					/ \				
36		-	Topock -						
-			Alluvium	SM					
37		$ \cdot $	Deposits		H				
					r M				
38			Topock -		MP				
 39			Alluvium Deposits	GM	r Mid				
38					HF				
 40					<u> </u>				

ARCAD	Design & Co for natural built assets	onsultancy and s		Well Const	ruction Log		Sheet: 3 of 17
	10/2019			_ Surface Elevation:	587.7 ft amsl	Well ID	: MW-U-183, MW-U-273
Date Completed: <u>05/</u>				_ Shallow Well Elevation			
•	scade			_ Deep Well Elevation:	587.7 ft amsl		G&E
Drilling Method: <u>So</u>					2101958.7	•	inal GW Remedy Phase I
	die Ramos			_ Easting (NAD83):	7613300.8	Location: <u>P</u>	G&E Topock, Needles, California
	Amaya/ O. I				6-12 inches	——————————————————————————————————————	mhar: DC0007E2 00E1
	ant Willford an McGrane			_ Water Level Start: _ Development End Date	131.45 ft bgs	Project Nur	mber: RC000753.0051
	7 ft bgs	<u> </u>			⊠ Flush⊡ Stick-u	ın	
<u>02</u>				_ Woll Completion.	radii_ duok d		
Groundwater Sample ID	Geologic Formation	Code	USCS Class		Construction	Calculated Material Volume	Material Volumes s Installed
	Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits	GM	56.00.00.00.00.00.00.00.00.00.00.00.00.00	(1.0 - 135.0') Portland Cement 6% Bentonite	— (4.0 - 276.0 Borehol	r) 10" (1.0 - 135.0') 51	2.6 (1.0 - 135.0') 1250 gallons (144%) Note: Type I, II and V and Benseal

ARC ²	ADIS Design & for natura built asse	Consultancy Land ts		Well Const	ructio	on Log		(Sheet: 4	l of 17
Date Started:	04/10/2019			Surface Elevation:	587.7 ft		Well	ID: I	MW-U-1	183, MW-U-273
Date Completed Drilling Co.:	1: <u>05/10/2019</u> Cascade			_ Shallow Well Elevation _ Deep Well Elevation:	1: <u>587.5 ft</u> 587.7 ft		_∟ Client:	PG&E	=	
Drilling Method:				Northing (NAD83):	2101958					edy Phase I
Driller Name:	Eddie Ramos			Easting (NAD83):	7613300					Needles, California
Drilling Asst:	L. Amaya/ O.			Borehole Diameter:	6-12 inc					
∟ogger: Editor:	Grant Willford Sean McGran			_Water Level Start: _Development End Date	131.45 f	•	_ Project N	lumbe	r: <u>RC0007</u>	<u>753.0051</u>
Total Depth:	327 ft bgs	IC				n⊟ Stick-up	_			
		S e	SS SS				Calculated	<u> </u>		Material Volumes
Groundwa Sample I		USCS	Class		Construction		Material Volu			Installed
	Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits	G G G G G G G G G G G G G G G G G G G	60,00,00,00,00,00,00,00,00,00,00,00,00,0	(1.0 - 135.0') Portland Cement 6%		- (4.0 - 276.0') 10" Borehole	(1.0 - 135.0') gallons	512.6	(1.0 - 135 Note: Tvt	5.0') 1250 gallons (144%) pe I, II and V and Benseal
	Topock - Alluvium Deposits	SM		Bentonite		Borehole	galions		Note. Ty	ze i, ii aliu v aliu beriseal

9/	ARCA	DIS Design & for natura built asse	Consultancy al and ts		Well Const	truction Log	9	Sheet: 5 of 17
Date S	Started:	04/10/2019			_ Surface Elevation:	587.7 ft amsl	Well ID: N	MW-U-183, MW-U-273
		:05/10/2019			_ Shallow Well Elevation			
Drilling		Cascade			_ Deep Well Elevation:		Client: PG&E	
_		Sonic Drilling			_ Northing (NAD83):	2101958.7		GW Remedy Phase I
Driller		Eddie Ramos			_ Easting (NAD83):	7613300.8	Location: <u>PG&E</u>	Topock, Needles, California
Drilling		L. Amaya/ O.			_ Borehole Diameter:	6-12 inches		
Logger		Grant Willford			_ Water Level Start:	131.45 ft bgs	Project Numbe	r: RC000753.0051
Editor:		Sean McGrar	ie		_ Development End Dat			
Total D	Depth:	327 ft bgs	I		_ Well Completion:		T	
Depth (ft)	Groundwat Sample ID		Code	USCS		Construction	Calculated Material Volumes	Material Volumes Installed
 81 82		Topock - Alluvium Deposits	SM		(0.6 - 163.2') 2" PVC — Sch 80 Casing	(0.5 - 253.2') 2" PVC Sch 80 Casing		
83		Topock - Alluvium Deposits	SM		(82.5 - 83.5') Centralizer			
		Topock - Alluvium Deposits	GM		(1.0 - 135.0') Portland Cement 6% Bentonite	(4.0 - 276.0') 10" Borehole	(1.0 - 135.0') 512.6 gallons	(1.0 - 135.0') 1250 gallons (144%) Note: Type I, II and V and Benseal
94 95 96 97 98		Topock - Alluvium Deposits	SM					
 99 100		Topock - Alluvium Deposits	GM					

ARC	ADIS Design & for natura built asse	Consultancy all and ts		Well Const	truction Log	5	Sheet: 6 of 17
Date Started:	04/10/2019			_ Surface Elevation:	587.7 ft amsl	Well ID: N	MW-U-183, MW-U-273
Date Completed				_ Shallow Well Elevatior			
Drilling Co.:	Cascade			_ Deep Well Elevation:		Client: PG&E	
Drilling Method:	-			_ Northing (NAD83):	2101958.7		GW Remedy Phase I
Driller Name:	Eddie Ramos			_ Easting (NAD83):	7613300.8	Location: <u>PG&E</u>	Topock, Needles, California
Drilling Asst:	L. Amaya/ O.			_ Borehole Diameter:	6-12 inches		D0000750 0054
Logger: Editor:	Grant Willford Sean McGran			_ Water Level Start: _ Development End Dat	131.45 ft bgs	Project Numbe	r: RC000753.0051
Total Depth:	327 ft bgs	<u>ie</u>		_ Development End Dat _ Well Completion:	e <u>5/10/2019</u> ⊠ Flush⊡ Stick-up		
Total Boptiii		1		_ won completion.	Trachi Crick up		
Groundwa Sample I		Code	USCS		Construction	Calculated Material Volumes	Material Volumes Installed
	Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits	GM ML		(1.0 - 135.0') Portland Cement 6% Bentonite	(4.0 - 276.0') 10" Borehole	(1.0 - 135.0') 512.6 gallons	(1.0 - 135.0') 1250 gallons (144%) Note: Type I, II and V and Benseal

9/	ARCAI	Design & for natura built asse	Consultancy ol and ts		Well Const	truction Log	S	Sheet: 7 of 17
		4/10/2019			_ Surface Elevation:	587.7 ft amsl	— Well ID∙ N	MW-U-183, MW-U-273
Date C	Completed:0	5/10/2019			_ Shallow Well Elevation	n: <u>587.5 ft amsl</u>		
Drilling	g Co.: <u>C</u>	ascade			_ Deep Well Elevation:	587.7 ft amsl	Client: PG&E	
Drilling	g Method: <u>S</u>	onic Drilling			_ Northing (NAD83):	2101958.7	Project: Final	GW Remedy Phase I
Driller	Name: <u>E</u>	ddie Ramos			_ Easting (NAD83):	7613300.8	Location: PG&E	Topock, Needles, California
Drilling	g Asst: <u>L</u>	<u>. Amaya/ O.</u>	Flores		_ Borehole Diameter:	6-12 inches		
Logge	r: <u>G</u>	Grant Willford	l		_ Water Level Start:	131.45 ft bgs	Project Number	r: RC000753.0051
Editor:	<u>s</u>	ean McGran	ne		_ Development End Dat	e <u>5/10/2019</u>		
Total [Depth: <u>3</u>	27 ft bgs			_ Well Completion:			
Depth (ft)	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
121 122 123 124		Topock - Alluvium Deposits	SM		(0.6 - 163.2') 2" PVC— Sch 80 Casing	—(0.5 - 253.2') 2" PVC Sch 80 Casing	30	
125		Topock - Alluvium Deposits	GM	D. C.D. C.D. C.D. C.D. C.D. C.D. C.D. C	(1.0 - 135.0') Portland Cement 6% Bentonite	(4.0 - 276.0') 10" Borehole	(1.0 - 135.0') 512.6 gallons	(1.0 - 135.0') 1250 gallons (144%) Note: Type I, II and V and Benseal
133 134 135		Topock - Alluvium Deposits	SM		(132.5 - 133.5') — Centralizer			
136 137 139					(135.0 - 157.0') — Bentonite seal chips		(135.0 - 157.0') 13.9 bags	(135.0 - 157.0') 13 bags (-6%) Note: Puregold Medium Chips
138 139 140	MW-U-VAS- 137-142 (1.4 ppb) 4/12/2019 11:30	Topock - Alluvium Deposits	SM					
Ahhra	viations: IIS	sc∵S = I Inifi⊝	പ പ്ലി (Taccitio	cation System ff = feet	has = helow around surface	amei = ahove me	200 CA2 IAVAL (3VV =

Started: 04/10/2019 Surface Elevation: 587.7 f Completed: 05/10/2019 Shallow Well Elevation: 587.5 f Completed: 05/10/2019 Shallow Well Elevation: 587.7 f C	VVEILID. IVIVV-U-103. IVIVV-U-21
ng Co.: Cascade Deep Well Elevation: 587.7 f ng Method: Sonic Drilling Northing (NAD83): 210195 er Name: Eddie Ramos Easting (NAD83): 761330	
ng Method: Sonic Drilling Northing (NAD83): 210195 er Name: Eddie Ramos Easting (NAD83): 761330	tt amsl
er Name: <u>Eddie Ramos</u> Easting (NAD83): <u>761330</u>	
3 (,	•
ng Asst: I Amaya/ O Flores Borehole Diameter: 6-12 in	00.8 Location: PG&E Topock, Needles, Califor
	iches
ger: <u>Grant Willford</u> Water Level Start: <u>131.45</u>	5 ft bgs Project Number: RC000753.0051
or: <u>Sean McGrane</u> Development End Date <u>5/10/20</u>	
ll Depth: 327 ft bgs Well Completion: ⊠ Flus	sh Stick-up
Groundwater Sample ID Speed Sp	on Calculated Material Volumes Installed
— MW-U-VAS- Topock - 137-142 Alluvium SM Sch 80 Casing Sch 80 Casing 4/12/2019	— (0.5 - 253.2') 2" PVC Sch 80 Casing
Topock - GM O O O	
Deposits	
	4.67
Topock - Alluvium SM	
Alluvium SM Deposits	
Topock -	
- Alluvium SM [∷[∴]	
B Deposits	
	(135.0 - 157.0') 13.9 (135.0 - 157.0') 13 bags (-6%) bags Note: Puregold Medium Chips
be not the seal chips	1.55
	(4.0 - 276.0') 10" Borehole
	Borehole
Topock -	
Alluvium Deposits Alluvium Deposits	
Topock - Alluvium SM	
Deposits Control Deposits	
	1
	1
Topock - (157.0 - 187.0')	(157.0 - 187.0') 29.2 (157.0 - 187.0') 43 bags (47%)
Topock - (157.0 - 187.0')	(157.0 - 187.0') 29.2 (157.0 - 187.0') 43 bags (47%) bags Note: Lapis Lustre Sand
Topock - Alluvium SM (157.0 - 187.0') Cemex #3 MESH —	
Topock - Alluvium Deposits SM (157.0 - 187.0') Cemex #3 MESH (8x10)	bags Note: Lapis Lustre Sand
Topock - Alluvium Deposits SM (157.0 - 187.0') Cemex #3 MESH (8x10) reviations: USCS = Unified Soil Classification System, ft = feet, bgs = be	bags Note: Lapis Lustre Sand elow ground surface, amsl = above mean sea level, GW =
Topock - Alluvium Deposits SM (157.0 - 187.0') Cemex #3 MESH (8x10)	bags Note: Lapis Lustre Sand elow ground surface, amsl = above mean sea level, GW = reporting limit, J - estimated value, NR = no recovery, blue water

Drilling Asst: L. Amaya/ O. Flores	ARCADIS Design & Consultancy for natural and built assets	Well Construction Log	Sheet: 9 of 17
Shallow Well Elevation: 587.5 ft amsl.		Surface Elevation: 587.7 ft amsl	- Well ID: MW-U-183, MW-U-273
Drilling Method: Sonic Drilling Drilling Anse: Eddic Ramos Drilling Anse: L. Amayal O. Flores Borehole Diameter: 6-12 inches Logger: Grant Willford Editor: Sean McGrane Development End Date 5/10/2019 Total Depth: 327 ft.bgs Well Completion: ☑ Flush ☐ Stick-up Well Completion: ☑ Flush ☐ Stick-up Well Construction Well Construction Well Construction Calculated Material Volumes Installed Material Volumes Installed Material Volumes Installed Topcock Alluvium Deposits Material Volumes Installed (163.2 - 183.2) 2" Sch 80 Casing Topcock Alluvium Deposits Topcock Alluvium Canada Topc	Date Completed: <u>05/10/2019</u>	Shallow Well Elevation: <u>587.5 ft amsl</u>	
Driller Name: Eddie Ramos Easting (NAD83): 7613300.8 Location: PG&E Topock, Needles, Californ Drilling Asst: L. Amaya/ O. Flores Borehole Diameter: 6:12 inches Project Number: RC000753.0051 Editor: Sean McGrane Development End Date5/10/2019 Project Number: RC000753.0051 Total Depth: 327 ft bgs Well Completion: ☑ Flush ☐ Stick-up Well Completion: ☑ Flush ☐ Stick-up Well Construction Calculated Material Volumes Material Volumes Installed 161	I -	•	 -
Drilling Asst: L. Amays/ O. Flores Borehole Diameter: 6-12 inches	l = =	, ,	-
Continue Continue		* '	Location: PG&E Topock, Needles, California
Editor: Sean McGrane 327 ft bgs			
Total Depth: 327.ft bgs Well Completion: Flush Stick-up		· ·	Project Number: <u>RC000753.0051</u>
Calculated Cal			_
161		_ Well Completion:	
Sch 80 Casing Sch 80 Casing	Depth (ft) Geologic Code Code Code Code Code Code Code Code		
		(163.2 - 183.2') 2" — Sch 80 PVC (20-slot) Screen — (4.0 - 276.0') 10" Rerebble	

SA	RCAI	DIS Design & C for natura built asset	Consultancy Il and ts		Well Const	ruction Log	5	Sheet: 10 of 17
Date Sta	rted: <u>0</u>	4/10/2019			_Surface Elevation:	587.7 ft amsl	Well ID: N	MW-U-183, MW-U-273
	-	5/10/2019			_ Shallow Well Elevatior			
Drilling C		ascade			_ Deep Well Elevation:		Client: PG&E	
_		onic Drilling			Northing (NAD83):	2101958.7	•	GW Remedy Phase I
Driller Na		ddie Ramos			_ Easting (NAD83):	7613300.8	Location: <u>PG&E</u>	Topock, Needles, California
Drilling A		<u>. Amaya/ O.</u>			_ Borehole Diameter:	6-12 inches		
Logger:		Grant Willford			_ Water Level Start:	131.45 ft bgs	Project Numbe	r: RC000753.0051
Editor:		ean McGran	ne		_ Development End Date			
Total De	pth: <u>3</u>	27 ft bgs			_ Well Completion:			T
Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Construction	Calculated Material Volumes	Material Volumes Installed
181		Topock - Alluvium Deposits	SM		(163.2 - 183.2') 2" —	(0.5 - 253.2') 2" PVC Sch 80 Casing	0	
_ (0	1W-U-VAS- 181-186 .112 J ppb) 4/13/2019 12:00	Topock - Alluvium Deposits	SM		(157.0 - 187.0') Cemex #3 MESH (8x10) (183.7 - 184.7') Centralizer (183.2 - 185.6') Sump and End Cap		(157.0 - 187.0') 29.2 bags	(157.0 - 187.0') 43 bags (47%) Note: Lapis Lustre Sand
188		Topock - Alluvium Deposits	SM		(187.0 - 247.0') — Bentonite seal pellets	— (4.0 - 276.0') 10" Borehole	(187.0 - 247.0') 50.1 buckets	(187.0 - 247.0') 66.8 buckets (33%) Note: Pel-Plug (TR30) 3/8â€□
200 Abbrevia	ations: IIS	CS = Unifie	d Soil C	lassific	ation System ft = feet I	ogs = below ground surface	e amsl = ahove me	ean sea level GW =

9/-	4RC4	DIS Design & for natura built asse	Consultancy all and ts		Well Const	truction Log	:	Sheet: 11 of 17
Date S	Started:	04/10/2019			_ Surface Elevation:	587.7 ft amsl	- Well ID: I	MW-U-183, MW-U-273
Date C	Completed	:05/10/2019			_ Shallow Well Elevatior	n: <u>587.5 ft amsl</u>		VIVV-0-103, IVIVV-0-273
Drilling	Co.:	Cascade			_ Deep Well Elevation:	587.7 ft amsl	Client: PG&I	<u> </u>
Drilling	Method:	Sonic Drilling			_ Northing (NAD83):	2101958.7	Project: Final	GW Remedy Phase I
Driller	Name:	Eddie Ramos			_ Easting (NAD83):	7613300.8	Location: PG&I	E Topock, Needles, California
Drilling	Asst:	L. Amaya/ O.	Flores		_ Borehole Diameter:	6-12 inches		
Loggei	r:	Grant Willford			_ Water Level Start:	131.45 ft bgs	Project Numbe	er: <u>RC000753.0051</u>
Editor:		Sean McGrar	ne		_ Development End Date			
Total [Depth:	327 ft bgs			_ Well Completion:			
Depth (ft)	Groundwat Sample IE		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
		Topock - Alluvium	SM			—(0.5 - 253.2') 2" PVC Sch 80 Casing		
_201		Deposits						
		Topock - Alluvium Deposits	CL-ML					
		Topock - Alluvium Deposits	SM		(187.0 - 247.0')	(4.0 - 276.0') 10"	(187.0 - 247.0') 50.1	(187.0 - 247.0') 66.8 buckets (33%)
211 		Topock - Alluvium Deposits	GP-GM		Bentonite seal pellets	Borehole	buckets	Note: Pel-Plug (TR30) 3/8â€□
213 		Topock - Alluvium Deposits	CL-ML					
215 216 217		Topock - Alluvium Deposits	GM					
218 219 		Topock - Alluvium Deposits	sc					

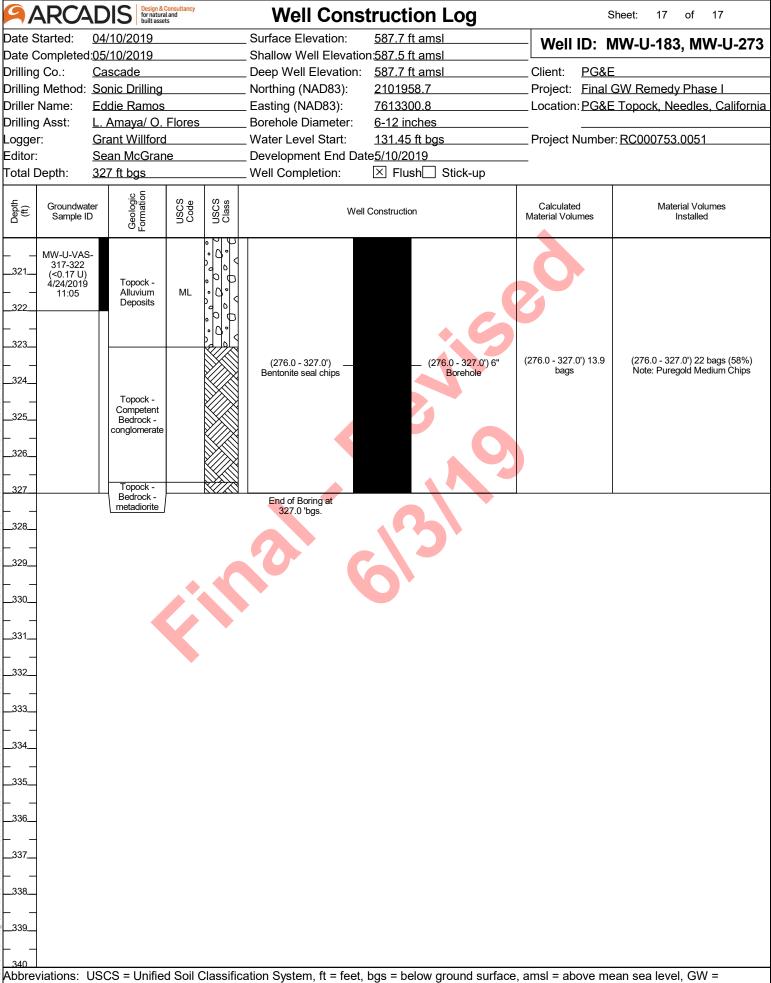
ARCA	DIS Design & C for natural built asset	Consultancy l and ts		Well Const	ruction Log	:	Sheet: 12 of 17
	04/10/2019			Surface Elevation:	587.7 ft amsl	Well ID: I	MW-U-183, MW-U-273
Date Completed:	05/10/2019			Shallow Well Elevation	n: <u>587.5 ft amsl</u>		111 8 100, 1111 8 270
Drilling Co.:	<u>Cascade</u>			_ Deep Well Elevation:	587.7 ft amsl	Client: PG&I	Ξ
Drilling Method: 3	Sonic Drilling			Northing (NAD83):	2101958.7	Project: <u>Final</u>	GW Remedy Phase I
	<u>Eddie Ramos</u>			_Easting (NAD83):	7613300.8	Location: PG&I	<u> Topock, Needles, California</u>
Drilling Asst:	L. Amaya/ O.	Flores		_Borehole Diameter:	6-12 inches		
	Grant Willford			_ Water Level Start:	131.45 ft bgs	Project Numbe	r: RC000753.0051
1	<u>Sean McGran</u>	<u>ie</u>		Development End Date			
Total Depth:	327 ft bgs			_ Well Completion:			T
Groundwate Sample ID		OSCS Code	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
	Topock - Alluvium Deposits	SC	4.		—(0.5 - 253.2') 2" PVC Sch 80 Casing		
	Topock - Alluvium Deposits	GM		(227.5 - 228.5') — Centralizer (187.0 - 247.0') — Bentonite seal pellets	— (4.0 - 276.0') 10" Borehole	(187.0 - 247.0') 50.1 buckets	(187.0 - 247.0') 66.8 buckets (33%) Note: Pel-Plug (TR30) 3/8â€□
239 	Topock - Alluvium Deposits	SM					

ARCAI	DIS Design & Co for natural a built assets	nsultancy and	Well Const	truction Log	S	Sheet: 13 of 17
)4/10/2019		_ Surface Elevation:	587.7 ft amsl	Well ID: N	/IW-U-183, MW-U-273
Date Completed:0	5/10/2019		_ Shallow Well Elevation			<u></u>
•	Cascade		_ Deep Well Elevation:	587.7 ft amsl	Client: PG&E	
Drilling Method: S	Sonic Drilling		_ Northing (NAD83):	2101958.7	Project: <u>Final (</u>	GW Remedy Phase I
Driller Name: E	<u>Eddie Ramos</u>		_ Easting (NAD83):	7613300.8	Location: PG&E	Topock, Needles, California
Drilling Asst: <u>L</u>	<u> Amaya/ O. F</u>	Flores	_ Borehole Diameter:	6-12 inches		
Logger: <u>G</u>	Grant Willford		_ Water Level Start:	131.45 ft bgs	Project Number	r: RC000753.0051
	<u>Sean McGrane</u>)	_ Development End Dat			
Total Depth: 3	327 ft bgs		_ Well Completion:	⊠ Flush Stick-up		
Groundwater Sample ID	Geologic Formation	USCS Code USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
	Topock - Alluvium Deposits	SM	(187.0 - 247.0') — Bentonite seal pellets	—(0.5 - 253.2') 2" PVC Sch 80 Casing	(187.0 - 247.0') 50.1 buckets	(187.0 - 247.0') 66.8 buckets (33%) Note: Pel-Plug (TR30) 3/8â€□
248				(4.0 - 276.0') 10" Borehole		
251	Topock - Alluvium Deposits	CL-ML	(247.0 - 276.0') Cemex #3 MESH		(247.0 - 276.0') 30.1	(247.0 - 276.0') 37.25 bags (24%) Note: Lapis Lustre Sand
254	Topock - Alluvium Deposits	SM	(8x10)	Screen	bags	INOIG. LAPIS LUSITE SAITU
257-262 257-262 (0.0896 J ppb) 4/16/2019 14:05 260	Deposits	SM				ean sea level. GW =

9/	ARC4	DIS Design for nat built as	& Consultancy ural and ssets		Well Const	truction Log	5	Sheet: 14 of 17
Date S	Started:	04/10/2019			_ Surface Elevation:	587.7 ft amsl	- Well ID: M	MW-U-183, MW-U-273
		1:05/10/2019			_ Shallow Well Elevatior			
Drilling	-	Cascade			_ Deep Well Elevation:		Client: PG&E	
1	-	Sonic Drilling	-		_ Northing (NAD83):	2101958.7	-	GW Remedy Phase I
	Name:	Eddie Ramo			_ Easting (NAD83):	7613300.8	Location: PG&E	Topock, Needles, California
-	g Asst:	L. Amaya/ C			_ Borehole Diameter:	6-12 inches		
Logge		Grant Willfor			_ Water Level Start:	131.45 ft bgs	Project Numbe	r: RC000753.0051
Editor		Sean McGra	ine		_ Development End Date			
l otal l	Depth:	327 ft bgs	1		_ Well Completion:	✓ Flush ✓ Stick-up		
Depth (ft)	Groundwa Sample II		USCS	USCS	Well (Construction	Calculated Material Volumes	Material Volumes Installed
261	MW-U-VAS 257-262 (0.0896 J pp 4/16/2019 14:05		SM			(253.2 - 273.2') 2" Sch 80 PVC (20-slot) Screen	30	
265		Topock - Alluvium Deposits	ML		(247.0 - 276.0') Cemex #3 MESH — (8x10)	(4.0 - 276.0') 10" Borehole	(247.0 - 276.0') 30.1 bags	(247.0 - 276.0') 37.25 bags (24%) Note: Lapis Lustre Sand
273		Topock - Alluvium Deposits	SM	0 0	(273.7 - 274.7') Centralizer	(273.2 - 275.6') Sump and End Cap		
277 278 279		Topock - Alluvium Deposits	МН		(276.0 - 327.0') Bentonite seal chips	— (276.0 - 327.0') 6" Borehole	(276.0 - 327.0') 13.9 bags	(276.0 - 327.0') 22 bags (58%) Note: Puregold Medium Chips
		Topock - Alluvium	ML					
280	L	Deposits					<u> </u>	

9/	ARC ⁴	DIS Design & for natu built ass	& Consultancy ral and sets		Well Cons	truction Log	S	Sheet: 15 of 17
Date S	Started:	04/10/2019			_ Surface Elevation: _ Shallow Well Elevation	587.7 ft amsl	Well ID: N	MW-U-183, MW-U-273
Drilling	-	Cascade			_ Deep Well Elevation:		Client: PG&E	<u> </u>
_	-	Sonic Drilling	1		_ Northing (NAD83):	2101958.7		GW Remedy Phase I
_	Name:	Eddie Ramos			_ Easting (NAD83):	7613300.8		Topock, Needles, California
Drilling					_ Borehole Diameter:	6-12 inches	Location. <u>r Oct</u>	- Topock, Necdics, California
_	-	L. Amaya/ O						D0000750 0054
Logge		Grant Willfor			_ Water Level Start:	131.45 ft bgs	Project Numbe	r: RC000753.0051
Editor:		Sean McGra	ne		_ Development End Dat			
Total [Depth:	327 ft bgs	1		_ Well Completion:			
Depth (ft)	Groundwat Sample II		Code	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
		Topock - Alluvium Deposits	ML					
286 		Topock - Alluvium Deposits	SM			1/6		
288 289 290 291	MW-U-VAS 287-292 (<0.033 U ppb) 4/17/2019 14:50	Topock - Alluvium Deposits	SM	*******	(276.0 - 327.0') — Bentonite seal chips	— (276.0 - 327.0') 6" Borehole	(276.0 - 327.0') 13.9 bags	(276.0 - 327.0') 22 bags (58%) Note: Puregold Medium Chips
		Topock - Alluvium Deposits	ML					
		Topock - Alluvium Deposits	GM					
298 299 		Topock - Alluvium Deposits	МН					

9/-	ARCA	DIS Design & for natural built asse	Consultancy all and ts		Well Const	truction Log	S	Sheet: 16 of 17
Date S Date C Drilling Drilling	Started: Completed g Co.: g Method: Name: g Asst: r:	04/10/2019 :05/10/2019 Cascade Sonic Drilling Eddie Ramos L. Amaya/ O. Grant Willford Sean McGran	Flores		_ Surface Elevation: _ Shallow Well Elevation: _ Deep Well Elevation: _ Northing (NAD83): _ Easting (NAD83): _ Borehole Diameter: _ Water Level Start: _ Development End Dat _ Well Completion:	587.7 ft amsl 2101958.7 7613300.8 6-12 inches 131.45 ft bgs	Client: PG&E Project: Final (//W-U-183, MW-U-273 GW Remedy Phase I Topock, Needles, California
Depth (ft)	Groundwate Sample ID		Code	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
301		Topock - Alluvium Deposits	МН	2004/2004 (2004		+6		
304 305 306 307		Topock - Alluvium Deposits	SM					
308		Topock - Alluvium Deposits	SC		(276.0 - 327.0') — Bentonite seal chips	— (276.0 - 327.0') 6" Borehole	(276.0 - 327.0') 13.9 bags	(276.0 - 327.0') 22 bags (58%) Note: Puregold Medium Chips
316 		Topock - Alluvium Deposits	CL-ML					
318 319 320	MW-U-VAS 317-322 (<0.17 U) 4/24/2019 11:05	Topock - Alluvium Deposits	ML					



9/	4RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	9			She	eet: 1 of	3
	Started				Surface			459.5 ft amsl		Borin	na No.:	MW-W	
	•	ted: <u>03/28/2</u>			Northino			2101904.2		_	_		
Drilling		Cascac			Easting		3):	<u>7616366.1</u>		Client:	PG&E		
Drilling			•		Total De	-	otori	43 ft bgs		Project:		roundwater Re	medy Phase
	ig Type Name:		ic Truck Mou /asquez		Borehol			6-10 inches 4.83 ft bgs		Location:		Topock, Needle	e California
Drilling			ya/ O. Flores		Samplin			_	Core Barrel	- Project N		er: RC000753.0051	
Logge		Gantt J	-		Samplin	-		Continuous	JOIO BUITOI	_ 1 10,00011	iambor.	110000700.000	J 1
Editor			/IcGrane		Convert	•		× Yes □ N	No	_			
		<u> </u>											
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class			Soil Description			Drilling Notes	Drilling Fluid
	24	No Sieve Samples Collected	MW-W- VAS-7-12 (<0.17 U) 3/27/2019 16:55	Topock - Fil Topock - Fluvial Deposits Topock - Fluvial Deposits	SP-SM		(5.0 - 6 (SP-SM subang round; consisti (6.5 - 2 brown subrou	i.5') Topock - Fluvia i); brown (7.5YR 5/ jular to subround; lit trace cobbles, roun of granodiarites (6.0') Topock - Fluvial pock - Fluvial Deponding in the subreman in the subround; little mica; mois pock - Fluvial Deponding in the subreman in t	al Deposits; Poorly g 4); very fine grained ttle silt; trace granu d; trace mica; mois ial Deposits; Poorly e grained to fine gra it to wet; iron oxide sits; very fine graine ning	graded sand of the first of the sand of the first of the sand of the first of the sand of the first of the sand of the first of the fir	with silt led, pebbles, er clasts	(0.0 - 5.0') Hand augered for utility clearance (5.0 - 12.0') Soft drilling (5.0') Approximate depth to water table	(0.0 - 12.0') 50 gal of water used
11_	-			·			trace s	ilt; trace organics					
12													
- '-												(12.0 - 27.0') Soft drilling,	(12.0 - 27.0') 50 gal of water
13	-			Tanaak								compaction of	used
				Topock - Fluvial	SP							sands, casing was settling in	
14				Deposits								sands when sample screen	
<u> </u>												was being set for 7 to 12 ft	
15												interval	
<u> </u>													
16	156												
	-												
17													
-													
18	-												
	-												
19	-												
<u> </u>					-	<u></u>							

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet: 2 of	3
	Started				Surface			Boring N	o.: <u>MW-W</u>	
l l	-	ted: <u>03/28/2</u>			Northin		•			
Drilling		Cascac			Easting	•		Client: PG		
Drilling			<u> </u>		Total De Borehol	•	43 ft bgs	Project: Fina Location: 1	al Groundwater Rei	medy Phase
Drill Ri Driller	• • •		/asquez				eter: <u>6-10 inches</u> Vater: <u>4.83 ft bgs</u>		&E Topock, Needle	e California
Drilling			ya/ O. Flores		Samplin		_		er: <u>RC000753.005</u>	
Logge		Gantt J	-		Samplin	-				•
Editor:			/IcGrane		Convert	-				
	2			in Fig.	T					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description		Drilling Notes	Drilling Fluid
21	156		MW-W- VAS-22-27 (0.266 J ppb) 3/28/2019 13:00	Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits	SP		(26.0 - 29.2') Topock - Fluvial Deposits; Silty: brown (2.5Y 5/2); very fine grained to fine gras subround: tittle mica: little mica:	ined, subangular to	Soft drilling, compaction of sands, casing was settling in sands when sample screen was being set for 7 to 12 ft interval	(12.0 - 27.0') 50 gal of water used
27							subround; little silt; little mica; little organics;	wet		(27.0 42.0')
2828				Topock - Fluvial Deposits	SM					(27.0 - 43.0') No water used
	60			Topock -			(29.2 - 31.0') Topock - Weathered Bedrock - sand with gravel (SM); reddish brown (2.5YR		-7	
30		No Sieve Samples Collected		Weathered	SM		grained to coarse grained, angular to subrour granules to very large pebbles, angular to sub	nd; and silt; little		
		Collected		Bedrock - conglomerat			coarse grained grained sand; trace mica; wet	; larger clast consi	st	
31							of metadiorite and granodiorites. (31.0 - 43.0') Topock - Competent Bedrock - o	conglomerate: dark	(31.0 - 34.0')	
					Ť		reddish brown (2.5YR 3/4); dry; moderate cer	nentation; friable	Rough drilling	
32										
33	24									
34										
									(34.0 - 40.0') Core was hot	
35									Core was not	
				Topock - Competent	ı					
36				Bedrock - conglomerat						
37	72									
38										
39										
A										
40	<u> </u>		<u> </u>	<u> </u>		<u> </u>				

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 3 of	3
Date S	Started:	03/27/2	<u>2</u> 019		Surface	Elevation	on: 459.5 ft amsl	Rorine	η No ·	MW-W	
Date 0	Comple	ted: <u>03/28/2</u>	2019		Northing	g (NAD	33): <u>2101904.2</u>		9 110	10.00	
Drilling	Co.:	Cascac	le		Easting	(NAD8	3): <u>7616366.1</u>	Client:	PG&E		
Drilling	Metho	od: <u>Sonic E</u>	<u> Drilling</u>		Total De	epth:	43 ft bgs	Project:	Final Gr	roundwater Re	medy Phase
Drill Ri	д Туре	: <u>Proson</u>	ic Truck Mou	ınt	Borehol	e Diame	eter: <u>6-10 inches</u>	Location:	1		
Driller	Name:	Steve \	/asquez		Depth to	First V	Vater: 4.83 ft bgs		PG&E	Fopock, Needl	es, California
Drilling	Asst:	L. Ama	<u>ya/ O. Flores</u>	<u> </u>	Samplin	g Meth	od: 4 inch x 10 ft Core Barrel	Project Nu	ımber: 🛚	RC000753.00	51
Logge	r:	<u>Gantt J</u>	effers		Samplin	g Interv	ral: <u>Continuous</u>				
Editor		Sean M	<u>1cGrane</u>		Convert	ed to W	/ell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
41 _42 	36	No Sieve Samples Collected		Topock - Competent Bedrock - conglomerat							(27.0 - 43.0') No water used
44							End of Boring at 43.0 'bgs				
46							6/				
48											
49											
50											
51											
52											
53											
54											
55											
56											
58											
59											
60 Abbro	viations	·· IISCS = I	Inified Soil Cl	accification	Systom	ft – fo	et has = helow around surface ams	d = abovo n	2020 60	a laval GW =	groundwater

9/	ARC	A	DIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 1 of	16
Date S	started:		12/02/2	2018		Surface	Eleva	tion: <u>480.8 ft amsl</u>	Borin	a No .	IRZ-9 Pilo	nt .
Date C	Comple	ted:	01/03/2	2019		Northing	JAN) g	983): <u>2103560.0</u>		9 110	<u></u>	<u> </u>
Drilling	Co.:		Cascac	le		Easting	(NAD	33): <u>7615565.9</u>	Client:	PG&E		
Drilling	Metho	od:	Sonic E	Drilling		Total De	epth:	317 ft bgs	Project:	Final GV	N Remedy Ph	ase I
Drill Ri	д Туре	: :	Borat L	ongyear Trac	k Mount	Borehol	e Dian	neter: <u>6-12 inches</u>	Location:	PG&E T	opock, Needle	es, California
Driller I	Name:		Nick Pe	etrone		Depth to	First	Water: 24.84 ft bgs				
Drilling	Asst:		T. Aylm	<u>ier/J. Candela</u>	aria	Samplin	g Met	nod: 4 inch x 10 ft Core Barrel	Project N	umber: <u>F</u>	RC000753.005	51
Logge	r:		A. Gard	<u>cia / G. Willfor</u>	rd	Samplin	g Inte	val: <u>Continuous</u>	-			
Editor:			Sean M	1cGrane		Convert	ed to \	Vell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)		Sieve nple ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
- 1 _ 1 1 2 3 4	6				Topock - Fluvial Deposits	SP-SM		(0.0 - 9.5') Topock - Fluvial Deposits; Poorly g (SP-SM); pale yellow (2.5Y 8/3); very fine grai subangular to subround; little silt; dry; no stair	ned to fine gra		(7.0') loss of core sample during recovery due to very loose sediment	(0.0 - 281.0') No water used
 10 11 	54				Topock - Fluvial Deposits	SM		(9.5 - 12.0') Topock - Fluvial Deposits; Silty sa dark brown (7.5YR 3/4); very fine grained to fit to subround; some granule to small pebbles, subround; dry; no staining	ne grained, ar	ngular		
[(12.0 - 19.0') Topock - Alluvium Deposits; Silt (SM); strong brown (7.5YR 4/6); very fine grai				
13								grained, subangular to subround; some granu subangular to subround; dry to moist; no stair	lle to small pe			
								. Subangular to Subround, dry to moist, no stall	ıy			
14												
								•				
15	42											
15					Topock -							
					Alluvium Deposits	SM						
16					Deposits							
-												
17												
18								:				
<u> </u>	96]				
19					L				,			
L J					Topock - Alluvium	SM		(19.0 - 25.0') Topock - Alluvium Deposits; Silt (SM); strong brown (7.5YR 4/6); fine grained t	y sand with gr to very coarse	ravel		
20					Deposits	Sivi		grained, angular to subround; some small to I	arge pebbles,	,		

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring L	_og		She	eet: 2 of	16
Date S						Elevation		Borin	a No.:	IRZ-9 Pilo	ot
		ted: <u>01/03/2</u>				g (NAD83					
Drilling Drilling		Cascad			Easting Total De	(NAD83)		_ Client: _ Project:	PG&E	A/ Domody/Db	
Drill Ri			<u>ongyear Trad</u>			•	317 ft bgs er: 6-12 inches	-		W Remedy Ph Γοροςk, Needle	
Driller				<u> </u>			ater: 24.84 ft bgs			ropoon, moodin	oo, Camorria
Drilling	Asst:	T. Aylm	ner/J. Candel	aria	Samplin	ng Method	I: 4 inch x 10 ft Core Barrel	_ Project N	umber:	RC000753.00	51
Logge			cia / G. Willfo	rd	-	ng Interval		_			
Editor:		Sean N	/lcGrane		Convert	ted to We	ll: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
21	96	IRZ-9-SS- 22-27 12/19/2018 11:02		Topock - Alluvium Deposits	SM	(2 (2 (5)	5.0 - 34.0') Topock - Alluvium Deposits; Sil M); brown (7.5YR 5/4); fine grained to very lbangular to subround; little granule to sma libangular to subround; wet; no staining	coarse graine	ravel ed,	(25.0') Approximate depth of water table	(0.0 - 281.0') No water used
27 28 29 30 31 32	60	IRZ-9-SS- 27-32 12/19/2018 11:20	IRZ-9-VAS- 27-32 (120 ppb) 12/4/2018 11:55	Topock - Alluvium Deposits	SM					(32 0') Drill	
33 34 35 36 37 38 39	204	IRZ-9-SS- 32-37 12/19/2018 11:50 IRZ-9-SS- 37-42 12/19/2018 12:00		Topock - Alluvium Deposits	ML	(N)	4.0 - 40.0') Topock - Alluvium Deposits; Gr IL); brown (7.5YR 5/4); low plasticity; some rge pebbles, subangular to subround; little ained sand, angular to subround; trace cob ibangular; moist	granules to very fine to co	ery arse	(32.0') Drill stem bolts sheared off when commencing drilling after VAScollection from 27-32' bgs	
40				L		DIII	 				<u> </u>

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	3			She	eet: 3 of	16
Date S				_	Surface			480.8 ft amsl		Borir	na No.:	: IRZ-9 Pil	ot
	•	ted: <u>01/03</u>			Northing	- '		2103560.0		_		<u> •</u>	
Drilling		Casca			Easting	•	33):	<u>7615565.9</u>		_ Client:	PG&E		
Drilling			<u>Drilling</u>		Total De	•	4	317 ft bgs		Project:		W Remedy Ph	
Drill Ri Driller I			<u>Longyear Trad</u> Petrone	CK Mount				6-12 inches 24.84 ft bgs		Location	: PG&E	Topock, Need	es, California
Drilling			mer/J. Candel	aria	Samplin			_	Core Barrel	- Project N	Jumber:	RC000753.00	 51
Logge		-	rcia / G. Willfo		Samplin	-		Continuous	5010 Barror	_ 1 10,00011	tarribor.	110000100.00	01
Editor:			McGrane		Convert	-			No	-			
				υ <u>Ε</u>									
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		;	Soil Description			Drilling Notes	Drilling Fluid
 41 42 		IRZ-9-SS- 37-42 12/19/2018 12:00		Topock - Alluvium Deposits	SM		(SM); li grained	ght brown (7.5YR (I, subangular to su	uvium Deposits; Silt 6/4); very fine graine bround; some grant silt; wet; no staining	ed to very coa	arse		(0.0 - 281.0') No water used
43 44 45 46 47	204	IRZ-9-SS- 42-47 12/19/2018 12:02		Topock - Alluvium Deposits	SM		(SM); li angula	ght brown (7.5YR (uvium Deposits; Silt 6/4); fine grained to le granules to large ist; no staining	very coarse	grained,		
48 49 50		IRZ-9-SS- 47-52 12/19/2018 12:10	IRZ-9-VAS- 47-52 (<0.033 U ppb) 12/4/2018 10:00	Topock - Alluvium Deposits	SM		(SM); li angula to subr	ght brown (7.5YR (r to subround; som ound; little silt; moi 54.5') Topock - Alli	uvium Deposits; Silt	very coarse opebbles, suba	grained, angular sand		
51 52 53 54		IRZ-9-SS-		Topock - Alluvium Deposits	GM		angúla	r to subround; som	6/4); granules to ver e very fine to very cue e silt; trace cobbles	oarse graine	d sand,		
55 56 57 58 59	102	52-57 12/19/2018 12:15 IRZ-9-SS- 57-62 12/19/2018 12:17		Topock - Alluvium Deposits	SM	0 1	(SM); b	rown (7.5YR 5/4); jular to subround; l	uvium Deposits; Silt fine grained to very ittle medium to larg ittle silt; moist to we	coarse grain e pebbles,			
 60													

9/	4RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet: 4 of	16
	Started				Surface		· · · · · · · · · · · · · · · · · · ·	Boring	No.: IRZ-9 Pilo	ot
	•	ted: <u>01/03/2</u>			Northing		•		<u> </u>	
Drilling		Cascac			Easting	•	•		G&E	
_	Metho		•		Total De	•	317 ft bgs	•	inal GW Remedy Ph	
	ig Type Name:		ongyear Trad	<u>ck iviouni</u>			eter: <u>6-12 inches</u> Vater: <u>24.84 ft bgs</u>	_ Location: P	G&E Topock, Needle	es, Calliornia
Drilling			er/J. Candel	aria	Samplin		<u> </u>	- Proiect Nun	nber: RC000753.00	51
Logge		-	ia / G. Willfo		Samplin	-				
Editor		Sean M	1cGrane		Convert	-				
_	ک			. <u>5</u> E		(0				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
		177.0.00		_						(0.0 - 281.0') No water used
61		IRZ-9-SS- 57-62 12/19/2018								
62_		12:17								
02										
63	102							9		
64		IRZ-9-SS-	IRZ-9-VAS- 62-67	Topock - Alluvium Deposits	SM					
65		62-67 12/19/2018 12:14	(<0.033 U ppb) 12/4/2018	Берозка			46			
			13:05							
66										
67										
-										
68							(68.0 - 77.0') Topock - Alluvium Deposits; Sil (SM); dark brown (10YR 3/3); very fine graine	ed to coarse grain	ned,	
69		IRZ-9-SS-					subangular to subround; some small to large subround; some silt; moist to wet	pebbles, angula	r to	
		67-72 12/19/2018								
70	-	12:40								
- - -71_	-									
72	108			Topock -						
73				Alluvium Deposits	SM					
74	-	IRZ-9-SS-								
75	-	72-77 12/19/2018 13:05								
		. 5.00								
76										
	-									
77				<u> </u>			(77.0 - 85.0') Topock - Alluvium Deposits; Silbrown(2.5YR 4/3); medium grained to coarse	ty sand (SM), red	ddish	
78	1						to subround; little silt; trace granule to small p	e grained, subang pebbles, subangt	gular	
-10-	400	IRZ-9-SS- 77-82		Topock -	0.4		to subround; moist to wet			
	108	12/20/2018 09:33		Alluvium Deposits	SM					
<u> </u>							(79') reddish brown (2.5YR 4/4); very fine gra subangular to subround	ined to fine grain	ed,	
80 Abbro	viation	·· IISCS = I	Inified Soil C	assification	System	[해설함 # = f	et. bas = below around surface. ams	al = abovo ma	an soa lovol. GW =	groundwater

9/-	AKC	ADIS	for natural and built assets		Во	ring Lo	g		She	eet: 5 of	16
Date S					Surface Elevation: Northing (NAD83):		480.8 ft amsl	Borii	na No.:	IRZ-9 Pil	ot
		ted: <u>01/03/2</u>			-	- , ,	2103560.0				<u> </u>
Drilling		<u>Cascad</u>			_	(NAD83):	<u>7615565.9</u>	_ Client:	PG&E		
Drilling			•		Total De	-	317 ft bgs	_ Project:		N Remedy Pr	
Drill Ri			ongyear Trac	<u>ck Mount</u>			6-12 inches : 24.84 ft bgs	_ Location	: PG&E I	<u>гороск, Neea</u>	les, California
Drilling			<u>erione</u> ner/J. Candela	aria	-	g Method:	4 inch x 10 ft Core Barrel	Project N	Jumber: 1	RC000753.00	 151
Logge			cia / G. Willfor		-	ig Interval:	Continuous	1 10,0001	• • • • • • • • • • • • • • • • • • •	110000700.00	<u> </u>
Editor:			1cGrane		-	ed to Well:					
	2			.º 5							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
81 82 83 84 85 86	108	IRZ-9-SS- 77-82 12/20/2018 09:33 IRZ-9-SS- 82-87 12/20/2018 09:36		Topock - Alluvium Deposits Topock - Alluvium Deposits	SM	redd suba ::::::::::::::::::::::::::::::::::::	- 86.0') Topock - Alluvium Deposits; S sh gray(2.5YR 7/1); very fine grained to ngular to subround; little silt; dry to mo - 107.0') Topock - Alluvium Deposits; sh gray(5YR 6/2); very fine grained to f	o fine grained, ist Silty sand (SN ine grained,	1);		(0.0 - 281.0') No water used
87 88 89 90 91 92	96	IRZ-9-SS- 87-92 12/20/2018 09:43				suba	ngular to subround; little silt; trace graingular to subround; moist to wet	nule to small p	ebbles,		
93 94 95 96 97		IRZ-9-SS- 92-97 12/20/2018 09:48		Topock - Alluvium Deposits	SM	(92')	reddish brown (2.5YR 5/4)				
98	108	IRZ-9-SS- 97-102 12/20/2018 09:53									

Date Started: 120/22018 Surface Elevation: 480.8 ft amal Concentration: 400.8 ft amal	9/-	ARC	CADIS	for natural and built assets		Во	ring l	_og		She	eet: 6 of	16
Cascade Cascade Casting (NAOSS) Cascade Casting (NAOSS) Cascade Cascade Casting (NAOSS) Cascade Casting (NAOSS) Cascade C									Borii	na No.:	: IRZ-9 Pil	ot
Dalling Methods Sonic Diffing Total Depth 317 h bgs		•				-		•	_			
Dal Rig Type: Boral Langueer Track Mount Borhole Diameter 6-12 Inches Location: PG&E Topook, Needles, California Dilling Asst: T. Aytmer/J. Candelaria Sampling Informatic Sampling In	_					_						
Daller Name	_			•			-		•			
Dalling Assist:				••					_ Location	: PG&E	<u>гороск, Neeai</u>	ies, California
A. Carria / Sean McGrane						-		_	- Project N	Jumher:	RC000753 00	151
Edition: Sean McGrane	_		-			-	_		_ 1 10,0001	turnbor.	110000100.00	.01
102						-	-		_			
102		>			.º 5	1						
101	Depth (ft)	Recover (in)			Geologi	USCS	USCS	Soil Description			Drilling Notes	
Topock	 102 		97-102 12/20/2018				(102') pale red (2.5YR 6/2)				
106_ 102_9_S 102_107 102_108 102_109	100_	400				CM						
105		108		IRZ-9-VAS-		SM						
105. 106. 107. 107. 107. 107. 107. 107. 107. 107			102-107	(<0.17 U								
106	_105		12/20/2018 09:55	ppb) 12/6/2018								
107.	_			10:10								
108	106											
108				1								
108	107							107.0 127.0') Topock - Alluvium Denosits:	Silty sand (S	M).		
			107-112 12/20/2018				p to	inkish gray(5YR 6/2); fine grained to coarse o subround; little silt; trace granule to large posubround; moist to wet; with interbedded o	grained, sub pebbles, sub	angular angular		
Topock-Alluvium Deposits IRZ-9-SS-112-117 12/20/2018 115 116 - 117 - 118 - 118 - 108 1RZ-9-SS-17-122 12/20/2018 10:12	112	102										
	113					SM						
	114		ID7 0 00			J.VI						
	L .		112-117									
	115											
	-											
	116											
	-											
- 108 IRZ-9-SS- 117-122 12/20/2018 - 120 10:12	117											
	118	100										
	119	100	12/20/2018									
			. 11000	Institute of Co. 11 Co.		- 0: 1		6 has = hala	al!-		a level OW	

9/	ARC	ADIS	for natural and built assets		Во	ring L	_og		She	eet: 7 of	16
Date S						Elevation		Borii	ng No.:	: IRZ-9 Pil	ot
	•	ted: <u>01/03/2</u>			-	g (NAD83	•	_			-
Drilling		Cascac			_	(NAD83)		_ Client:	PG&E		
Drilling			•		Total De	-	317 ft bgs	_ Project:		W Remedy Ph	
Drill Ri Driller			<u>ongyear Trac</u>				er: <u>6-12 inches</u> ater: <u>24.84 ft bgs</u>	_ Location	: PG&E	Topock, Needl	es, California
Drilling			<u>etrone</u> ner/J. Candela		-	g Method	_	- Project N	Jumher:	RC000753.00	 51
Logge		•	cia / G. Willfor		-	ig Interval		_ 1 10,0001	turnbor.	110000100.00	<u> </u>
Editor:			/IcGrane		-	ed to We		_			
	>			.º 5	1						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
	108	IRZ-9-SS- 117-122 12/20/2018 10:12 IRZ-9-SS- 122-127 1/4/2019 08:00		Topock - Alluvium Deposits	SM						(0.0 - 281.0') No water used
128 129 130 131 131 132	102	IRZ-9-SS- 127-132 12/20/2018 10:17				re	127.0 - 147.0') Topock - Alluvium Deposits; ed (10R 4/4); medium grained to coarse graubround; little silt; trace granule to medium o subround; moist to wet; with interbedded glick sparingly through interval	ined, subang pebbles, sub	gular to pangular		
	102										
133				Tona-li							
<u> </u>				Topock - Alluvium	SM						
134		IRZ-9-SS-		Deposits							
		132-137 12/20/2018									
135		10:20									
400											
136											
137											
13/											
138		ID 7 5 5 5									
	108	IRZ-9-SS- 137-142									
139		12/20/2018 10:22									
140_		. 11000 - 1					t han - holow around ourfood am	-11		la laval CM =	

9/	AKC	ADIS	for natural and built assets		Во	ring Lo	g		She	eet: 8 of	16
Date S						Elevation:	480.8 ft amsl	Borir	na No.:	IRZ-9 Pil	ot
	•	ted: <u>01/03/</u>				g (NAD83):	2103560.0	_			<u> </u>
Drilling		<u>Casca</u>			_	(NAD83):	7615565.9	_ Client:	PG&E		
Drilling			•		Total De	•	317 ft bgs	_ Project:		N Remedy Ph	
Drill Ri Driller			Longyear Trad etrone				6-12 inches 24.84 ft bgs	_ Location	: PG&E I	ороск, ічееаі	les, California
Drilling		·	ner/J. Candel		-	ig Method:	4 inch x 10 ft Core Barrel	Project N	Jumber: F	RC000753.00	51
Logge		-	cia / G. Willfo		-	ig Interval:	Continuous			10000.00.00	<u> </u>
Editor:			McGrane		Convert	ed to Well:					
_	چ			. <u>2</u>							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
141 142 143 144 145 146	108	IRZ-9-SS- 137-142 12/20/2018 10:22 IRZ-9-SS- 142-147 12/20/2018 10:25	IRZ-9-VAS- 142-147 (<0.17 U ppb) 12/5/2018 15:40	Topock - Alluvium Deposits	SM						(0.0 - 281.0') No water used
147						(147.0	- 149.5') Topock - Alluvium Deposits;	(NR)		(147.0 - 149.5') No core recovered	_
148 149				Topock - Alluvium Deposits	NR	X					
145		IRZ-9-SS- 147-152									
150		12/20/2018 10:30				(149.5 reddis	- 182.0') Topock - Alluvium Deposits; h brown(2.5YR 5/3); fine grained to ve	Silty sand (Si	M); ined.		
						∷ ∷ subar	gular to subround; some silt; little clay m pebble, subangular to subround; tra	; trace granule			
151							und; moist	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
152											
153											
	180										
154		IRZ-9-SS- 152-157		Topock -							
155		12/20/2018 10:33		Alluvium Deposits	SM						
-											
156											
157											
150											
158		IRZ-9-SS- 157-162									
		12/20/2018 10:50									
160										<u></u>	

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Log	9		Sh	eet: 9 of	16
Date S						Elevation:	480.8 ft amsl	Borir	na No.	: IRZ-9 Pile	ot
l l		ted: <u>01/03/2</u>				g (NAD83):	2103560.0	_			
Drilling		Cascad				(NAD83):	7615565.9	_ Client:	PG&E		
Drilling			_	.1	Total De	-	317 ft bgs	_ Project:		W Remedy Ph	
Drill Ri Driller	• • •		ongyear Trac	<u>ck iviount</u>		e Diameter: o First Water:	6-12 inches	_ Location:	PG&E	Topock, Needl	es, California
Drilling			er/J. Candel	aria	-	g Method:	4 inch x 10 ft Core Barrel	- Project N	Jumber	RC000753.00	51
Logge		-	ia / G. Willfo		-	g Interval:	Continuous	_ 1 10,00011	tarribor.	110000700.00	01
Editor:			lcGrane		-	ed to Well:		_			
	2			.2 5	T						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
		IRZ-9-SS- 157-162 12/20/2018 10:50									(0.0 - 281.0') No water used
163	400										
164	180	IRZ-9-SS-									
165		162-167 12/20/2018 10:53					.6	•			
166							C/0,				
166											
167											
-											
169		IRZ-9-SS-									
		IRZ-9-SS- 167-172 12/20/2018		Topock -							
170		10:57		Alluvium Deposits	SM						
171				·							
172	400										
	120										
173											
174		IRZ-9-SS-									
175		172-177 12/20/2018 10:59									
		3.00									
176											
177											
178		IRZ-9-SS-									
- 179	120	177-182 12/20/2018 11:02									
-											
180_				15			a - bolow ground ourfood am				<u> </u>

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	SI	neet: 10 of	16
Date S	tarted:	12/02	/2018		Surface	Elevat	ion: <u>480.8 ft amsl</u>	Boring No.	: IRZ-9 Pilo	ot
Date C	comple	ted: <u>01/03</u>	/2019		Northing	g (NAD	83): <u>2103560.0</u>			<u></u>
Drilling		Casca			Easting	•	•	Client: PG&E		
Drilling			<u>Drilling</u>		Total De	•	317 ft bgs	•	SW Remedy Ph	
Drill Ri			Longyear Tra					Location: PG&E	Topock, Needle	es, California
Driller I Drilling			Petrone mer/J. Candel		Samplin		Water: 24.84 ft bgs nod: 4 inch x 10 ft Core Barrel	Project Number:	PC000753 00	 51
Logge		•	rcia / G. Willfo		Samplin	-		Froject Number.	<u>KC000733.00.</u>	J I
Editor:			McGrane	<u> </u>	Convert	•		-		
				0.5						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description		Drilling Notes	Drilling Fluid
 181 		IRZ-9-SS- 177-182 12/20/2018 11:02		Topock - Alluvium Deposits	SM					(0.0 - 281.0') No water used
182							(182.0 - 186.0') Topock - Alluvium Deposits; S reddish gray / pale brown(5YR 5/2); fine gr <mark>ai</mark> n	Silty sand (SM);		
 183							grained, angular to subround; some silt; trace	granule to medium		
	120						pebble; trace cobbles; trace clay; moist to we conglomerate and metadiorite	t, sand composed of		
184	120	ID7 0 00	IRZ-9-VAS-	Topock - Alluvium	SM					
		IRZ-9-SS- 182-187	182-187 (<0.17 U	Deposits						
185		12/20/2018 11:07	ppb) 12/11/2018							
_			13:03							
186							(186.0 - 18 <mark>7.0') Topock - Al</mark> luvium Deposits; S	Silty sand (SM): wook		
				Topock - Alluvium	SM		red (10R 4/3); fine grained to very coarse grai	ined, subangular to		
187				Deposits			subround; some silt; little granule to medium to subround; little clay; trace cobbles, subrour	pebble, subangular nd; moist	(187.0 - 197.0')	
 188 189		IRZ-9-SS- 187-192			* . *		(187.0 - 196.5') Topock - Alluvium Deposits; S (GM); dark reddish brown(2.5YR 3/3); small p cobbles, angular; some small to large pebble little very coarse grained sand, angular; trace trace clay; moist to dry; moderate cementation of metadiorite	pebbles to small , angular; some silt; cobbles, angular;	Drill rods chattering	
190		12/20/2018 11:16			1					
191										
				Topock -						
192	120			Alluvium Deposits	GM					
 193										
 194										
194		IRZ-9-SS- 192-197								
195		12/20/2018 11:22								
196										
				Topock -			(196.5 - 197.0') Topock - Alluvium Deposits; F	Poorly graded are a	(106 51)	
197				Alluvium	GP		(GP); very palé brown (10YR 8/3); granules to	very large pebbles,	(196.5') Possible	
				<u>Deposits_</u>	-		angular; little fine to very coarse grained sand trace boulders; dry; boulder metadiorite	i	bedrock (197.0 - 202.0')	
198		IRZ-9-SS-		Topock -			(197.0 - 207.0') Topock - Alluvium Deposits; S reddish brown (2.5YR 3/4); fine grained to ver	ry coarse grained,	Rough drilling	
-	120	197-202 12/20/2018		Alluvium	SM		subangular to subround; some silt; trace sma subround; trace clay; moist	II to medium pebble,		
199		11:28		Deposits			, , , , , , , , , , , , , , , , , , , ,			
-										
200 Abbrox	iation	: USCS -	Linified Soil C	laccification	System	<u> </u>	eet has = helow around surface ams	el – ahove mean s	ealevel GW - /	aroundwater

9/	ARC	ADIS	for natural and built assets		Во	ring	Log		Sh	eet: 11 of	16
Date S					Surface			Borii	na No.:	: IRZ-9 Pilo	ot
	•	ted: <u>01/03/</u>			Northing		•	_			
Drilling		Casca			Easting			_ Client:	PG&E		
Drilling			•		Total De	•	317 ft bgs	_ Project:		W Remedy Ph	
Drill Ri Driller			Longyear Trac				ter: <u>6-12 inches</u> /ater: <u>24.84 ft bgs</u>	_ Location	: PG&E	Topock, Needle	es, Calliornia
Drilling			ner/J. Candela		Samplin		_	Project N	Jumber:	RC000753.005	 51
Logge		-	cia / G. Willfor		Samplin	_					<u> </u>
Editor:			McGrane		Convert	-					
_	ح			is E	Τ.,						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
	120	IRZ-9-SS- 197-202 12/20/2018 11:28		Topock - Alluvium Deposits	SM			9		(197.0 - 202.0') Rough drilling	(0.0 - 281.0') No water used
204		IRZ-9-SS- 202-207									
		12/20/2018 11:30									
		11.00									
206											
_											
_207							(207.0) 242.0)) Tanah, Albudum Danada	C:14 1	W		
208 209 210 211 211	120	IRZ-9-SS- 207-212 12/20/2018 11:32	IRZ-9-VAS- 207-212 (<0.17 U ppb) 12/13/2018 10:55	Topock - Alluvium Deposits	SM		(207.0 - 213.0') Topock - Alluvium Deposits; (SM); dark reddish brown(2.5YR 3/3); very fir coarse grained, angular to subround; some sarge pebble, subangular to subround; trace trace clay; moist	ne grained to silt; little gran	very ule to		
213				<u> </u>	+		(213.0 - 220.0') Topock - Alluvium Deposits;				
24.4			no sample-	1			reddish brown (2.5YR 3/4); low plasticity; sor medium grained sand, angular to subround;	little granule	to		
214		IRZ-9-SS- 212-217	- (Interval did	1			medium pebble, subangular to subround; littl	le clay; moist			
215		12/20/2018 11:35	not produce.)	1							
			12/12/2018 10:15	1							
216				1							
L -				Topock - Alluvium	ML						
_217				Deposits							
_ 218_	120	IRZ-9-SS- 217-222									
219	120	12/20/2018 11:38									
ļ -											
220		11000	1		- 0:1		at has - helaw ground surface, am	-11		a level OW	

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	3				Sh	neet: 12 of	16
Date S	Started:	12/02/2	2018		Surface			480.8 ft am	sl		Borii	ng No.	: <u>IRZ-9 Pi</u>	lot
	•	ted: <u>01/03/</u> 2			Northing			2103560.0						
Drilling		<u>Casca</u>			Easting		3):	7615565.9			Client:	PG&E	NA/ D I D	d 1
Drilling Drill Ri			<u>∟ongyear Trad</u>	ek Mount	Total De	•	otor:	317 ft bgs 6-12 inches	<u> </u>		Project:		SW Remedy P	nase i dles, California
Driller				<u> JK IVIOUITE</u>				24.84 ft bgs			Location	. FGaL	тороск, пеес	iles, Calliornia
Drilling			ner/J. Candela	aria	Samplin			4 inch x 10		rel	Project N	Number:	RC000753.0	051
Logge		-	cia / G. Willfo		Samplin	•		Continuous			,			
Editor:		Sean N	//cGrane		Convert	ed to W	√ell:	Yes □	No					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class			Soil Descrip				Drilling Notes	Drilling Fluid
		IRZ-9-SS- 217-222 12/20/2018 11:38					reddish angular subrou	- 234.0') Topoci I brown (2.5YR r to subround; a nd; trace cobble sed of mixed lith	2.5/4); fine gra nd silt; little gra es, subround; t	ined to vanule to i	erý coarse c medium peb	rained, ble,		(0.0 - 281.0') No water used
224 225 	120	IRZ-9-SS- 222-227 12/20/2018 11:20		Topock -				6	6					
	120	IRZ-9-SS- 227-232 12/20/2018 11:17		Alluvium Deposits	SM									
233 234		IRZ-9-SS- 232-237	IRZ-9-VAS- 232-237 (<0.17 U				(ML); re	- 237.0') Topocleddish brown(2.	5YR 4/3); low	plasticity	; some very	fine to		
_235 236 237		12/20/2018 11:13	ppb) 12/13/2018 15:48	Topock - Alluvium Deposits	ML		coarse mediun	grained sand, a n pebble, subro	angular to subr und; trace clay	ound; litt r; moist	le granule to			
238 239 240	120	IRZ-9-SS- 237-242 12/20/2018 11:11		Topock - Alluvium Deposits	ML		(ML); re to large grained	- 252.0') Topocleddish brown (5 pebble, suband sand, angular sed of mixed lith	YR 4/3); medi gular to subrou to subround; tr	um plasti ınd; little	city; some overy fine to	ranule coarse		
	viations	·· IISCS - I	Inified Soil Cl	accification	n Syston	141011	ot ba	- bolovy ar	ound ourfor	o ame	l = abovo	moon co	a laval CW =	aroundwater

9/	ARC	ADIS	for natural and built assets		Во	ring Lo	g		Sh	eet: 13 of	16
Date S						Elevation:	480.8 ft amsl	Borii	na No.:	: IRZ-9 Pilo	ot
	•	ted: <u>01/03/2</u>				g (NAD83):	2103560.0	_			
Drilling		Cascad			_	(NAD83):	7615565.9	_ Client:	PG&E		
Drilling			•		Total De	-	317 ft bgs	_ Project:		W Remedy Ph	
Drill Ri Driller			ongyear Trac				6-12 inches 24.84 ft bgs	_ Location	: PG&E	Topock, Needl	es, California
Drilling			ier/J. Candela		-	ig Method:	4 inch x 10 ft Core Barrel	- Project N	Jumber	RC000753.00	 51
Logge		-	cia / G. Willfor		-	ig Interval:	Continuous	_ 1 10,0001	turnbor.	10000700.00	01
Editor:			1cGrane			ed to Well:		_			
	2			.º 5							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
241 242 243 244 245 246 247	120	IRZ-9-SS- 237-242 12/20/2018 11:11 IRZ-9-SS- 242-247 12/20/2018 11:05		Topock - Alluvium Deposits	ML		6/6/				(0.0 - 281.0') No water used
248 249 250 251 252	86.4	IRZ-9-SS- 247-252 12/20/2018 10:55									
						o \ \	0 - 266.0') Topock - Alluvium Deposits; reddish brown / moderate brown(5YR	4/4); granule	s to very		
253						angul	pebbles, angular to subround; some sil ar, little very fine to very coarse grained	l sand, angul	ar to		
						subro	und; trace clay; moist to dry; moderate osed of mixed lithology	cementation	; gravel		
254		IRZ-9-SS-				1397					
-		252-257 12/20/2018								(254.5 - 261.0')	
_255		10:37				397				Rough drilling	
				Topock -							
256				Alluvium Deposits	GM	1397					
_23/	78					1397					
258											
		IRZ-9-SS- 257-262									
259		12/20/2018 10:33									
260	·	11000			0	10 D T	go = bolow ground ourfood am	-1 - '		- 11-000	

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	neet: 14 of	16
Date S					Surface	Elevati	on: 480.8 ft amsl	Boring No.	: IRZ-9 Pilo	ot
	•	ted: <u>01/03</u>			Northing		•			
Drilling		<u>Casca</u>			Easting	•	•	Client: PG&E		
Drilling			Drilling		Total De	•	317 ft bgs	•	W Remedy Ph	
Drill Ri			Longyear Tra	ck Mount				Location: PG&E	Lopock, Needle	es, California
Driller I Drilling			Petrone mer/J. Candel	orio.	Samplin		Vater: 24.84 ft bgs od: 4 inch x 10 ft Core Barrel	Project Number:	DC000752 006	 5.1
Logge		•	rcia / G. Willfo		Samplin	-		Project Number.	KC000755.000)
Editor:			McGrane	<u>ıu</u>	Convert	-				
				0.5						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
 261	78	IRZ-9-SS- 257-262					(004)		(254.5 - 261.0') Rough drilling	(0.0 - 281.0') No water used
 _262		12/20/2018 10:33					(261'); some silt; little clay; moist to dry; strong decrease in sand, gravel composed of mixed I cobbles of metadiorite	ithology, large	(261.0 - 266.0') Rough drilling	
				Topock -						
263				Alluvium Deposits	GM					
264	60	IRZ-9-SS-								
 _265		262-267 12/20/2018 10:29								
		10.20								
_266			IRZ-9-VAS- 264-269				(266.0 - 268.0') Topock - Alluvium Deposits; G			
 _267			(<0.17 U ppb) 12/15/2018	Topock - Alluvium	NAL /NALL		with sand (ML/MH); reddish brown (5YR 5/4); some granule to medium pebble, angular to su fine to medium grained sand, subangular to su	ubround; little very		
			09:15	Deposits	ML/MH	. O O	moderate cementation	abrouria, moist,	(267.0 - 273.0') Rough drilling	
268							(268.0 - 273.0') Topock - Alluvium Deposits; S			
269		IRZ-9-SS-					large pebbles, angular to subround; some silt; angular; little very fine to medium grained sand	little cobbles, d, subangular to		
		267-272 12/20/2018					subround; little clay; moist to dry; strong ceme composed of mixed lithology, large cobbles of			
_270	72	10:24		Topock - Alluvium	GM					
_271				Deposits	Givi					
272										
273							(273.0 - 277.0') Topock - Alluvium Deposits; G	Gravelly silt with sand	(273.0 - 281.0')	
							(ML); reddish brown (2.5YR 5/4); some granul subangular to subround; little fine to medium of subangular to subround; trace cobbles; trace of	grained sand,	Rough drilling	
_		IRZ-9-SS- 272-277 12/20/2018		Tanaak		.0.0	Subangular to Subround, trace commes, trace t	siay, moist to dry		
275		10:22		Topock - Alluvium Deposits	ML					
 276										
	96									
_277			IRZ-9-VAS-				(277.0 - 281.0') Topock - Alluvium Deposits; S (GM); reddish brown (2.5YR 4/4); granules to			
278		IRZ-9-SS-	276-281 (<0.17 U ppb)	Topock -			angular to subround; some very fine to very co angular to subround; some silt; trace cobbles,	arse grained sand,		
270		277-282 12/20/2018 10:20	ppb) 12/16/2018 09:15	Alluvium Deposits	GM		subround; trace clay; dry; strong cementation			
279		10.20								
280										

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	3			She	eet: 15 of	16
Date S	Started:	12/02	/2018		Surface	Elevati	on:	480.8 ft amsl		Borin	a No .	IRZ-9 Pilo	nt
Date C	Comple	ted: <u>01/03</u>	/2019		Northing	g (NAD	83):	2103560.0		Born	ıg 1 1 0	<u> </u>	<u> </u>
Drilling	Co.:	<u>Casca</u>	ade		Easting	(NAD8	3):	7615565.9		Client:	PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:		317 ft bgs		Project:	Final G\	W Remedy Ph	ase I
Drill Ri	д Туре	: <u>Borat</u>	Longyear Tra	ck Mount	Borehol	le Diam	eter:	6-12 inches		Location:	PG&E 1	Topock, Needle	es, California
Driller	Name:	Nick F	Petrone		Depth to	o First \	Vater:	24.84 ft bgs					
Drilling	Asst:	T. Aylı	<u>mer/J. Candel</u>	aria	Samplin	ng Meth	od:	4 inch x 10 ft Cor	e Barrel	Project N	lumber: <u>l</u>	RC000753.00	51
Logge			rcia / G. Willfo		Samplin	•		Continuous					
Editor:		<u>Sean</u>	McGrane		Convert	ted to V	Vell:						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class		Soil I	Description			Drilling Notes	Drilling Fluid
	96	IRZ-9-SS- 277-282		Topock - Alluvium Deposits	GM							(273.0 - 281.0') Rough drilling	(0.0 - 281.0') No water used
	18	12/20/2018 10:20		Topock - Alluvium Deposits	NR			- 285.5') Topock - Alluv no recovery	vium Deposits; (I	NR); Drilled	with —	(281.0 - 287.0') Attempted to drill using water this run to collect solid rock core resulted in poor recovery	(281.0 - 287.0') 50 gal of water used
286 				Topock - Alluvium Deposits	GM		(GM); r angula angula	- 287.0') Topock - Alluv eddish brown (2.5YR 4 r to subround; some ve r to subround; little silt;	l/4); granules to ry fine to very co wet; iron oxide s	large pebble parse grained staining	es, d sand,		
	120	IRZ-9-SS- 287-292 12/20/2018 10:17		Topock - Alluvium Deposits	ML		(ML); ro	- 293.5') Topock - Alluvedish brown(2.5YR 4/3 e pebble, subangular to a sand, subangular to si	 medium plas subround; little 	ticity; some of very fine to r	granule	(292.0 - 297.0')	(287.0 - 317.0') No water used
												Collected sample after attempting to collect sample	
294 295 296 297		IRZ-9-SS- 292-297 12/20/2018 10:05	IRZ-9-VAS- 292-297 (<0.17 U ppb) 12/18/2018 14:55	Topock - Alluvium Deposits	GM		(GM); r angula angula	- 297.0') Topock - Alluv eddish brown(2.5YR 4/ r to subround; some ver to subround; some sili nd; trace clay; moist	/3); granules to l ry fine to coarse	arge pebbles grained san	з,	from 312 to 317, pulled casing back up.	
298 299 300	120			Topock - Weathered Bedrock - conglomerat	GM te		Silty gr very lar mediur angula staining red sta	- 307.0') Topock - Wea avel with sand (GM); re ge pebbles, angular to n grained sand, angula r to round; trace clay; m g; gravel composed of r ining on them	eddish brown(2.5 round; some sil r to subround; rnoist; strong cen mixed litholgy, so	SYR 4/3); gra t; little very fi ace cobbles nentation; iro ome gravels	nules to ne to , on oxide have	(297.0 - 307.0') Drill rods chattering, tight formation	
Abbre	viations	s: USCS =	Unified Soil C	lassification	n Systen	$f_{\rm t}$, ft = $f_{\rm c}$	et, ba	s = below ground s	surface. ams	l = above	mean sea	a level. GW =	groundwater.

9/	ARC	ADIS	for natural and built assets		Во	ring Lo	g		Shee	et: 16 of	16
Date S	Started	12/02/2	2018		Surface	e Elevation:	480.8 ft amsl	Borin	na No.:	IRZ-9 Pilo	ot
Date 0	Comple	ted: <u>01/03/2</u>	<u>2019 </u>		Northin	g (NAD83):	2103560.0	_			<u></u>
Drilling	g Co.:	<u>Cascac</u>	<u>le</u>		Easting	(NAD83):	7615565.9	_ Client:	PG&E		
Drilling			•		Total D	•	317 ft bgs	_ Project:		V Remedy Ph	
Drill R			ongyear Trac				6-12 inches	Location	: <u>PG&E T</u>	opock, Needl	es, California
Driller						o First Water:		-	. —		
Drilling		•	ner/J. Candel		-	ng Method:	4 inch x 10 ft Core Barrel	_ Project N	Number: <u>F</u>	RC000753.00	51
Logge Editor:			<u>cia / G. Willfo</u> //cGrane		-	ng Interval: ted to Well:	Continuous	-			
Luitor		Sean is	ICGIAIIE		T	ted to vveii.	△ Tes □ NO				I
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
301 302 303 304	. 120			Topock - Weathered Bedrock - conglomeral	GM			9		(297.0 - 307.0') Drill rods chattering, tight formation	(287.0 - 317.0') No water used
305 306 307							66				
308				Topock - Weathered Bedrock - conglomerat	MH	Gravel plastic little ve	311.0') Topock - Weathered Bedrock ly elastic silt (MH); reddish brown (2.5' ity; some granule to large pebble, suba- ary fine to medium grained sand, angul loist; moderate cementation; gravel co	YR 4/4)(5YR) angular to sul ar to subrour); high bround; nd; trace	(307.0 - 317.0') Tight formation	
312	120					Silty grivery la graine subang	- 317.0") Topock - Weathered Bedrock ravel with sand (GM); reddish brown(2. rge pebbles, subangular to round; som d sand, angular to subround; some silt gular to round; trace clay; moist; strong	5YR 4/3); gra le fine to very ; trace cobble g cementation	anules to / coarse es, n; iron		
313				1		stainin	staining; gravel composed of mixed lith g on gravels	oigy, suitte fe	ed IIOII		
ļ -				Topock -							
314			no sample-	Weathered Bedrock -		Patal					
<u> </u>			(Interval did	conglomerat							
315			produce.) 12/18/2018	1							
<u> </u>	_		10:15	1							
316	-			1		PT P					
H -				1		12					
317				<u> </u>		n M.K.I	End of Boring at 317.0 'bg	js.			<u> </u>
_ 318_	-										
_ ١٥ سـ											
319											
320											
							s = below ground surface, ams				

9/	ARCA	DIS Design 8 for natur built ass	Consultancy al and ets		Temporary I	Backfill Log	S	heet: 1 of 16
Date S Date C Drilling	tarted: completed: Co.: Method: Name: Asst:	12/02/2018 01/03/2019 Cascade Sonic Drilling Nick Petrone T. Aylmer/J. A. Garcia / C	g e Candel		Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	480.8 ft amsl 2103560.0 7615565.9 317 ft bgs 6-12 inches	Location: PG&E	
Depth (ft)	Groundwate Sample ID	Geologic Formation	Code	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed
_ 1 1		Topock - Fluvial	SP-SM		(0.0 - 0.5') Steal plate with BMPs (0.5 - 5.0') Plastering Sand	(0.0 - 8.0') 12" Borehole	(0.5 - 5.0') 5 bags	(0.5 - 5.0') 5 bags (0%) Note: Wildcat Washed
		Deposits						
10		Topock - Fluvial Deposits	SM					
		Topock - Alluvium Deposits	SM		(5.0 - 287.0') Pea	(8.0 - 17.0') 6" Borehole (17.0 - 57.0') 6" Borehole	(5.0 - 287.0') 121.6 bags	(5.0 - 287.0') 120 bags (-1%) Note: Cal-silica 3/8" x 1/4"
19	intinu 116	Topock - Alluvium Deposits	SM					sea level, GW = groundwater,

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

ARC	ADIS Design for natural built as	& Consultancy Iral and sets		Temporary I	Backfill Log	S	Sheet: 2 of 16		
Date Started: Date Completed Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	Cascade	g e Candel		 Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor: 	480.8 ft amsl 2103560.0 7615565.9 317 ft bgs 6-12 inches 24.84 ft bgs Sean McGrane	Location: PG&I			
Groundw Sample		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed		
21 22 23 24 25	Topock - Alluvium Deposits	SM				9			
26	Topock -	SM		(5.0 - 287.0') Pea Gravel	(17.0 - 57.0') 6" Borehole	(5.0 - 287.0') 121.6 bags	(5.0 - 287.0') 120 bags (-1%) Note: Cal-silica 3/8" x 1/4"		
34 35 36 37 38 39 40	Topock - Alluvium Deposits	ML					sea level, GW = groundwater,		

ARC/	ADIS Design & for natura built asset	Consultancy al and ets		Temporary I	Backfill Log	S	Sheet: 3 of 16		
Date Started: Date Completed Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	12/02/2018 : 01/03/2019 Cascade Sonic Drilling Nick Petrone T. Aylmer/J. A. Garcia / G	Candel		 Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor: 	480.8 ft amsl 2103560.0 7615565.9 317 ft bgs 6-12 inches 24.84 ft bgs Sean McGrane	Location: PG&E			
Groundwa Sample		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed		
41 42 42 43	Topock - Alluvium Deposits	SM							
44	Topock - Alluvium Deposits	SM							
49 IRZ-9-VAS 47-52 (<0.033 L ppb) 50 12/4/2018	Deposits	SM		(5.0 - 287.0') Pea	(17.0 - 57.0') 6" Borehole	(5.0 - 287.0') 121.6	(5.0 - 287.0') 120 bags (-1%)		
	Topock - Alluvium Deposits	GM		Gravel		bags	Note: Cal-silica 3/8" x 1/4"		
55 56 57 58 59 60	Topock - Alluvium Deposits	SM			(57.0 - 107.0') 6" Borehole		sea level, GW = groundwater,		

ARCAI	DIS for natura built asse	Consultancy l and ts		Temporary Backfill	Log	Sheet: 4 of 16
Date Started:	12/02/2018			_ Surface Elevation: 480.8 ft am:		D: IRZ-9 Pilot
Date Completed:	01/03/2019			_ Northing (NAD83): 2103560.0		7. II 2 0 1 II 0 1
Orilling Co.:	Cascade			_ Easting (NAD83): <u>7615565.9</u>	Client: _	PG&E
Orilling Method:	Sonic Drilling			_ Total Depth: <u>317 ft bgs</u>	Project: <u> </u>	Final GW Remedy Phase I
Oriller Name:	Nick Petrone	!		_ Borehole Diameter: 6-12 inches	Location: l	PG&E Topock, Needles, California
Orilling Asst:	T. Aylmer/J.	Candel	aria	_ Depth to First Water: 24.84 ft bgs	<u> </u>	
-	A. Garcia / G			Editor: Sean McGr	ane Project Nu	mber: <u>RC000753.0051</u>
ਓ Groundwater	tion tion	ωφ	တ္ တ္		Calculated	Material Volumes
Groundwater Sample ID	Geologic Formation	USCS	USCS	Well Construction	Material Volum	
	Topock - Alluvium Deposits	SM				
- 69	Topock - Alluvium Deposits	SM		(5.0 - 287.0') Pea Gravel	57.0 - 107.0') 6" (5.0 - 287.0') 1 Borehole bags	21.6 (5.0 - 287.0') 120 bags (-1%) Note: Cal-silica 3/8" x 1/4"
_77 _78 -79	Topock - Alluvium Deposits	SM				

ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

ARCA	DIS Design & for natur built asset	Consultancy al and ets		Temporary Ba	ackfill Log	Sheet: 5 of 16		
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	12/02/2018 01/03/2019 Cascade Sonic Drilling Nick Petrone T. Aylmer/J. A. Garcia / G	e Candel		Northing (NAD83): 2 Easting (NAD83): 7 Total Depth: 3 Borehole Diameter: 6 Depth to First Water: 2	80.8 ft amsl 2103560.0 7615565.9 817 ft bgs 3-12 inches 24.84 ft bgs Gean McGrane	_ Location: <u>PG&E</u> 		
Groundwate Sample ID		Code	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed	
81	Topock - Alluvium Deposits	SM						
86	Topock - Alluvium Deposits	SM						
	Topock - Alluvium Deposits	SM		(5.0 - 287.0') Pea Gravel	(57.0 - 107.0') 6" Borehole	(5.0 - 287.0') 121.6 bags	(5.0 - 287.0') 120 bags (-1%) Note: Cal-silica 3/8" x 1/4" ea level, GW = groundwater,	

AF	SCAE	DIS Design & for natura built asse	Consultancy al and its		Temporary Backfill Log	Sheet: 6 of 16
Date Start Date Com Drilling Co Drilling Me	npleted: (12/02/2018 01/03/2019 Cascade Sonic Drilling	1		Surface Elevation: 480.8 ft amsl Northing (NAD83): 2103560.0 Easting (NAD83): 7615565.9 Total Depth: 317 ft bgs	Well ID: IRZ-9 Pilot Client: PG&E Project: Final GW Remedy Phase I
Driller Nar Drilling As Logger:	ne: <u>l</u> st: <u> </u>	Nick Petrone T. Aylmer/J. A. Garcia / G	Candel		Borehole Diameter: 6-12 inches Depth to First Water: 24.84 ft bgs Editor: Sean McGrane	Location: PG&E Topock, Needles, California Project Number: RC000753.0051
£d.⊋ Gr	roundwater Sample ID	Geologic	USCS	USCS Class	Well Construction	Calculated Material Volumes Material Volumes Installed
(<0.	Z-9-VAS- 02-109 .17 U ppb) 2/6/2018 10:10	Topock - Alluvium Deposits	SM		(57.0 - 107.0') 6" Borehole	
		Topock - Alluvium Deposits	SM		(5.0 - 287.0') Pea Gravel (107.0 - 147.0') 6" Borehole	(5.0 - 287.0') 121.6 (5.0 - 287.0') 120 bags (-1%) Note: Cal-silica 3/8" x 1/4"
						amsl = above mean sea level, GW = groundwater,

Date Started: 12(02/2018 Surface Elevation: ABO 8 It amal Mell ID: IR2-9 Pilot	ARCA	DIS Design for natural built as	& Consultancy ural and sets		Temporary Ba	ackfill Log	Sheet: 7 of 16	
121 122 123 124 125 126 127 129 130 140 150 160 170 170 170 170 170 170 170 170 170 17	Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst:	01/03/2019 Cascade Sonic Drillin Nick Petron T. Aylmer/J.	g e . Cande		Northing (NAD83): 2 Easting (NAD83): 7 Total Depth: 3 Borehole Diameter: 6 Depth to First Water: 2	2103560.0 615565.9 117 ft bgs 3-12 inches 14.84 ft bgs	Client: PG&E Project: Final GW Remedy Phase I Location: PG&E Topock, Needles, Cali	
	Groundwate Sample ID	Geologic Formation	USCS	USCS Class	Well Co	nstruction		
		Alluvium	SM					
		Topock - Alluvium Deposits	SM		(5.0 - 287.0') Pea	(107.0 - 147.0') 6" Borehole		(5.0 - 287.0') 120 bags (-1%) Note: Cal-silica 3/8" x 1/4"

ARCADIS Design & Consultancy for natural and unit assets					Temporary I	Backfill Log	S	Sheet: 8 of 16		
Date 0 Drilling Drilling Driller	g Method: Name: g Asst:	Cascade Sonic Dri Nick Petr T. Aylmei	19 Iling one		Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	480.8 ft amsl 2103560.0 7615565.9 317 ft bgs 6-12 inches 24.84 ft bgs Sean McGrane	Location: <u>PG&E</u>			
Depth (ft)	Groundwate Sample ID	Geologic Formation	USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed		
	IRZ-9-VAS- 142-147 (<0.17 U ppb) 12/5/2018 15:40	Topoci Alluviu Depos	m SM ts NR ts SM		(5.0 - 287.0') Pea Gravel	(107.0 - 147.0') 6" Borehole	(5.0 - 287.0') 121.6 bags	(5.0 - 287.0') 120 bags (-1%) Note: Cal-silica 3/8" x 1/4"		
Abbre	viations: US	SCS = Uni	fied Soil C	lassificat	ion System, ft = feet, bg	s = below ground surface, ar	nsl = above mean s	sea level, GW = groundwater,		

9/	ARCA	DIS Design 8 for natural built ass	Consultancy ral and ets		Temporary I	3ackfill Log	SI	heet: 9 of 16
Date C Drilling	Co.: Method: Name:	12/02/2018 01/03/2019 Cascade Sonic Drilling Nick Petrone T. Aylmer/J. Candelaria		Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water:	480.8 ft amsl 2103560.0 7615565.9 317 ft bgs 6-12 inches			
Logge		A. Garcia / C			Editor:	Sean McGrane	Project Number:	RC000753.0051
Depth (ft)	Groundwate Sample ID	Geologic Formation	USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
	viations: US	Topock - Alluvium Deposits	SM Soil C		(5.0 - 287.0') Pea Gravel	(147.0 - 187.0') 6" Borehole	(5.0 - 287.0') 121.6 bags	(5.0 - 287.0') 120 bags (-1%) Note: Cal-silica 3/8" x 1/4"

ARCA	DIS Design & for nature built asse	Consultancy al and ts		Temporary E	Backfill Log	S	heet: 10 of 16
Date Started: Date Completed:				_ Northing (NAD83):	480.8 ft amsl 2103560.0	Well ID: IR	
Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	Cascade Sonic Drilling Nick Petrone T. Aylmer/J. Candelaria A. Garcia / G. Willford		_ Total Depth: _ Borehole Diameter: _ Depth to First Water:	7615565.9 317 ft bgs 6-12 inches 24.84 ft bgs Sean McGrane	Location: <u>PG&E</u> 	GW Remedy Phase I Topock, Needles, California RC000753.0051	
Groundwat Sample ID		USCS	USCS Class	Well 0	Construction	Calculated Material Volumes	Material Volumes Installed
 181 182	Topock - Alluvium Deposits	SM					
183_ - 184_ IRZ-9-VAS- 182-187 (<0.17 U ppt 12/11/2018 13:03	Denosits	SM			(147.0 - 187.0') 6" Borehole		
5 	Topock - Alluvium Deposits	SM					
190 190 191 192 193 194 195 196 196 197 198 198 199 199 199 199 199 199	Topock - Alluvium Deposits	GM		(5.0 - 287.0') Pea Gravel		(5.0 - 287.0') 121.6 bags	(5.0 - 287.0') 120 bags (-1%) Note: Cal-silica 3/8" x 1/4"
[[197	Topock - Alluvium	GP					
5	Topock - Alluvium Deposits	SM					

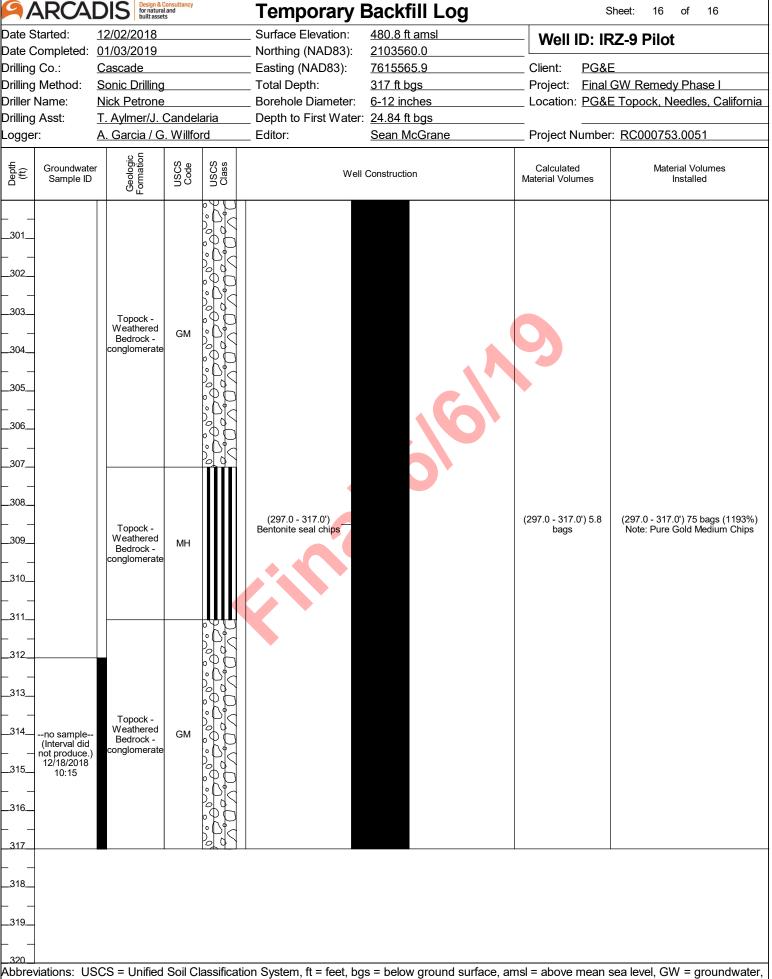
9/	ARCA	DIS Design & for natur built asset	Consultancy al and ets		Temporary I	Backfill Log	S	Sheet: 11 of 16		
Date C Drilling	Co.: Method: Name: Asst:	12/02/2018 01/03/2019 Cascade Sonic Drilling Nick Petrone T. Aylmer/J. A. Garcia / G	e Candel		Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	480.8 ft amsl 2103560.0 7615565.9 317 ft bgs 6-12 inches 24.84 ft bgs Sean McGrane	Location: PG&E			
Depth (ft)	Groundwate Sample ID	Geologic Formation	Code	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed		
201		Topock - Alluvium Deposits	SM							
208 209 210 211 211	IRZ-9-VAS- 207-212 (<0.17 U ppb) 12/13/2018 10:55	Topock - Alluvium Deposits	SM		(5.0 - 287.0') Pea Gravel		(5.0 - 287.0') 121.6 bags	(5.0 - 287.0') 120 bags (-1%) Note: Cal-silica 3/8" x 1/4"		
213 214 215 216 217 218 219 219	no sample (Interval did not produce.) 12/12/2018 10:15	Topock - Alluvium Deposits	ML			(217.0 - 247.0') 4" Borehole		eea level, GW = groundwater,		

9/-	ARCA	DIS Design & for natura built asset	Consultancy al and ets		Temporary B	Backfill Log	Sh	neet: 12 of 16
Date S Date C Drilling	ctarted: Completed: Co.: Method: Name: Asst:	12/02/2018 01/03/2019 Cascade Sonic Drilling Nick Petrone T. Aylmer/J. A. Garcia / G] e Candel		Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water:	480.8 ft amsl 2103560.0 7615565.9 317 ft bgs 6-12 inches	Well ID: IRZ-9 Pilot Client: PG&E Project: Final GW Remedy Phase I Location: PG&E Topock, Needles, Calife Project Number: RC000753.0051	
Depth (ft)	Groundwate Sample ID	logic lation	USCS Code	USCS Class		Construction	Calculated Material Volumes	Material Volumes Installed
	IRZ-9-VAS- 232-237 (<0.17 U ppb 12/13/2018 15:48	Topock - Alluvium Deposits	SM		(5.0 - 287.0') Pea Gravel	(217.0 - 247.0') 4" Borehole	(5.0 - 287.0') 121.6 bags	(5.0 - 287.0') 120 bags (-1%) Note: Cal-silica 3/8" x 1/4"
236	15:48	Topock - Alluvium Deposits	ML					
238		Topock - Alluvium Deposits	ML					
240 Abbrev	viations: Us		Soil C	ˈdၙ႞ၜ႞႞ assificati	on System, ft = feet, bas	= below ground surface, ams	sl = above mean se	ea level. GW = groundwater.

AF	RCAI	DIS Design 8 for natur built ass	Consultancy ral and ets		Temporary I	Backfill Log	S	heet: 13 of 16
Date Starte Date Comp Drilling Co Drilling Me Driller Nam Drilling Ass Logger:	pleted: o.: ethod: ne: st:	12/02/2018 01/03/2019 Cascade Sonic Drilling Nick Petrone T. Aylmer/J. A. Garcia / C	e Candel		Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	480.8 ft amsl 2103560.0 7615565.9 317 ft bgs 6-12 inches 24.84 ft bgs Sean McGrane	_ Location: <u>PG&E</u> 	
	oundwater Sample ID	Geologic Formation	USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
		Topock - Alluvium Deposits	ML		(5.0 - 287.0') Pea Gravel	(217.0 - 247.0') 4" Borehole	(5.0 - 287.0') 121.6 bags	(5.0 - 287.0') 120 bags (-1%) Note: Cal-silica 3/8" x 1/4"
	one: US	Topock - Alluvium Deposits	GM Soil C			s = below ground surface, am		nog lovel CW = groundwater

9/	ARCA	DIS Design & for natura built asse	Consultancy al and its		Temporary E	Backfill Log		Sheet: 14 of 16
Drilling	ompleted: Co.: Method: Name: Asst:	12/02/2018 01/03/2019 Cascade Sonic Drilling Nick Petrone T. Aylmer/J. A. Garcia / G	e Cande		_ Surface Elevation: _ Northing (NAD83): _ Easting (NAD83): _ Total Depth: _ Borehole Diameter: _ Depth to First Water: _ Editor:	480.8 ft amsl 2103560.0 7615565.9 317 ft bgs 6-12 inches 24.84 ft bgs Sean McGrane	Client: PG& Project: Fina Location: PG&	RZ-9 Pilot E GW Remedy Phase I E Topock, Needles, California
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
	IRZ-9-VAS- 264-269 (<0.17 U ppb) 12/15/2018 09:15	Topock - Alluvium Deposits Topock - Alluvium Deposits	GM ML/MH				9	
269 270 271 272 272 273		Topock - Alluvium Deposits	GM		(5.0 - 287.0') Pea		(5.0 - 287.0') 121.6 bags	(5.0 - 287.0') 120 bags (-1%) Note: Cal-silica 3/8" x 1/4"
274		Topock - Alluvium Deposits	ML					
278	IRZ-9-VAS- 276-281 (<0.17 U ppb) 12/16/2018 09:15	Deposits	GM		on System # = foot ha	s = below ground surface, an	ool – abovo masii	and level CW = ground water

9 Α	RCA	DIS Design & Control for natural built asset	consultancy and s		Temporary E	Backfill Log	5	Sheet: 15 of 16
Date Sta Date Co Drilling (mpleted:	12/02/2018 01/03/2019 Cascade			Surface Elevation: Northing (NAD83): Easting (NAD83):	480.8 ft amsl 2103560.0 7615565.9	Well ID: IF Client: PG&I	
Drilling Non Triller Non Prilling And Logger:	Asst:	Sonic Drilling Nick Petrone T. Aylmer/J. (A. Garcia / G	Cande		_ Total Depth: _ Borehole Diameter: _ Depth to First Water: _ Editor:	317 ft bgs 6-12 inches 24.84 ft bgs Sean McGrane	Location: PG&I	GW Remedy Phase I Topock, Needles, California RC000753.0051
_	Groundwate Sample ID	o Jic	OSCS Code	USCS		Construction	Calculated Material Volumes	Material Volumes Installed
		Topock - Alluvium Deposits	GM					
282 283 284 285 286		Topock - Alluvium Deposits	NR		(5.0 - 287.0') Pea Gravel		(5.0 - 287.0') 121.6 bags	(5.0 - 287.0') 120 bags (-1%) Note: Cal-silica 3/8" x 1/4"
		Alluvium Deposits	GM					
		Topock - Alluvium Deposits	ML		(287.0 - 297.0') Filter Pack (#2/12 Sand)		(287.0 - 297.0') 4.2 bags	(287.0 - 297.0') 6 bags (43%) Note: Lapis Lustre Sand
(< 	IRZ-9-VAS- 292-297 <0.17 U ppb) 12/18/2018 14:55	Topock - Alluvium Deposits	GM					
		Topock - Weathered Bedrock - conglomerate	GM		(297.0 - 317.0') Bentonite seal chips		(297.0 - 317.0') 5.8 bags	(297.0 - 317.0') 75 bags (1193%) Note: Pure Gold Medium Chips



ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of

Date Started: 11/16/2018 Surface Elevation: 481.5 ft amal Date Completed: 1/20/12/018 Northing (NAD8); 21/03309.6 Delling Co. Cascade. Easting (NAD8); 7615/07/4. Clent: PG&E Delling Method: Drilling Amethod: Drilling Co. Drilling Amethod: Drilling Co. Drilling Amethod: Drilling Co. Drilling Amethod: Drilling Co. Drilling Amethod: Drilling Co. Drilling Amethod: Drilling Co. Drilling Amethod: Drilling Co. Drilling Amethod: Drilling Co. Drilling Amethod: Drilling Co. Drilling Amethod: Drilling Co. Drilling Amethod: Drilling Co. Drilling Amethod: Drilling Amethod: Drilling Amethod: Drilling Amethod: Drilling Amethod: Drilling Amethod: Drilling Amethod: Sampling Method: Sampling Me	9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	g		She	eet: 1 of	13
Date Completed: Casacade	Date S	tarted:	<u>11/16/</u>	2018		Surface	Elevat	ion:	481.5 ft amsl	Borin	a No:	IR7-13 Pi	lot
Drilling Name: Drilling Asst. Drilling Asst. Drilling Asst. Drilling Asst. A Garcial G. Jeffers Sean McGrane Converted to Welt: \$\frac{\text{23 h bys}}{\text{27 f ft bys}}\$ Project: \$\frac{\text{Final Groundwater Remedy Phase}}{\text{Drilling Name:}}\$ Drilling Asst. T. Aythreriji C. Candelaria Sample in Method: Sean McGrane Converted to Welt: \$\frac{\text{27 ft ft bys}}{\text{27 ft bys}}\$ Project Number: \$\frac{\text{Project Number:}}{\text{Project Number:}}\$ Project Number: \$\frac{\text{Project Number:}}{Project Numb	Date C	omple				Northin	g (NAD	83):	2103309.6		.9		
Drill Ry Type: Driller Name: Nick Perlone Depth to First Water 27.6 ft bgs PGSE Topock, Needles, California Prilling Asst. Logger: A. Garcia/G. Jeffers Sampling Method: A. Garcia/G. Jeffers Sampling Method: Sa	Drilling	Co.:	<u>Casca</u>	de		Easting	(NAD8	33):	7615707.4	Client:	PG&E		
Dellier Amer. Dillier Amer. Di	Drilling	Metho	od: <u>Sonic</u>	Drilling		Total D	epth:		243 ft bgs	Project:	Final Gr	<u>roundwater Re</u>	medy Phase
Dalling Asst: T. Aymer/J. Candelaria Sampling Method: 4. inch. x10 ft. Core Barrel Project Number: RC000753.0051 Editor: Sam NbC3ma. Converted to Well: Yes \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Drill Ri	g Type	: <u>Borat I</u>	Longyear Tra	ck Mount	Boreho	le Diam	eter:	6-12 inches	Location:	: <u>1</u>		
Logger: Sea McGrane Sompling Interval: Continuous No No No No No No No N	Driller	Name:	Nick P	etrone		Depth to	o First \	Water:	27.6 ft bgs			•	
Editor: Sean McGrane Converted to Well: 2 Yes No Solid Description Drilling Notes Drilling Fluid Solid Description Drilling Notes Drilling Fluid (0.0 - 16.5) Topock - Fill Soly and (5M), strong proon (7.5 VPR - 1 - 24 - 2 7	Drilling	Asst:	<u>T. Aylr</u>	<u>ner/J. Candel</u>	aria	Samplin	ng Meth	nod:	4 inch x 10 ft Core Barrel	Project N	lumber: <u>l</u>	RC000753.00	51
Siege Semple ID Groundwater Sample ID Ground	Logge	r:	A. Gar	<u>cia/G. Jeffers</u>		Samplin	ng Inter	val:					
1 24 (0.2-16.5) Topock - Fill (3P) data with sill (3P) data (0.2-243.0') No water used subangular to round; trace granted to first grid and to find grained gr	Editor:		<u>Sean I</u>	<u>McGrane</u>		Conver	ed to V	Vell:					
yellowish brown (10/R 44); wry fine grained to fine grained, subungular to round; trace sift, 44); wry fine grained to fine grained to fine grained, subungular to round; trace sift, 44); wry fine grained to fine grained, subungular to round; trace sift, 44); were fine grained to fine grained to fine grained. No water used subungular to round; trace sift, 44); wry fine grained to fine grained to fine grained to fine grained. No water used subungular to round; and standard to round; and stift little grained to fine grained. subungular to round; and stift little grained to fine grained to round; and stift little grained to small pebbles, subangular to round; and stift little grained to small pebbles, subangular to round; and stift little grained to small pebbles, subangular to round; moist	Depth (ft)	Recovery (in)			Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
Topock - Fill SM	1	24 27 102			Topock - Fil	II SP		yellowi subang to roun	sh brown (10YR 4/4); very fine grained gular to round; trace granule to small pend; trace silt; dry 24.5') Topock - Fill; Silty sand (SM); stery fine grained to fine grained, subang	rong brown (ular to round	7.5YR	recovery due it compaction of sands in	(0.0 - 243.0') No water used

9/	AKC	ADIS	for natural and built assets		Во	ring	Log	5	Sheet: 2 of	13
Date S	Started	11/16/2	2018		Surface	Elevati	on: <u>481.5 ft amsl</u>	- Boring No	o.: <u>IRZ-13 Pi</u>	lot
Date C	Comple	ted: <u>12/01/2</u>	2018		Northing	g (NAD	83): <u>2103309.6</u>	_	<u>II (2 10 1 1</u>	100
Drilling		Cascac			Easting	•	•	_ Client: PG&		
Drilling					Total De	-	243 ft bgs		Groundwater Re	medy Phase
Drill Ri			ongyear Trad					_ Location: 1		0 1.0
Driller Drilling			etrone ner/J. Candel				Vater: 27.6 ft bgs od: 4 inch x 10 ft Core Barrel		E Topock, Needler: RC000753.00	
Logge		•	cia/G. Jeffers		Samplin Samplin			_ Project Number	r. RC000753.00	O I
Editor:			/IcGrane		Convert	•		_		
					T				1	
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
21										(0.0 - 243.0') No water used
22				Topock - Fill	I SM					
23								9)		
24	108									
25							(24.5 - 27.0') Topock - Alluvium Deposits; Si (SM); pale red (10R 6/2); very fine grained to subangular; and silt; little granule to small pe	very coarse grained,		
26				Topock - Alluvium Deposits	SM		round; wet			
27		IRZ-13-SS- 25-30					(27.0 - 44.5') Topock - Alluvium Deposits; Si brown (10YR 6/3); very fine grained to very c	Ity sand (SM); pale	(27.0') Approximate	
28		25-30 12/2/2018 14:00					subangular to round; moist	to small pebbles,	depth of water table	
							O'			
	54									
30	54									
g 										
32_										
		IRZ-13-SS- 30-35 12/2/2018 13:45								
		10.40		Topock - Alluvium Deposits	SM					
34			IRZ-13-VAS- 32-37							
35_	54		(220 ppb) 11/17/2018							
			15:00							
_37		ID7 40 60								
		IRZ-13-SS- 35-40								
38	220	12/1/2018 09:00								
39	336									
<u> </u>										
40					<u> </u>				11	

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring L	og		She	eet: 3 of	13
Date S						Elevation:	481.5 ft amsl	Borin	na No.:	IRZ-13 P	ilot
	•	ted: <u>12/01</u>				g (NAD83)	2103309.6				
Drilling		<u>Casca</u>			_	(NAD83):	<u>7615707.4</u>	_ Client:	PG&E		
Drilling			Drilling		Total De	•	243 ft bgs	_ Project:		roundwater Re	emedy Phase
Drill Ri			Longyear Tra	ck Mount				_ Location:			
Driller I			etrone		•		er: 27.6 ft bgs			•	les, California
Drilling		-	<u>ner/J. Candel</u>		-	ng Method:	4 inch x 10 ft Core Barrel	_ Project N	lumber:	RC000753.00	51
Logge			<u>cia/G. Jeffers</u>		•	ng Interval:	Continuous	_			
Editor:		<u>Sean</u>	<u>McGrane</u>		Convert	ted to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
41 42 43 44 45		IRZ-13-SS- 40-45 12/1/2018 09:15		Topock - Alluvium Deposits	SM		5 - 46.0') Topock - <mark>Alluvium</mark> Dep o sits; Sa ; brown (10YR 4/3); v ery fine grained to				(0.0 - 243.0') No water used
46				Alluvium Deposits	SM	sub son	angular to round; some small to large pe e silt; moist	bbles, subang	jular;		
 47		IRZ-13-SS-		Topock - Alluvium Deposits	ML	(10 ::::::::::::::::::::::::::::::::::::	0 - 47.0") Topock - Alluvium Deposits; Sa (R 4/3); and very fine to fine grained san oxide staining	d, subangular	; moist;		
48 49 50	336	45-50 12/1/2018 09:30		Topock -	SM	(SN	O - 53.0') Topock - Alluvium Deposits; Si); pink (7.5YR 7/4); very fine grained to v angular to round; some granule to small und; some silt; wet	ery coarse gra	ained		
51 52 53		IRZ-13-SS- 50-55 12/1/2018 10:10		Deposits							
54 55 56				Topock - Alluvium Deposits	SM	red) - 57.0') Topock - Alluvium Deposits; Si (2.5YR 6/6); very fine grained to very coa angular; little silt; trace granule to small _l t	rse grained,			
57 58 59		IRZ-13-SS- 55-60 12/1/2018 10:15	IRZ-13-VAS- 57-62 (<0.17 U ppb) 11/18/2018 11:50	Topock - Alluvium Deposits	SM	gra	D - 64.5') Topock - Alluvium Deposits; Si / grayish orange pink(5YR 7/2); very fine se grained, subangular to round; some : Il pebbles, subangular to round; wet	e grained to ve	ery		
60											

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	She	eet: 4 of	13
Date S	Started	11/16/2	2018		Surface	Elevat	on: <u>481.5 ft amsl</u>	Boring No.:	IR7-13 P	ilot
Date 0	Comple	ted: <u>12/01/2</u>	2018		Northing	g (NAD	83): <u>2103309.6</u>			
Drilling		<u>Casca</u>	de		Easting	(NAD8	3): <u>7615707.4</u>	_ Client: PG&E		
Drilling	g Metho	od: <u>Sonic I</u>	Drilling		Total De	epth:	243 ft bgs	_ Project: <u>Final G</u>	<u>roundwater Re</u>	medy Phase
	ig Type		<u>ongyear Trac</u>	ck Mount				_ Location: <u>1</u>		
	Name:				-		Vater: <u>27.6 ft bgs</u>		<u> Fopock, Needl</u>	
Drilling	g Asst:	•	ner/J. Candela		Samplin	-		_ Project Number: .	RC000753.00	51
Logge			cia/G. Jeffers		Samplin	-		_		
Editor		Sean N	<u>/////////////////////////////////////</u>		Convert	ed to V	Vell:	Т		I
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
61 62 63 64 65	- 336	IRZ-13-SS- 60-65 12/1/2018 10:30	IRZ-13-VAS- 57-62 (<0.17 U ppb) 11/18/2018 11:50	Topock - Alluvium Deposits	SM		(64.5 - 67.0') Topock - Alluvium Deposits; Sil yellow (2.5Y 7/4); very fine grained to very co	ity sand (SM); pale		(0.0 - 243.0') No water used
66		IRZ-13-SS-		Topock - Alluvium Deposits	SM		subangular to round; and silt; trace granule to subangular to round; moist (67.0 - 77.0') Topock - Alluvium Deposits; Sil	o small pebbles,		
68 69 70		65-70 12/1/2018 10:45					(SYR 7/3); very fine grained to very coarse gr round; and silt; trace granule to small pebble round; moist	ained, subangular to		
7172737475	336	IRZ-13-SS- 70-75 12/1/2018 11:00		Topock - Alluvium Deposits	SM					
76 77 78 79		IRZ-13-SS- 75-80 12/1/2018 11:30		Topock - Alluvium Deposits	SM		(77.0 - 87.5') Topock - Alluvium Deposits; Sil pale brown (10YR 7/3); very fine grained to w subangular to round; some silt; trace granule subangular; moist	ery coarse grained,		

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	S	sheet: 5 of	13
Date S	Started	<u>11/16/2</u>	2018		Surface	Elevatio	n: <u>481.5 ft amsl</u>	- Boring No	.: <u>IRZ-13 P</u>	ilot
Date C	Comple	eted: <u>12/01/2</u>	<u>2018 </u>		Northing	(NAD8	3): <u>2103309.6</u>		<u></u>	<u></u>
Drilling	Co.:	Cascad	le		Easting	(NAD83): <u>7615707.4</u>	_ Client: PG&E	<u>:</u>	
Drilling	Metho	od: <u>Sonic E</u>	<u>Orilling</u>		Total De	epth:	243 ft bgs	Project: Final	Groundwater Re	emedy Phase
Drill Ri	д Туре	: <u>Borat L</u>	ongyear Trac	k Mount	Borehol	e Diame	ter: <u>6-12 inches</u>	Location: 1		
Driller	Name:	Nick Pe	etrone		Depth to	First W	ater: 27.6 ft bgs	_ PG&E	E Topock, Needl	les, California
Drilling	Asst:	T. Aylm	ner/J. Candela	<u>aria</u>	Samplin	g Metho	d: 4 inch x 10 ft Core Barrel	_ Project Number	: RC000753.00)51
Logge	r:	A. Gard	cia/G. Jeffers		Samplin	g Interva	al: <u>Continuous</u>	_		
Editor:		<u>Sean M</u>	1cGrane		Convert	ed to We	ell: 🗵 Yes 🗌 No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
81 82 83 84 85 86 87 88 89	336	IRZ-13-SS- 80-85 12/1/2018 11:50 IRZ-13-SS- 85-90 12/6/2018 12:00		Topock - Alluvium Deposits Topock - Alluvium Deposits	SM		87') Topock - Alluvium Deposits; pink (5YR 87.5 - 97.0') Topock - Alluvium Deposits; Si 6M); light reddish brown(2.5YR 7/3); granul subangular to round; some very fine to very c subangular; some silt; moist	ty gravel with sand es to small pebbles,		(0.0 - 243.0') No water used
9192		IRZ-13-SS- 90-95 12/1/2018 12:10		Topock - Alluvium Deposits	GM	[0 (97.0 - 99.0') Topock - Alluvium Deposits; Po vith silt (GP-GM); light reddish brown / light	brown(5YR 6/4);		
98 99	120	12/1/2018 12:30		Topock - Alluvium Deposits	GP-GM		granules to small pebbles, subangular to rou very coarse grained sand, subangular; little s	nd; some very fine to ilt; moist	-	
_ 100 _				Topock - Alluvium Deposits	SM		99.0 - 107.0') Topock - Alluvium Deposits; S eddish brown / light brown(5YR 6/4); very fir coarse grained, subangular to round; some s	ne grained to very		

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 6 of	13
Date S	Started	: <u>11/16/</u>	2018		Surface	Elevati	on: <u>481.5 ft amsl</u>	Boring No.	· IR7-13 P	ilot
Date 0	Comple	eted: <u>12/01/</u>	2018		Northing	g (NAD	83): <u>2103309.6</u>		. <u></u>	<u></u>
Drilling	Co.:	<u>Casca</u>	<u>de</u>		Easting	(NAD8	3): <u>7615707.4</u>	_ Client: PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	243 ft bgs	_ Project: Final G	<u>Froundwater Re</u>	emedy Phase
Drill Ri	ig Type	: <u>Borat l</u>	Longyear Trad	ck Mount	Borehol	e Diam	eter: 6-12 inches	_ Location: <u>1</u>		
Driller	Name:	Nick P	<u>etrone</u>		Depth to	First \	Vater: 27.6 ft bgs	_ PG&E	Topock, Need	<u>les, California</u>
Drilling	y Asst:	T. Aylr	mer/J. Candel	aria	Samplin	ig Meth		_ Project Number:	RC000753.00	51
Logge			<u>rcia/G. Jeffers</u>		Samplin	-		_		
Editor:	:	<u>Sean I</u>	McGrane		Convert	ed to V	Vell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	SCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
	120	IRZ-13-SS- 100-105 12/1/2018 12:40	IRZ-13-VAS- 102-107 (<0.17 U ppb) 11/19/2018 09:30	Topock - Alluvium Deposits	SM		small pebbles, subangular to round; moist			(0.0 - 243.0') No water used
107 108 109 110		IRZ-13-SS- 105-110 12/1/2018 12:50		Topock - Alluvium Deposits	ML		(107.0 - 109.5') Topock - Alluvium Deposits; (ML); brown (10YR 4/3); low plasticity; some coarse grained sand, angular to subangular; large pebbles, angular; wet; very stiff	very fine to very little granule to very		
110 111 112		JD7 40 00		Topock - Alluvium Deposits	SM		(SM); dark yellówish brown (10YR 4/4); very coarse grained, subangular to subround; little pebbles, subangular to round; little silt; wet	e granule to small		
113 114	324	IRZ-13-SS- 110-115 12/1/2018 13:05		Topock - Alluvium Deposits	GM		(112.0 - 114.0') Topock - Alluvium Deposits; (GM); olive brown (2.5Y 4/3); granules to larg subangular to round; some very fine to very cangular to subangular; some silt; wet	ge pebbles, coarse grained sand,		
115 116 117	-			Topock - Alluvium Deposits	SM		(114.0 - 117.0') Topock - Alluvium Deposits; (SM); reddish brown / moderate brown(5YR to very coarse grained, angular to subangula very large pebbles, angular; little silt; trace of	4/4); very fine grained ir; some granule to		
118119		IRZ-13-SS- 115-120 12/1/2018 13:15		Topock - Alluvium Deposits	SM		(117.0 - 123.0') Topock - Alluvium Deposits; (SM); reddish brown (5YR 4/3); very fine grai grained, angular to subangular; some granul pebbles, angular to subangular; some silt; w 4" lens of green metadiorite	ined to very coarse es to very large		

9/-	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 7 of	13
Date S	tarted	: <u>11/16</u> /	2018		Surface	Elevat	on: <u>481.5 ft amsl</u>	Borin	a No .	IRZ-13 P	ilot
Date C	omple	eted: <u>12/01</u>	2018		Northing	g (NAD	83): <u>2103309.6</u>		9 110	1142 101	<u></u>
Drilling	Co.:	<u>Casca</u>	ide		Easting	(NAD8	3): <u>7615707.4</u>	Client:	PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	243 ft bgs	Project:	Final Gr	oundwater Re	emedy Phase
Drill Ri	д Туре	e: <u>Borat</u>	Longyear Trad	ck Mount	Borehol	e Diam	eter: <u>6-12 inches</u>	Location:	1		
Driller I	Name:	Nick F	etrone		Depth to	First \	Vater: 27.6 ft bgs		PG&E 1	Γοροck, Need	es, California
Drilling	Asst:	T. Aylı	<u>mer/J. Candela</u>	aria	Samplin	ig Meth	od: 4 inch x 10 ft Core Barrel	Project N	umber: <u>l</u>	RC000753.00	51
Loggei	r:	A. Ga	cia/G. Jeffers		Samplin	ıg Inter	/al: <u>Continuous</u>	-			
Editor:		<u>Sean</u>	McGrane		Convert	ed to V	/ell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
 _121 _122 _123		IRZ-13-SS- 120-125 12/1/2018 14:35		Topock - Alluvium Deposits	SM			3			(0.0 - 243.0') No water used
 124 _125_ 				Topock - Alluvium Deposits	SM		(123.0 - 126.0') Topock - Alluvium Deposits; \$ (SM); reddish brown / moderate brown(5YR 4 to very coarse grained, angular to subangular very large pebbles, angular to subangular; littl wet; weak cementation; 4" lens of silty gravel	/4); very fine of and granules le silt; trace m	grained s to		
126 127 128 129 130	324	IRZ-13-SS- 125-130 12/1/2018 14:45		Topock - Alluvium Deposits	SM		(126.0 - 132.0') Topock - Alluvium Deposits; S (SM); reddish brown / moderate brown(5YR 4 to very coarse grained, angular to subangular very large pebbles, angular to subangular; sowet; weak cementation (127'); little silt (128'); some silt; little granules to very large p subangular; trace mica (128.5'); some granules to very large pebbles subangular; little silt; trace cobbles, angular	./4), very fine on the silt; little not be sil	grained es to nica;		
131 132 133 134 135		IRZ-13-SS- 130-135 12/1/2018 08:30		Topock - Alluvium Deposits	GM		(132.0 - 133.0') Topock - Alluvium Deposits; (GM); reddish brown / moderate brown(5YR 4 large pebbles, angular to subround; some vergrained sand, angular to subround; some silt; (133.0 - 137.0') Topock - Alluvium Deposits; S(SM); reddish brown / moderate brown(5YR 4 to very coarse grained, angular to subround; svery large pebbles, angular to subangular; little wet	4/4); granules y fine to very of trace mica; w Bilty sand with 4/4); very fine of some granules	to very coarse vet gravel grained s to		
136		IRZ-13-SS- 135-140		Alluvium Deposits	SM		(137.0 - 142.5') Topock - Alluvium Deposits; \$ (ML); reddish brown / moderate brown(5YR 4		gravel		
138 139 140	108	12/2/2018 08:45		Topock - Alluvium Deposits	ML		plasticity; some medium to large pebbles, and to very coarse grained sand, angular to subro moist; hard; moderate cementation	gular; some ve			

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	rin	g Lo	g		She	eet: 8 of	13
Date S	tarted:	11/16	5/2018		Surface	Elev	ation:	481.5 ft amsl	Borin	a No .	IRZ-13 P	ilot
Date C	Comple	ted: <u>12/01</u>	/2018		Northing	y (NA	AD83):	2103309.6		9	<u> </u>	<u></u>
Drilling	Co.:	Casc	ade		Easting	(NA	D83):	<u>7615707.4</u>	Client:	PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:		243 ft bgs	Project:	Final G	roundwater Re	emedy Phase
Drill Ri	д Туре	: <u>Borat</u>	Longyear Trad	ck Mount	Borehol	e Dia	meter:	6-12 inches	Location:	1		
Driller I	Name:	Nick I	Petrone		Depth to	Fire	st Water	: 27.6 ft bgs	-	PG&E	Topock, Need	es, California
Drilling	Asst:	<u>T. Ay</u>	mer/J. Candel	aria	Samplin	g Me	ethod:	4 inch x 10 ft Core Barrel	Project N	umber:	RC000753.00	51
Logge	r:	<u>A. Ga</u>	rcia/G. Jeffers		Samplin	ıg Int	erval:	Continuous	_			
Editor:		<u>Sean</u>	McGrane		Convert	ed to	Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	2	Soil Description			Drilling Notes	Drilling Fluid
141 142		IRZ-13-SS-		Topock - Alluvium Deposits	ML							(0.0 - 243.0') No water used
	108	140-145 12/2/2018 08:55	IRZ-13-VAS- 142-147 (<0.17 U ppb) 11/19/2018	Topock - Alluvium Deposits	SM		∷ (SM); ∴ to ver	5 - 147.0') Topock - Alluvium Deposits; s reddish brown / moderate brown(5YR 4 y coarse grained, subangular to subrour arge pebbles, angular to subangular; so	/4); very fine ond; some gran	grained nules to		
 146 _147_		IRZ-13-SS-	14:35	Deposits				; little silt; increase in gravel	Silty gravel wi	th sand		
148 149		145-150 12/2/2018 09:15		Topock - Alluvium Deposits	GM		medit coars to ver	reddish brown / moderate brown(5YR 4 m pebbles, angular to subangular; som e grained sand, angular to subround; so y large pebbles, angular to subangular; 0 - 150.0') Topock - Alluvium Deposits; \$	ne very fine to ome silt; trace wet Sandy silt with	very large		
150				Alluvium Deposits	ML		plastic	reddish brown / moderate brown(5YR 4 city; some very fine to very coarse grains	ed sand, angu			
150 151 152		ID7 40 00		Topock - Alluvium Deposits	SM		hard; (150.0 (SM); to very la	igular; little granule to very large pebble: weak cementation) - 152.0') Topock - Alluvium Deposits; \$ reddish brown / moderate brown(5YR 4 y coarse grained, angular to subround; \$ arge pebbles, angular to subangular; so	Silty sand with 4/4); very fine some granule me silt; wet	n gravel grained s to		
 153 154 	324	IRZ-13-SS- 150-155 12/2/2018 09:20		Topock - Alluvium Deposits	GM		(GM); large	0 - 155.0') Topock - Alluvium Deposits; Sreddish brown / moderate brown(5YR 4 pebbles, subangular; some very fine to angular to subround; some silt	1/4); granules	to very		
155 156 157 158 159 160_		IRZ-13-SS- 155-160 12/2/2018 16:56		Topock - Alluvium Deposits	SM		∷ (SM); ∴ to ver) - 161.0') Topock - Alluvium Deposits; S reddish brown / moderate brown(5YR 4 y coarse grained, angular to subround; s arge pebbles, angular to subangular; so	l/4); very fine gome granule	grained s to		

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet: 9 of	13
Date S Date C Drilling Drilling Drill Ri Driller Drilling Logge Editor:	Comple Co.: Methon G Type Name: Asst:	eted: 12/01/2 Cascac od: Sonic I Borat L Nick Pe T. Aylm A. Gard	2018 de Orilling .ongyear Trad	ck Mount aria		g (NAD (NAD8 epth: le Diam o First \ ng Meth ng Inter	83): 2103309.6 (3): 7615707.4 243 ft bgs eter: 6-12 inches Water: 27.6 ft bgs eter: 4 inch x 10 ft Core Barrel eval: Continuous	Client: P Project: F Location: 1 P	No.: IRZ-13 P G&E inal Groundwater Re G&E Topock, Need nber: RC000753.00	emedy Phase
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
161 162 163 164 165		IRZ-13-SS- 160-165 12/2/2018 09:40		Topock - Alluvium Deposits	SM		(161.0 - 171.0') Topock - Alluvium Deposits; (ML); reddish brown / moderate brown(5YR 4 some granules to very large pebbles, angular very fine to very coarse grained sand, angular	/4); low plasticity to subangular; s	y; some	(0.0 - 243.0') No water used
166 167 168 169 170	324	IRZ-13-SS- 165-170 12/2/2018 09:50		Topock - Alluvium Deposits	ML		9/6/			
		IRZ-13-SS- 170-175 12/2/2018 10:00		Topock - Alluvium Deposits	SM		(171.0 - 176.0') Topock - Alluvium Deposits; (SM); yellowish red / light brown(5YR 5/6); we coarse grained, angular to subround; some g pebbles, subangular to subround; some silt; r	ry fine grained to ranules to very la	very	
176 177 178 179 180		IRZ-13-SS- 175-180 12/2/2018 10:10		Topock - Alluvium Deposits	SM		(176.0 - 187.0') Topock - Alluvium Deposits; (SM); yellowish red / light brown(5YR 5/6); ve coarse grained, angular to subround; some g pebbles, angular to subangular; some silt; mothick	ry fine grained to ranules to very la	very arge	

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 10 of	13
Date S	tarted	: <u>11/16</u>	/2018		Surface	Elevat	ion: <u>481.5 ft amsl</u>	Borine	. ou	IRZ-13 Pi	lot
Date C	omple	eted: <u>12/01</u>	/2018		Northing	g (NAD	83): <u>2103309.6</u>		<i>j</i>		<u></u>
Drilling	Co.:	Casca	ade		Easting	(NAD8	33): <u>7615707.4</u>	_ Client:	PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	243 ft bgs	_ Project:	Final Gro	oundwater Re	medy Phase
Drill Ri	д Туре	e: <u>Borat</u>	Longyear Trad	ck Mount	Borehol	e Diam	eter: 6-12 inches	_ Location:	1		
Driller I	Name:	Nick F	Petrone		Depth to	First \	Nater: 27.6 ft bgs	_	PG&E T	opock, Needle	es, California
Drilling	Asst:	<u>T. Ayl</u>	<u>mer/J. Candel</u>	aria	Samplin	ig Meth	nod: 4 inch x 10 ft Core Barrel	_ Project Nu	ımber: <u>F</u>	RC000753.00	51
Loggei	r:	<u>A. Ga</u>	<u>rcia/G. Jeffers</u>		Samplin	g Inter	val: <u>Continuous</u>	_			
Editor:		<u>Sean</u>	McGrane		Convert	ed to V	Vell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
		IRZ-13-SS- 180-185 12/2/2018 15:07	IRZ-13-VAS- 180-185 (190 ppb) 11/27/2018 12:35	Topock - Alluvium Deposits	SM		(181'); little granules to very large pebbles, ar increase in sand	ngular to subar	igular;		(0.0 - 243.0') No water used
186 187 188 189 190		IRZ-13-SS- 185-190 12/2/2018 10:15					(187.0 - 197.0') Topock - Alluvium Deposits; (SM); reddish brown / moderate brown(5YR 4 to very coarse grained, angular to subangular very large pebbles, subangular to subround;	4/4); very fine g r; some granule some silt; mois	rained es to t		
191 192 193 194 195	108	IRZ-13-SS- 190-195 12/2/2018 10:20		Topock - Alluvium Deposits	SM		(190'); and granules to very large pebbles, ar little silt; increase in sand (192'); saturated (193'); some granules to very large pebbles, subangular; little silt; little mica; increase in s	angular to	gular;	(192.0 - 197.0') Saturated sands	
	108	IRZ-13-SS- 195-200 12/2/2018 10:30	IRZ-13-VAS- 197-202 (<0.83 ppb) 11/28/2018 09:15	Topock - Alluvium Deposits	SM		(197.0 - 202.0') Topock - Alluvium Deposits; (SM); weak red / pale reddish brown(10R 5/4 coarse grained, angular to subround; some g pebbles, subangular to subround; some silt; i mica; coarser clast composed of conglomer); very fine grai granule to small trace boulders;	ned to	(197.0 - 202.0') Observed coarser very saturated zone	
200											

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 11 of	13
Date S					Surface Elevation: 481.5 ft amsl			Borin	a No.:	IRZ-13 Pi	lot
	-	ted: <u>12/01/</u>			Northin			_			
					Easting	•	•	Client: PG&I			
Drilling Method: <u>Sonic Drilling</u> Drill Rig Type: <u>Borat Longyear Track Mount</u>					Total De	•	243 ft bgs	Project: Final Groundwater Remedy			medy Phase
Driller I			<u>Longyear i rad</u> etrone				eter: 6-12 inches Water: 27.6 ft bgs	_ Location:		Гороск, Needle	os California
Drilling			ner/J. Candel		Samplin		-	- Project N		•	
Logge			cia/G. Jeffers		Samplin	-		_ 1 10,00011	ambor.	110000100.000	J 1
Editor:			McGrane		Convert	•		_			
£	ery	0.	0 1 1	gic	oφ	တ တ					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
 201 			IRZ-13-VAS- 197-202 (<0.83 ppb) 11/28/2018 09:15	Topock - Alluvium Deposits	SM		(200'); conglomerate boulder (201'); 6" gravel layer			(197.0 - 202.0') Observed coarser very saturated zone	(0.0 - 243.0') No water used
202		IRZ-13-SS- 200-205					(202.0 - 209.5') Topock - Alluvium Deposits;	Silty sand with	n gravel		
 203		12/2/2018 10:35					(SM), light reddish brown / light brown(5YR 6 to very coarse grained, angular to subangu <mark>lar</mark>	r; some silt; lit	ttle		
203	400	10.55					granules to medium pebbles, angular to suba moist	ingular; trace	mica;		
	108										
205											
				Topock -							
206				Alluvium Deposits	SM						
_207		IRZ-13-SS-									
		205-210 12/2/2018									
208		10:40									
-											
_209											
							(209.5 - 224.5') Topock - Alluvium Deposits;	Silty sand with	n gravel		
_210							(SM); red (2.5ÝR 4/8); very fine grained to ver angular to subangular; some granules to very	large pebble	s,		
 211					K		angular to subangular; some silt; trace cobble mica; moist; weak cementation	es, angular; li	ttle		
212	100										
213	108	IRZ-13-SS- 210-215 12/2/2018 10:45									
		10.43									
_214											
215				Topock - Alluvium	SM						
				Deposits							
216_											
							(216'); 6" layer of metadiorite gravel				
_217		ID7 12 CC									
		IRZ-13-SS- 215-220 12/2/2018									
218		12/2/2018									
-	108										
219											
-											
220											

9/	ARC	ADIS	for natural and built assets		Bo	ring	Log	J			Shee	et: 12 of	13
Date S	tarted:	11/16/	2018	;	Surface	Elevati	on:	481.5 ft amsl		Borin	a No .	IRZ-13 Pi	lot
Date C	omple	ted: <u>12/01/</u>	2018	ا	Northing	(NAD	83):	2103309.6		Domi	9 110	1112-1011	<u>10t</u>
Drilling	Co.:	<u>Casca</u>	de	[Easting	(NAD8	3):	7615707.4		Client:	PG&E		
, ,					Total De	epth:		243 ft bgs		Project:	Final Gro	oundwater Re	medy Phase
Drill Rig Type: Borat Longyear Track Mount					Borehol	e Diam	eter:	6-12 inches		Location:	1		
Driller N	Name:	Nick P	etrone	!	Depth to	First V	Vater:	27.6 ft bgs			PG&E T	<u>opock, Needl</u>	es, California
Drilling	Asst:	<u>T. Ayln</u>	ner/J. Candel	aria ;	Samplin	g Meth	od:	4 inch x 10 ft Core Barre	<u>rel</u>	Project N	umber: <u>F</u>	RC000753.00	51
Logger	:	A. Gar	<u>cia/G. Jeffers</u>		Samplin	•		Continuous					
Editor:		<u>Sean I</u>	<u> </u>		Convert	ed to W	Vell:	Yes □ No					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Descript	otion			Drilling Notes	Drilling Fluid
													(0.0 - 243.0')
	108	IRZ-13-SS- 220-225 12/2/2018 11:15		Topock - Alluvium Deposits	SM		(223');	12" layer of metadiorite gravel					No water use'd
224 _225_				Tanaak			Silty sa	· 227.0') Topock - Weathered E nd with gravel (SM); red (2.5YF arse grained, angular to suban	R 4/6); ve	ery fine graine	ed to		
226			IRZ-13-VAS- 224-229 (<0.83 ppb) 11/28/2018	Topock - Weathered Bedrock - conglomerate	SM		large p	ebbles, angul <mark>ar to subangula</mark> r; to su <mark>bang</mark> ular; little mica; wet;	; some sil	lt; trace cobb			
227		IRZ-13-SS- 225-230 12/2/2018 11:30	16:00				Sandy s	237.0') Topock - Weathered E silt with gravel (ML); red (2.5YR to very coarse grained sand, s to large pebbles, angular to s	R 5/8); lo , angular t	w plasticity; s to subangula	some r; little	(227.0') Saturated zone at bottom of	
								ementation	subangui	iai, dry to mo	1151,	217 to 227 f. bgs run	
 231													
	108			Topock - Weathered Bedrock -	ML								
				conglomerate	9								
234													
235													
236													
 _238	72		IRZ-13-VAS- 237-242 (<0.17 U ppb)	Topock - Weathered Bedrock -	SM		Silty sa very co	242.0') Topock - Weathered End with gravel (SM); red (2.5YF arse grained, angular to subants to very large pebbles, angula	'R 4/8); ve ngular; so	ery fine graine ome silt; little	ed to	(237.0 - 243.0') Driller stops advacncement of 10 foot run at 243 feet bgs core barrel plugged up	
_239			11/29/2018 13:20	conglomerate				- below ground ourfood				preventing smooth advancement	

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	og		Sh	eet: 13 of	13
	Started:					Elevation:	481.5 ft amsl	Borin	ıg No.	: <u>IRZ-13 Pi</u>	lot
	•	ted: <u>12/01/</u> 2				g (NAD83):		_	_		
Drilling		Casca			_	(NAD83):	7615707.4	_ Client:	PG&E		
	Metho		-		Total De	•	243 ft bgs	Project:		<u>Froundwater Re</u>	medy Phase
	ig Type Name:	: <u>Borat L</u> Nick P	ongyear Trac				6-12 inches er: 27.6 ft bgs	_ Location:		Topock, Needle	oo Colifornia
Drilling			<u>etrone</u> ner/J. Candel		-	ว คารเ พลเษ ng Method:	4 inch x 10 ft Core Barrel	- Project N		RC000753.00	
Logge		-	cia/G. Jeffers		-	ng Interval:	Continuous	_ 1 10,00011	iambon.	10000700.000	J 1
Editor			/lcGrane			ted to Well:		_			
	5			υ <u>F</u>							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
241 	72		IRZ-13-VAS- 237-242 (<0.17 U ppb) 11/29/2018 13:20	Topock - Weathered Bedrock - conglomerat	SIVI	(242	:.0 - 243.0') Topock - Competent Bedrock	c - conglomer	ate: red	(237.0 - 243.0') Driller stops advacncement of 10 foot run at 243 feet bgs core barrel plugged up preventing	(0.0 - 243.0') No water used
243				Competent Bedrock - conglomerat		(10F	R 5/8); dry; moderate cementation; friable End of Boring at 243.0 'bg		,	smooth advancement	
-	_										
_244											
245							107				
246											
							10)				
_247	<u>.</u>										
248_						7					
249	-				•						
250											
051	_										
251_											
252											
253											
254											
	_										
200_											
256											
_257											
-											
258											
259_	-										
260											
	viations	· USCS = I	Inified Soil CI	assification	Systen	n ft = feet h	ogs = below ground surface, am	sl = above	mean se	ea level GW = 0	aroundwater

9/	ARCAI	DIS Design & C for natural built asset	Consultancy Land es		Temporary I	Backfill Log		Sheet: 1 of 13
		11/16/2018			Surface Elevation:	481.5 ft amsl	Well ID: II	RZ-13 Pilot
	-	12/01/2018			Northing (NAD83):	2103309.6		
Drilling		Cascade			Easting (NAD83):	<u>7615707.4</u>	Client: <u>PG8</u>	
_		Sonic Drilling			_ '	243 ft bgs	•	GW Remedy Phase 1
Driller I		Nick Petrone			Borehole Diameter:	6-12 inches	Location: <u>PG&</u>	E Topock, Needles, California
Drilling		T. Aylmer/J.				_		
Logge	r: 	A. Garcia/G.	Jeffers	; 	Editor:	Sean McGrane	Project Numbe	r: RC000753.0051
Depth (ft)	Groundwater Sample ID	Geologic	USCS	USCS Class	Well	l Construction	Calculated Material Volumes	Material Volumes Installed
					(0.0 - 0.5') Temporary Steel		(0.0 - 0.5') 1	(0.0 - 0.5') 1 (0%)
1					Plate with BMP (0.5 - 5.0') Plastering Sand	(0.0 - 8.0') 12" Borehole	(0.5 - 5.0') 9.9 bags	(0.5 - 5.0') 5 bags (-49%) Note: Wildcat Washed, loose dredge sands collapsed duing removal of 12 inch conductor casing resulting in less bags need to backfill
5		Topock - Fill	SP		(5.0 - 217.0') Cemex # 2/12 Mesh (16x30)	(8.0 - 243.0') 6" Borehole	(5.0 - 217.0') 93.6 bags	(5.0 - 217.0') 100 bags (7%) Note: Lapis Lustre Sand
 19 		Topock - Fill	SM					
Λ hbrox	intions: LIS	CS - Unified	Soil C	laccificat	tion System ft = foot ha	rs = below around surface ar	mel = above mean	and level CW = groundwater

ARCADIS Design & Consultry for natural and for natural and unit assets **Temporary Backfill Log** Sheet: Surface Elevation: Date Started: 11/16/2018 481.5 ft amsl Well ID: IRZ-13 Pilot Northing (NAD83): 2103309.6 Date Completed: 12/01/2018 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615707.4 Client: PG&E Drilling Method: Total Depth: Project: Final GW Remedy Phase 1 Sonic Drilling 243 ft bgs Driller Name: Nick Petrone Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California T. Aylmer/J. Candelaria Depth to First Water: 27.6 ft bgs Drilling Asst: A. Garcia/G. Jeffers Editor: Sean McGrane Project Number: RC000753.0051 Logger: Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed 21. 22 Topock - Fill 23 24 25 Topock -Alluvium SM 26 Deposits 28 29 (5.0 - 217.0') Cemex (8.0 - 243.0') 6" (5.0 - 217.0') 93.6 (5.0 - 217.0') 100 bags (7%) 30 2/12 Mesh (16x30) Borehole Note: Lapis Lustre Sand 31 32 33 Topock -Alluvium Deposits IRZ-13-VAS-32-37 (220 ppb) 11/17/2018 .35 15:00 36 38 .39 Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

ppb = parts per billion, U = not detected above the laboratory reporting limit, blue water table symbol represents depth to water measured during the

first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

ARCADIS Design & Consultry for natural and for natural and unit assets **Temporary Backfill Log** Sheet: Surface Elevation: 481.5 ft amsl Date Started: 11/16/2018 Well ID: IRZ-13 Pilot 2103309.6 Date Completed: 12/01/2018 Northing (NAD83): Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615707.4 Client: PG&E Drilling Method: Total Depth: Sonic Drilling 243 ft bgs Project: Final GW Remedy Phase 1 Driller Name: Nick Petrone Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California Depth to First Water: 27.6 ft bgs T. Aylmer/J. Candelaria Drilling Asst: A. Garcia/G. Jeffers Editor: Sean McGrane Project Number: RC000753.0051 Logger: Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed 42 Topock -Alluvium Deposits 43 45 Topock -Alluvium SM Deposits 46 Topock -ML Alluvium Deposits Topock -(5.0 - 217.0') Cemex (8.0 - 243.0') 6" (5.0 - 217.0') 93.6 (5.0 - 217.0') 100 bags (7%) 50 SM Alluvium 2/12 Mesh (16x30) Borehole Note: Lapis Lustre Sand Deposits 51 52 53 Topock -55 SM Alluvium Deposits 56 57 IRZ-13-VAS-Topock -(<0.17 U ppb) 11/18/2018 SM Alluvium Deposits .59 11:50 Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

ARCA	DIS for nature built asset	al and ets		Temporary I	Backfill Log	Sh	Sheet: 4 of 13			
Date Started: <u>11/16/20</u>						Well ID: IR	Well ID: IRZ-13 Pilot			
Date Completed:				Northing (NAD83):	2103309.6	L Client: PG&E				
Drilling Co.: Drilling Method:		Cascade Sonic Drilling		Easting (NAD83): Total Depth:	7615707.4 243 ft bgs	Client: PG&E Project: Final GW Remedy Phase 1				
Driller Name:	Nick Petrone	-		Borehole Diameter:	6-12 inches	-	Topock, Needles, California			
Drilling Asst:	T. Aylmer/J.		aria	 Depth to First Water:			, , , , , ,			
Logger:	A. Garcia/G.	Jeffers	i	Editor:	Sean McGrane	Project Number:	RC000753.0051			
Groundwat Sample ID		USCS Code	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed			
IRZ-13-VAS 57-62 - 61 11/18/2018 11:50 - 62		SM				9				
65 66 67	Topock - Alluvium Deposits	SM								
68	Topock - Alluvium Deposits	SM		(5.0 - 217.0') Cemex # 2/12 Mesh (16x30)	(8.0 - 243.0') 6" Borehole	(5.0 - 217.0') 93.6 bags	(5.0 - 217.0') 100 bags (7%) Note: Lapis Lustre Sand			
77 78 79 80	Topock - Alluvium Deposits	SM					ea level. GW = groundwater.			

ARCADIS Design & Consultry for natural and for natural and unit assets **Temporary Backfill Log** Sheet: Surface Elevation: Date Started: 11/16/2018 481.5 ft amsl Well ID: IRZ-13 Pilot Northing (NAD83): 2103309.6 Date Completed: 12/01/2018 PG&E Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615707.4 Client: Drilling Method: Total Depth: Project: Final GW Remedy Phase 1 Sonic Drilling 243 ft bgs Driller Name: Nick Petrone Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California T. Aylmer/J. Candelaria Depth to First Water: 27.6 ft bgs Drilling Asst: A. Garcia/G. Jeffers Editor: Sean McGrane Project Number: RC000753.0051 Logger: Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed 81 82 83 Topock -SM Alluvium Deposits 85 .86 Topock -Alluvium Deposits .88 89 (5.0 - 217.0') Cemex (8.0 - 243.0') 6" (5.0 - 217.0') 93.6 (5.0 - 217.0') 100 bags (7%) 90 # 2/12 Mesh (16x30) Borehole Note: Lapis Lustre Sand 91 92 Topock -GM Alluvium Deposits 93 .95 96 97 Topock -98 GP-GM Alluvium Deposits .99 Topock -Alluvium SM Deposits Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

ARCADIS Design & Consultry for natural and for natural and unit assets **Temporary Backfill Log** Sheet: 13 Date Started: Surface Elevation: 11/16/2018 481.5 ft amsl Well ID: IRZ-13 Pilot Northing (NAD83): 2103309.6 Date Completed: 12/01/2018 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615707.4 Client: PG&E Drilling Method: Total Depth: Project: Final GW Remedy Phase 1 Sonic Drilling 243 ft bgs Driller Name: Nick Petrone Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California Depth to First Water: 27.6 ft bgs T. Aylmer/J. Candelaria Drilling Asst: A. Garcia/G. Jeffers Editor: Sean McGrane Project Number: RC000753.0051 Logger: Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed _101_ 102 _103_ Topock -Alluvium SM Deposits IRZ-13-VAS-102-107 (<0.17 U ppb) 11/19/2018 _105_ 09:30 _106_ 107 _108_ Topock -ML Alluvium Deposits _109_ (5.0 - 217.0') Cemex (8.0 - 243.0') 6" (5.0 - 217.0') 93.6 (5.0 - 217.0') 100 bags (7%) 110 2/12 Mesh (16x30) Borehole Note: Lapis Lustre Sand Topock -Alluvium SM Deposits 112 Topock -Alluvium GM Deposits Topock -Alluvium SM Deposits 116 117 _118_ Topock -SM Alluvium Deposits _119_ Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

ARCA	DIS for natura	al and ts		Temporary E	Backfill Log	S	Sheet: 7 of 13					
Date Started:	11/16/2018			Surface Elevation:	481.5 ft amsl	Well ID: IR	7-13 Pilot					
Date Completed:	12/01/2018			Northing (NAD83):	2103309.6							
Drilling Co.:	-				lethod: <u>Sonic Drilling</u>				Easting (NAD83):	7615707.4	Client: PG&E	
Drilling Method:							Total Depth:	243 ft bgs	Project: Final GW Remedy Phase 1			
Driller Name:	Nick Petrone			_ Borehole Diameter:	6-12 inches	Location: PG&E Topock, Needles, Californi						
Drilling Asst:	T. Aylmer/J.			Depth to First Water:		<u> </u>						
Logger:	A. Garcia/G.	<u>Jeffers</u>		Editor:	Sean McGrane	_ Project Number	: RC000753.0051					
Groundwate Sample ID			Well	Construction	Calculated Material Volumes	Material Volumes Installed						
	Topock - Alluvium Deposits	SM										
	Topock - Alluvium Deposits	SM										
	Topock - Alluvium Deposits	SM		(5.0 - 217.0') Cemex # 2/12 Mesh (16x30)	(8.0 - 243.0') 6" Borehole	(5.0 - 217.0') 93.6 bags	(5.0 - 217.0') 100 bags (7%) Note: Lapis Lustre Sand					
_132	Topock -											
	Alluvium Deposits	GM										
	Topock - Alluvium Deposits	SM										
138 139 	Topock - Alluvium Deposits	ML Soil CI	assificat	ion System ft = feet bo	s = below ground surface an	nsl = ahove means	sea level, GW = groundwater,					

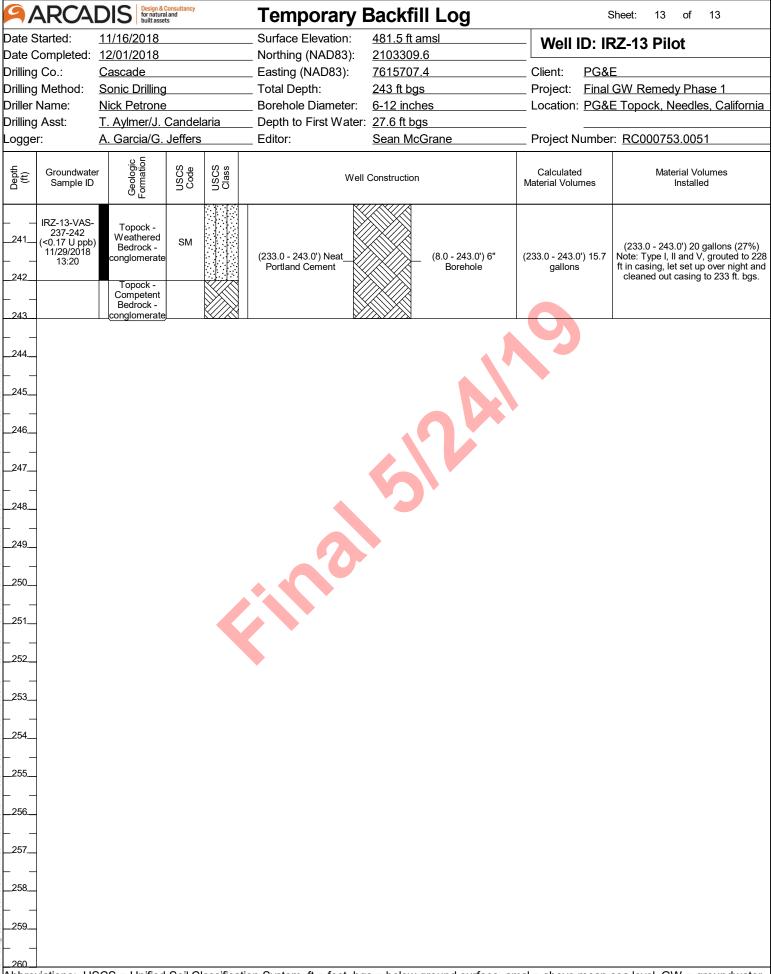
ARC	DIS for natural built ass	ral and sets		Temporary I	Backfill Log	Sh	neet: 8 of 13			
Date Started:	11/16/2018			Surface Elevation:	481.5 ft amsl	Well ID: IR	Well ID: IRZ-13 Pilot			
Date Completed: <u>12/01/2018</u>				Northing (NAD83):	2103309.6					
Drilling Co.:	-		Easting (NAD83):	7615707.4	Client: PG&E					
Drilling Method: <u>Sonic Drilling</u>		Total Depth:	243 ft bgs	Project: Final GW Remedy Phase 1						
Driller Name:	Nick Petron			Borehole Diameter:	6-12 inches	Location: <u>PG&E</u>	Location: PG&E Topock, Needles, California			
Drilling Asst:	T. Aylmer/J.			Depth to First Water:		Design of Normals and	D0000750 0054			
Logger:	A. Garcia/G	. Jeπers	·	Editor:	Sean McGrane	Project Number: <u>RC000753.0051</u>				
Groundwa Sample II		USCS	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed			
	Topock - Alluvium Deposits	ML								
		SM								
148 	Topock - Alluvium Deposits	GM								
	Topock - Alluvium Deposits	ML		(5.0 - 217.0') Cemex	(8.0 - 243.0') 6"	(5.0 - 217.0') 93.6	(5.0 - 217.0') 100 bags (7%)			
	Topock - Alluvium Deposits	SM		# 2/12 Mesh (16x30)	Borehole	bags	`Note: Lapis Lustre Sand ´			
153 	Topock - Alluvium Deposits	GM								
155 156 157 158 159	Topock - Alluvium Deposits	SM								
160	ISCS = Unifie	d Soil C	laccificat	tion System ft = feet ha	s = helow ground surface	amel = ahove mean se	ea level, GW = groundwater,			

9/	ARCA	DIS Design & 1 for natura built asse	consultancy al and ts		Temporary E	Backfill Log	S	heet: 9 of 13
Date S		11/16/2018			Surface Elevation:	481.5 ft amsl	Well ID: IF	ZZ-13 Pilot
	-	12/01/2018			Northing (NAD83):	2103309.6		
Drilling		Cascade			Easting (NAD83):	7615707.4	_ Client: PG&E	
Drilling Driller N	Method:	Sonic Drilling			Total Depth: Borehole Diameter:	243 ft bgs		GW Remedy Phase 1
Drilling		Nick Petrone T. Aylmer/J.		aria	Borenole Diameter. Depth to First Water:	6-12 inches	_ Location. PG&E	Topock, Needles, California
Logger		A. Garcia/G.			Editor:	Sean McGrane	Project Number	: RC000753.0051
		.2 G					•	
Depth (ft)	Groundwate Sample ID	Geologic Formation	USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
		Topock - Alluvium	SM					
161		Deposits						
162								
163								
164								
_								
165								
 166		Topock - Alluvium	ML					
_		Deposits	IVIL					
167								
_								
168								
169								
					(5.0 - 217.0') Cemex		(5.0 - 217.0') 93.6	(5.0 - 217.0') 100 bags (7%)
					# 2/12 Mesh (16x30)	Borehole	` bags ´	Note: Lapis Lustre Sand
_172								
173								
		Topock - Alluvium	SM					
174		Deposits						
_								
175								
_								
176								
_								
177								
		Topock -						
178		Alluvium Deposits	SM					
		Deposits						
179								
-								
180 ∆hhrev	iations: 119	CS = Unified	Soil C	lassificat	tion System ft = feet ha		nsl = ahove mean s	sea level. GW = groundwater.

ARCADIS Design & Consultry for natural and for natural and unit assets **Temporary Backfill Log** Sheet: 13 Surface Elevation: 11/16/2018 481.5 ft amsl Date Started: Well ID: IRZ-13 Pilot 2103309.6 Date Completed: 12/01/2018 Northing (NAD83): Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615707.4 Client: PG&E Drilling Method: Total Depth: Sonic Drilling 243 ft bgs Project: Final GW Remedy Phase 1 Driller Name: Nick Petrone Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California Depth to First Water: 27.6 ft bgs T. Aylmer/J. Candelaria Drilling Asst: A. Garcia/G. Jeffers Editor: Sean McGrane Project Number: RC000753.0051 Logger: Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed _181_ 182 IRZ-13-VAS-180-185 (190 ppb) 11/27/2018 _183_ 12:35 Topock -Alluvium SM Deposits 184 _185_ _186_ 187 _188_ 189 (5.0 - 217.0') Cemex (8.0 - 243.0') 6" (5.0 - 217.0') 93.6 (5.0 - 217.0') 100 bags (7%) 190 2/12 Mesh (16x30) Borehole Note: Lapis Lustre Sand 191 Topock -192 Alluvium Deposits 193 _195_ 196 197 IRZ-13-VAS-197-202 Topock -(<0.83 ppb) 11/28/2018 SM Alluvium Deposits _199. Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

Date Started: Date Started: Date D		AKUA	DIS for natur built ass	ral and ets			Backfill Log		Sheet: 11 of 13
Date Completed: 12/01/2018								Well ID: IF	RZ-13 Pilot
Dalling Methods Sonio Diffling		-				- , ,			
Doller Name: Nick Petrone									
Deling Asst: T. Aylmer/J. Candelaria	-	-		-			-	•	
Loggier A. Garcia/G. Jeffers Editor: Seen McGrane Project Number RC000753.0051								Location: <u>PG&</u>	<u>E Topock, Needles, California</u>
Fig. Councivator Topick SM Topick _	-	-			•		<u> </u>		
## RE213-VAS- 198-201 Topock- 198-201 Topock- 198-201 Topock- 200 SM 201 Topock- 202 Zond 202 Zond 203 Zond 204 Zond 205 Zond 206 Zond 207 Zond 208 Zond 209 Zond 209 Zond 200 Zond 200 Zond 201 Zond 202 Zond 203 Zond 204 Zond 205 Zond 206 Zond 207 Zond 208 Zond 209 Zond 200 Zond 200 Zond 201 Zond 202 Zond 203 Zond 204 Zond 205 Zond 206 Zond 207 Zond 208 Zond 208 Zond 209 Zond 200 Zond 200 Zond 200 Zond 200 Zond 200 Zond 200 Zond 201 Zond 202 Zond 203 Zond 204 Zond 205 Zond 206 Zond 207 Zond 208 Zond 208 Zond 209 Zond 200 Logge	er:		Jeffers		Editor:	Sean McGrane	Project Numbe	r: RC000753.0051	
201	Depth (ft)		Geologic Formation	USCS	USCS	Well	Construction		
203. 204. 205. 206. 207. 208. 207. 208. 208. 209. 210. 210. 211. 212. 214. 215. 215. 216. 217. 218. 218. 219. 210. 210. 210. 211. 212. 214. 215. 216. 217. 218. 218. 219. 210. 210. 210. 210. 211. 212. 213. 214. 215. 216. 217. 218. 218. 219. 219. 210.		197-202 (<0.83 ppb) 11/28/2018	Alluvium	SM					
Borehole Borehole	203 204 205 206 207 208		Alluvium	SM		(5.0 - 217.0') Cemex # 2/12 Mesh (16x30)			(5.0 - 217.0') 100 bags (7%) Note: Lapis Lustre Sand
(217.0 - 227.0') 4 bags (43%) Plastering Sand Plastering Sand (217.0 - 227.0') 2.8 bags (217.0 - 227.0') 4 bags (43%) Note: Wildcat Washed	211 212 213 214 215 216		Alluvium	SM			(8.0 - 243.0') 6" Borehole		
220	-					(217.0 - 227.0') Plastering Sand			(217.0 - 227.0') 4 bags (43%) Note: Wildcat Washed
	220]					\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		

9/	ARCA	DIS Design & for natura built asse	Consultancy Il and ts		Temporary	Backfill Log	;	Sheet: 12 of 13
Date C Drilling Drilling Driller	y Co.: y Method: Name: y Asst:	11/16/2018 12/01/2018 Cascade Sonic Drilling Nick Petrone T. Aylmer/J. A. Garcia/G.	e Candel		Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	481.5 ft amsl 2103309.6 7615707.4 243 ft bgs 6-12 inches 27.6 ft bgs Sean McGrane	Client: PG& Project: Final Location: PG&	RZ-13 Pilot E GW Remedy Phase 1 E Topock, Needles, California
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
		Topock - Alluvium Deposits	SM		(217.0 - 227.0') Plastering Sand		(217.0 - 227.0') 2.8 bags	(217.0 - 227.0') 4 bags (43%) Note: Wildcat Washed
225 226 227	IRZ-13-VAS- 224-229 (<0.83 ppb) 11/28/2018 16:00	Topock - Weathered Bedrock - conglomerate	SM					
		Topock - Weathered Bedrock - conglomerate	ML		(227.0 - 233.0') Bentonite seal chips	(8.0 - 243.0') 6" Borehole	(227.0 - 233.0') 1.7 bags	(227.0 - 233.0') 2 bags (18%) Note: Puregold Medium Chips
					(233.0 - 243.0') Neat Portland Cement		(233.0 - 243.0') 15.7 gallons	(233.0 - 243.0') 20 gallons (27% Note: Type I, II and V, grouted to 2 ft in casing, let set up over night a cleaned out casing to 233 ft. bgs
_238	IRZ-13-VAS- 237-242 (<0.17 U ppb 11/29/2018 13:20	Weathered Bedrock - conglomerate						sea level, GW = groundwate



ARCA	Design & Consultancy for natural and built assets	l	Boring	Log		Sheet: 1 of	13
Date Started:	10/31/2018	Sur	rface Elevation	on: 480.5 ft amsl	Borine	g No.: <u>IRZ-15 Pi</u>	lot
Date Completed:	11/15/2018	Nor	rthing (NAD	83): <u>2103151.6</u>		<u></u>	<u></u>
Drilling Co.:	Cascade	Eas	sting (NAD8	3): <u>7615773.1</u>	Client:	PG&E	
Drilling Method:	•	Tota	•	257 ft bgs	-	Final Groundwater Re	medy Phase
Drill Rig Type:	Borat Longyear Tra				Location:		
Driller Name:	Nick Petrone	•	•	Vater: 26.02 ft bgs		PG&E Topock, Needle	
Drilling Asst:	T. Aylmer/J. Candel		mpling Meth		Project Nu	umber: <u>RC000753.00</u>	51
Logger:	A. Garcia / C.Mills		mpling Interv				
Editor:	Sean McGrane		nverted to W	/ell: ⊠ Yes □ No		1	
	Sieve Groundwater Sample ID	Geologic	USCS Code USCS Class	Soil Description		Drilling Notes	Drilling Fluid
 _ 1 _ 0 			NR	(0.0 - 2.0') (NR); No Recovery lost during han	d clearance		(0.0 - 257.0') No water used
_ 2		Topock - Fill	SP	(2.0 - 7.0') Topock - Fill; Poorly graded sand (/ moderate yellowish brown(10YR 5/4); very firmedium grained, angular to round; little coars grained sand, angular to round; trace granule subround; trace silt; trace clay; dry	ne grained to e to very coars	se	
8		Topock - Fill	SP	(7.0 - 17.0') Topock - Fill; Poorly graded sand 4/3); very fine grained to medium grained, and coarse to very coarse grained sand, angular to granule to small pebbles, subround; trace silt;	gular to round; o round; trace	little	
15 16 17 18 18 78 19 		Deposits	SM	(17.0 - 22.5') Topock - Alluvium Deposits; Silt (SM); dark yellowish brown (10YR 4/4); very fir coarse grained, angular to subangular; some pebble, angular to subangular; some very fine grained sand, angular to subround; some silt;	to very coarsitrace clay; dr	e not	

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring L	og	SI	neet: 2 of	13
Date S					Surface	Elevation:	480.5 ft amsl	Boring No.	.: <u>IRZ-15 Pi</u>	lot
I .		ted: <u>11/15/</u>				g (NAD83):	2103151.6	_	•	
Drilling		Casca			_	(NAD83):	7615773.1	Client: PG&E		
Drilling			<u>Drilling</u>		Total De	•	257 ft bgs	•	<u> Groundwater Re</u>	medy Phase
Drill Ri	• • •		Longyear Trac				6-12 inches er: 26.02 ft bgs	Location: 1	Topock, Needle	a California
Driller I Drilling		-	ner/J. Candela			g Method:	4 inch x 10 ft Core Barrel		•	
Logge		-	cia / C.Mills		•	ig Interval:	Continuous	_ 1 Tojeot Namber.	110000700.000	<i>7</i> 1
Editor:			McGrane		-	ed to Well:		-		
	7			υ <u>Ε</u>						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description		Drilling Notes	Drilling Fluid
21 22				Topock - Alluvium Deposits	SM				(17.0 - 27.0') Core barrel and sediments were hot	(0.0 - 257.0') No water used
23				Topock - Alluvium Deposits	GW-GM	silt peb	5 - 23.5') Topock - Alluvium Deposits; <mark>We</mark> and sand (GW-GM); (10Y 3/2)(7.5YR); <mark>gr</mark> bles, angular to subangular; little ve ry fine	anules to large to very coarse		
24 24 25	78					grai sub (23)	ned sand, angular; little silt; trace granule ingular; moist 5 - 27.0') (NR); No recovery core barrel we sample bag part of the core fell through the er.	as hot and melted		
26					NR		6		¥	
27 28 29		IRZ-15-SS- 25-30 11/14/2018 11:55		Topock - Alluvium Deposits	ML	(ML) larg grai	2-29.5') Topock - Alluvium Deposits; Gr.; brown (10YR 4/3); medium plasticity; lite pebbles, angular to subangular; little ve led sand, angular to subangular; trace cl.	ttle granules to very ry fine to very coarse ay; wet	(27.0') Approximate depth of water table	
30 31 32	120	IRZ-15-SS-				(GN sub	5 - 47.0') Topock - Alluvium Deposits; Sili); brown (10YR 5/3); granules to medium ingular; and silt; little very fine to very coa ingular to round; trace large pebbles, and	pebbles, angular to arse grained sand,		
33 34		30-35 11/14/2018 12:03	IRZ-15-VAS-							
35			32-37 (13 ppb) 11/1/2018 13:00	Topock - Alluvium Deposits	GM					
36										
37		IRZ-15-SS- 35-40								
38 38 39	300	11/14/2018 12:15								
40 Abbro	iotions	. USCS - I	Initiad Sail Cl	aggification	System		ngs = helow ground surface amo	ol – abovo mass s	an lavel CW =	groundwater

9/	1RC	CADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	eet: 3 of	13
Date S						Elevation:	480.5 ft amsl	Borir	ıa No.:	: <u>IRZ-15 P</u>	ilot
	-	eted: <u>11/15/2</u>				g (NAD83):	2103151.6	_			
Drilling		Cascad			_	(NAD83):	<u>7615773.1</u>	_ Client:	PG&E		
Drilling					Total D	•	257 ft bgs	_ Project:		roundwater Re	emedy Phase
Drill Ri			ongyear Trac				6-12 inches	_ Location			
Driller					•		7: 26.02 ft bgs			Topock, Needl	
Drilling		•	ner/J. Candela		-	ng Method:	4 inch x 10 ft Core Barrel	_ Project N	lumber:	RC000753.00	<u>51</u>
Logge Editor:			cia / C.Mills //cGrane		-	ng Interval: ted to Well:	Continuous	_			
Euitoi.		<u>Sean iv</u>	ICGIAIIE		Conven	led to vveii.	∴ les □ NU				Т
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
41 42 43 44 45 46		IRZ-15-SS- 40-45 11/14/2018 12:24		Topock - Alluvium Deposits	GM	0					(0.0 - 257.0') No water used
4748	300	IRZ-15-SS- 45-50 11/14/2018 12:43				(47.0 (GM) angul sand	- 57.0') Topock - Alluvium Deposits; Si grayish brown (10YR 5/2); granules to ar to subangular; some very fine to ver subangular to rounded; little large to v ar to subangular; little silt; trace cobble	o medium peb y coarse grain ery large pebb	bles, ed bles,		
5152535455		IRZ-15-SS- 50-55 11/14/2018 13:23		Topock - Alluvium Deposits	GM						
56575859		IRZ-15-SS- 55-60 11/14/2018 13:32		Topock - Alluvium Deposits	GM	(GM) to me coars pebbl	- 69.5') Topock - Alluvium Deposits; Si brown (7.5YR 5/3) and reddish brown dium pebbles, angular to subangular; e grained sand, subangular to round; i es, angular to subangular; little silt; tra ngular; wet	(5YR 5/3); gra some very fine ittle large to ve	anules to very		
60 Abbro	dotio:	n: 11808 - 1	Inified Sail Cl	 cooification	- Cuetar	1201 N	go - bolow ground surface, am	al = abassa	maan sa	la lavel CW =	groundwater

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring L	og		Shee	et: 4 of	13
Date S	Started	10/31/2	2018		Surface	Elevation:	480.5 ft amsl	Borin	a No.:	IRZ-15 Pi	ilot
l l	-	ted: <u>11/15/2</u>	2018		Northing	g (NAD83)		_			
Drilling		Cascac			_	(NAD83):	7615773.1	_ Client:	PG&E		
Drilling			•		Total De	•	257 ft bgs	_ Project:		oundwater Re	medy Phase
Drill Ri			<u>ongyear Trad</u>	ck Mount				_ Location:			0 1:6 :
Driller					•		er: 26.02 ft bgs 4 inch x 10 ft Core Barrel	– Droiget N		opock, Needl	
Drilling Logge		-	ner/J. Candela cia / C.Mills	ana	-	ig Method: ig Interval:	Continuous	_ Project N	ullibel. <u>r</u>	RC000753.00	01
Editor:			//cGrane		-	ed to Well		_			
				٥٤							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	Class	Soil Description			Drilling Notes	Drilling Fluid
616263646566566667	300	IRZ-15-SS- 60-65 11/14/2018 15:58 IRZ-15-SS- 65-70 11/15/2018	IRZ-15-VAS- 62-67 (0.459 J ppb) 11/2/2018 12:30	Topock - Alluvium Deposits	GM	0%0%0%0%0%0%0%0%0%0%0%0%0%0%0%0%0%0%0%					(0.0 - 257.0') No water used
6868 - 69 - 70		09:30				silt	5 - 74.5') Topock - Alluvium Deposits; Wand sand (GW-GM); brown (7.5YR 4/3); c	granules to lar	ge		
5 71						gra 🔟 gra	bles, angular to subangular; some very fii ned sand, angular to subangular; little sili bles, angular; trace cobbles, subangular;	t; trace very la	rse rge		
72	96	IRZ-15-SS-		Topock - Alluvium	GW-GM						
		70-75 11/15/2018 09:40		Deposits							
 - 74_											
75						silt	5 - 87.0') Topock - Alluvium Deposits; Wa and gravel (SW-SM); brown (7.5YR 4/3);	very fine grain	ed to		
<u> </u>						°	v coarse grained, angular to subround; an e pebbles, angular to subangular; little sil	d granules to	very		
76											
77		IRZ-15-SS-		Topock -	CM/ CM						
5	108	75-80 11/15/2018 09:45		Alluvium Deposits	SW-SM						
80_	<u> </u>					<u> </u>	han - holow around ourfood am				

9/	4R (ADIS	Design & Consultancy for natural and built assets		Во	ring L	og		She	eet: 5 of	13
Date S	Started	10/31/2	2018		Surface	Elevation:	480.5 ft amsl	Borin	a No.:	IRZ-15 P	ilot
Date 0	Comple	ted: <u>11/15/2</u>	2018		Northing	g (NAD83):	2103151.6			<u></u>	<u></u>
Drilling	-	<u>Cascad</u>			_	(NAD83):	7615773.1	_ Client:	PG&E		
_	g Metho				Total De	•	257 ft bgs	_ Project:		roundwater Re	emedy Phase
	ig Type		ongyear Trad	ck Mount				_ Location:			0 "" .
	Name:				•		er: 26.02 ft bgs	- 		Topock, Needl	
Drilling		•	er/J. Candel	arıa	-	g Method:	4 inch x 10 ft Core Barrel Continuous	_ Project N	umber:	RC000753.00	51
Logge Editor			cia / C.Mills IcGrane		-	g Interval: ed to Well:		_			
Luitoi	1	<u>OCAIT IV</u>	ICOTATIC								
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
81	- 108	IRZ-15-SS- 80-85 11/15/2018 09:50		Topock - Alluvium Deposits	SW-SM						(0.0 - 257.0') No water used
8788		IRZ-15-SS- 85-90 11/15/2018 09:58				(GN sub	0 - 97.0') Topock - Alluvium Deposits; Sil 1); brown (7.5YR 4/3); granules to large p angular; some silt; little very fine to very o ular to subround; trace very large pebbles	ebbles, angula oarse grained	ar to I sand,		
90_ - 91_ - 92_	96	IRZ-15-SS-		Topock - Alluvium	GM						
93	-	90-95 11/15/2018 10:05		Deposits							
94 95	-										
96	- 96	IRZ-15-SS- 95-100 11/15/2018 10:15		Topock - Alluvium Deposits	SM	1 · 1 · 1 · 1 (SM	0 - 104.5') Topock - Alluvium Deposits; S l); reddish brown (2.5YR 4/4); very fine gr ned, angular to subangular; and granules bles, angular; little silt; trace cobbles, ang	ained to very o	coarse		
100 Abbre	viations	·· IISCS - II	Inified Soil Cl	assification	n System	ft = feet	bas = below around surface, am	el = ahove i	mean se	a level GW =	groundwater

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 6 of	13
Date S			/2018		Surface		· · · · · · · · · · · · · · · · · · ·	Borin	a No.:	IRZ-15 P	ilot
	•	eted: 11/15			Northing		•	_	_		
Drilling		Casca			Easting	•	•	_ Client:	PG&E		
Drilling			Drilling		Total De	•	257 ft bgs	Project:		roundwater Re	medy Phase
Drill Ri			Longyear Trac					_ Location:			
Driller Drilling			Petrone mer/J. Candel		Samplin		Water: 26.02 ft bgs od: 4 inch x 10 ft Core Barrel	- Project N		<u>Fopock, Needl</u> RC000753.00	
Logge		-	rcia / C.Mills		Samplin	-		_ i iojectiv	umber. <u>I</u>	10000133.00	<u> </u>
Editor:			McGrane		Convert	-		-			
				0 5	$\overline{}$						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
101 102 103 104 105	96	IRZ-15-SS- 100-105 12/6/2018 10:25	IRZ-15-VAS- 102-107 (< 0.17 U ppb) 11/3/2018 16:15	Topock - Alluvium Deposits	SM		(104.5 - 106.5') Topock - Alluvium Deposits; (SM); reddish brown / moderate brown(5YR 4 to very coarse grained, angular to subangular	1/4); very fine	grained		(0.0 - 257.0') No water used
106 107				Alluvium Deposits	SM		very large pebble, angular; some silt; trace co (106.5 - 116.0') Topock - Alluvium Deposits; (ML); reddish brown / moderate brown(5YR 4	Sandy silt with	ar; wet		
		IRZ-15-SS- 105-110 11/15/2018 11:00					plasticity; some granules to very large pebble subangular; some very fine to very coarse grate subangular; wet; weak cementation	, angular to	ngular		
 111 112		IRZ-15-SS-		Topock - Alluvium Deposits	ML						
113	300	110-115 11/15/2018 11:20									
114 115											
L _											
116							(44C 0 447 0) T All : D : :	Cilhy are 1	ith occur		
117				Topock - Alluvium Deposits	GM		(116.0 - 117.0') Topock - Alluvium Deposits; (GM); reddish brown / moderate brown(5YR 4 large pebbles, angular to subangular; and silt very coarse grained sand, angular to subangular to subangu	4/4); granules t; little very fin	to very le to		
118 119				Topock - Alluvium Deposits	ML		(117.0 - 120.0') Topock - Alluvium Deposits; (ML); reddish brown / moderate brown(5YR 4 plasticity; some granules to very large pebble subangular; some very fine to very coarse grato subangular; wet; weak cementation	l/4); medium s, angular to			
120	.i	. 11000	Theight Coll C	laasifiaati -		<u> [</u>	oot has - holow ground ourfood ame	.1		a layel CM/ =	

9/-	ARC	ADIS	for natural and built assets		Во	ring	Log			She	et: 7 of	13
Date S	tarted:	10/31/2	2018		Surface	Elevati	on:	480.5 ft amsl	Borin	a No :	IRZ-15 P	ilot
Date C	omple	ted: <u>11/15/</u> 2	2018		Northing	g (NAD	83):	2103151.6				<u></u>
Drilling	Co.:	Casca	de		Easting		3):	7615773.1	Client:	PG&E		
Drilling			Drilling		Total De	•		257 ft bgs	Project:		<u>oundwater Re</u>	emedy Phase
Drill Ri		·	ongyear Trac	k Mount				6-12 inches	Location:			
Driller I		Nick P			•			26.02 ft bgs		,	•	les, California
Drilling		•	ner/J. Candela		Samplin	•		4 inch x 10 ft Core Barrel	Project N	umber: <u>F</u>	RC000753.00	51
Logge			cia / C.Mills		Samplin	•		Continuous				
Editor:		Sean N	<u>/////////////////////////////////////</u>		Convert	ed to V	Vell:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
 121				Topock - Alluvium Deposits	GM		(GM); r large p	- 121.0') Topock - Alluvium Deposits; Seddish brown / moderate brown(5YR 4 ebbles, angular to subangular; some signse grained sand, angular to subangular to subangular to subangular to subangular to subangular to subangu	l/4); granules ilt; little very f	to very		(0.0 - 257.0') No water used
	300		IRZ-15-VAS- 132-137 (< 0.17 U ppb) 11/4/2018 12:40	Topock - Alluvium Deposits Topock - Alluvium Deposits	ML	00/00/00/00/00/00/00/00/00/00/00/00/00/	very co (121.0 (ML); re plastici subang subang subang	arse grained sand, angular to subanguarse grained sand, angular to subanguarse grained sand, angular to subanguarse grained sand, angular to subanguar; to some granules to very large pebble, ty; some granules to very large pebble, ular; little very fine to very coarse grainular; wet; weak cementation 137.0') Topock - Alluvium Deposits; Seddish brown / moderate brown(5YR 4 ebbles, angular to subangular; some w grained sand, angular to subangular; saltion; pebbles composed of metadiorit	Silty gravel wit Although the same and the	th sand to very		
137 138 139	96			Topock - Alluvium Deposits	ML		(ML); re some g very fin weak c	- 139.5') Topock - Alluvium Deposits; Ceddish brown / moderate brown(5YR 4/2) ranules to very large pebbles, angular e to very coarse grained sand, angular ementation	/4); low plasti to subangula to subangula	city; r; some ar; wet;		
140					SM		`	- 144.5') Topock - Alluvium Deposits; S		ŭ		
Abbrev	<i>i</i> iations	: USCS = L	Inified Soil Cla	assification	n System	n ft = fe	et has	s = below ground surface, ams	d = above r	mean sea	a level GW =	groundwater

9/	4R (CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 8 of	13
Date S					Surface			Borin	ıa No.:	: <u>IRZ-15 Pi</u>	ilot
	-	eted: <u>11/15/2</u>			Northing						
Drilling		Cascad			Easting	•	•	_ Client:	PG&E		
Drilling					Total De	•	257 ft bgs	_ Project:		roundwater Re	medy Phase
Drill Ri Driller			ongyear Trac				eter: <u>6-12 inches</u> <i>V</i> ater: <u>26.02 ft bgs</u>	_ Location:		Topock, Needl	es California
Drilling			ner/J. Candela		Samplin		_	- Proiect N		-	
Logge		-	cia / C.Mills		Samplin	_					<u> </u>
Editor:			1cGrane		Convert	-					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
141 142 143 144	96	IRZ-15-SS- 140-145 11/15/2018 11:25		Topock - Alluvium Deposits	SM		(SM); reddish brown (2.5YR 4/4); very fine gragrained, angular to subangular; some granule pebbles, angular; little silt; trace cobbles, angular; little silt; little silt; trace cobbles, angular; little silt; little	es to very larg	ge		(0.0 - 257.0') No water used
145		IRZ-15-SS-					(144.5 - 161.0') Topock - Alluvium Deposits; (SM); reddish brown (2.5YR 4/4); very fine gragrained, angular to subangular; some granule pebbles, angular; some silt; trace cobbles, and subangular; some silt; trace cobbles, and subangular; some silt; trace cobbles, and subangular some	ained to very es to very larg ngular; wet	coarse ge		
		145-150 11/15/2018 11:30					(147'); increase in granules and very large persit	obies, decre	ase in		
151	96	IRZ-15-SS-		Topock - Alluvium	SM						
153		150-150 11/15/2018 12:40		Deposits							
154 155							(154.5'); decrease in silt, trace clay				
156											
157 158		IRZ-15-SS- 155-160 11/15/2018 12:45									
159	96										
160_	<u> </u>		<u> </u>			<u> 1:41:45</u>					<u> </u>

9/	ARC	CAD)IS	Design & Consultancy for natural and built assets		Во	ring	Log	3			Sh	eet: 9 of	13
Date S	tarted:	: <u>1</u>	0/31/2	2018		Surface	Elevati	ion:	480.5 ft am	sl	Borin	na No.	: <u>IRZ-15 P</u>	ilot
Date C	omple	ted: 1	1/15/2	2018		Northing	g (NAD	83):	2103151.6				· <u></u>	<u></u>
Drilling	Co.:	<u>C</u>	ascac	le		Easting	(NAD8	3):	<u>7615773.1</u>		Client:	PG&E		
Drilling				Drilling		Total De	•		257 ft bgs		Project:		roundwater Re	emedy Phase
Drill Ri				ongyear Trac					6-12 inches		Location			
Driller I				etrone		•			26.02 ft bgs				Topock, Need	
Drilling			•	<u>ier/J. Candel</u>		Samplin	-			ft Core Barrel	Project N	lumber:	RC000753.00	51
Logge				ia / C.Mills		Samplin	-		Continuous					
Editor:		<u> </u>	ean iv	1cGrane		Convert	ea to v	veii:	× Yes	No				
Depth (ft)	Recovery (in)	Sie [,] Samp		Groundwater Sample ID	Geologic Formation	USCS	USCS Class			Soil Description			Drilling Notes	Drilling Fluid
 161					Topock - Alluvium Deposits	SM	2	(404.0	404 5D T	Alleria D. "				(0.0 - 257.0') No water used
	96	IRZ-15- 160-10 11/15/2 12:50	65 018	IRZ-15-VAS- 162-167	Topock - Alluvium Deposits	ML		(ML); d	ark reddish brov large pebbles, a arse grained sa	k - Alluvium Deposit wn(2.5YR 3/3); no p angular to subanguli nd, angular to subro	lasticity; some o ar; some very fir	granules ne to		
165 166 167		IRZ-15-		(3200 ppb) 11/5/2018 13:00	Topock - Alluvium Deposits	SM		(SM); r grained pebble	eddish brown (2 , angular to sub s, angular; som	k - Alluvium Deposit .5YR 4/4); very fine bangular, some grare e silt; trace cobbles,	grained to very nules to very lard , angular; wet	coarse ge		
168 169 170		165-1; 11/15/2 13:0!	70 018		Topock - Alluvium Deposits	SM		(SM); r	eddish brown (2 , angular to sub	k - Alluvium Deposit 2.5YR 4/4); very fine bangular; some grar e silt; trace cobbles,	grained to very nules to very larg	coarse ge		
171	114	IRZ-15- 170-1 11/15/2	75 018					(GM); r large p	eddish brown / ebbles, angular	k - Alluvium Deposit moderate brown(5Y to subangular; som	(R 4/4); granules ne very fine to ve	s to very ry		
173 174		13:1	3		Topock - Alluvium Deposits	GM		cemen	ation	angular to subangula k - Alluvium Deposit				
175 176 								(GM); r large p	eddish brown / ebbles, angular grained sand, a	moderate brown(5Y to subangular; som angular to subangula	'R 4/4); granules ne very fine to ve	s to very		
177 178	108				Topock - Alluvium Deposits	GM								
179 180	intions	·· 1190	Y = 11	Inified Soil C	assification	System		oot ba	- bolow gr	ound surface a	mel = above	moon	na lovol GW -	groundwater

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet: 10 of	13
Date S	Started	10/31	/2018		Surface	Elevation	n: <u>480.5 ft amsl</u>	- Boring N	o.: <u>IRZ-15 P</u>	ilot
Date C	Comple	ted: <u>11/15</u>	5/2018		Northing	g (NAD8	3): <u>2103151.6</u>			
Drilling		<u>Casc</u>			Easting	•	•	_ Client: <u>PG8</u>		
Drilling			Drilling		Total De	•	257 ft bgs	-	l Groundwater Re	medy Phase
Drill Ri			Longyear Tra	ck Mount				Location: 1		
Driller I Drilling			Petrone	orio	•		ater: 26.02 ft bgs d: 4 inch x 10 ft Core Barrel	PG&E Topock, Needles, Cal Project Number: RC000753.0051		
Logge		-	<u>lmer/J. Candel</u> arcia / C.Mills	ana	Samplir Samplir	-		_ Project Numbe	er. <u>RC000753.00</u>	<u> </u>
Editor:			McGrane		Convert	-		_		
		<u> </u>	- IVIO GI GI II		1					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
										(0.0 - 257.0') No water used
181										
182		IRZ-15-SS-								
		180-185 11/15/2018								
183		13:27		T						
	108			Topock - Alluvium	GM					
184			IRZ-15-VAS- 182-187	Deposits						
-			(140 ppb) 11/6/2018					•		
185			11:10							
186						PI				
407										
187		IRZ-15-SS- 185-190					187.0 - 189.5') Topock - Alluvium Deposits;	Gravelly silt with san	id	
 188		11/15/2018 13:25					ML); reddish brown (2.5YR 4/4); no plasticit very large pebbles, angular to subangular; so	me very fine to very		
100		13.23		Topock - Alluvium	ML	000	coarse grained sand, angular to subround; w	et; weak cementation	n	
 189				Deposits						
						.00				
190						000	189.5 - 192.0') Topock - Alluvium Deposits; ML); reddish brown (2.5YR 4/4); no plasticity	Gravelly silt with san	d	
				Topock -			very large pebbles, angular to subangular; so coarse grained sand, angular to subround; w	ome very fine to very	n	
191				Alluvium Deposits	ML		,	oi, mount comomune.		
_				Воровко						
192	108	IRZ-15-SS-				6 P P	100 0 107 0) T	0	_	
		190-195 11/15/2018					192.0 - 197.0') Topock - Alluvium Deposits; ML); reddish brown (2.5YR 4/4); no plasticity	y; some granules to		
193		13:30					very large pebbles, angular to subangular; so coarse grained sand, angular to subround; w		n	
-										
194				Topock -						
-				Alluvium	ML					
195				Deposits						
196										
197		IRZ-15-SS- 195-200					197.0 - 200.0') Topock - Alluvium Deposits;			1
 198		195-200 11/15/2018 13:35					SM); dark reddish brown (2.5YR 3/4); very fi coarse grained, angular to subangular; some	granules to very	Interval is coarse grained	
130		13.33		Topock -			arge pebbles, angular; some silt; trace cobb clay; wet	ies, angular; trace	and very saturated	
 199	108			Alluvium Deposits	SM					
200										
	viations	: USCS =	Unified Soil Cl	lassification	n Systen	ft = fe	t has = helow around surface am	sl = ahove mean	sea level GW =	aroundwater

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sh	neet: 11 of	13
Date S					Surface			Borin	ıa No.	: <u>IRZ-15 Pi</u>	lot
	•	eted: <u>11/15/2</u>			Northing						
Drilling		Cascad			Easting		•	Client:	PG&E		
Drilling			•		Total De	•	257 ft bgs	Project:		<u> Broundwater Re</u>	medy Phase
Drill Ri Driller			ongyear Trac				eter: <u>6-12 inches</u> Vater: <u>26.02 ft bgs</u>	Location		Topock, Needle	oc California
Drilling			<u>erione</u> ner/J. Candela		Samplin		_	Project N		RC000753.005	
Logge		-	cia / C.Mills		Samplin	-		i rojocci	idilibor.	110000700.000	<u>, , </u>
Editor:			1cGrane		Convert	•					
	>			.º 5							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
201 202 203 204 205	108	IRZ-15-SS- 200-205 11/15/2018 13:45		Topock - Alluvium Deposits	SM		(200.0 - 206.5') Topock - Alluvium Deposits; S (SM); reddish brown (2.5YR 4/4); very fine gra grained, angular to subangular; some granule pebble, angular; some silt; trace cobbles, ang	ined to very s to very larg	coarse ge	(197.0 - 202.0') Interval is coarse grained and very saturated	(0.0 - 257.0') No water used
206 							(206.5 - 212.0') Topock - Alluvium Deposits; S (ML); reddish brown (2.5YR 4/4); low plasticity	Sandy silt wit	h gravel		
		IRZ-15-SS- 205-210 11/15/2018 07:28		Topock - Alluvium Deposits	ML		very coarse grained sand, angular to subround very large pebbles, angular to subangular; tracementation	d; little granu	les to		
211 212											
213	108	IRZ-15-SS- 210-215 11/15/2018 14:00					(212.0 - 232.0') Topock - Weathered Bedrock Sandy silt with gravel (ML); red (2.5YR 4/6); m little granules to very large pebbles, angular to very fine to very coarse grained sand, angular clay; wet: weak cementation	nedium plasti subangular	icity; ; little		
214							out, work commentation				
-											
215											
216				Topock - Weathered							
				Bedrock - conglomerat	IVIL						
217		ID7 15 66									
L -		IRZ-15-SS- 215-220									
218		11/15/2018 14:05									
	96										
219											
- -											
220	<u> </u>			<u> </u>		<u> </u>					

AR	CADIS	for natural and built assets		Во	ring Lo	g		She	eet: 12 of	13
Date Started				Surface	Elevation:	480.5 ft amsl	Borir	na No.:	IRZ-15 P	ilot
Date Comple	eted: <u>11/15/</u>	2018		Northing	g (NAD83):	2103151.6			<u> </u>	<u></u>
Drilling Co.:	<u>Casca</u>	de		Easting	(NAD83):	7615773.1	_ Client:	PG&E		
Drilling Meth		•		Total De	•	257 ft bgs	_ Project:		<u>roundwater Re</u>	emedy Phase
Drill Rig Typ		_ongyear Trac				6-12 inches	_ Location: 1			
Driller Name	·			-		26.02 ft bgs	PG&E Topock, Needles, Califo			
Drilling Asst:	-	ner/J. Candel		•	g Method:	4 inch x 10 ft Core Barrel	_ Project N	lumber:	RC000753.00	51
Logger: Editor:		cia / C.Mills McGrane		-	g Interval: ed to Well:	Continuous	_			
	<u>Sean i</u>	VICGIANE		T	ed to vveii.					
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
		IRZ-15-VAS- 222-227 (< 0.17 U ppb) 12/4/2018 14:00	Topock - Weathered Bedrock - conglomerate	IVIL			9			(0.0 - 257.0') No water used
					angula	- 232.0'); some very fine to very coars ir to subround; little clay; wet; decrease	e in silt			
	IRZ-15-SS- 232-237 11/15/2018 13:37		Topock - Weathered Bedrock - conglomerate	SM	Silty sa	- 237.0') Topock - Weathered Bedroc and with gravel (SM); red (2.5YR 4/6); parse grained, angular to subround; so pebbles, angular; some silt; trace cobb noist	very fine grair me granules	ned to to verv		
	11000		Topock - Weathered Bedrock - conglomerate	e e	Silty sa very co large p clay; n	- 247.0') Topock - Weathered Bedroc and with gravel (SM); red (2.5YR 4/6); barse grained, angular to subround; so bebbles, angular; some silt; trace cobb noist S = below ground surface, am	very fine grair me granules les, angular;	ned to to very trace		

9/	ARC	ADIS	for natural and built assets		Во	ring	Log			She	et: 13 of	13
	Started:	10/31/			Surface			480.5 ft amsl	Borin	a No.:	IRZ-15 P	ilot
	-	ed: <u>11/15/</u>			Northing			2103151.6	_			
Drilling		<u>Casca</u>			Easting	•	33):	7615773.1	Client:	PG&E		
1 -	Metho g Type		Drilling Longyear Tra		Total De	•	neter.	257 ft bgs 6-12 inches	Project: Location:		oundwater Re	emedy Phase
	Name:		etrone					26.02 ft bgs	_ Location.		opock, Needl	es. California
Drilling			ner/J. Candel		Samplin			4 inch x 10 ft Core Barrel	- _ Project N		er: RC000753.0051	
Logge		-	cia / C.Mills		Samplir	-		Continuous	-			
Editor:	:	Sean I	<u> McGrane</u>		Convert	ted to V	Vell:	Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
												(0.0 - 257.0') No water used
_241												
 242							:					
242							•					
243												
_	108			Topock - Weathered	SM		:					
_244				Bedrock - conglomerat			:					
_245												
246												
							_	W'				
_247								255.0') Topock - Weathered Bedrock and with gravel (SM); red (2.5YR 4/6); v				
 248							mediur	n grained, angular to subround; some ebbles, angular; some silt; trace coars	granules to ve	ery		
								sand, subangular to round; trace clay				
249												
<u> </u>												
_250												
				Topock -								
_251				Weathered Bedrock -	SIVI		:					
 252				conglomerat	е]					
	108						:					
 253							:					
]					
254]					
255				<u> </u>			(255.0	- 257.0') Topock - Competent Bedrock	- conglomer	ate: red		
<u> </u>				Topock -			(2.5YR	4/6); friable	. oongomer	, 16u		
256				Competent Bedrock -			1					
				conglomerat	е		\					
257							3	End of Boring at 257.0 'bo	js.			
	1											
260												
								s = below ground surface, ams				
			= not detecte r measured d					limit, J - estimated value, NR =	- no recove	y, blue \	water table syl	ΠΟΟΙ
rehies	unio ut	piii io wate	i ilicasultu ü	uning une II	ISL VAS	ıı ıı c ı va	U .					

ARCA	DIS Design & Control for natural built asset	Consultancy Land s		Temporary Backfill Log	(Sheet: 1 of 13		
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	Cascade Sonic Drilling Nick Petrone T. Aylmer/J. (A. Garcia / C	Cande	aria	Surface Elevation: 480.5 ft amsl Northing (NAD83): 2103151.6 Easting (NAD83): 7615773.1 Total Depth: 257 ft bgs Borehole Diameter: 6-12 inches Depth to First Water: 26.02 ft bgs Editor: Sean McGrane	Client: PG& Project: Final Location: 1 PG&	oject: Final Groundwater Remedy Phase		
Groundwate Sample ID		USCS	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed		
1 1 2 3 4		NR		(0.0 - 0.5') Temporary Steel Plate with BMP (0.5 - 4.0') Cemex #00 Mesh	(0.5 - 4.0') 7.9 bags	(0.5 - 4.0') 4 bags (-49%) Note: Lapis Lustre Sand, loose dredge sands collapsed duing removal of 12 inch conductor casing resulting in less bags need to backfill		
1	Topock - Fill	SP		(0.0 - 9.0') 12" Borehole				
10 _	Topock - Fill	SP		(4.0 - 227.0') Cemex	(4.0 - 227.0') 97.6 bags	(4.0 - 227.0') 89 bags (-9%) Note: Lapis Lustre Sand		
18	Topock - Alluvium Deposits	SM	laceifica*	ion System, ft = feet, bgs = below ground surface	a amel = above meen	sea level GW = aroundwater		

9/	ARCA	DIS Desi for n built	gn & Consultancy atural and assets		Temporary I	Backfill Log	S	Sheet: 2 of 13		
Date C Drilling Drilling	Co.: Method: Mame: Asst:	10/31/201 11/15/201 Cascade Sonic Drill Nick Petro T. Aylmer/ A. Garcia	ng ne J. Cande	laria	Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	480.5 ft amsl 2103151.6 7615773.1 257 ft bgs 6-12 inches 26.02 ft bgs Sean McGrane	Location: 1 PG&E			
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed		
21		Topock Alluvium Deposits	n SM							
23 		Topock Alluvium Deposits	n GW-GN							
24 25			NR							
 26 					1					
27 										
28 29		Topock Alluviun Deposits	n ML							
30 31					(4.0 - 227.0') Cemex #3 MESH (8x10)	(9.0 - 257.0') 6" Borehole	(4.0 - 227.0') 97.6 bags	(4.0 - 227.0') 89 bags (-9%) Note: Lapis Lustre Sand		
 33										
34	IRZ-15-VAS- 32-37 (13 ppb) 11/1/2018	Topock	-							
35	11/1/2018 13:00	Alluviun Deposit								
36 37										
39 3										
40 Abbre	 viations: U		ed Soil C	lassificat	ion System, ft = feet, bg	·····:	amsl = above mean s	ea level, GW = groundwater,		

ARCA	DIS Design & for natur built asset	Consultancy al and ets		Temporary I	Backfill Log	Sh	Sheet: 3 of 13		
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	10/31/2018 11/15/2018 Cascade Sonic Drilling Nick Petrone T. Aylmer/J. A. Garcia / C	e Cande	laria	_ Surface Elevation: _ Northing (NAD83): _ Easting (NAD83): _ Total Depth: _ Borehole Diameter: _ Depth to First Water: _ Editor:	480.5 ft amsl 2103151.6 7615773.1 257 ft bgs 6-12 inches 26.02 ft bgs Sean McGrane	Z-15 Pilot Groundwater Remedy Phase Topock, Needles, California RC000753.0051			
Groundwate Sample ID		USCS Code	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed		
41	Topock - Alluvium Deposits	GM				9			
48	Topock - Alluvium Deposits	GM		(4.0 - 227.0') Cemex #3 MESH (8x10)	(9.0 - 257.0') 6" Borehole	(4.0 - 227.0') 97.6 bags	(4.0 - 227.0') 89 bags (-9%) Note: Lapis Lustre Sand		
57 58 59 60 Abbreviations: US	Topock - Alluvium Deposits	GM I Soil C	lassificati	on System, ft = feet, bg	s = below ground surface, a	nmsl = above mean se	ea level, GW = groundwater,		

ARCA	DIS Design & for natur built asset	Consultancy al and ets		Temporary I	Backfill Log	SI	Sheet: 4 of 13		
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	10/31/2018 11/15/2018 Cascade Sonic Drilling Nick Petrone T. Aylmer/J. A. Garcia / C	e Candel	aria	_ Surface Elevation: _ Northing (NAD83): _ Easting (NAD83): _ Total Depth: _ Borehole Diameter: _ Depth to First Water: _ Editor:	480.5 ft amsl 2103151.6 7615773.1 257 ft bgs 6-12 inches 26.02 ft bgs Sean McGrane	Location: 1 PG&E			
Groundwate Sample ID		USCS Code	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed		
		GW-GM		(4.0 - 227.0') Cemex #3 MESH (8x10)	(9.0 - 257.0') 6" Borehole	(4.0 - 227.0') 97.6 bags	(4.0 - 227.0') 89 bags (-9%) Note: Lapis Lustre Sand		
Abbreviations: US	SCS = Unified	d Soil C	lassification	on System, ft = feet, bg	s = below ground surface,	amsl = above mean s	ea level, GW = groundwater,		

ARC	ADIS Design for nat built as	& Consultancy ural and ssets		Temporary	Backfill Log	SI	Sheet: 5 of 13		
Date Started: Date Complete Drilling Co.: Drilling Method Driller Name: Drilling Asst: Logger:	10/31/2018 d: 11/15/2018	11/15/2018 Cascade Sonic Drilling Nick Petrone T. Aylmer/J. Candelaria A. Garcia / C.Mills		18 Northing (NAD83): 2103151.6 Easting (NAD83): 7615773.1 Illing Total Depth: 257 ft bgs one Borehole Diameter: 6-12 inches r/J. Candelaria Depth to First Water: 26.02 ft bgs d / C.Mills Editor: Sean McGrane		Location: 1 PG&E			
Groundy Sample		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed		
81	Topock - Alluvium Deposits	SW-SM							
87888990919192939495969697	Topock - Alluvium Deposits	GM		(4.0 - 227.0') Cemex #3 MESH (8x10)	(9.0 - 257.0') 6" Borehole	(4.0 - 227.0') 97.6 bags	(4.0 - 227.0') 89 bags (-9%) Note: Lapis Lustre Sand		
97 98 99 100 Abbreviations:	Topock - Alluvium Deposits	SM ed Soil C	lassificat	ion System, ft = feet bo	s = below ground surface	amsl = above mean s	ea level, GW = groundwater,		

AR	CAI	DIS Design & for natura built asse	Consultancy al and its		Temporary I	Backfill Log	St	Sheet: 6 of 13		
Date Starte Date Comp Drilling Co. Drilling Met Driller Nam Drilling Ass Logger:	oleted: :: thod: ne: st:	10/31/2018 11/15/2018 Cascade Sonic Drilling Nick Petrone T. Aylmer/J. A. Garcia / C	Candel	aria	_ Surface Elevation: _ Northing (NAD83): _ Easting (NAD83): _ Total Depth: _ Borehole Diameter: _ Depth to First Water: _ Editor:	480.5 ft amsl 2103151.6 7615773.1 257 ft bgs 6-12 inches 26.02 ft bgs Sean McGrane	Location: 1 PG&E			
	oundwater ample ID	Geologic Formation	Code	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed		
	.15-VAS-)2-107 0.17 U	Topock - Alluvium Deposits	SM				9			
	ppb) /3/2018 16:15	Topock - Alluvium Deposits	SM							
		Topock - Alluvium Deposits	ML		(4.0 - 227.0') Cemex #3 MESH (8x10)	(9.0 - 257.0') 6" Borehole	(4.0 - 227.0') 97.6 bags	(4.0 - 227.0') 89 bags (-9%) Note: Lapis Lustre Sand		
	one: LIC	Topock - Alluvium Deposits	ML Soil C	locsifica*	on System # = fact h =	p = bolow ground surface	amel = above mean =	ea level, GW = groundwater,		

9/	ARCA	DIS Desi	gn & Consultancy atural and assets		Temporary I	Backfill Log	S	Sheet: 7 of 13
	Started:	10/31/201			Surface Elevation:	480.5 ft amsl	Well ID: IF	RZ-15 Pilot
Date C Drilling	Completed:	11/15/201 Cascade	8		Northing (NAD83): Easting (NAD83):	2103151.6 7615773.1		=
	Method:	Sonic Drill	ina		Easting (NAD63). Total Depth:	257 ft bgs		Groundwater Remedy Phase
_	Name:	Nick Petro	•		Borehole Diameter:	6-12 inches	Location: <u>1</u>	
Drilling	Asst:	T. Aylmer/		laria	Depth to First Water:	_		E Topock, Needles, California
Logge	r:	A. Garcia	C.Mills		Editor:	Sean McGrane	Project Number	: RC000753.0051
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
		Topock Alluvium Deposits	n GM					
122								
123		Topock					0	
124 		Alluvium Deposits	n ML	0,0				
]							
				.0.				
126								
127				[4] 6] 6 P D				
				5919				
128_				de				
5 _ 129_								
					(4.0 - 227.0') Cemex	(9.0 - 257.0') 6"		(4.0 - 227.0') 89 bags (-9%)
					#3 MESH (8x10)	Borehole	bags	Note: Lapis Lustre Sand
131				397				
— — — — — — — — — — — — — — — — — — —		Topode						
132		Topock Alluvium Deposits		139				
	-	Deposit		5910				
133				df				
5 — — 5134	IRZ-15-VAS-							
	IRZ-15-VAS- 132-137 (< 0.17 U							
135	ppb) 11/4/2018 12:40			PIN				
	12:40							
136								
137								
22								
138	-	Topock Alluvium						
		Deposits						
139				6,00				
140	<u></u>		SM					
Abbrev	viations: U	SCS = Unifi	ed Soil C	lassifica	tion System, ft = feet, bg	gs = below ground surface	e, amsl = above mean s	sea level, GW = groundwater,

ARCA	DIS Design for nat built as	& Consultancy ural and sets		Temporary I	Backfill Log	Sh	neet: 8 of 13
Date Started: Date Completed: Drilling Co.:	Cascade			Surface Elevation: Northing (NAD83): Easting (NAD83):	480.5 ft amsl 2103151.6 7615773.1	Well ID: IR: Client: PG&E	
Drilling Method:	Sonic Drillin			_ Total Depth:	257 ft bgs	•	Groundwater Remedy Phase
Driller Name:	Nick Petror			_ Borehole Diameter:	6-12 inches	Location: 1	Tanaali Naadlaa California
Drilling Asst:	T. Aylmer/J A. Garcia /		arıa	_ Depth to First Water: _ Editor:	26.02 π bgs Sean McGrane		Topock, Needles, California RC000753.0051
Logger:		C.IVIIIIS		Editor.	<u>Sean McGrane</u>	Project Number.	10000733.0031
Groundwat Sample II		USCS	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed
141 142 143	Topock - Alluvium Deposits	SM					
144						9	
145 146							
148 149							
				(4.0 - 227.0') Cemex_ #3 MESH (8x10)	(9.0 - 257.0') 6" Borehole	(4.0 - 227.0') 97.6 bags	(4.0 - 227.0') 89 bags (-9%) Note: Lapis Lustre Sand
152 	Topock - Alluvium Deposits	SM					
153							
154							
155							
156							
157 158							
159							
4 1	11			1	[단구:1214]		

ARCA	DIS Design & for natur built asso	Consultancy ral and ets		Temporary I	Backfill Log	Sh	neet: 9 of 13
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	10/31/2018 11/15/2018 Cascade Sonic Drilling Nick Petrone T. Aylmer/J. A. Garcia / C	e Candel	aria	Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	480.5 ft amsl 2103151.6 7615773.1 257 ft bgs 6-12 inches 26.02 ft bgs Sean McGrane	Location: <u>1</u> PG&E	
Groundwate Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
	Topock - Alluvium Deposits Topock - Alluvium Deposits	SM ML				0)	
162-167 (3200 ppb) 11/5/2018 13:00	Topock - Alluvium Deposits	SM					
	Topock - Alluvium Deposits	SM		(4.0 - 227.0') Cemex #3 MESH (8x10)	(9.0 - 257.0') 6" Borehole	(4.0 - 227.0') 97.6 bags	(4.0 - 227.0') 89 bags (-9%) Note: Lapis Lustre Sand
	Topock - Alluvium Deposits	GM					
175 176 177 178 179	Topock - Alluvium Deposits	GM					
180	SCS = Unified	d Soil C	lassificati	on System, ft = feet, ba	s = below ground surface. a	msl = above mean s	ea level, GW = groundwater,

9/-	ARCA	DIS Design for no built	n & Consultancy itural and assets		Temporary I	Backfill Log		Sheet: 10 of 13			
Date C Drilling Drilling	Method:	Cascade Sonic Drilli	ng		Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth:	480.5 ft amsl 2103151.6 7615773.1 257 ft bgs	Client: Project:	D: IRZ-15 Pilot PG&E Final Groundwater Remedy Phase			
Driller I		Nick Petro		lorio	_ Borehole Diameter:	6-12 inches	Location:	PG&E Topock, Needles, California			
Drilling Loggei		T. Aylmer/. A. Garcia /		laria	_ Depth to First Water: _ Editor:	26.02 π bgs Sean McGrane	—— Project N	umber: RC000753.0051			
Loggei	1.		U.IVIIII3		_ Luitor.	OCAN MCOIANC	1 10jcct N	MINDEL. 14000733.0031			
Depth (ft)	Groundwate Sample ID	Geologic Formation	USCS	USCS	Well	Construction	Calculated Material Volui				
181	IRZ-15-VAS- 182-187 (140 ppb) 11/6/2018 11:10	Topock Alluvium Deposits	GM				9				
188		Topock Alluvium Deposits	ML								
190 191 192		Topock Alluvium Deposits	ML		(4.0 - 227.0') Cemex #3 MESH (8x10)	(9.0 - 257.0') 6" Borehole	(4.0 - 227.0') bags	97.6 (4.0 - 227.0') 89 bags (-9%) Note: Lapis Lustre Sand			
		Topock Alluvium Deposits	ML								
197	viations: 119	Topock Alluvium Deposits	SM	lassificati	on System ft = feet ha	s = below ground surface	amsl = ahove	mean sea level, GW = groundwater,			

9/	ARCA	DIS Design for na built a	n & Consultancy tural and assets		Temporary I	Backfill Log	SI	Sheet: 11 of 13				
Date C Drilling	Method: Name: Asst:	10/31/2018		Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	Northing (NAD83): 2103151.6 Easting (NAD83): 7615773.1 Total Depth: 257 ft bgs Borehole Diameter: 6-12 inches Depth to First Water: 26.02 ft bgs		Z-15 Pilot Groundwater Remedy Phase Topock, Needles, California RC000753.0051					
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed				
201		Topock - Alluvium Deposits Topock - Alluvium Deposits	SM		(4.0 - 227.0') Cemex #3 MESH (8x10)	(9.0 - 257.0') 6" Borehole	(4.0 - 227.0') 97.6 bags	(4.0 - 227.0') 89 bags (-9%) Note: Lapis Lustre Sand				
212 213 214 215 216 217 218 219 220_ Abbrev	viations: U	Topock - Weathere Bedrock conglomera	d ML ate	lassificati	ion System, ft = feet, bg	s = below ground surface,	amsl = above mean s	ea level, GW = groundwater,				

DIS Design & for natural built asset	Consultancy ral and ets		Temporary Backfill Log	Sheet: 12 of 13
Cascade Sonic Drilling Nick Petrone T. Aylmer/J.	g e Candel	aria	Surface Elevation: 480.5 ft amsl Northing (NAD83): 2103151.6 Easting (NAD83): 7615773.1 Total Depth: 257 ft bgs Borehole Diameter: 6-12 inches Depth to First Water: 26.02 ft bgs Editor: Sean McGrane	Client: PG&E Project: Final Groundwater Remedy Phase Location: 1 PG&E Topock, Needles, California Project Number: RC000753.0051
	USCS	USCS Class	Well Construction	Calculated Material Volumes Material Volumes Installed
Topock - Weathered Bedrock -	ML e		(4.0 - 227.0') Cemex #3 MESH (8x10) (227.0 - 232.0') Plastering Sand (9.0 - 257.0') Borehole	(4.0 - 227.0') 97.6 bags (-9%) Note: Lapis Lustre Sand (227.0 - 232.0') 1.4 bags (227.0 - 232.0') 3 bags (114%) Note: Wildcat Washed
Topock - Weathered Bedrock -	SM		(232.0 - 247.0') Bentonite seal chips	(232.0 - 247.0') 6 bags (36%) Note: Pure Gold Medium Chips, After placement of 6 bags of bentonite chips and tagged at 238 ft, the bentonite expanded to 202 ft. bgs in the casing, the over chipped portion was cleaned out of the casing to 232 ft bgs
- t	Topock - Weathered Bedrock - conglomerate	Topock - Weathered Bedrock - conglomerate Topock - Weathered Bedrock - conglomerate Topock - Weathered Bedrock - conglomerate Topock - Weathered Bedrock - conglomerate	Topock - Weathered Bedrock - conglomerate Topock - Weathered Bedrock - conglomerate Topock - Weathered Bedrock - conglomerate Topock - Weathered Bedrock - conglomerate Topock - Weathered Bedrock - conglomerate Topock - Weathered Bedrock - conglomerate	Topock-Weathered Bedrock - Conglomerate Topock-Weathered Bedrock - Conglomerate Topock-Weathered Bedrock - Conglomerate Topock-Weathered Bedrock - Conglomerate Topock-Weathered Bedrock - Conglomerate Topock-Weathered Bedrock - Conglomerate Topock-Weathered Bedrock - Conglomerate SM Topock-Weathered Bedrock - SM Topock-Weathered Bedrock - Conglomerate SM Topock-Weathered Bedrock - SM Topock-Weathered Bedrock - Conglomerate SM Topock-Weathered Bedrock - SM Topock-Weathered Bedrock - Conglomerate SM Topock-Weathered Bedrock - SM Topock-Weathered Bedrock - SM Topock-Weathered Bedrock - SM Topock-Weathered Bedrock - SM Topock-Weathered Bedrock - SM Topock-Weathered Bedrock - SM Topock-Weathered Bedrock - SM Topock-Weathered Bedrock - SM Topock-Weathered Bedrock - SM

	DIS Design & for natura built asse	Consultancy al and ts		Temporary I	Backfill Log		Sheet: 13 of 13
ate Started:	10/31/2018			_ Surface Elevation:	480.5 ft amsl	Well ID: II	RZ-15 Pilot
ate Completed:	<u>11/15/2018</u>			_ Northing (NAD83):	2103151.6		
illing Co.:	Cascade			_ Easting (NAD83):	7615773.1	Client: PG&	E
illing Method:	Sonic Drilling	1		_ Total Depth:	257 ft bgs	Project: Final	Groundwater Remedy Pha
iller Name:	Nick Petrone			Borehole Diameter:	6-12 inches	Location: <u>1</u>	
illing Asst:	T. Aylmer/J.		aria	_ Depth to First Water:			E Topock, Needles, Californ
gger:	A. Garcia / C		unu	_ Editor:	Sean McGrane		er: RC000753.0051
				_ Luitor.	<u>Sean McGrane</u>	i roject ivanibe	1. 10000733.0031
Groundwate Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
	Topock - Weathered Bedrock - conglomerate	SM		(232.0 - 247.0') Bentonite seal chips		(232.0 - 247.0') 4.4 bags	(232.0 - 247.0') 6 bags (36% Note: Pure Gold Medium Chip After placement of 6 bags of bentonite chips and tagged at 23 the bentonite expanded to 202 bgs in the casing, the over chip portion was cleaned out of the casing to 232 ft bgs
47	Topock - Weathered Bedrock - conglomerate	SM		(247.0 - 257.0') Neat Portland Cement	(9.0 - 257.0') 6" Borehole	(247.0 - 257.0') 15.7 gallons	(247.0 - 257.0') 35 gallons (123 Note: Type I, Il and V
55 56 57	Topock - Competent Bedrock - conglomerate						

represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

	ADIS	Design & Consultancy for natural and built assets		DU	mig	Log		One	et: 1 of	11
ate Started				Surface			Borin	ng No.:	IRZ-16 Pi	lot
-	ted: <u>03/07/</u>			Northin	• •	•				
rilling Co.:	Casca			Easting	•		Client:	PG&E		
rilling Meth		-			-	207 ft bgs	Project:		N Remedy Ph	
orill Rig Type		nic Truck Mo					Location	: <u>PG&E 1</u>	opock, Needle	es, Californi
riller Name rilling Asst:		Vasquez aya/ O. Flore				Vater: <u>26 ft bgs</u> od: <u>4 inch x 10 ft Core Barrel</u>	Droiget N	lumbor: E	2000752 005	:1
ogger:		McGrane		Samplir	-		. Projectiv	number. <u>r</u>	XC000755.005) [
ditor:		el Andrews		Convert	_		-			
	<u>iviiorius</u>				<u> </u>				<u> </u>	
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
1_			Topock - Fill	NR		(0.0 - 2.0') Topock - Fill; No recovery (NR); No r sloughed in during advancement of 12 inch con			(0.0 - 7.0') Loose dredge sands falling out of core barrel causing poor recovery	
3			Topock - Fill	SP		(2.0 - 3.2') Topock - Fill; Poorly graded sand (Sf very fine grained to medium grained, subround t trace clay; dry	o round; trace	e silt;		
4 - 14.4 5 6			Topock - Fill	NR		(3.2 - 7.0') Topock - Fill; (NR); No recovery loos out of core barrel could not provide core will acc	e dredge sand urate depths	ds falling		
7						(7.0 - 17.0') Topock - Fill; No recovery (NR); No dredge sands falling out of core barrel and sloug not provide core with accurate depths			(7.0 - 17.0') Loose dredge sands continuously fell out of core barrel	
12 ₀			Topock - Fill	NR						
14 - 15 - 16										
17			L	L	L\					
- 18 - 54 19			Topock - Fill	NR		(17.0 - 22.5') Topock - Fill; No recovery (NR); N what depth core sample was lost. Based on drilli bottom of core started at approximately 26 ft bgs	ng native mat	erial at	(17.0 - 27.0') Poor recovery maybe due to compaction of loose dredge sands, drilling change at approximately 25 ft. bgs	

Date Started: 02/19/20/19 asset Completed: 03/07/20/19 brilling Cot: Cascade Cas	SAF	RCA	DIS	for natural and built assets		Bo	ring	Log		Shee	et: 2 of	11
Northing (No.Nas) College Coll	Date Star	rted:	02/19/2	2019	(Surface	Eleva	tion: 480.0 ft amsl	Borine	n No ·	IR7-16 Pi	lot
Total Depth: Solic Deliling Assertion Solic De	Date Con	npleted	03/07/2	2019	1	Northing	g (NAD	083): <u>2103041.4</u>		g 1 1 0	1112-1011	<u>10t</u>
Dock Fig Type: Prosent Truck Mount Borehole Diameter: 6:12 Inches Location: PG&E Topock, Needles, California Original Research Continuous Continuou	Drilling Co	0.:	Casca	de	E	Easting	(NAD	83): <u>7615824.1</u>				
Deliler Marie: Logger: Seen McGrane Seen McG	Drilling M	lethod:	Sonic I	Drilling		Total De	epth:	207 ft bgs	Project:	Final GV	V Remedy Ph	ase I
Comparison Com	Drill Rig T	Гуре:	Prosor	nic Truck Mou	ınt i	Borehol	e Dian	neter: 6-12 inches	Location:	PG&E T	opock, Needle	es, California
Seam McGrane Sany Michael Andrews Converted to Well: \$\tilde{\text{V}} \tilde{\text{V}} \tilde{\text{V}} \tilde{\text{Note}} \tilde{\text{Note}} \tilde{\text{Vol.}} \tilde{\text{Description}} \tilde{\text{Dolling Notes}}		Steve '	Vasquez				•	-				
Signature Converted to Well: Yes No Solid Description Defling Note: Defling Flaid Solid Description Defling Note: D	_	sst:		-		-	-		_ Project Nu	ımber: <u>F</u>	C000753.005	51
Service D Grundstater Sample ID Grundstater Sample ID Grundstater Sample ID Service D Service ID Se						-	-		-			
Topock - Fill NR	Editor:		Michae	el Andrews	(Convert	ed to \	Well: ⊻ Yes ∟ No				
Topock - Fill NR	Depth (ft) Recovery	ui) Sa			Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
56) very fine grained to meturn grained, subcond or round; teach set, tuck cally, round; control depth infloant called to conflict provincy. 23 (3) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4					Topock - Fill	NR					Poor recovery maybe due to compaction of loose dredge sands, drilling change at approximately	
Topock - Alluvium Deposits SM Small process	5 24 25 	IRZ- 22. 3/7	.0-27.0 7/2019		Topock - Fill	SP		5/3); very fine grained to medium grained, subro silt; trace clay; moist; contact depths unclear du moisture due to water added during drilling	ound to round: to	ace		
28 28 28 29 20 20 20 20 20 20 20					Alluvium	SM		brown (7.5YR 5/3); very fine grained to very coat to round; little granules to large pebbles, angular	arse grained, an r to subround; li	gular	(07.01)	
Topock-Alluvium Deposits Topock-Alluvium Deposits		30 27. 3/7	.0-32.0 7/2019	27.0-32.0 (480 ppb) 2/20/2019	Alluvium			(27.0 - 30.5') Topock - Alluvium Deposits; Sity: (7.5YR 4/4); very fine grained to very coarse grasubround; some granules to very large pebbles, subangular; little silt; coarser clasts composed of (29.5'); increase in silt content	sand with grave ained, angular to angular to of metadiorite; w	et .	Approximate depth to water	
Topock-Alluvium Deposits; Well graded gravel with sit and sand (GW-GM); granules to large pebbles, angular to subround; and sand (GW-GM); granules to large pebbles, angular to subround; some very fine to very coarse grained sand, angular to subround; little silt; trace clay; coarser clasts composed of metadiorite; wet IRZ-16-SS-32.0-37.0					Alluvium	sc		(SC); brown (7.5YR 4/3); very fine grained to ve angular to subround; little granules to large pebl subangular; little clay; trace silt; coarser clasts c	ery coarse grain oles, angular to			
Topock - Alluvium Deposits IRZ-16-SS- 332-0-37.0 377/2019 14:25 IRZ-16-SS- 3300-37.0 377/2019 14:25 IRZ-16-SS- 37.0-42.0 37/2019 14:30 IRZ-16-SS- 37.0-42.0 37/2019 14:30 IRZ-16-SS- 37.0-42.0 37/2019 14:30 IRZ-16-SS- 37.0-39.0') Topock - Alluvium Deposits; Sandy silt (ML); brown (7.5YR 4/2); low plasticity; some very fine to very coarse grained, angular to subround; trace clay; coarser clasts composed of metadiorite; wet (37.0 - 39.0') Topock - Alluvium Deposits; Sandy silt (ML); brown (7.5YR 4/2); low plasticity; some very fine to very coarse grained, angular to subround; little granules to large pebbles, angular to subround; little granules to very coarse grained, angular to subround; little granules to large pebbles, angular to subround; little granules to					Alluvium	GW-GM		and sand (GW-GM); granules to large pebbles, some very fine to very coarse grained sand, and silt; trace clay; coarser clasts composed of meta	angular to subr gular to subrour adiorite; wet	ound; id; little		
- 38 _ IRZ-16-SS- 37.0-42.0 377/2019 14:30	35 36	32. 3/7 1	.0-37.0 7/2019		Alluvium	SM		brown (7.5YR 4/3); very fine grained to very coat to subround; some silt; little granules to very large	arse grained, an ge pebbles, ang	gular ular to		
Alluvium Deposits GW-GM Alluvium Deposits Alluvium Deposits Alluvi	38 	37. 3/7	.0-42.0 7/2019		Alluvium Deposits			(7.5YR 4/2); low plasticity; some very fine to ver sand, angular to subround; little granules to larg subround; little clay; moist to wet	y coarse graine e pebbles, angu	d ılar to		
		tions: 1	1808 -	Unified Sail C	Alluvium Deposits	GW-GM		(7.5YR 4/2); very fine grained to very coarse gra subround; little granules to large pebbles, angula	ained, angular to ar to subround;	little	sea lovel C	Λ/ —

AR	CADIS	Design & Consultancy for natural and built assets		Во	ring	_og		Sheet: 3 of	11
ate Start				Surface	Elevati	n: <u>480.0 ft amsl</u>	- Boring N	o.: <u>IRZ-16 Pi</u>	lot
	pleted: <u>03/07/</u>			Northin		•	_		<u></u>
rilling Co				Easting	•		_ Client: PG8		
rilling Me		•			•	207 ft bgs	-	l GW Remedy Ph	
rill Rig Ty		nic Truck Mou					_ Location: <u>PG8</u>	E Topock, Needl	<u>es, Californi</u>
riller Nan		•		•		ater: 26 ft bgs	—		
rilling As		aya/ O. Flores		-	-		_ Project Numbe	er: <u>RC000753.00</u>	51
ogger:		McGrane		Samplir	-		_		
ditor:	Micha	el Andrews		Convert	ted to V	ell: 🗵 Yes 🗌 No		1	
(ft) (Recovery	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	OSCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
41	IRZ-16-SS- 37.0-42.0 3/7/2019		Topock - Alluvium Deposits	GW-GM		lt; trace clay; wet 19.5 - 41.3') Topock - Alluvium Deposits; Well nd sand (GW-GM); brown (10YR 5/3); granul ngular to subangular; some very fine to very c	es to large pebbles,	t	
- 42	14:30		Topock -			ngular to subround; little silt; trace very large p ay; coarser clasts composed of metadiorite; w 1.3 - 43.3') Topock - Alluvium Deposits; Well	ebbles, angular; trace et; dense graded sand with silt		
- 43			Alluvium Deposits	SW-SM		nd gravel (ŚW-SM); brown (7.5YR 4/4); very f parse grained, angular to subround; little grant abbles, angular to subangular; little silt; wet	ine grained to very		
- 14						(3.3 - 54.5') Topock - Alluvium Deposits; Silty rown (7.5YR 5/3); very fine grained to very consult of the subround; some granules to large pebbles, a	arse grained, angular);	
	IRZ-16-SS- 42.0-47.0					tle silt; coarser clasts composed of metadiorite			
15	3/7/2019 14:35					.05			
16									
47									
48_									
49_	IRZ-16-SS-		Topock - Alluvium Deposits	SM					
50	47.0-52.0 3/7/2019								
	14:40								
51_									
52_									
53_									
_									
54	IRZ-16-SS-								
	52.0-57.0					4.5 57.00 T	1 1/1		
55	3/7/2019 14:45					i4.5 - 57.0') Topock - Alluvium Deposits; Silty eddish brown / moderate brown(5YR 4/4); very	fine grained to very);	
			Topock -			parse grained, angular to subround; some silt; rge pebbles, angular to subangular; trace cob	little granules to very		
56			Alluvium Deposits	SM		ay; coarser clasts composed of metadiorite; w 5.5'); little silt; increase in sand	et		
			Берозію			o.o j, mue siii, iiioiease iii sailu			
57									
						17.0 - 59.5') Topock - Alluvium Deposits; Well and gravel (SW-SM); reddish brown (5YR 4/3);		(57.0 - 62.0') Adjusted sample	
58_	ID7 10 55	IRZ-16-VAS-	Topock -			ery coarse grained, angular to round; some graph bbles, angular to subround; little silt; coarser	anules to very large	interval based on geology,	
120	IRZ-16-SS- 57.0-62.0	57.0-62.0 (<0.33 U	Alluvium	SW-SM		etadiorite; coarser clast composed of conglom		sandier zone	
59_	3/7/2019 14:50	`ppb) 2/20/2019	Deposits					with less fines	
		14:36							
60 7				SM		9.5 - 64.8') Topock - Alluvium Deposits; Silty	sand with gravel (SM);	
hbrovioti	ne: IISCS =	Unified Soil (· Classification	n Syste	-m ft =	eet, bgs = below ground surface,	amsl = above m	nean sea level G	Λ/ =

	CADIS		DU	ı ıı ıy	Log		neet: 4 of	11	
ate Starte				Surface			Boring No.	: <u>IRZ-16 Pi</u>	lot
	oleted: <u>03/07/</u>			Northin		•	_		
rilling Co.				Easting	•	•	_ Client: PG&E		
rilling Met rill Rig Ty		Drilling nic Truck Mou		Total D	•	207 ft bgs eter: 6-12 inches	•	GW Remedy Ph	
riller Nam	-	Vasquez				Water: <u>26 ft bgs</u>	_ Location. <u>r Oal</u>	Topock, Necal	cs, camor
rilling Ass		aya/ O. Flores		Samplir		_	 _ Project Number:	RC000753.005	51
ogger:	<u>Sean l</u>	McGrane		Samplir	ng Inter	val: <u>Continuous</u>	_		
ditor:	<u>Micha</u>	el Andrews		Conver	ted to \	Vell: ⊠ Yes □ No			
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Flu
_ _61 _ _62	IRZ-16-SS- 57.0-62.0 3/7/2019 14:50	IRZ-16-VAS- 57.0-62.0 (<0.33 U ppb) 2/20/2019 14:36	Topock -			brown (7.5YR 4/4) and reddish brown / moder very fine grained to very coarse grained; rapid granules to very large pebbles, angular to sub cobbles, subangular; coarser clasts composed clast composed of conglomerate; wet	dilatency; some ound; little silt; trace	(57.0 - 62.0') Adjusted sample interval based on geology, sandier zone with less fines	
_63 - 120 _64	IRZ-16-SS- 62.0-67.0		Alluvium Deposits	SM			9		
_65	3/7/2019 14:55					(64.8 - 67.0') Topock - Alluvium Deposits; Silty	sand with gravel (SM);		
			Topock - Alluvium	SM		brown (10YR 5/3); very fine grained to very countries subround; some granules to large pebbles, an some silt; coarser clasts composed of metadic	gular to subangular;		
4			Deposits						
67						(67.0 - 72.0') Topock - Alluvium Deposits; Silt	conducith groval (CM)		
68_ - 69_ - 70_ - 71_ - 72_	IRZ-16-SS- 67.0-72.0 3/7/2019 15:00		Topock - Alluvium Deposits	SM		brown (7.5YR 4/4); very fine grained to very of to subround; little granules to very large pebblic subangular; little silt; coarser clasts composed	es, angular to		
			Topock - Alluvium	ML		(72.0 - 73.0') Topock - Alluvium Deposits; Sar strong brown (7.5YR 4/6); low plasticity; and v			
73_			Deposits	IVIL		grained sand, angular to subround; little granu pebbles, angular to subangular; trace cobbles.	les to very large		
- 240 .74	IRZ-16-SS- 72.0-77.0					composed of metadiorite; moist to wet (73.0 - 79.0') Topock - Alluvium Deposits; Silt brown (7.5YR 4/4) with reddish brown / moder very fine grained to very coarse grained, angu granules to very large pebbles, angular to sub	ate brown(5YR 4/4); lar to subround; some angular; little silt; trace		
.75	3/7/2019 15:05					cobbles, angular; coarser clasts composed of	metadiorite; wet		
4			Tonock			(75.5'); increase in silt, decrease in sand			
.76			Topock - Alluvium	SM		(), more sace in only desired in ourid			
+			Deposits						
_77									
_ _78	IRZ-16-SS-								
4	77.0-82.0 3/7/2019								
_79	15:10		Tonock			(79.0 - 80.5') Topock - Alluvium Deposits; Silt	sand with gravel (SM).		
4			Topock - Alluvium	SM		brown (7.5YR 4/4); some silt; little granules to angular to subround; wet			
80 hbroviotic	ne: HSCS -	Unified Sail C	Deposits	on Strot		feet, bgs = below ground surface	amel = ahovo mo	an sea loval C	<u>Λ/ –</u>
'nni caigill									
	er. pph = nart	s per hillion I	$J = n \cap d \cap d$	iecteu s	DOVE 1	ne laboratory reporting limit, NR = i	10 tecovery pine w	alei janie svim	

9/-	١RC	ADIS	Design & Consultancy for natural and built assets		Bo	ring	Log	Sh	neet: 5 of	11
Date S	Started	: <u>02/19/</u>	2019		Surface	Eleva	tion: <u>480.0 ft amsl</u>	- Boring No.	: <u>IRZ-16 Pi</u>	lot
Date C	Comple	eted: <u>03/07/</u>	2019		Northing) (NAD	083): <u>2103041.4</u>	_ Dorning 140.	. <u>IIXZ-1011</u>	<u>10t</u>
Drilling	J Co.:	<u>Casca</u>	de		Easting	(NAD	83): <u>7615824.1</u>	_ Client: PG&E		
Drilling	y Meth	od: <u>Sonic</u>	Drilling		Total De	epth:	207 ft bgs	_ Project: Final C	<u> SW Remedy Ph</u>	ase I
Drill Ri	ig Туре	e: <u>Prosor</u>	nic Truck Mou	ınt	Borehol	e Dian	neter: 6-12 inches	_ Location: <u>PG&E</u>	Topock, Needle	es, California
Driller	Name		•		-		Water: 26 ft bgs	_		
Drilling	y Asst:		aya/ O. Flores		•	•		_ Project Number:	RC000753.005	51
Logge	r:	<u>Sean N</u>	<u> McGrane</u>		Samplin	g Inter		_		
Editor:		<u>Michae</u>	el Andrews		Convert	ed to \	Well: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
					SM					
81 81 82		IRZ-16-SS- 77.0-82.0 3/7/2019 15:10		Topock - Alluvium Deposits	SW-SM		(80.5 - 82.3') Topock - Alluvium Deposits; Well and gravel (SW-SM); brown (7.5YR 4/4); very coarse grained, angular to subround; some grapebles, angular to subangular; little silt; coarse metadiorite; wet	fine grained to very nules to very large		
				Topock - Alluvium	ML		(82.3 - 82.8') Topock - Alluvium Deposits; San brown (7.5YR 4/3)red (2.5YR 4/6); low plasticit			
83				Deposits	J		very coarse grained sand, angular to subangul	ar; little granules to very		
	240			Topock - Alluvium	SW-SM		large pebbles, angular to subround; coarser cla metadiorite; hard; iron oxide staining	asts composed of		
84		IRZ-16-SS-		Deposits	1		(82.8 - 83.8') Topock - Alluvium Deposits; Well and gravel (SW-SM); brown (7.5YR 4/4); very	graded sand with silt		
		82.0-87.0 3/7/2019					coarse grained, angular to subround; some gra pebbles, angular to subangular; little silt; coarse	nules to very large		
85		15:15		Topock -			metadiorite; wet	·		
				Alluvium Deposits	SM		(83.8 - 87.0') Topock - Alluvium Deposits; Silty brown (7.5YR 4/4); very fine grained to very co			
86				Верозна			to round; some granules to very large pebbles, some silt; coarser clasts composed of metadior	angular to subangular:		
							Some one, course our pesses of moderate	no, wor		
87							(87.0 - 88.8') Topock - Alluvium Deposits; San	dy silt with gravel (ML):	(87.0 - 107.0')	
 88 				Topock - Alluvium Deposits	ML		brown (7.5YR 4/4); low plasticity; some granule angular to subangular; some very fine to very of angular to round; trace clay; moist; hard	es to large pebbles,	`Drilling was' hard, formation tight, core came out hot and steaming moist	
89 90		IRZ-16-SS- 87.0-92.0 3/7/2019 15:20		Topock - Alluvium Deposits	ML		(88.8 - 89.8') Topock - Alluvium Deposits; San- (7.5YR 4/4); low plasticity; some very fine to ve sand, angular to subround; little granules to me to subangular; trace clay; moist; hard	ery coarse grained edium pebbles, angular	to wet	
91 91 92							(89.8 - 96.0') Topock - Alluvium Deposits; Sanbrown (7.5YR 4/4); low plasticity; some granule angular to subangular; some very fine to very cangular to round; trace clay; moist; hard	es to large pebbles,		
 93	0.40			Topock - Alluvium Deposits	ML					
 94	240									
		IRZ-16-SS- 92.0-97.0								
95		3/7/2019 15:20								
96										
				Topock - Alluvium	SM		(96.0 - 96.5') Topock - Alluvium Deposits; Silty brown (7.5YR 4/3); very fine grained to very co		(96.0 - 96.5') Dry	
97				Deposits	4		to subround; some silt; little granules to large possible subangular; coarser clasts composed of metad	ebbles, angular to	, ,	
_]							(96.5 - 100.0') Topock - Alluvium Deposits; Sa	ndy silt with gravel		
98		ID7 40 00		Topock -			(ML); brown (7.5YR 4/4); low plasticity; some g pebbles, angular to subangular; some very fine	to very coarse grained		
		IRZ-16-SS- 97.0-102.0		Alluvium Deposits	ML		sand, angular to round; trace cobbles; trace cla	ay; moist; hard		
99		3/7/2019 15:30		Dehosira						
100										
Δhhre\	viation	e: 118C8 -	Linified Soil C	laccificati	on Syete	m ft-	= feet has = helow around surface	amel - ahove mea	an sea level Cl	۸ <i>۱</i> –

/	KC	ADIS	Design & Consultancy for natural and built assets		Во	rin	g Lo			She	eet: 6 of	11
Date S					Surface			480.0 ft amsl	Borin	g No.:	IRZ-16 Pi	lot
	-	ted: <u>03/07/</u>			Northin	• `	,	2103041.4	_			
rilling		<u>Casca</u>			Easting	•		7615824.1	_ Client:	PG&E		
rilling						•		207 ft bgs	-		W Remedy Ph	
-	g Type Name:		nic Truck Mou Vasquez	unt				6-12 inches	_ Location:	PG&E	Topock, Needl	es, Californ
	Asst:		<u>vasquez</u> aya/ O. Flores		•			4 inch x 10 ft Core Barrel	- Project N	umher:	RC000753 009	 51
ogger			McGrane		Samplir	-		Continuous	_ 1 10,000 10	umber.	10000733.000	<i>7</i> I
ditor:	•		el Andrews		Conver	-			_			
(ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	SOS	Class	Soil Description			Drilling Notes	Drilling Fluid
101_		IRZ-16-SS- 97.0-102.0 3/7/2019		Topock - Alluvium Deposits	SM		(SM); l angula subrou	- 101.3') Topock - Alluvium Deposits; Si rown (7.5YR 4/4); very fine grained to vi to subround; some granules to very larged, some silt; little clay; coarser clasts co	ery coarse grai ge pebbles, an	ned, gular to	(87.0 - 107.0') Drilling was hard, formation tight, core came	
4		15:30					moist to (101.3	- 104.5') Topock - Alluvium Deposits; Si	ty sand with g	avel	out hot and steaming moist	
102	-						(SM); I	rown (7.5YR 4/4); very fine grained to vertice to subround; little granules to large peb	ery coarse grai	ned,	to wet	
-				Topock -			subanç	ular; little silt; trace clay; moist to dry				
103_				Alluvium Deposits	SM							
104_	240		IRZ-16-VAS-									
04		IRZ-16-SS- 102.0-107.0	102.0-107.0 (<0.33 U									
05_		3/7/2019 15:35	ppb) 2/21/2019		†			- 118.0') Topock - Alluvium Deposits; Si eddish brown / moderate brown(5YR 4/4				
		10.00	11:51				very co	arse grained, angular to rou <mark>nd;</mark> some gra	anules to medi	um		
06_								s, angular to su <mark>ba</mark> ngular; so <mark>me</mark> silt; coars orite; m <mark>oist t</mark> o wet	ser clasts comp	oosed of		
07												
								some granules to very large pebbles, and coarser clasts composed of metadiorite		gular;		
08_									, ,,			
4												
109		IRZ-16-SS-					(100)	trace cobble				
4		107.0-112.0 3/7/2019); no cobbles				
10_		15:37					(109.5	, no cobbles				
4												
11_				Topock - Alluvium	SM							
-				Deposits	VOIVI							
12_												
-												
113												
114_	240											
1		IRZ-16-SS- 112.0-117.0										
15_		3/7/2019 15:40										
. —		. 5 0										
16												
17												
18_		ID7 40 00										
		IRZ-16-SS- 117.0-122.0 3/7/2019					(ML); r	- 121.5') Topock - Alluvium Deposits; Sa eddish brown (2.5YR 4/4); low plasticity;	some very fine	to very		
19_		3/7/2019 15:45		Topock - Alluvium	ML		coarse	grained sand, angular to subround; little s, angular to subangular; trace cobbles; t	granules to ve	ry largé		
_				Deposits			subang very st	ular; trace clay; coarser clasts compose	d of metadiorite	e; moist;		
							<u>]: </u>					
<u> 120 L</u>				N :£: £: .	on Cunt	-m	H - foot	bgs = below ground surface,	amal - aba	wa maa	a aga layal Cl	n/

represents depth to water measured during the first VAS interval

AR	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 7 of	11
Date Starte	d: <u>02/19</u> /	/2019		Surface	Elevat	ion: <u>480.0 ft amsl</u>	Borin	na No .	IRZ-16 P	ilot
Date Compl	eted: <u>03/07/</u>	/2019		Northing	- '	· ·			1112 101	
Drilling Co.:		ade		Easting	(NAD8	33): <u>7615824.1</u>	_ Client:	PG&E		
Drilling Meth		Drilling		Total De	•	207 ft bgs	_ Project:		N Remedy Ph	
Drill Rig Typ		<u>nic Truck Mou</u>	unt			eter: <u>6-12 inches</u>	_ Location:	: <u>PG&E T</u>	opock, Need	es, California
Driller Name		Vasquez		-		Water: 26 ft bgs		. —		
Drilling Asst		aya/ O. Flores	<u> </u>	Samplin	-		_ Project N	lumber: <u>I</u>	RC000753.00	51
Logger: Editor:		McGrane el Andrews		Samplir Convert	-		_			
1	IVIICITA	HIGHENS		Conven	eu io v	veii. A res I No				I
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	nscs Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
	IRZ-16-SS- 117.0-122.0 3/7/2019 15:45		Topock - Alluvium Deposits	ML						
	IRZ-16-SS- 122.0-127.0 3/7/2019 15:50		Topock - Alluvium Denosits	SM		(121.5 - 132.0') Topock - Alluvium Deposits; S (SM); reddish brown (2.5YR 4/4); very fine grained, angular to round; some granules to ve angular to subangular; some silt; coarser clasts metadiorite; wet	ined to very coary large pebble	arse		
	IRZ-16-SS- 127.0-132.0 3/7/2019 15:55		Deposits			(127'); little silt; increase in sand (127.5'); some silt; wet (129'); some silt; wet; increase in silt, decrease				
			Topock - Alluvium	ML		(132.0 - 133.0') Topock - Alluvium Deposits; S (ML); brown (7.5YR 4/3); medium plasticity; so	me very fine to	very		
133			Deposits			coarse grained sand, angular to subround; little pebbles, angular to subangular; little clay; coars				
			Topock - Alluvium	GM		metadiorite; wet; very stiff (133.0 - 134.0') Topock - Alluvium Deposits; S	ilty gravel with	sand		
134 135 136 137	IRZ-16-SS- 132.0-137.0 3/7/2019 13:00	IRZ-16-VAS- 132.0-137.0 (<0.17 U ppb) 2/26/2019 13:38	Deposits Topock -		00	(GM); reddish brown (2.5YR 4/4); granules to vangular; some very fine to very coarse grained subround; trace cobbles, angular; coarser clast metadiorite; wet (134.0 - 143.0') Topock - Alluvium Deposits; S (SM); reddish brown (2.5YR 4/4); very fine gra grained, angular to subround; little granules to angular to subround; little silt; wet	very large pebb sand, angular ts composed of ilty sand with g ined to very co	les, to f ravel arse		
138 210 139 	IRZ-16-SS- 137.0-142.0 3/7/2019 13:05	Unified Soil C	Alluvium Deposits	SM som	em, ft =	: feet, bgs = below ground surface,	amsl = abo	ove mear	n sea level, G	W =

	111	CADIS	for natural and built assets		BO	ring	Log		Sheet: 8 of	11
	Started				Surface			- Boring I	No.: <u>IRZ-16 Pi</u>	lot
		eted: <u>03/07</u>			Northin		· ·	_		<u></u>
_	Co.:	<u>Casca</u>			Easting	•	•		3&E	
	Meth		<u>Drilling</u>		Total D	•	207 ft bgs		nal GW Remedy Pha	
	ig Typ Name		nic Truck Mou		Boreho			_ Location: <u>PG</u>	S&E Topock, Needle	es, Califo
	ıvame ı Asst:		Vasquez aya/ O. Flores		Sampli		Vater: <u>26 ft bgs</u> od: <u>4 inch x 10 ft Core Barrel</u>	— Project Num	ber: <u>RC000753.005</u>	
.ogge	•		McGrane		Samplii	•		1 10,000 140111	DCI. <u>11.0000700.000</u>	
Editor:			el Andrews		Conver	0				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fl
_ _141 _ _142		IRZ-16-SS- 137.0-142.0 3/7/2019 13:05		Topock - Alluvium Deposits	SM				(137.0 - 147.0') Soils were soft to drill through, core barrel was full, 144.5 to 147 ft. bgs sediments very wet, poor recovery may be due to soft wet	
_143 _144		IRZ-16-SS-		Topock - Alluvium Deposits	ML		(143.0 - 144.3') Topock - Alluvium Deposits; brown (2.5YR 4/4); low plasticity; some fine to sand, angular to subround; trace granules to subangular; moist to wet	very coarse grained		
_ _145		142.0-147.0 3/7/2019 13:10		Topock - Alluvium Deposits	SM		(144'); trace cobbles, angular to subangular (144.3 - 145.5') Topock - Alluvium Deposits; (SM); olive brown (2.5Y 4/4); very fine grained angular to subround; some granules to very la	d to very coarse grain		
_ _146				Topock -			subangular; little silt; wet (145.5 - 147.8') Topock - Alluvium Deposits; 3 brown (2.5YR 4/4); medium plasticity; some v grained sand, angular to subround; little grant	ery fine to very coars lles to very large	sh e	
_147				Alluvium Deposits	ML		pebbles, angular to subangular; wet; very soft			
_148 _149	210	IRZ-16-SS- 147.01-152.0	IRZ-16-VAS- 147.0-152.0 (<0.17 U		••		(147.8 - 155,5') Topock - Alluvium Deposits; (SM); reddish brown (2.5YR 4/4); very fine grigarined, angular to subround; some silt; little gpebbles, angular to subangular; wet	ained to very coarse		
_150		3/7/2019 13:15	ppb) 2/27/2019 10:45				(149.5'); little silt; increase in sand			
151 _ _ _152_				Topock - Alluvium Deposits	SM		(151'); trace clay; decrease in sand			
_ _153							(152.5'); some granules to very large pebbles decrease in sand	angular to subangula	ar;	
_154		IRZ-16-SS- 152.0-157.0								
_155		3/7/2019 13:20					(455 5 400 0NT) A N N N N N N N N N N N N N N N N N N	Sanda 20 20 2		
_156 _ _							(155.5 - 162.8') Topock - Alluvium Deposits; (ML); reddish brown (2.5YR 4/4); low plasticity coarse grained sand, angular to round; little gipebbles, angular to subangular; coarser clasts metadiorite; moist to wet; very stiff	/; some very fine to very large	ery	
_157 - 158				Topock - Alluvium	ML		. , , , , , , , , , , , , , , , , , , ,			
_158 _ _159		IRZ-16-SS- 157.0-162.0 3/7/2019 13:25		Deposits			(158'); trace boulder (158.5'); no boulders			
100										
160 Abbrev	viation	s: USCS =	Unified Soil C	Classificati	on Svst	<u> </u>	feet, bgs = below ground surface	. amsl = ahove	mean sea level GV	V =
							e laboratory reporting limit, NR =			
		, rr- Puit	p =. >ioii, (first VA			, Dic	table byillb	٠.

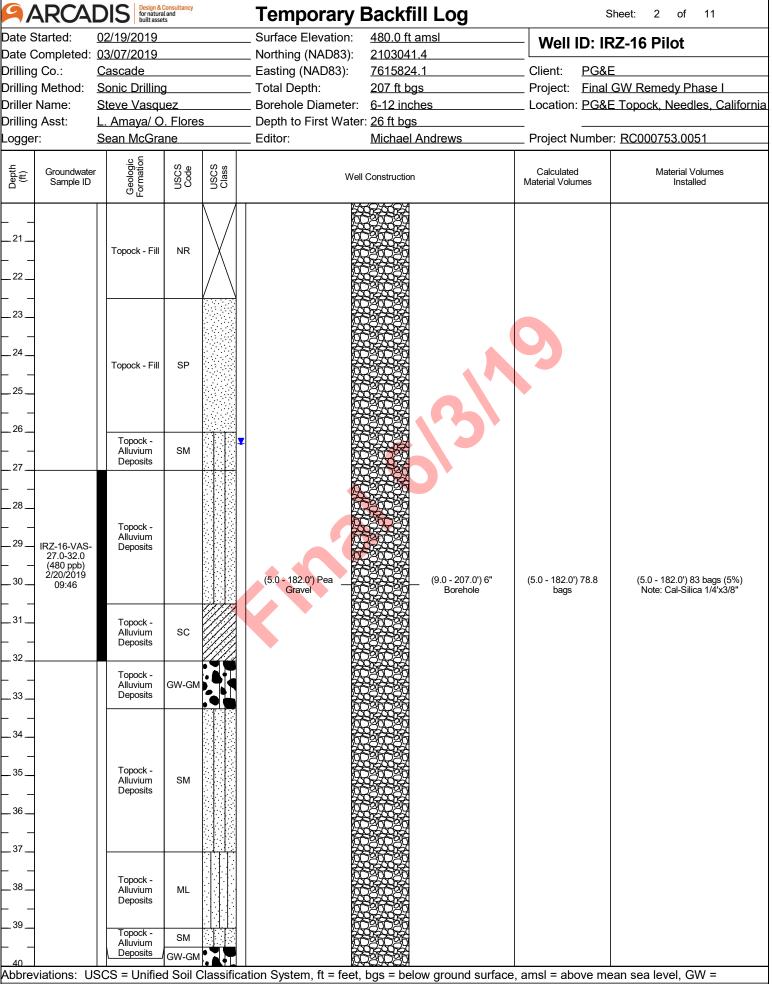
9/	٩RC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	3	Sh	neet: 9 of	11
Date S	Started	l: <u>02/19/</u>	2019		Surface	Elevat	ion:	480.0 ft amsl	Boring No.	: IR <i>7-</i> 16 Pi	ilot
	-	eted: <u>03/07/</u>			Northing	- '	,	2103041.4	-		
Drilling		<u>Casca</u>			Easting	•	33):	7615824.1	Client: PG&E		
Drilling			Drilling		Total De	-		207 ft bgs	•	SW Remedy Ph	
Drill R			<u>nic Truck Μοι</u>		Borehol			6-12 inches	Location: <u>PG&E</u>	Topock, Needl	es, California
Driller					-			26 ft bgs 4 inch x 10 ft Core Barrel	. — — — — — — — — — — — — — — — — — — —	DC0007E2 000	F.4
Drilling Logge			aya/ O. Flores McGrane		Samplir Samplir	_		Continuous	Project Number:	RC000753.003	01
Editor:			el Andrews		Convert	-			=		
		<u>iviiciia</u>	1		1						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS		Soil Description		Drilling Notes	Drilling Fluid
161 162		IRZ-16-SS- 157.0-162.0 3/7/2019 13:25		Topock - Alluvium Deposits	ML						
 163							(SM); re	- 169.5') Topock - Alluvium Deposits; Silt eddish brown (2.5YR 4/4); very fine grain	ned to very coarse		
 164		IRZ-16-SS- 162.0-167.0					angular	, angular to subround; little gra <mark>nules t</mark> o vo to subangular; little silt; coarser clasts co rite; wet			
165		3/7/2019 13:30						(3)			
166				Topock - Alluvium Deposits	SM			6			
_167							(167'); i	ncrease in silt, decrease in sand			
168							7				
169		IRZ-16-SS- 167.0-172.0									
170		3/7/2019 13:35		Topock - Alluvium Deposits	ML		brown (sand, a	- 170.5') Topock - Alluvium Deposits; Sa 2.5Y 4/4); low plasticity; some very fine to ngular to subround; little granules to med	o very coarse grained		
171_							(170.5 silt and	ngular; wet; very stiff - 179.5') Topock - Alluvium Deposits; Wegravel (SW-SM); dark reddish brown (2. to very coarse grained, angular to subar	5YR 3/4); very fine		
172							to large	pebbles, angular to subround; little silt; c sed of metadiorite; wet	coarser clasts		
173											
174		IRZ-16-SS- 172.01-177.0	IRZ-16-VAS- 172.0-177.0								
 175		3/7/2019 13:45	(110) 2/27/2019	Topock - Alluvium	SW-SM						
		.55	16:26	Deposits	SVV-SIM						
176											
<u> </u>											
_177				•						(477.0 407.0"	
 178		IRZ-16-SS-								(177.0 - 187.0') Drilling through soils was soft, softer sediments	
-	210	177.0-182.0 3/7/2019								compacted in core bag	
179		13:50								causing poor recovery, core	
-					ML		(179.5	- 182.0') Topock - Alluvium Deposits; Sa	ndy silt with gravel	barrel was full	
	viation	e: 11808 =	Unified Soil C	l Slassificati		<u> </u>	`	has = helow around surface a	j	n sea level G	<u> </u>

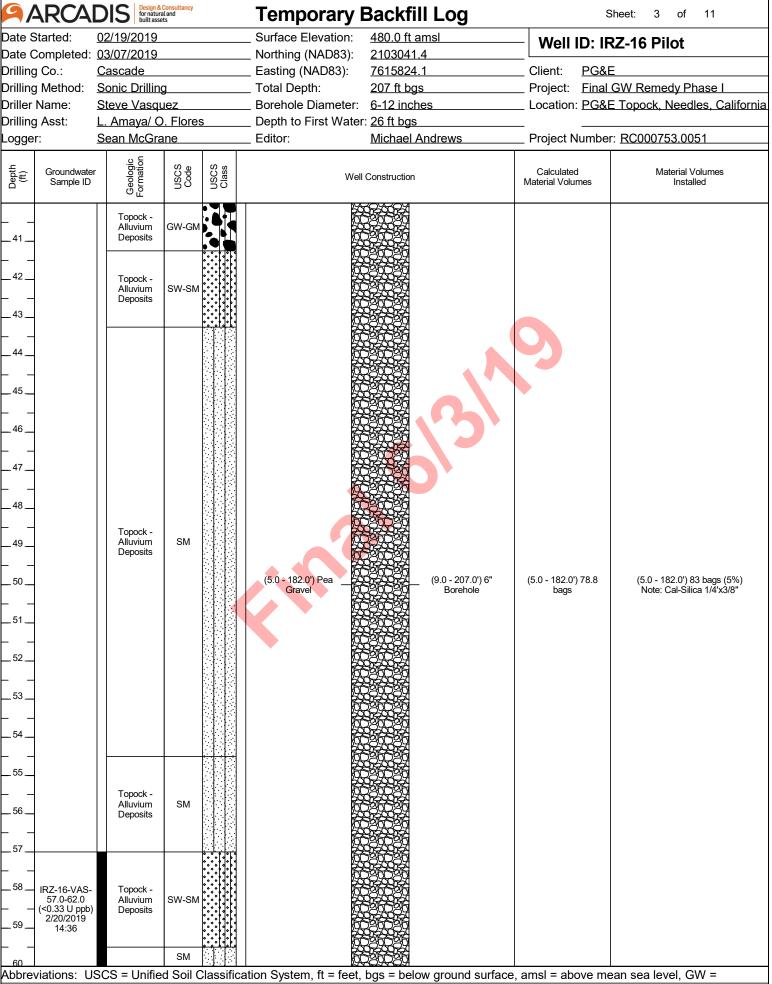
SA	RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	g Lo	g		She	et: 10 of	11
Date St					Surface			480.0 ft amsl	Borin	a No.:	IRZ-16 Pi	lot
	-	ted: <u>03/07/</u>			Northin	• •	,	2103041.4				
Drilling		<u>Casca</u>			Easting	•		7615824.1	Client:	PG&E		
Drilling			•			•		207 ft bgs	-		N Remedy Ph	
Prill Rig	• •		nic Truck Mo						Location:	PG&E T	opock, Needle	es, Californi
riller N			-	[-			-			20000750 005	
rilling			aya/ O. Flore		-	-		4 inch x 10 ft Core Barrel	Project N	umber: <u>I</u>	RC000753.005)1
ogger:					•	•		Continuous				
ditor:		<u>iviicna</u>	el Andrews		Conver	tea to	vveii:	X Yes				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS		Soil Description			Drilling Notes	Drilling Fluid
- 181_ - 182_		IRZ-16-SS- 177.0-182.0 3/7/2019 13:50		Topock - Alluvium Deposits	ML		coarse	reddish brown (2.5YR 4/4); low plasticity; a grained sand, angular to subround; little g s, angular to subround; coarser clasts cor orote; moist to wet	granules to ve		(177.0 - 187.0') Drilling through soils was soft, softer sediments compacted in core bag causing poor	
183	•						∷ (SM);	- 187.0') Topock - Alluvium Deposits; Silt reddish brown (2.5YR 4/4); very fine grain d; little granules to large pebbles, angular t	ed to very coa	irse	recovery, core barrel was full	
184		IRZ-16-SS- 182.0-187.0		Topock -	SM							
185_		3/7/2019 16:26		Alluvium Deposits	SIVI			100				
4												
186												
-												
187				Topock -			(187.0	- 187.8') Topock - Alluvium Deposits; Sar	ndy silt with gr	avel	(187.0 - 197.0')	
-				Alluvium Deposits	ML		(ML);	eddish brown (2.5YR 4/4); low plasticity; a grained sand, angular to subround; little c	and very fine t	o very	Tight formation	
188					1		pebble	s, angular to subround; trace cobbles, and	gular; coarser	clasts		
-	210						highly	sed of metadiorote; moist to wet; some me weathered	· ·			
189		IRZ-16-SS-					(187.8 (SM);	- 197.0') Topock - Alluvium Deposits; Silt reddish brown (2.5YR 4/4); very fine grain	y sand with gr ed to very coa	avel irse		
4		187.0-192.0 3/7/2019			Y		graine little si	d; little granules to very large pebbles, ang	ular to súbanç	gular;		
190		13:55						t, wet '); some silt; trace cobbles, subangular; de	ecrease in san	d		
4												
91_												
4												
92				Topock -			(102')	little silt; increase in sand				
4				Alluvium Deposits	SM		(192), [::]	nue siit, increase in sand				
93_				Deposits								
4												
194			IRZ-16-VAS- 192.0-197.0									
_			(<0.17 U									
195_			ppb) 2/28/2019									
			13:41									
196												
197							(196.7	5') black (10YR 2/1); possible organics				
				Topock -			(197.0	- 198.3') Topock - Alluvium Deposits; We				
198_				Alluvium Deposits	SW-SM		angula	d gravel (SW-SM); very fine grained to ver ir to subround; little granules to large pebb	les, angular to) '		
	400			_ 5,550,00				nd; little silt; coarser clasts composed of n - 204.5') Topock - Weathered Bedrock - o				
199_	120			Topock -			silt with	n gravel (ML); reddish brown (2.5YR 4/4);	low plasticity;	some		
				Weathered Bedrock -	ML		granul	ne to very coarse grained sand, angular to es to large pebbles, angular to subround; t	race clay; coa			
700				conglomerate			clast c	omposed of conglomerate; moist to wet; ve	ery stiff			
200	ation	s: LISCS =	Unified Soil (Classification	n Svet	em f	t = feet	bgs = below ground surface, a	amsl = abo	Ve mear	sealevel GV	N =

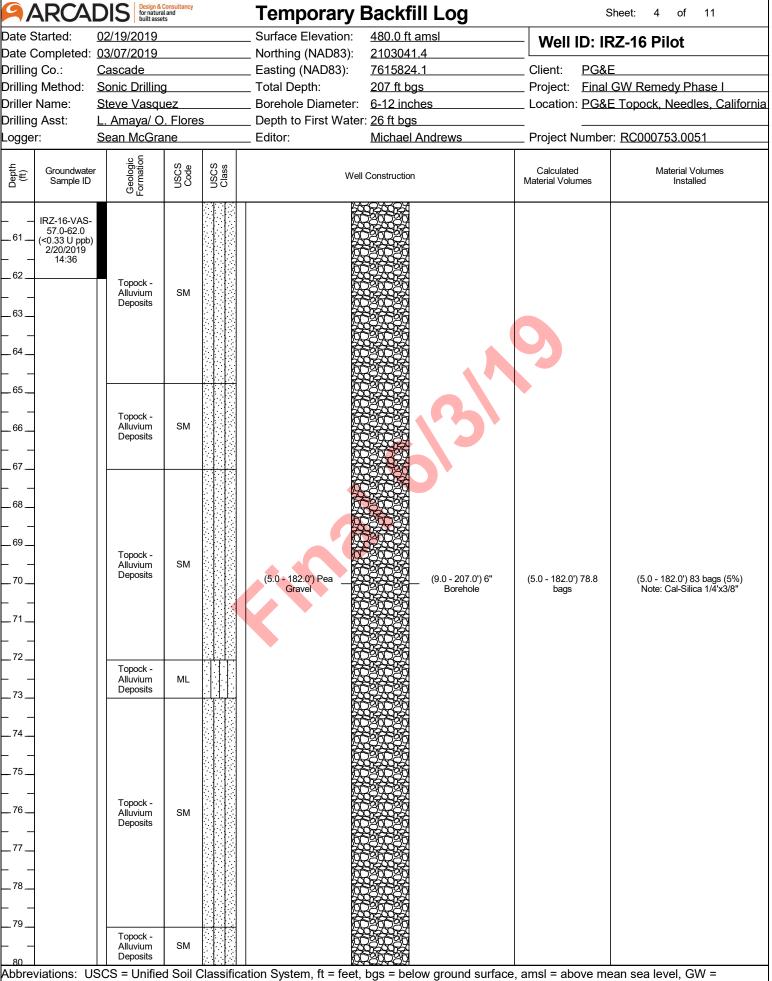
9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	et: 11 of	11
Date S	Started	: 02/19/2	2019		Surface	Elevation:	480.0 ft amsl	Bori	na No .	IRZ-16 Pi	lot
	-	eted: <u>03/07/2</u>	2019			g (NAD83):	2103041.4	_		1112 1011	<u></u>
Drilling	-	Cascac			_	(NAD83):	7615824.1	_ Client:	PG&E		
Drilling	-		-		Total Do	-	207 ft bgs	_ Project:		N Remedy Ph	
Drill R			ic Truck Mo			e Diameter:	6-12 inches	_ Locatior	n: <u>PG&E T</u>	opock, Needle	es, California
Driller			/asquez		-	o First Water	-	- Designat I		2000752.005	· ₄
Drilling	-		ya/ O. Flore: IcGrane		-	ng Method: ng Interval:	4 inch x 10 ft Core Barrel Continuous	_ Project i	Number: <u>F</u>	RC000753.008	0.1
Logge Editor:			l Andrews		-	ed to Well:	× Yes □ No	_			
Laitor		IVIIOTIAC	17 trial CW3	_	T	T T					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	Class	Soil Description			Drilling Notes	Drilling Fluid
 201 _202_				Topock -							
				Weathered Bedrock - conglomerate	ML					(202.0 - 203.0') Rough drilling	
203				25gioinoidi						(203.0 - 207.0')	
	120									` Hard drilling '	
204											
205							- 207.0') Topock - Competent Bedrock - (2.5YR 4/4); moist to dry; moderate ceme				
				Topock - Competent							
206				Bedrock - conglomerate							
				Congiomerati							
207						K///XI 🔷	End of Boring at 207.0 'bg	ļs.			
208						9					
209						7					
210											
211_											
					•						
213_											
214											
-											
215											
-											
216											
_217											
218											
219_											
5											
220											
Abbre	viation	s: USCS = l	Jnified Soil (Classificati	on Syste	em, ft = feet,	bgs = below ground surface,	amsl = ab	ove mear	n sea level, G\	V =

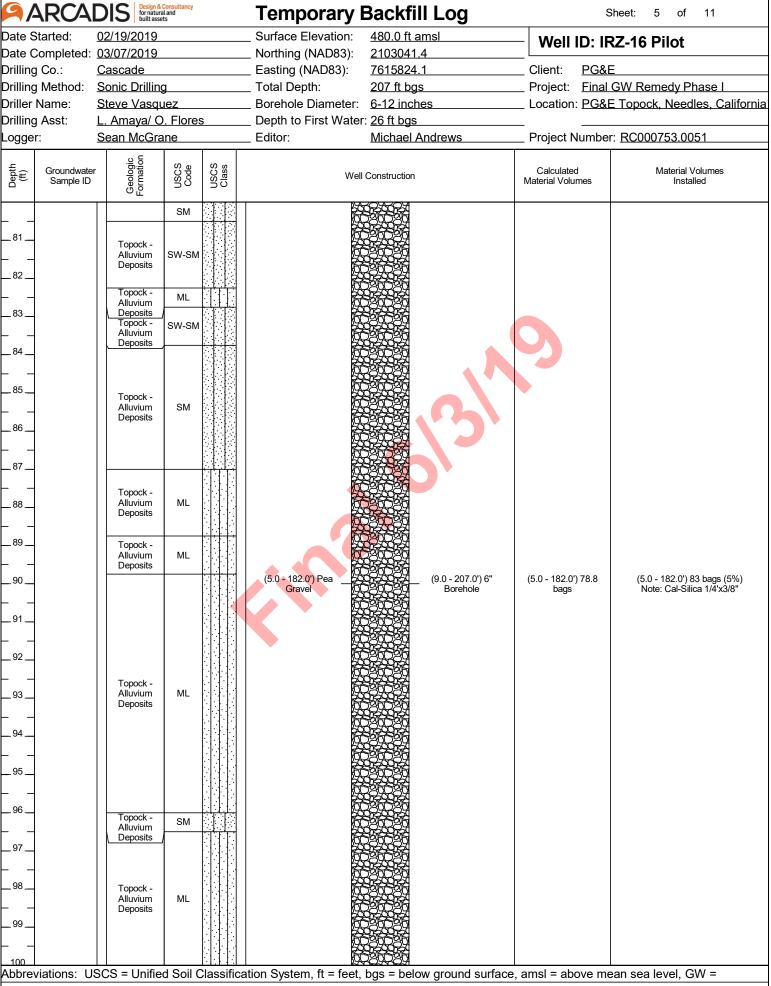
groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval

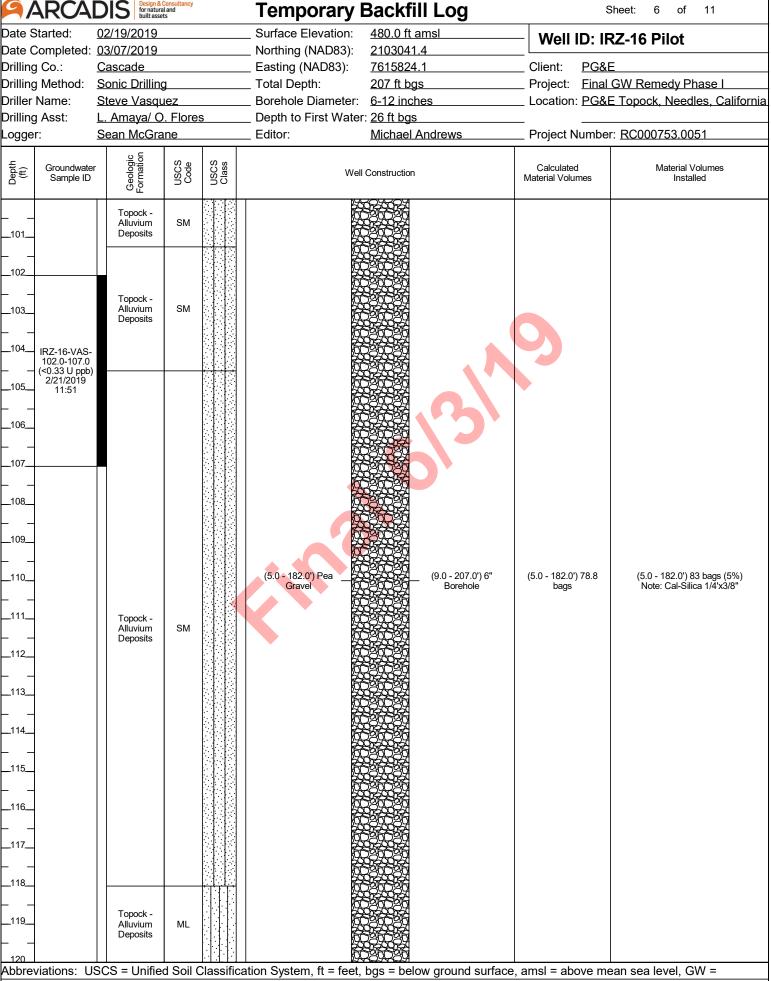
Date Started:	02/19/2019			Surface Elevation:	480.0 ft amsl	,,,,,,,,	7 40 DU 4
ate Started. Oate Completed:				_ Northing (NAD83):	2103041.4	Well ID: IRZ	2-16 Pilot
	Cascade			_ Easting (NAD83):	7615824.1	Client: PG&E	
-	Sonic Drilling	1		_ Total Depth:	207 ft bgs		W Remedy Phase I
-	Steve Vasqu			_ Borehole Diameter:	_	•	Topock, Needles, California
	L. Amaya/ O.		S	_ _ Depth to First Water			,
-	Sean McGra			 Editor:	Michael Andrews	Project Number:	RC000753.0051
Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
	A S E			(0.0 - 0.5') Temporary Steel Plate with BMP	-	material versions	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	Topock - Fill	NR		Steel Plate with BMP			
- 3 _	Topock - Fill	SP		(0.5 - 5.0') Plastering		(0.5 - 5.0') 7.9 bags	(0.5 - 5.0') 7 bags (-11%) Note: Wildcat Washed
. 4	Topock - Fill	NR			(0.0 - 9.0') 12" Borehole		
- 6 - 7 - 8 - 9							
- 10 - 11 - 12 - 13	Topock - Fill	NR		(5.0 - 182.0') Pea Gravel		(5.0 - 182.0') 78.8 bags	(5.0 - 182.0') 83 bags (5%) Note: Cal-Silica 1/4'x3/8"
					(9.0 - 207.0') 6" Borehole		
.18	Topock - Fill	NR					
					bgs = below ground surf		
roundwater, ppb	= parts per b	illion, l	J = not c	detected above the lab	oratory reporting limit, NF	R = no recovery, blue w	ater table symbol
, -						*	om the pilot borehole durin

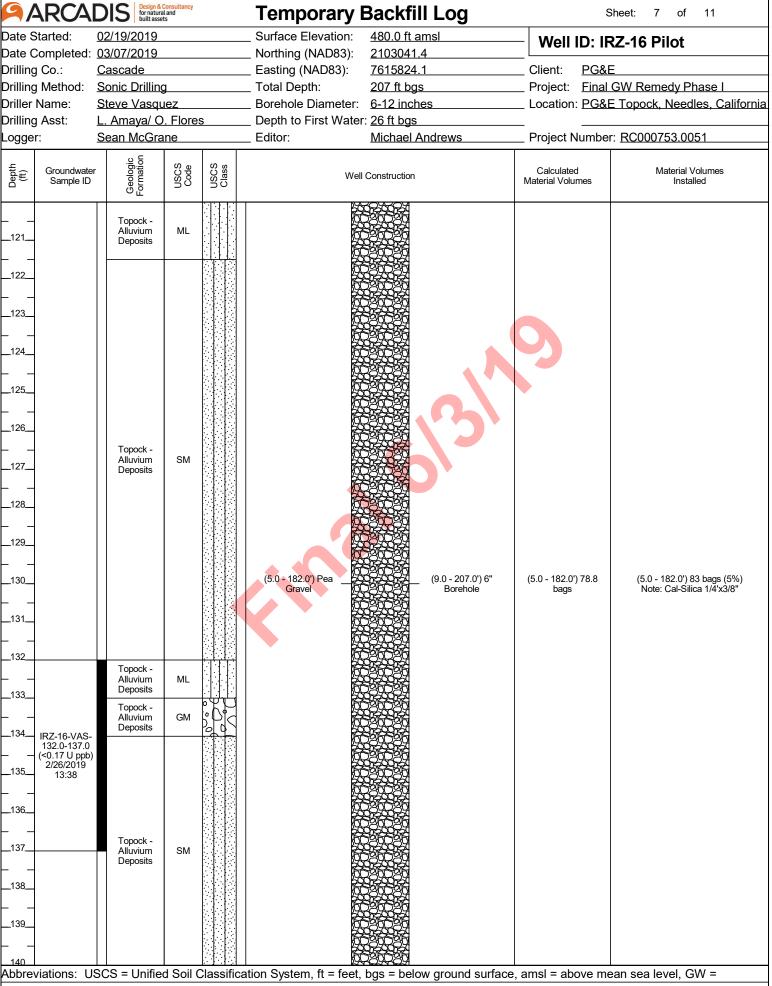


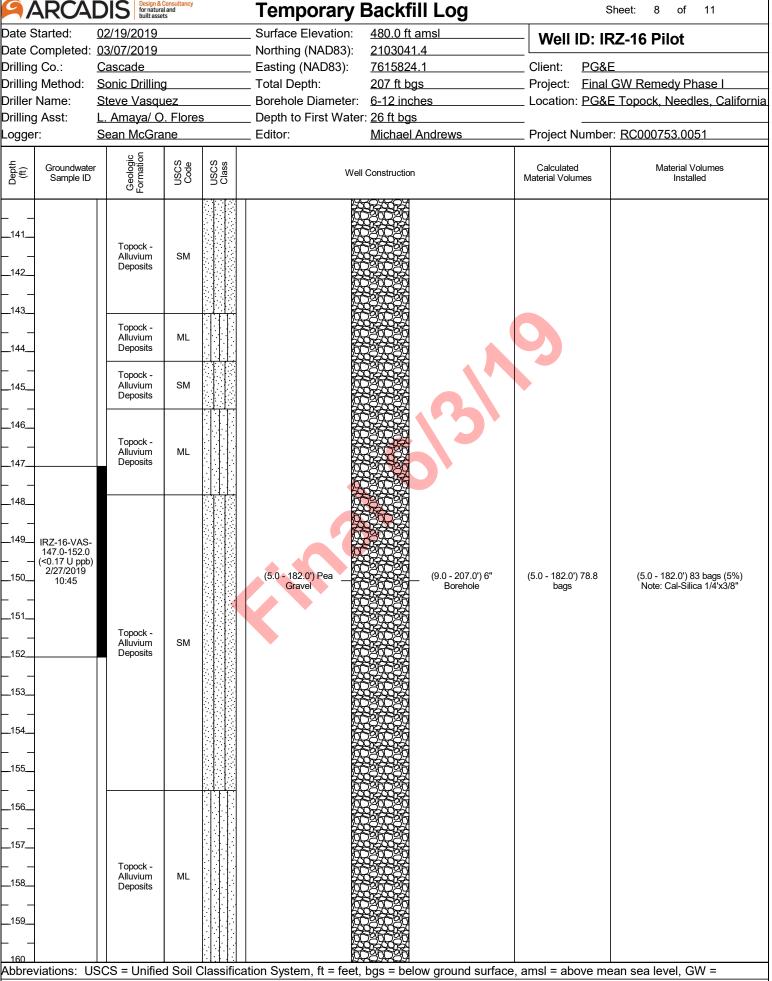


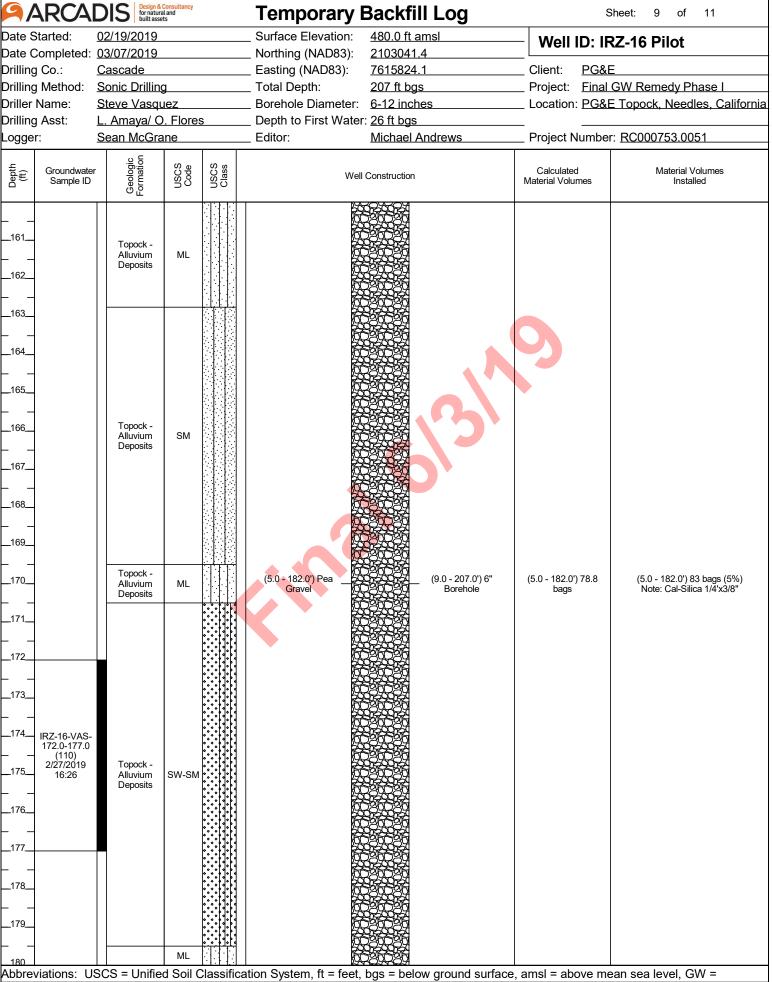




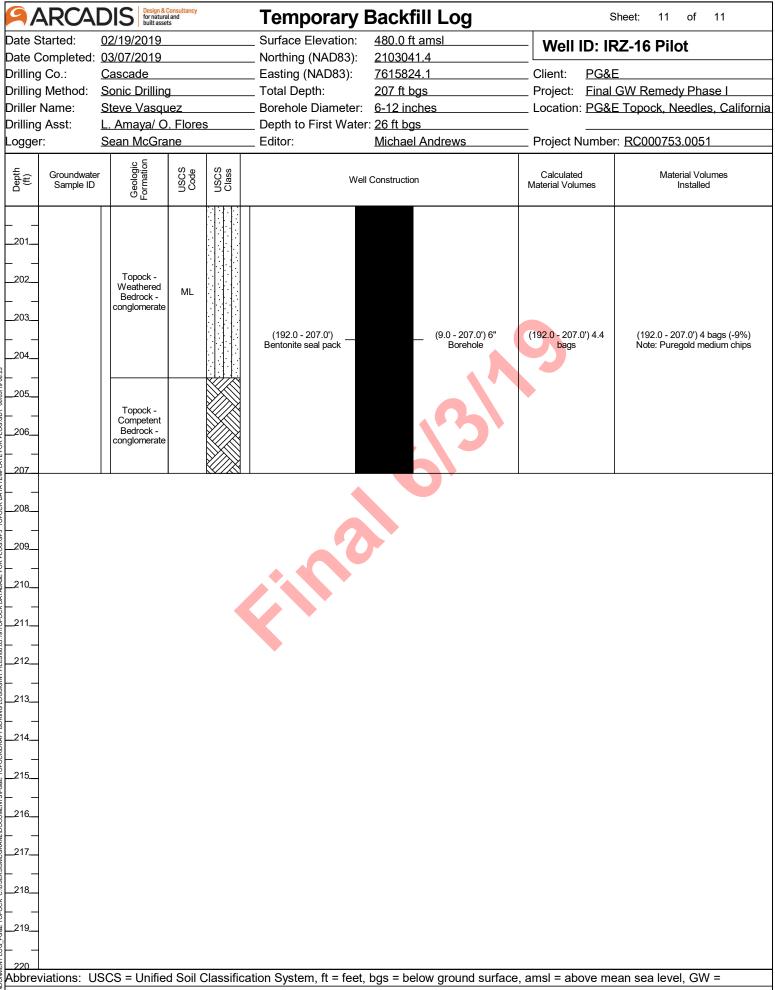








Temporary Backfill Log Sheet: Surface Elevation: 480.0 ft amsl 02/19/2019 Well ID: IRZ-16 Pilot Date Completed: <u>03/07/2019</u> Northing (NAD83): 2103041.4 Drilling Co.: Cascade Easting (NAD83): 7615824.1 Client: PG&E Drilling Method: Sonic Drilling Total Depth: Project: Final GW Remedy Phase I 207 ft bgs Driller Name: Steve Vasquez Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California Drilling Asst: L. Amaya/ O. Flores Depth to First Water: 26 ft bgs Logger: Sean McGrane Editor: Michael Andrews Project Number: RC000753.0051 Geologic Formation USCS Class USCS Depth (ft) Calculated Material Volumes Groundwater Well Construction Sample ID Material Volumes Installed Topock -(5.0 - 182.0') 83 bags (5%) (5.0 - 182.0') Pea (5.0 - 182.0') 78.8 _181_ Alluvium ML Note: Cal-Silica 1/4'x3/8" Gravel bags Deposits 182 183 184 Topock -Alluvium SM Deposits _185_ _186_ (182.0 - 192.0') (182.0 - 192.0') 4 bags (-5%) (182.0 - 192.0') 4.2 187. Cemex #3 MESH Topock -Note: Lapis Lustre Sand bags (8x10)Alluvium ML Deposits 188_ 189 (9.0 - 207.0') 6" 190 Borehole 191 192 Topock -Alluvium Deposits 193 IRZ-16-VAS-192.0-197.0 (<0.17 U ppb) 2/28/2019 _195 13:41 (192.0 - 207.0')(192.0 - 207.0') 4.4 (192.0 - 207.0') 4 bags (-9%) 196 Bentonite seal pack bags Note: Puregold medium chips 197 Topock -SW-SM Alluvium Deposits 198 Topock -_199_ Weathered ML Bedrock conglomerate Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =



9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	g		She	eet: 1 of	12
Date S	Started	: 03/02/2	2019		Surface	Eleva	tion:	480.3 ft amsl	Borin	a No .	IRZ-17 Pi	lot
Date 0	Comple	eted: <u>03/13/2</u>	2019		Northin	g (NAE	083):	2103000.2		9 110	1112-17 1 1	<u>10t</u>
Drilling	g Co.:	<u>Cascac</u>	<u>de</u>		Easting	(NAD	33):	7615871.3	Client:	PG&E		
Drilling	g Meth	od: <u>Sonic [</u>	Drilling		Total D	epth:		227 ft bgs	Project:	Final G	W Remedy Ph	ase I
Drill R	ig Typ	e: <u>Proson</u>	nic Truck Mou	ınt	Boreho	le Dian	neter:	6-12 inches	Location:	PG&E]	Fopock, Needl	es, California
Driller	Name	: Steve \	Vasquez		Depth t	o First	Water	: <u>26.55 ft bgs</u>	-			
Drilling	g Asst:	O. Flor	res, L. Amaya	1	Samplir	ng Met	hod:	4 inch x 10 ft Core Barrel	Project N	lumber: <u>I</u>	RC000753.005	51
Logge	r:	<u>G Jeffe</u>	ers / J. Wann	er	Samplir	ng Inte	rval:	Continuous	=			
Editor		<u>Sean N</u>	<u> McGrane</u>		Conver	ted to \	Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
	0 2 3 3 4 4 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8			Ge For	NR		barrel d	9.5') (NR); No recovery loose dredge sar sould not provide core will accurate depth:	s		(0.0 - 17.0') Due to loose dredge sand, little to no recovery, push 6" casing to try and get recovery, was not successful (17.0 - 19.5') Loose dredge sands continuosly fell out of core barrel	(0.0 - 217.0') No water used
20	90			Topock - F				21.5') Topock - Fill; Poorly graded sand (
	viation	s: USCS = I	Unified Soil C	lassificat	ion Syste	em, ft :	feet,	bgs = below ground surface, a	amsl = abo	ove mear	n sea level. G\	N =

	KC	ADIS	Design & Consultancy for natural and built assets		Во	rin	g Log	l		She	eet: 2 of	12
Date S					Surface			480.3 ft amsl	Boring N	lo.:	IRZ-17 Pi	lot
	-	eted: <u>03/13/</u>			Northin	- '		2103000.2				
rilling		<u>Casca</u>			Easting	•		7615871.3	Client: PG			
•	Meth			7		•		227 ft bgs	•		W Remedy Ph	
	д Туре		<u>nic Truck Mo</u>					6-12 inches	Location: <u>PG</u>	&Е ⁻	<u> Fopock, Needl</u>	<u>es, Californi</u>
	Name		-		-			26.55 ft bgs	·			
•	Asst:		<u>res, L. Amay</u>			_		4 inch x 10 ft Core Barrel	Project Numb	er:	RC000753.00	51
ogger	:		<u>ers / J. Wanr</u>		-	-		Continuous				
ditor:		<u>Sean l</u>	<u>McGrane</u>	(Convert	ed t	o Well:	Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	sosñ	200	Soil Description			Drilling Notes	Drilling Fluid
_21				Topock - Fill	SP		grained	te yellowish brown(10YR 5/4); very fine g angular to subround; trace silt; little mica staining; moist at 20.5' bgs				(0.0 - 217.0') N water used
_ _22 _ _23 _ _24	90			Topock - Fluvial Deposits	SM		dark ye grained subang moist; r	24.0') Topock - Fluvial Deposits; Silty sar lowish brown (10YR 4/4); very fine grain subangular to round; some granules to ular to round; little silt; trace cobbles, sub o odor; no staining; larger clasts consist orite and metadiorite. Higher gravel conte	ed to very coarse very large pebbles, angular to subround of sandstone,	d;		
25 25 26 27		IRZ-17-SS- 22-27 3/7/2019 11:28		Topock - Fluvial Deposits	ML		yellowis slow dil subrou trace co odor; n	28.0') Topock - Fluvial Deposits; Sandy s h brown / moderate yellowish brown(10Y atency; some very fine to fine grained sar d; little granules to very large pebbles, su bbles, subround to round; trace mica; we staining ume granules to very large pebbles, subar ery course sand, 3" lense at 26' bgs of d	(R 5/4); no plasticity nd, subangular to ubangular to round; et; medium stiff; no ngular to round; tra	,	(24.0') Approximate depth of water table	
28	60	IRZ-17-SS- 27-32 3/7/2019		Topock - Fluvial Deposits Topock - Fluvial	SM		yellowis grained very lar staining	29.0') Topock - Fluvial Deposits; Silty sar h brown / moderate yellowish brown(10Y to fine grained, subangular to round; and ge pebbles, subangular to round; little mid trace med to very fine sand. 30.0') Topock - Fluvial Deposits; Sandy s	(R 5/4); very fine d silt; little granules ca; wet; no odor; no	to	(27.0 - 32.0') Set temporary well screen, ~6" of water in screen, due to silt and clays, drilled an additonal 5 ft to collect sample	
30 - 31 - 32		11:33		Topock - Fluvial Deposits	МН		yellowis plastici subang subang staining (30.0 - yellowis no dilat	h brown / moderate yellowish brown(10Y /, slow dilatency; some very fine to fine g ular to subround; little granules to very la ular to round; trace mica; wet; medium sti	(R 5/4), medium prained sand, rge pebbles, iff; no odor; no silt with sand (MH); (R 5/4); high plastic gular to subround;			
33				·			cobbles staining (4"), ox	, round; trace clay; trace mica; wet; very ; increase granules to very large pebbles dized staining observed at bottom of bed.	soft; no odor; no at bottom of soil be			
.34 _ .35	48	IRZ-17-SS- 32-37 3/7/2019 11:36	IRZ-17-VAS- 32-37 (67 ppb) 3/2/2019 13:14	Topock - Fluvial Deposits	SM		yellowis grained granule	35.5') Topock - Fluvial Deposits; Silty sar h brown / moderate yellowish brown(10Y to very coarse grained, subangular to rot s to very large pebbles, subround to roun race clay; little mica; wet; no odor; iron ox	(R 5/4); very fine und; some silt; little ad; trace cobbles,			
_36		IRZ-17-SS-		Topock - Alluvium Deposits	SM		yellowis grained to very	38.0') Topock - Alluvium Deposits; Silty s h brown / moderate yellowish brown(10Y to very coarse grained, angular to suban arge pebbles, angular to subangular; little no staining	R 5/4); very fine igular; some granul	es		
_38 _ _39	240	36-42 3/7/2019 11:45		Topock - Alluvium Deposits	GM		reddish subrou subrou	14.5') Topock - Alluvium Deposits; Silty g brown (5YR 4/3); granules to very large Id; some very fine to very coarse grained di, little silt; trace mica; wet; no odor; no s of granodiorite.	pebbles, angular to I sand, angular to			

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 3 of	12
Date S	Started	: <u>03/02/</u>	2019		Surface	Eleva	ion: <u>480.3 ft amsl</u>	Boring No.:	· IR7-17 P	ilot
Date C	Comple	eted: <u>03/13/</u>	2019		Northing	g (NAE	83): <u>2103000.2</u>	_ Borning No	1112-17 1	<u>110t</u>
Drilling	Co.:	<u>Casca</u>	de		Easting	(NAD	3): <u>7615871.3</u>	Client: PG&E		
Drilling	y Meth	od: <u>Sonic</u>	Drilling		Total Do	epth:	227 ft bgs	Project: Final G	W Remedy Pl	nase I
Drill Ri	ig Тур	e: <u>Prosor</u>	nic Truck Moi	unt	Borehol	e Dian	eter: 6-12 inches	Location: PG&E	Topock, Need	les, California
Driller	Name	: <u>Steve</u>	Vasquez		Depth to	o First	Nater: <u>26.55 ft bgs</u>			
Drilling	Asst:	O. Flo	res, L. Amaya	a	Samplin	ng Metl	od: 4 inch x 10 ft Core Barrel	Project Number:	RC000753.00	51
Logge	r:	G Jeffe	ers / J. Wann	<u>ier</u>	Samplin	ng Inte	val: <u>Continuous</u>	_		
Editor:		<u>Sean I</u>	<u> McGrane</u>		Convert	ted to \	Vell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	OSCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
41 42 43 44 45 46		IRZ-17-SS- 36-42 3/7/2019 11:45 IRZ-17-SS- 42-47 3/7/2019 11:50		Topock - Alluvium Deposits	GM		(44.5 - 53.0') Topock - Alluvium Deposits; Silty: reddish brown / moderate brown(5YR 4/4); very coarse grained, angular to subangular; little grar pebbles, angular to subangular; little silt; trace c mica; wet; no odor; no staining; larger clasts cor and metadiorite.	sand with gravel (SM); fine grained to very nules to very large obbles, angular; little		(0.0 - 217.0') No water used
47 48 49 50 51 52	240	IRZ-17-SS- 47-52 3/7/2019 11:55		Topock - Alluvium Deposits	SM		(46.5'); some granules to very large pebbles, and decrease in sand and silt. (49'); increase in silt, decrease in granules to very (49.5'); decrease in silt.			
53 54 55 56		IRZ-17-SS- 52-57 3/7/2019 12:10		Topock - Alluvium Deposits Topock - Alluvium Deposits	SW		(53.0 - 54.0') Topock - Alluvium Deposits; Well gravel (SW); brown (10YR 4/3); very fine graine grained, angular to subround; little granules to v angular to subround; trace cobbles, subround; twet; no odor; no staining; larger clasts consist o coarsen downward. (54.0 - 57.0') Topock - Alluvium Deposits; Silty; reddish brown / moderate brown(5YR 4/4); very coarse grained, subangular to subround; some pebbles, angular to subround; little silt; little mica staining; larger clasts consist of granodiorites.	ed to very coarse very large pebbles, race silt; little mica; if granodiorite, clasts sand with gravel (SM); fine grained to very granules to very large		
57 58 59	120	IRZ-17-SS- 57-62 3/7/2019 12:25		Topock - Alluvium Deposits Topock - Alluvium	SW-SM		(57.0 - 59.0') Topock - Alluvium Deposits; Well and gravel (SW-SM); reddish brown (5YR 4/3); very coarse grained, angular to subround; some pebbles, angular to subround; little silt; trace mic staining; larger clasts consist of granodiorite. (59.0 - 59.5') Topock - Alluvium Deposits; Sand reddish brown / moderate brown(5YR 4/4); low processes to the state of the sta	very fine grained to e granules to very large ca; wet; no odor; no dy silt with gravel (ML);		
60				Deposits	_ SM		some very fine to very coarse grained sand, and		<u> </u>	
	iation	o: LISCS -	Unified Soil (Naccificati	ion Systa	om ft -	feet has = helow around surface	amel = abovo moa	n soa lovol. G	١٨/ –

Sample ID Sample	9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	rir	ng Lo	g	Sł	neet: 4 of	12
Northing (No. 19.3) 20.300.00.00.00.00.00.00.00.00.00.00.00.0										Boring No.	: IRZ-17 Pi	ilot
Drilling Method: Sonic Chilling Total Depth: 227.ft bgs								•				
Drill Right Type: Prosent Truck Mount Depth to First Water, 26.55 ft bis Dept						-	•					
Delire Name: Steve Vasquez Depth to First Water 26.55 h bgs Delire Name: Cogger: Alloward Sampling Method: 4 inch x 10 h Core Barrel Project Number: R0000753.0051 Sampling Method: Continuous Sampling Method: Continuous Sampling Method: Continuous Sampling Method: Continuous Sampling Name Sampling Method: Continuous Sampling Name S				-			-		_	•	•	
Drilling Asst: Q_Elores_L_Amaya Sampling Interval: Continuous Cont										_ Location: <u>PG&E</u>	Topock, Needl	es, California
Sear McGrane Converted to Well: Service Sear McGrane Converted to Well: Sear McGrane Converted Converted Converted to Well: Sear McGrane Converted Converte				•		-			_		D0000750 000	
Editor: Sean McGrane Converted to Well: Yes No No Searple D	_			-		•	•			_ Project Number:	RC000753.00	51
Sample ID Count details C			<u> </u>			-	-			_		
RZ-17-SS- S7-62 3772010 12.25 RZ-17-SS- S7-62 3772010 12.25 RZ-17-SS- RS- RS- RS- RS- RS- RS- RS- RS- RS-	zailoi.		<u>Sean</u>	WicGrane		Conver	lea	o weii.	△ res □ No		T	
R2-17-SS R2-17-SS	Depth (ft)	Recovery (in)			Geologic Formation	USCS	nscs	Class	Soil Description		Drilling Notes	Drilling Fluid
RZ 17 SS RZ 17 SS			57-62 3/7/2019		Alluvium	SM		medium (59.5 reddis coarse pebble stainin	m stiff to stiff; no odor; no staining 64.0') Topock - Alluvium Deposits; Silty n brown / moderate brown(5YR 4/4); ven e grained, subangular to subround; some s, angular to subangular; some silt; little g; larger clasts consist of metadiorite an	sand with gravel (SM); y fine grained to very granules to very large mica; wet; no odor; no		(0.0 - 217.0') No water used
RZ-17-SS- RZ-1	 _63				Deposits					0)		
R2.17.SS 62.67 Topock GM Deposits Deposits GM Deposits Deposits GM Deposits GM Deposits GM Deposits Deposit		120										
15:50 Search Subriging for a browning was all right made, who door, no staining (S.5.) Topock. Alluvium Deposits. Sally sand with gravel (SM); brown from subrangular title silt, trace mica, wet, no odor, no subrangular title silt, trace mica, wet, no odor, no subrangular title silt, trace mica, wet, no odor, weak cementation; no subrangular title silt, trace mica, wet, no odor, weak cementation; no subrangular title silt, trace mica, wet, no odor, weak cementation; no subrangular; increase in silt, weathered granules to very large pebbles, no gentles to very large pebbles, angular to subrangular; increase in silt, weathered granules to very large pebbles, angular to subrangular; weathered granules to very large pebbles, angular to subrangular; weathered granules to very large pebbles, angular to subrangular; increase in silt. [70.5]; little granules to very large pebbles, angular to subrangular; weathered granules to very large pebbles, angular to subrangular; increase in silt. [73.5]; little granules to very large pebbles, angular to subrangular; increase in silt. [73.5]; little granules to very large pebbles, angular to subrangular; increase in silt. [73.5]; little granules to very large pebbles, angular to subrangular; increase in silt. [73.5]; little granules to very large pebbles, angular to subrangular; increase in silt. [73.5]; little granules to very large pebbles, angular to subrangular; increase in silt. [73.6]; little granules to very large pebbles, angular to subrangular; increase in silt. [73.7]; little granules to very large pebbles, angular to subrangular; increase in silt. [73.6]; little granules to very large pebbles, angular to subrangular; increase in silt.			62-67 3/7/2019	62-67 (0.604 J ppb) 3/2/2019	Alluvium	GM	6	reddis	n brown / moderate brown(5YR 4/4); grains, angular to subangular; and very fine to	nules to very large o very coarse grained		
brown (10/18,56), very fine granules to very large pebbles, angular to subangular; increase in silt, meanth of the subangular; increase in silt, weathered granules to very large pebbles, angular to subangular; increase in silt, weathered granules to very large pebbles, angular to subangular; increase in silt, weathered granules to very large pebbles observed. [87.17.85.67.72.37/2019 13.12 Topook Alluvium Deposits 192	_05		10.00	15:50	-					ca; wet; no odor; no		
subround; some granules to very large pebbles, angular to subangular; its altiturate mice, wet, no cord; weak cementation; no staining (66) reddish brown / moderate brown(5YR 4/4); some silt, decrease in granules to very large pebbles, angular to subangular; and served of the serve	- 66							(65.0 -	75.5') Topock - Alluvium Deposits; Silty (10YR 5/3), very fine grained to very coa	sand with gravel (SM);		
	_00							subrou	and: some granules to very large pebbles	s. angular to		
Granules to very large pebbles, angular to subangular; increase in silt, weathered granules to very large pebbles, angular to subangular; increase in silt, weathered granules to very large pebbles angular to subangular; increase in silt, weathered granules to very large pebbles angular to subangular; weathered granules to very large pebbles, angular to subangular; weathered granules to very large pebbles, angular to subangular; weathered granules to very large pebbles, angular to subangular; weathered granules to very large pebbles, angular to subangular; weathered granules to very large pebbles, angular to subangular; increase in silt. [RZ-17-SS-72-73] [RZ-17-SS-77-82] [RZ-17	67							stainin	g			
RZ-17-SS- 77- 3/7/2019 13:12 Topock- Alluvium Deposits SM Deposits SM Deposits (70.5'); some granules to very large pebbles, angular to subangular; weathered granules to very large pebbles observed. (73.5'); little granules to very large pebbles, angular to subangular; increase in silt. (73.5'); little granules to very large pebbles, angular to subangular; increase in silt. (73.5'); little granules to very large pebbles, angular to subangular; increase in silt. (75.5 - 80.5') Topock - Alluvium Deposits; Sandy silt with gravel (ML); reddish brown (6YR 5/4); no plasticity, slow dilatency; some granules to very large pebbles, angular to subangular; over large pebbles, angular to subangular; over large pebbles, angular to subangular to very large pebbles, angular to subangular to very large pebbles, angular to subangular to very large pebbles, angular to subangular to very large pebbles, angular to subangular to very large pebbles, angular to subangular to very large pebbles, angular to subangular to very large pebbles, angular to subangular to very large pebbles, angular to subangular to very large pebbles, angular to subangular to very large pebbles, angular to subangular to very large pebbles, angular to subangular to very large pebbles, angular to subangular to very large pebbles, angular to subangular to very large pebbles, angular to subangular to very large pebbles, angular to subangular to very large pebbles, angular to subangular to very large pebbles observed.	 _68							granul (67'); l increa	es to very large pebbles, no cementation ittle granules to very large pebbles, angu se in sand, increase in silt, weathered gra	lar to subangular;	Core compaction observed switch	
Topock - Alluvium Deposits Sand, subangular to subangular to very large pebbles, angular to subangular; increase in silt. [RZ-17-SS-72-77 37/2019 13:25] [RZ-17-SS-73-76	 _70 _71		67-72 3/7/2019		Alluvium	SM						
IRZ-17-SS- 72-77 3/7/2019 13:25 IRZ-17-SS- 77-82 3/7/2019 Topock - Alluvium Deposits; Sandy silt with gravel (ML); reddish brown (5YR 5/4); no plasticity, slow dilatency; some granules to very large pebbles, angular to subangular; some very fine to very coarse grained sand, subangular to subround; trace mica; wet; stiff; no odor; no staining Topock - Alluvium Deposits ML Deposits ML Deposits	_/2_											
IRZ-17-SS- 72-77 3/7/2019 13:25 IRZ-17-SS- 77-82 3/7/2019	- ₇₂ -											
IRZ-17-SS- 72-77 3/7/2019 13:25 IRZ-17-SS- 77-82 3/7/2019 Topock - Alluvium Deposits; Sandy silt with gravel (ML); reddish brown (5YR 5/4); no plasticity, slow dilatency; some granules to very large pebbles, angular to subangular; some very fine to very coarse grained sand, subangular to subround; trace mica; wet; stiff; no odor; no staining Topock - Alluvium Deposits ML Deposits ML Deposits	_/3											
IRZ-17-SS- 77-82 3/7/2019 IRZ-17-SS- 77-82 3/7/2019 IRZ-17-SS- 77-82 3/7/2019 IRZ-17-SS- 3/7/2019 IRZ-17-SS- 77-82 3/7/2019 IRZ-17-SS- 77-82 3/7/2019 IRZ-17-SS- 77-82 3/7/2019 IRZ-17-SS- 77-82 3/7/2019 IRZ-17-SS- 77-82 3/7/2019 IRZ-17-SS- 77-82 3/7/2019 IRZ-17-SS- 77-82 3/7/2019		192								gular to subangular;		
3/7/2019 13:25	_/4							increa	se in siit.			
Topock - Alluvium Deposits; Sandy silt with gravel (ML); reddish brown (5YR 5/4); no plasticity, slow dilatency; some granules to very large pebbles, angular to subangular; some very fine to very coarse grained sand, subangular to subround; trace mica; wet; stiff; no odor; no staining Topock - Alluvium Deposits Topock - Alluvium Deposits overy large pebbles, angular to subround; trace mica; wet; stiff; no odor; no staining	75		3/7/2019									
	_,,		10.20									
Topock - Alluvium Deposits IRZ-17-SS- 77-82 3/7/2019	 _76							reddis to very coarse	n brown (5YR 5/4); no plasticity, slow dila r large pebbles, angular to subangular; so grained sand, subangular to subround;	atency; some granules ome very fine to very		
78 RZ-17-SS-	_77							no odd	or; no staining			
RZ-17-SS- 77-82 3/7/2019 Deposits						l MI						
-	_78					IVIL						
			3/7/2019									
	_79											
80 ■												
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =	80 Nhbrai	viotion	e: 11909 -	Linified Soil (laccification	n Svot	III	[· ·. ft = foot	has - helow around ourfees	amel = ahovo ma	an sea loval C	<u> </u>

AH	RCADIS	for natural and built assets		Во	ring	Log	Sh	eet: 5 of	12
Date Star	ted: <u>03/0</u>	2/2019		Surface	Elevat	tion: 480.3 ft amsl	Boring No.	· IR7_17 Pi	ilot
Date Con	npleted: <u>03/1</u>	3/2019		Northing	g (NAD	83): <u>2103000.2</u>	_ Dorning No.	. <u>1112-17 1 1</u>	<u>10t</u>
Drilling Co	o.: <u>Casc</u>	cade		Easting	(NAD8	33): <u>7615871.3</u>	Client: PG&E		
Drilling M	ethod: <u>Soni</u>	c Drilling		Total De	epth:	227 ft bgs	Project: Final C	W Remedy Ph	ase I
Drill Rig T	ype: <u>Pros</u>	<u>onic Truck Moun</u>	t	Borehol	e Diam	neter: 6-12 inches	Location: PG&E	Topock, Needl	<u>es, California</u>
Driller Na	me: <u>Stev</u>	e Vasquez		Depth to	First '	Water: <u>26.55 ft bgs</u>			
Drilling As		<u>lores, L. Amaya</u>		Samplin	-		Project Number:	RC000753.005	51
Logger:		<u>ffers / J. Wanner</u>		Samplin	•		_		
Editor:	<u>Sear</u>	n McGrane		Convert	ed to V	Vell: ⊠ Yes □ No			
Depth (ft)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
				ML				(67.0 - 87.0')	(0.0 - 217.0') No
 81 82	IRZ-17-SS- 77-82 3/7/2019 13:35		Topock - Alluvium Deposits	SM		(80.5 - 82.0') Topock - Alluvium Deposits; Silty reddish brown / moderate brown(5YR 4/4); very coarse grained, angular to subround; some grar pebbles, angular to subangular; some silt; trace staining	fine grained to very nules to very large	Core compaction observed. switch back to 10' runs.	water used
19 - 83 - 19 19 - 84 85 -	92 IRZ-17-SS- 82-87 3/7/2019 13:51		Topock - Alluvium Deposits	ML		(82.0 - 85.5') Topock - Alluvium Deposits; Sand reddish brown (5YR 5/4); no plasticity, no dilate very large pebbles, angular to subangular; some coarse grained sand, subangular to subround; t stiff; no odor; weak cementation; iron oxide stair	ncy; some granules to e very fine to very race mica; wet; very		
86 87 88		-	Topock - Alluvium Deposits	SM		(85.5 - 88.0") Topock - Alluvium Deposits; Silty reddish brown / moderate brown(5YR 4/4) trace very fine grained to very coarse grained, angula granules to very large pebbles, angular to subar mica; wet; no odor; iron oxide staining; crushed bottom of formation.	dusky red(5R 3/4); ir to subround; some ngular; some silt; trace		
	IRZ-17-SS- 87-92 3/7/2019 14:01					(88.0 - 96,5') Topock - Alluvium Deposits; Sand reddish brown (5YR 5/4); no plasticity, no dilate very large pebbles, angular; some very fine to v sand, angular to subround; trace mica; wet; very	ncy; some granules to ery coarse grained		
92 ₁₂ 93 94 95 96	IRZ-17-SS- 92-97 3/7/2019 14:07		Topock - Alluvium Deposits	ML		(92'); moist; weak cementation; increase in gran pebbles, decrease in sand.	ules to very large		
	14:12		Topock - Alluvium Deposits	SM		(96.5 - 119.0') Topock - Alluvium Deposits; Silty (SM); reddish brown / moderate brown(5YR 4/4 very coarse grained, angular to subround; some pebbles, angular to subround; some silt; trace in staining (99.5'); little silt; increase in granules to very larger feet, bgs = below ground surface,); very fine grained to e granules to very large lica; wet; no odor; no ge pebbles.		M-

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	_og	Sh	neet: 6 of	12
Date S	tarted	: 03/02/	2019	;	Surface	Elev	n: <u>480.3 ft amsl</u>	Boring No.	· IR <i>7</i> -17 P	ilot
Date C	omple	eted: <u>03/13/</u>	<u>/2019</u>	!	Northin	g (NA	3): 2103000.2		. <u></u>	<u></u>
Drilling	Co.:	<u>Casca</u>	ıde	!	Easting	(NAI	: <u>7615871.3</u>	Client: PG&E		
Drilling			Drilling		Total D	-	227 ft bgs	-	SW Remedy Ph	
Drill Ri			nic Truck Mou				er: 6-12 inches	Location: PG&E	Topock, Need	<u>les, California</u>
Driller N			Vasquez		-		ater: 26.55 ft bgs			
Drilling			res, L. Amaya		Samplii	-		Project Number:	RC000753.00	51
Logger Editor:	:		ers / J. Wann McGrane		Sampliı Conver	•		-		
_uitor.		<u> </u>	T		T	T	iii. A les L No	I		<u> </u>
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description		Drilling Notes	Drilling Fluid
		IRZ-17-SS- 97-102 3/7/2019 14:12					02'); some silt; moderate cementation; decrea;	se in sand and		(0.0 - 217.0') No water used
							ranules to very large pebbles.	SC III Saila aira		
103							03'); increase in sand and granules to very lar	ge pebbles decrease		
	120						silt.	ge pessies, decrease		
104		IRZ-17-SS-	IRZ-17-VAS- 102-107							
		102-107 3/7/2019	(<0.17 U ppb)							
_105		14:18	ppb) 3/3/2019 11:50				1000			
_106							06'); decrease in sand, increase in granules to	very large pebbles,		
							It nodules.	, , ,		
107							07'); increase slit, decrease in granules to very	y large pebbles.		
								, 31		
108										
							08.5'); and granules to very large pebbles, and	gular to subround; little		
109		IRZ-17-SS-		Topock -			lt; decrease in silt.			
		107-112 3/7/2019		Alluvium Deposits	SM		09.5'); some silt; increase in silt, decrease in g	ranules to very large		
110		14:22		Deposits			ebbles.			
111										
112	120						12') reddish brown / moderate brown(5YR 4/4)			
-							4); increase silt, decrease granules to very large eathered gravel, mottling.	ge pebbles, trace		
113							5 , 5			
114		IRZ-17-SS-								
		112-117 3/7/2019								
115		14:26								
_116										
_117							17') reddish brown / moderate brown(5YR 4/4)); little silt; decrease in		
-							lt, increase sand, no mottling.			
_118		IRZ-17-SS-								
-	120	117-122 3/7/2019								
119		14:31		Topock -			19.0 - 124.0') Topock - Alluvium Deposits; Sa	ndy silt with gravel		
I					ML	1:1:1-	IL); reddish brown / moderate brown(5YR 4/4)	trace dusky red(5R		
120				Alluvium Deposits	IVIL		4); low plasticity, no dilatency; some granules	to very large pebbles. I		

AR	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	3	Sh	eet: 7 of	12
Date Starte				Surface	Eleva	tion:	480.3 ft amsl	Boring No.	: IRZ-17 Pi	lot
	leted: 03/13/	2019		Northing	• `	,	2103000.2			<u></u>
Drilling Co.:				Easting	•	33):	7615871.3	Client: PG&E		
Drilling Met				Total De	•		227 ft bgs	•	SW Remedy Ph	
Drill Rig Ty		nic Truck Mou					6-12 inches	Location: PG&E	Topock, Needl	<u>es, California</u>
Driller Nam				-			: 26.55 ft bgs	·		
Drilling Ass		res, L. Amaya		Samplin			4 inch x 10 ft Core Barrel	Project Number:	RC000753.005	51
Logger:		ers / J. Wanne		Samplin	-		Continuous	-		
Editor:	<u>Sean</u>	McGrane		Convert	ea to v	veii:	Yes □ No			
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class		Soil Description		Drilling Notes	Drilling Fluid
	IRZ-17-SS- 117-122 3/7/2019 14:31 IRZ-17-SS- 122-127 3/7/2019 14:36		Topock - Alluvium Deposits	ML		angular larger c (120'); (122'); (1222'); (124.0 (SM); b coarse pebbles staining metadio	to subangular; some very fine to very conto subround; wet; medium stiff to stiff; no slasts consist of granodiorite and metadioridecrease in sand, increase in granules to decrease in sand, increase in granules to decrease silt, increase sand. - 132.0') Topock - Alluvium Deposits; Silt brown (7.5YR 4/3) some (7.5R 4/6); very grained, angular to subround; some grans, angular to subround; little silt; trace mic; larger clasts consist of quartzite, granocorite, weathered gravel observed.	by sand with gravel fine grained to very lules to very large a; wet; no odor; no diorite, and		(0.0 - 217.0') No water used
	IRZ-17-SS- 127-132 3/7/2019 14:40		Topock - Alluvium Deposits	SM		·	- 132.0'); little silt; increase sand.			
133	IRZ-17-SS- 132-137 3/7/2019 14:45	IRZ-17VAS- 132-137 (<0.17 U ppb) 3/13/2019 12:05	Topock - Alluvium Deposits Topock - Alluvium Deposits	ML GM		(ML); redilatency some voltrace of larger of (133.0 (GM); redirection grained subang clasts of granule lense a	 - 133.0') Topock - Alluvium Deposits; Saladdish brown / moderate brown(5YR 4/4) by; some granules to very large pebbles, a tery fine to very coarse grained sand, angobbles, subangular to subround; wet; stiff lasts consist of metadiorite. - 136.5') Topock - Alluvium Deposits; Silt eddish brown / moderate brown(5YR 4/4) abbles, angular to subround; some very fil sand, angular to subround; some silt; traular to subround; trace mica; wet; no odosonsist of granite, granodiorite, and metacist to very large pebbles observed. 4" Silty ti 134' bgs. - 156.5') Topock - Alluvium Deposits; Silt 	; low plasticity, no angular to subround; jular to subround; jular to subround; ;; no odor; no staining; ty gravel with sand); granules to very ine to very coarse ace cobbles, ar; no staining; larger diorite, weathered v sand with gravel	(132.0 - 137.0') Sample collected during the installation of temporary backfill	
137	IRZ-17-SS- 137-142 3/7/2019 14:47	IRZ-17-VAS- 137-142 (<0.17 U ppb) 3/12/2019 14:50 Unified Soil C	Topock - Alluvium Deposits	sm on Syste	em, ft =	(SM); rivery copebbles staining weathe (137');	eddish brown / moderate brown(5YR 4/4) arse grained, angular to subround; some s, angular to subangular; some silt; trace ig; larger clasts consist of metadiorite and red granules to very coarse pebbles. decrease granules to very large pebbles, bgs = below ground surface, a	, very fine grained to granules to very large mica; wet; no odor; no granodiorite, trace increase sand.	(137.0 - 142.0') Sample collected during the installation of temporary backfill	W =

9/-	١RC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	J	Sh	neet: 8 of	12
Date S	tarted	: <u>03/02</u>	/2019		Surface	Elevati	ion:	480.3 ft amsl	Boring No.	: <u>IRZ-17 P</u> i	ilot
	-	eted: <u>03/13/</u>			Northing			2103000.2			
Drilling		Casca			Easting	•	3):	7615871.3	Client: PG&E		
Drilling			<u>Drilling</u>		Total De	•		227 ft bgs	•	GW Remedy Ph	
Drill Ri Driller			nic Truck Mou Vasquez		Borehol			6-12 inches 26.55 ft bgs	Location: PG&E	гороск, мееа	es, California
Drilling			<u>vasquez</u> ores, L. Amaya		Samplin			4 inch x 10 ft Core Barrel	- Project Number:	RC000753 004	 51
Logge			ers / J. Wann		Samplir	-		Continuous	_ 1 10,000 110111501.	10000100.00	<i>-</i>
Editor:			McGrane		Convert	-		Yes □ No	-		
	2			io P	Τ.,						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description		Drilling Notes	Drilling Fluid
		IRZ-17-SS- 137-142 3/7/2019 14:47	IRZ-17-VAS- 137-142 (<0.17 U ppb) 3/12/2019 14:50					ttle silt; decrease in granules to very lar <mark>c</mark>	ge pebbles, increase in	(137.0 - 142.0') Sample collected during the installation of temporary backfill	(0.0 - 217.0') No water used
143 144 145 146	120	IRZ-17-SS- 142-147 3/7/2019 14:50	IRZ-17-VAS- 142-147 (84 ppb) 3/4/2019 10:24				sand. (145'); s	some silt; decrease in sand.			
147 148 149 150 151 151 152	120	IRZ-17-SS- 147-152 3/7/2019 14:53	IRZ-17-VAS- 147-152 (<0.33 U ppb) 3/12/2019 11:05	Topock - Alluvium Deposits	SM					(147.0 - 152.0') Sample collected during the installation of temporary backfill	
 _153 _154 _155 _156		IRZ-17-SS- 152-157 3/7/2019 14:57	IRZ-17-SS- 152-157 3/4/2019 12:00				some m	ark grayish brown (2.5Y 4/2); decrease i ottling. ncrease in sand, decrease silt, no moddl ; 12-24 mm silt nodules.	,		
 _157					1			160.5') Topock - Alluvium Deposits; Sa ddish brown / moderate brown(5YR 4/4)			
158 159 	120	IRZ-17-SS- 157-162 3/7/2019 14:59		Topock - Alluvium Deposits	ML		dilatenc some ve stiff; no metadio (158'); r	y; some granules to very large pebbles, ery fine to very coarse grained sand, and odor; no staining; larger clasts consist or rite, and feldspars. noist; hard; weak cementation; decrease ; wet; very stiff; increase silt, no cementation;	angular to subround; gular to subround; wet; of granodiorite, e silt, increase sand.		
160	,iotion	o: Hece –	Unified Sail C	locaificati	on Sust	<u> </u>	foot	age = holow ground surface	amel = above ma	an egg lovel C	<u> </u>
Apprev	/lation	s: USCS =	Unitied Soil C	Jassiticati	on Syste	em, ft =	reet, I	ogs = below ground surface, a	amsi = above mea	an sea level, G	vv =

9/	\R(CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 9 of	12
Date S	started	: <u>03/02/</u>	/2019		Surface	Eleva	tion: 480.3 ft amsl	Boring No.	· IR7-17 P	ilot
Date C	Comple	eted: <u>03/13/</u>	/2019		Northing	g (NAD	983): <u>2103000.2</u>	Borning 140.	. <u>IIXZ-17 1</u>	<u></u>
Drilling	Co.:	Casca	ade		Easting	(NAD	33): <u>7615871.3</u>	Client: PG&E		
Drilling	Meth	od: <u>Sonic</u>	Drilling		Total De	epth:	227 ft bgs	Project: Final G	W Remedy Ph	nase I
Drill Ri	д Тур	e: <u>Proso</u>	nic Truck Mou	unt	Borehol	le Dian	neter: 6-12 inches	Location: PG&E	Topock, Need	<u>les, California</u>
Driller			Vasquez		=		Water: <u>26.55 ft bgs</u>			
Drilling			<u>res, L. Amaya</u>		Samplir	-		Project Number:	RC000753.00	51
Logge			<u>fers / J. Wann</u>	ner	Samplin	•		-		
Editor:		<u>Sean</u>	<u>McGrane</u>		Convert	ted to \	Well: ⊠ Yes ☐ No			T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description		Drilling Notes	Drilling Fluid
					ML					(0.0 - 217.0') No water used
161		IRZ-17-SS- 157-162					(160.5 - 162.5') Topock - Alluvium Deposits; Silt brown / moderate brown(5YR 4/4); very fine grai			Water acca
		3/7/2019 14:59		Topock - Alluvium	SM		grained, angular to subangular; little granules to subangular to subround; little silt; trace mica; we	large pebbles,		
162				Deposits	Sivi		2-15 mm silt nodules, larger clasts consist of me			
163				Topock -			(162.5 - 164.0') Topock - Alluvium Deposits; Silt (GM); reddish brown / moderate brown(5YR 4/4	ty gravel with sand); granules to very		
	120			Alluvium Deposits	GM	PIE	large pebbles, angular to subround; and very fin- grained sand, angular to subround; little silt; trac	e to very coarse		
164	0	ID7 47 00	IRZ-17-VAS-	Верозію			no staining; larger clasts consist of granodiorite	and metadiorite.		
		IRZ-17-SS- 162-167	162-167 (<0.17 U				(164.0 - 183.0') Topock - Alluvium Deposits; Silt (SM); reddish brown / moderate brown(5YR 4/4)); very fine grained to		
165		3/7/2019 15:01	ppb) 3/4/2019				very coarse grained, angular to subangular; little pebbles, angular to subround; little silt; trace mic	granules to large a; wet; no odor; no		
			17:01				staining; larger clasts consist of metadiorite. (165.5'); some granules to large pebbles, angula	or to aubround:		
166							decrease in sand, increase in silt.	ar to subrouriu,		
167										
168										
169		IRZ-17-SS-								
		167-172 3/7/2019					*			
170		15:02					l (170') dark reddish brown (5YR 3/3); and granul	les to large pebbles,		
							angular to subround; decrease in sand.			
171										
470				Topock -						
172	120			Alluvium Deposits	SM					
 173				·						
175							(173') dark reddish brown (5YR 3/3) and black (9) mottled.	5YR 2.5/1); silt		
			IRZ-17-VAS-				(173.5') reddish brown / moderate brown(5YR 4/			
		IRZ-17-SS- 172-177	172-177 (<0.17 U				large pebbles, angular to subround; trace cobble in sand, no mottling.	s, subround, increase		
175		3/7/2019 15:04	ppb) 3/5/2019							
			15:20							
176										
<u> </u>										
_177							(4770)			
							(177'); some silt; trace clay; decrease in granule pebbles and grain size, decrease sand.	s to very large		
178		IRZ-17-SS-								
	120	177-182 3/7/2019					(479 Eth little silts as class incre	woothored gramiiles to		
179		15:05					(178.5'); little silt; no clay, increase sand, trace w very large pebbles.	veautered granules to		
-							(179.5'); some silt; decrease in sand.			
180	,iation	e: 11808 -	Unified Soil C	 	on State		= feet, bgs = below ground surface, a	amel = abovo mas	n sea lovel C	\// -
Lynnig/	rialiUH	a. USUS =	Orimed Soil C	ווופפטוע	un Syste	≂111, IL =	- 1661, bys – below ground sunace, a	amor – above mea	an sea level, G	v v —

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log)		Sh	eet: 10 of	12
Date S	Started	: 03/02/	2019		Surface	Eleva	tion:	480.3 ft amsl		Boring No.	: IR <i>7</i> -17 P	ilot
Date C	Comple	eted: <u>03/13/</u>	2019		Northing	g (NAC	083):	2103000.2			. <u></u>	<u></u>
Drilling	g Co.:	<u>Casca</u>	de		Easting	(NAD	83):	7615871.3		Client: PG&E		
Drilling			Drilling		Total De	epth:				•	W Remedy Pl	
Drill Ri			nic Truck Mo		Borehol			6-12 inches		Location: PG&E	Topock, Need	<u>les, California</u>
Driller			<u>Vasquez</u>		-			26.55 ft bgs				
Drilling			res, L. Amaya		Samplin	-		4 inch x 10 ft Core Ba	arrel	Project Number:	RC000753.00	51
Logge			ers / J. Wanr	<u>ier</u>	Samplin	-		Continuous				
Editor:		<u>Sean r</u>	<u>McGrane</u>		Convert	ed to \	vveii:	Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS		Soil Descri	ription		Drilling Notes	Drilling Fluid
 181 _182_ 		IRZ-17-SS- 177-182 3/7/2019 15:05		Topock - Alluvium Deposits	SM		(180.5' sand.	; little granules to large pebbles	es, angular t	o subround; increase		(0.0 - 217.0') No water used
183						6 PI P	(183.0	- 185.5') Topock - Alluvium De	eposits; Gra	velly silt with sand		
	120] (ML); y	ellowish red (5YR 4/6); low plas s to very large pebbles, a <mark>n</mark> gula	asticity, no d	ilatency; some		
184		IRZ-17-SS-		Topock - Alluvium	ML		to very	coarse grained sand, angular to stiff; no odor; no staining; large	to subround	; trace mica; wet; stiff		
405		182-187 3/7/2019		Deposits				tadiorite.	. 0.0010 00.	iolot or granicalionic		
_185		15:06										
106								- 187.0') Topock - Alluvium De				
186				Topock - Alluvium	SM		grained	ellow <mark>ish red (5YR 4/6); mediun</mark> , ang <mark>ular to subangula</mark> r; some :	silt; little sm	nall to large pebbles,		
 187				Deposits				to subangular; little mica; wet; onsist of metadiorite.	; no odor; no	o staining; larger		
	60	IRZ-17-SS- 187-192 3/7/2019 15:07		Topock - Alluvium Deposits	ML		(ML); y granule very co no odor	192.0') Topock - Alluvium De ellowish red (5YR 4/6); low plas s to very large pebbles, angula arse grained sand, angular to ; no staining; larger clasts cons	asticity, no d ar to subrou subround; t sist of meta	ilatency; some nd; some very fine to race mica; wet; stiff; diorite.		
	60		IRZ-17-VAS- 197-202 (<0.17 U ppb) 3/6/2019 11:20	Topock - Weathered Bedrock - conglomerat	SIM		sand w very co large pe	- 206.5') Topock - Weathered E th gravel (SM); reddish brown arse grained, angular to suban abbles, angular to subangular; eak cementation; no staining; ton.	(2.5YR 4/4 ngular; some some silt; s); very fine grained to e granules to very ome mica; wet; no		
	/iation	e: 118CS =	I Inified Soil (laccificati	on Syste	om ft =	= feet	has = helow around su	urface a	msl = ahove mea	n sea level G	\\\/ =

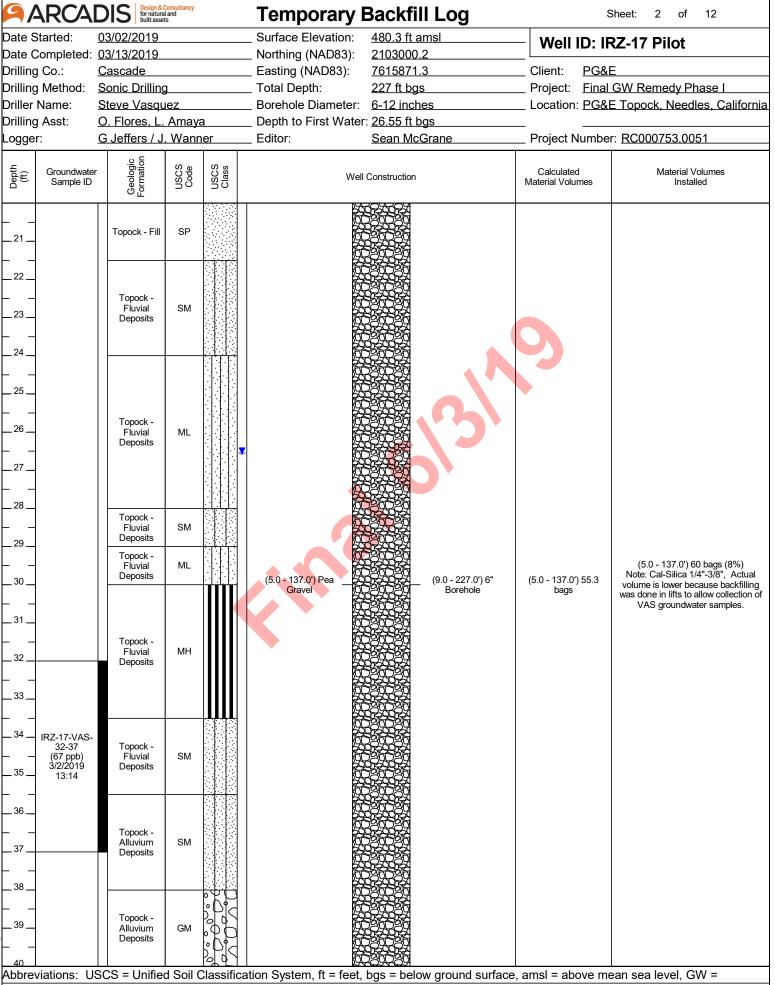
7/7		NDIS	for natural and built assets		ВО	ring Log	3		She	eet: 11 of	12
ate St		03/02/				Elevation:	480.3 ft amsl	Borin	g No.:	IRZ-17 P	ilot
	-	d: <u>03/13/</u>				g (NAD83):	2103000.2	_			
rilling (<u>Casca</u>			_	(NAD83):	7615871.3	_ Client:	PG&E		
_	Method:		<u>Drilling</u>		Total D	•	227 ft bgs	_ Project:		W Remedy Ph	
-	Type:		<u>nic Truck Mo</u>			le Diameter:	6-12 inches	_ Location:	PG&E	Topock, Needl	es, Califori
	lame:		<u>Vasquez</u>		•		26.55 ft bgs		. —		
illing <i>i</i>			res, L. Amay		•	ng Method:	4 inch x 10 ft Core Barrel	_ Project N	lumber:]	RC000753.00	51
gger:			ers / J. Wanr		-	ng Interval:	Continuous	_			
ditor:		<u>Sean i</u>	<u>McGrane</u>		Conver	ted to Well:	X Yes				
(ff)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
201_	60		IRZ-17-VAS- 197-202 (<0.17 U								(0.0 - 217.0') water used
	00		` ppb) 3/6/2019								
202			11:20								
										(202.0 - 212.0') Tight formation	
03_				Topock -							
				Weathered Bedrock -	SM						
04_				conglomerate	•						
05_											
06											
,0_											
77							- 209.5') Topock - Weathered Bedrock				
07	120					granule	gravel (ML); red (2.5YR 4/6); low plast s to very large pebbles, angular to suba	angular; some v	ery fine		
,,				Topock - Weathered			coarse grained sand, angular to subrou ff; no odor; weak cementation; no staini				
28				Bedrock -	ML		diorite and granodiarite trace weathred				
				conglomerate	1						
09											
							- 213.0') Topock - Weathered Bedrock				
10						sand w	th gravel (SM); reddish brown (2.5YR 4 arse grained, subangular to subround;	1/4); very fine g some granules	rained to to verv		
_				T		large p	bbles, angular to subangular; some silts staining; trace weathered granules to	; some mica; w	et; no		
11_				Topock - Weathered	SM	odor, n	o occurring, trace weathered granules to	very range peop	103.		
+				Bedrock - conglomerate	1						
12	-									(212.0 - 222.0')	-
+										Soft drilling	
13						(213.0	- 215.5') Topock - Weathered Bedrock	- conglomerate	Sandv		
4						silt with	gravel (ML); red (2.5YR 4/6); low plast s to very large pebbles, angular to suba	icity, no dilatend	cy; some		
14				Topock - Weathered	NA!	to very	coarse grained sand, angular to subrou	ınd; trace mica;	wet;		
4				Bedrock - conglomerate	ML.		ff; no odor; no staining; larger clasts col arite. trace weathred granules to very la		rite and		
15				Journale							
4							. 227 0') Topock - Weathered Redreek	- conglomorato	Silty		
16	120					∶ ∶ sand w	- 227.0') Topock - Weathered Bedrock th gravel (SM); reddish brown (2.5YR 4	1/4); very fine g	rained to		
4						large p	arse grained, subangular to subround; abbles, angular to subangular; some silt	; some mica; w	et; no		
17							staining; trace weathered granules to				
				Topock -							
18			IRZ-17-VAS-	Weathered Bedrock -	SM						
			217-222 (<0.17 U	conglomerate	1						
19			ppb) 3/6/2019								
			16:17								
					1	E4111				1	1
20					1	[4] [4] [4] [4] [4] [4] [4] [4] [4] [4]			l		

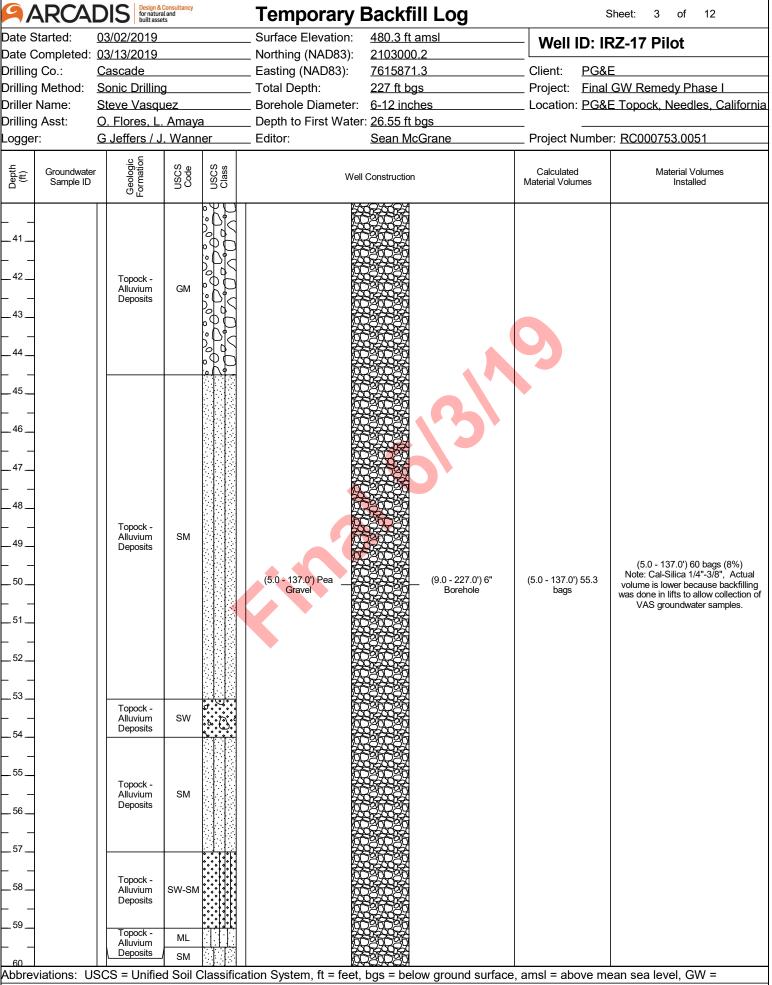
represents depth to water measured during the first VAS interval

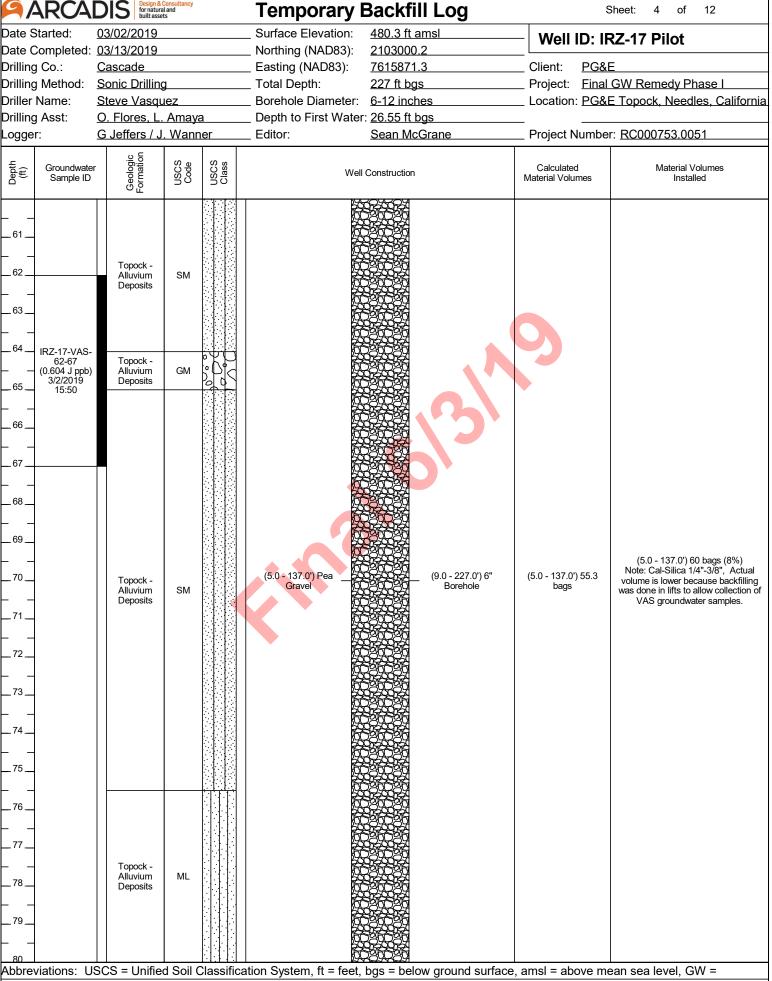
AF	RCADIS	Design & Consultancy for natural and built assets		Bo	ring Lo	g		She	eet: 12 of	12
Date Star		2/2019			Elevation:	480.3 ft amsl	Bori	na No.:	IRZ-17 Pi	lot
	npleted: <u>03/13</u>				g (NAD83):	2103000.2	_			
Drilling Co					(NAD83):	7615871.3	_ Client:	PG&E		
Drilling Me		Drilling		Total D		227 ft bgs	_ Project:		W Remedy Ph	
Drill Rig T Driller Nar	• •	onic Truck Mor vasquez			le Diameter:	6-12 inches	_ Location	1: <u>PG&E</u>	Topock, Needle	<u>es, California</u>
Drilling As		ores, L. Amay			ng Method:	: 26.55 ft bgs 4 inch x 10 ft Core Barrel	– Project I		RC000753 009	 51
Logger:		fers / J. Wanr		-	ng Interval:	Continuous	_ 1 10,0001	turnbor.	1.0000100.000	<u> </u>
Editor:		McGrane			ted to Well:	Yes □ No	_			
2			.º F	Τ.						
Depth (ft) Recovery	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	Class	Soil Description			Drilling Notes	Drilling Fluid
	20	IRZ-17-VAS- 217-222 (<0.17 U ppb) 3/6/2019 16:17							(212.0 - 222.0') Soft drilling	
223			Topock - Weathered							
224			Bedrock - conglomerate	SM e						
60	0									
225										
<u> </u>										
226										
227										
			· L	-	1.1.1.1	End of Boring at 227.0 'bo	gs.			
228										
229										
				•						
_233										
235_										
_236										
-										
_237										
_239										
Abbreviati	ions: USCS =	Unified Soil (Classificati	on Syst	em, ft = feet,	bgs = below ground surface,	amsl = ab	ove mea	n sea level, G\	N =

ARCA	DIS Design & for natura built asse	Consultancy al and its		Temporary I	Backfill Log		Sheet: 1 of 12
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	Cascade	iez . Amaya		Borehole Diameter: Depth to First Water		Client: PG& Project: Final Location: PG&	E GW Remedy Phase I E Topock, Needles, California
Groundwate Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
				(0.0 - 0.5') Temporary Steel Plate with BMP (0.5 - 5.0') Plastering Sand	(0.0 - 9.0') 12" Borehole	(0.5 - 5.0') 7.9 bags	(0.5 - 5.0') 6 bags (-24%) Note: Wildcat Washed, actual volume installed was 24% less because of dredged materials collapsing during casing removal
_ 6		NR		(5.0 - 137.0') Pea Gravel	(9.0 - 227.0') 6" Borehole	(5.0 - 137.0') 55.3 bags	(5.0 - 137.0') 60 bags (8%) Note: Cal-Silica 1/4"-3/8", Actual volume is lower because backfilling was done in lifts to allow collection of VAS groundwater samples.
20 Abbreviations: U	Topock - Fill JSCS = Unifie	SP d Soil C	Classific	ation System, ft = feet.	bgs = below ground surface	 e, amsl = above m	ean sea level, GW =

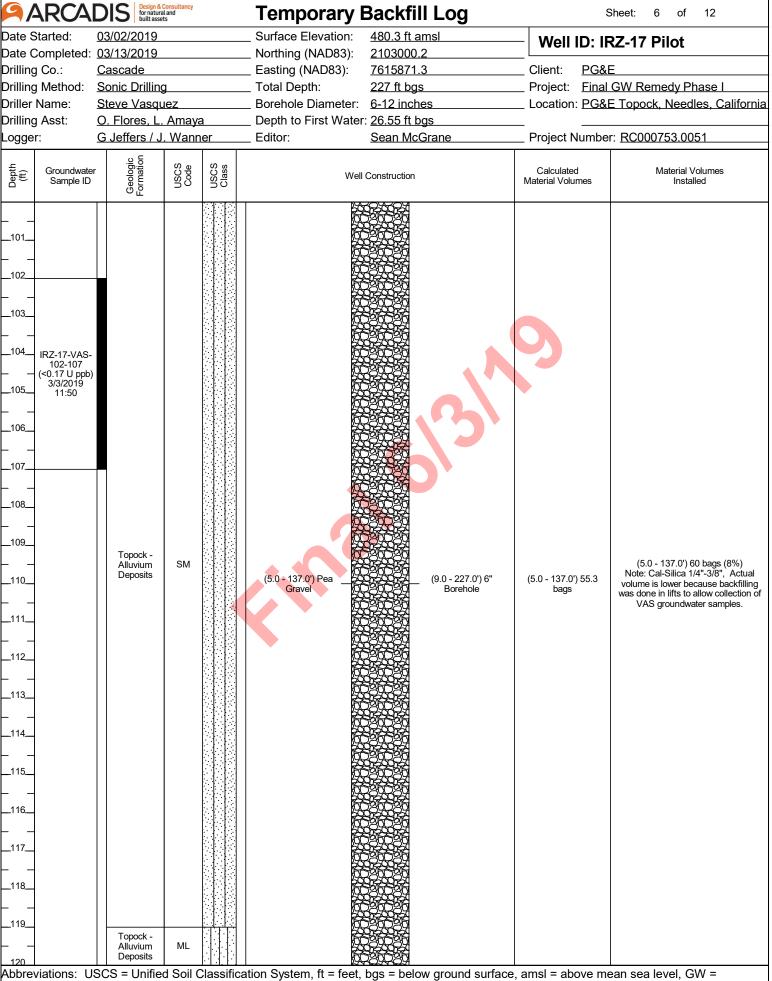
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.





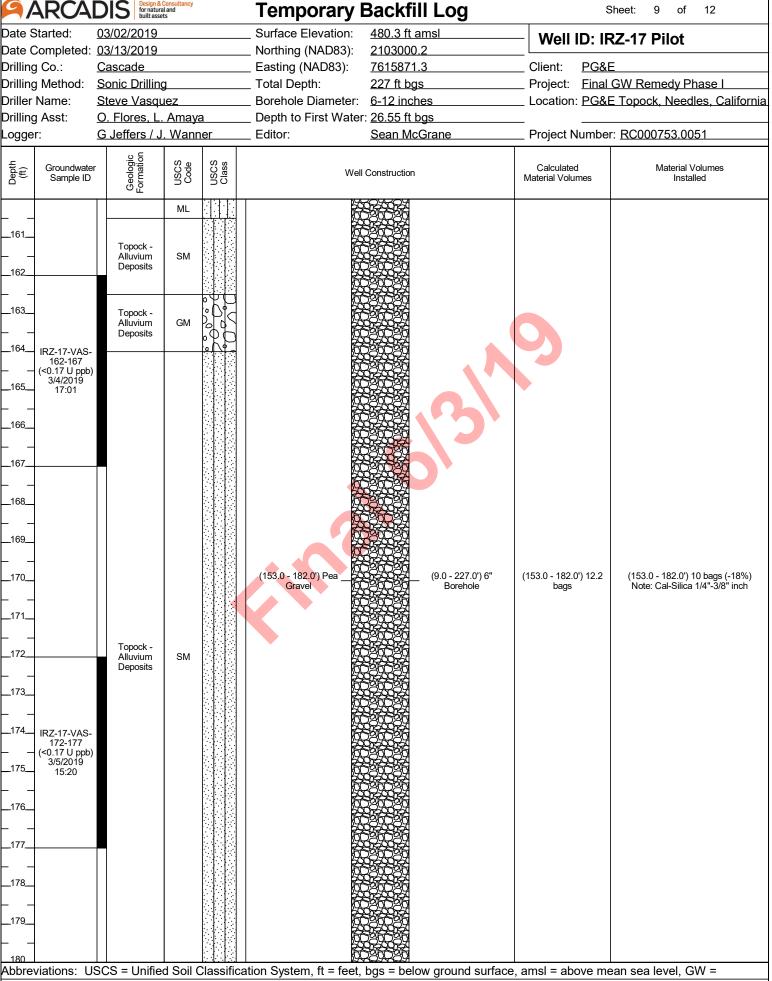


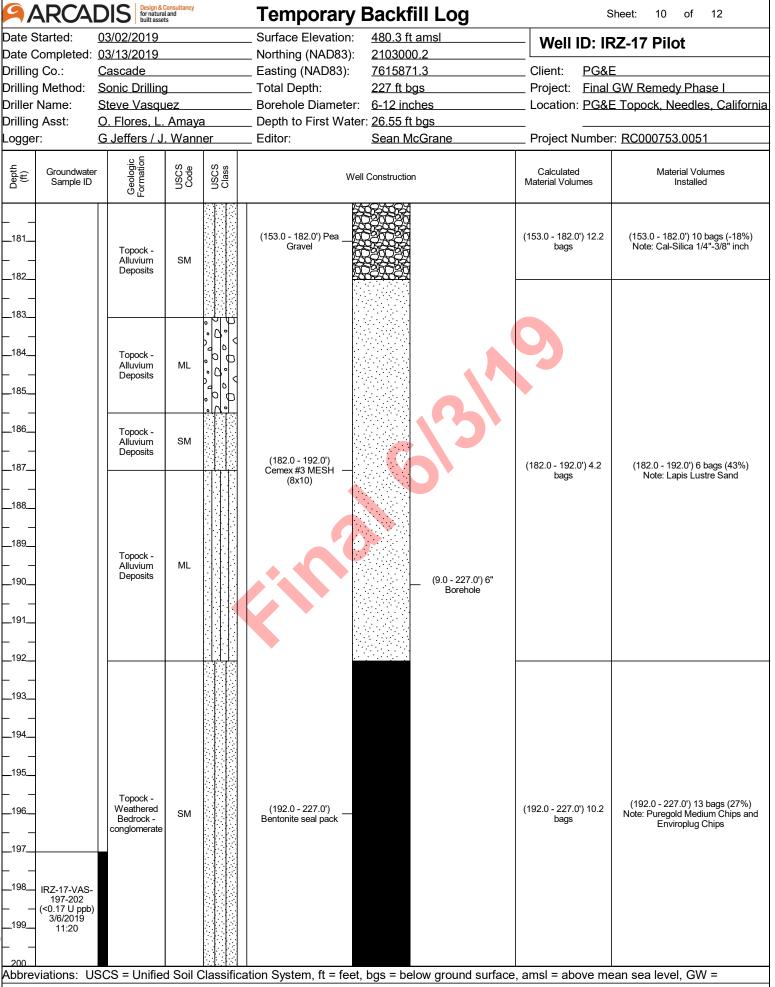
ARCA	DIS built asset	Consultancy al and rts		Temporary E	Backfill Log		Sheet: 5 of 12
Date Started:	03/02/2019			_ Surface Elevation:	480.3 ft amsl	- Well ID: II	RZ-17 Pilot
Date Completed:				_ Northing (NAD83):	2103000.2		
Orilling Co.:	Cascade			_ Easting (NAD83):	7615871.3	Client: PG&	
Orilling Method:	Sonic Drilling	g		_ Total Depth:	227 ft bgs	Project: <u>Fina</u>	GW Remedy Phase I
Oriller Name:	Steve Vasqu	ıez		_ Borehole Diameter:	6-12 inches	Location: <u>PG&</u>	E Topock, Needles, Californi
Orilling Asst:	O. Flores, L.	. Amaya	a	_ Depth to First Water	_		
ogger:	G Jeffers / J	. Wanr	er	Editor:	Sean McGrane	Project Numbe	er: RC000753.0051
Groundwate Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
		ML					
_ 81	Topock -						
	Alluvium	SM					
- – _82	Deposits				\$6000 B		
_ 02					1900		
-					20000		
_83					20020		
	Topock -				20020		
_84	Alluvium Deposits	ML			20020		
- 4					20020		
_85							
		L					
_ 86					20000		
_ 00					20020		
	Topock - Alluvium	SM					
_87	Deposits	5141			20020		
					20000		
_ 88					20020		
.]				5	20020		
_89					20020		
					20020		(F.O. 407.01) CO.L. (20%)
				(5.0 - 137.0') Pea	(9.0 - 227.0') 6"	(5.0 - 137.0') 55.3	(5.0 - 137.0') 60 bags (8%) Note: Cal-Silica 1/4"-3/8", Actual
_90				Gravel Gravel	(9.0 - 227.0) 6 Borehole	(5.0 - 137.0) 55.3 bags	volume is lower because backfilling was done in lifts to allow collection of
							VAS groundwater samples.
_91							
- 4							
_92	Topock -						
.]	Alluvium Deposits	ML					
_93	Берозна						
04							
_ 94							
_ 95							
_96							
_97							
00							
_98	Topock - Alluvium	SM					
	Deposits	5.01					
_99							
100							
				•	bgs = below ground surface		
roundwater, ppt					oratory reporting limit, NR =		water table symbol from the pilot borehole duri
enresents denth	to water mea	SUITED	alirina tr	Je tiret Vaz interval vio		Will De excanateu	

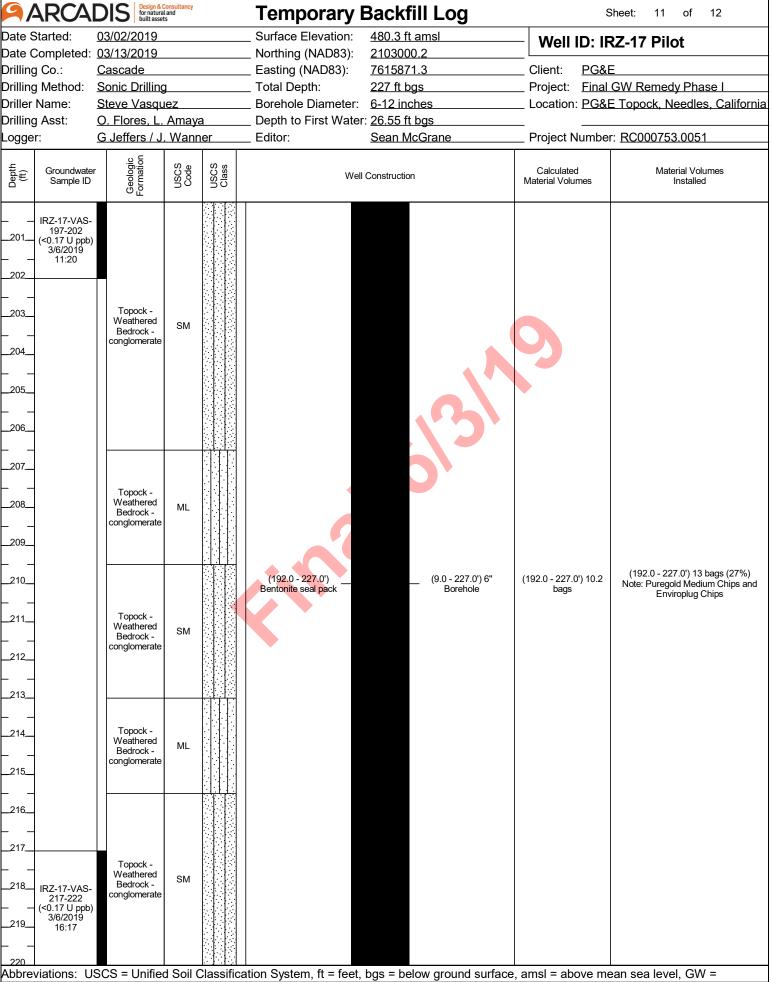


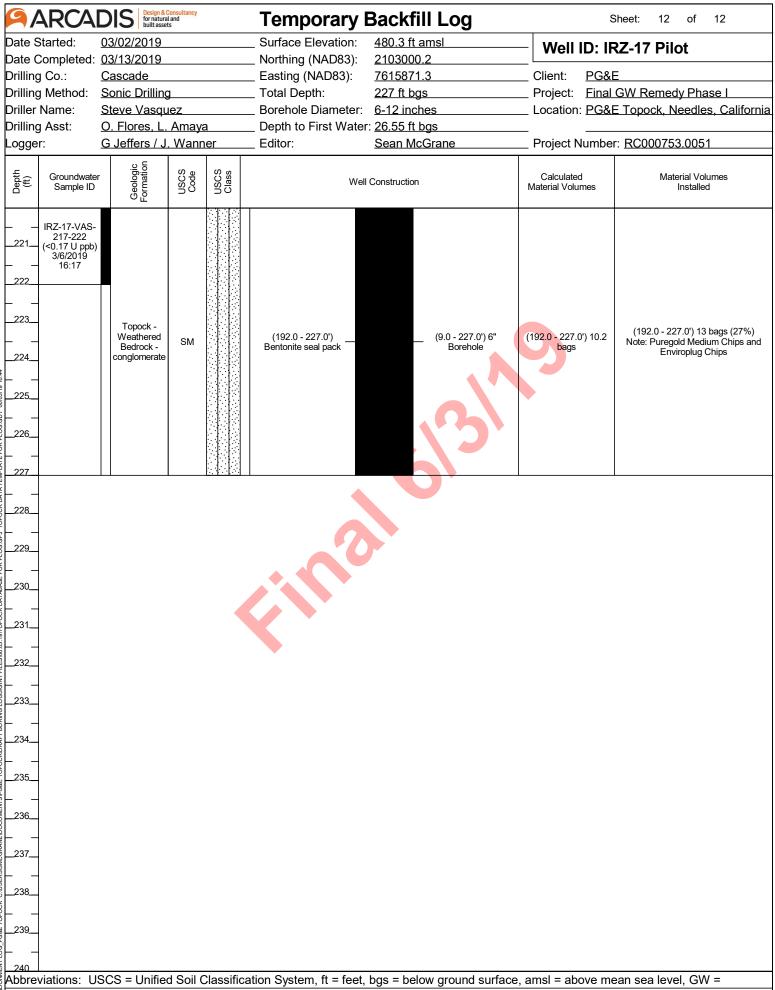
ARCA	DIS Design & for natura built asse	Consultancy al and ts		Temporary Backfill Log	Sheet: 7 of 12
Date Started:	03/02/2019			Surface Elevation: 480.3 ft amsl	Well ID: IRZ-17 Pilot
Date Completed:				_ Northing (NAD83): 2103000.2	
Orilling Co.:	<u>Cascade</u>			_ Easting (NAD83): <u>7615871.3</u>	Client: PG&E
Orilling Method:	Sonic Drilling	g		_ Total Depth: <u>227 ft bgs</u>	Project: Final GW Remedy Phase I
Oriller Name:	Steve Vasqu	ıez		Borehole Diameter: 6-12 inches	Location: PG&E Topock, Needles, Californ
Orilling Asst:	O. Flores, L.	-		_ Depth to First Water: <u>26.55 ft bgs</u>	
ogger:	G Jeffers / J	. Wanr	ner	Editor: <u>Sean McGrane</u>	Project Number: RC000753.0051
Groundwate Sample ID		USCS	USCS Class	Well Construction	Calculated Material Volumes Material Volumes Installed
	Topock - Alluvium Deposits	ML			
	Topock - Alluvium Deposits	SM		(5.0 - 137.0') Pea Gravel (9.0 - 227.0') Borehole	(5.0 - 137.0') 55.3 bags (5.0 - 137.0') 60 bags (8%) Note: Cal-Silica 1/4"-3/8", Actua volume is lower because backfillin was done in lifts to allow collection VAS groundwater samples.
132	Topock - Alluvium	ML			
_133	Deposits				
	Topock - Alluvium Deposits	GM			
137	Topock - Alluvium	SM		(137.0 - 138.0') Plastering Sand	(137.0 - 138.0') 0.4 bags (137.0 - 138.0') 0.86 bags (115% Note: Wildcat Washed, installed beganning
- (<0.17 U ppb) 3/12/2019 14:50	Deposits	Sivi		(138.0 - 142.0') Pea	(138.0 - 142.0') 2.1 (138.0 - 142.0') 2 bags (-5%) Note: Cal-Silica 1/4"-3/8" inch
140I Abbreviations: U	SCS = Unifie	d Soil (Classifica	ation System, ft = feet, bgs = below ground s	urface, amsl = above mean sea level, GW =
groundwater, ppt	o = parts per b	oillion,	U = not c	detected above the laboratory reporting limit,	NR = no recovery, blue water table symbol
				e first VAS interval Note: Granule backfill ma	· · · · · · · · · · · · · · · · · · ·

\(\)	ARCA	DIS for natural built ass	& Consultancy ral and sets		Temporary I	Backfill Log	<u> </u>	Sheet: 8 of 12
	Started:	03/02/2019			_ Surface Elevation:	480.3 ft amsl	Well ID: IF	RZ-17 Pilot
	-	03/13/2019			_ Northing (NAD83):	2103000.2		
_	Co.:	Cascade			Easting (NAD83):	7615871.3	Client: PG&I	
_	Method:	Sonic Drillin	•		_ Total Depth:	227 ft bgs		GW Remedy Phase I
	Name:	Steve Vasq			_ Borehole Diameter:		Location: <u>PG&</u>	<u> Topock, Needles, Califor</u>
_	y Asst:	O. Flores, L	-		_ Depth to First Water			B0000========
ogge	r:	G Jeffers / .	J. Wanı T	ner	_ Editor:	Sean McGrane	Project Numbe	r: RC000753.0051
Depth (ft)	Groundwate Sample ID	Geologic Formation	nscs Code	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed
141	IRZ-17-VAS- 137-142 (<0.17 U ppb) 3/12/2019 14:50				(138.0 - 142.0') Pea		(138.0 - 142.0') 2.1 bags	(138.0 - 142.0') 2 bags (-5%) Note: Cal-Silica 1/4"-3/8" inch
_142 _143					(142.0 - 143.0') \		(142.0 - 143.0') 0.4 bags	(142.0 - 143.0') 0.88 bags (120% Note: Wildcat Washed, installed be sampling
144 145 146 	IRZ-17-VAS- 142-147 (84 ppb) 3/4/2019 10:24							
	IRZ-17-VAS- 147-152 (<0.33 U ppb) 3/12/2019 11:05	Topock - Alluvium Deposits	SM		(143.0 - 152.3') Pea Gravel	(9.0 - 227.0') 6" Borehole	(143.0 - 152.3') 3.9 bags	(143.0 - 152.3') 5 bags (28%) Note: Cal-Silica 1/4"-3/8" inch
_152								
 _153					(152.3 - 153.0') — (152.3 - 153.0') — (152.3 - 153.0')	. \$^ \$ \$ \$^ \$\ 4 \$^ \$^ \$^ \$^ \$^ \$ \$^ \$ \$ \$ \$ \$ \$	(152.3 - 153.0') 0.3 bags	(152.3 - 153.0') 0.25 bags (-17% Note: Wildcat Washed, installed be sampling
154 155 156	IRZ-17-SS- 152-157 3/4/2019 12:00				(153.0 - 182.0') Pea		(153.0 - 182.0') 12.2	(153.0 - 182.0') 10 bags (-18%
_157 _158 _159 		Topock - Alluvium Deposits	ML		Gravel		bags	Note: Cal-Silica 1/4"-3/8" inch
160 Abbrev	viations: U	SCS = Unifie	ed Soil	Classifica	ı	bgs = below ground surf	ace, amsl = above me	ean sea level. GW =
					•	oratory reporting limit, NF		
							· · · · · · · · · · · · · · · · · · ·	from the pilot borehole dur
		nstruction of			ic mac vac interval No	ic. Granule packilli illale	nar will be excavated	nom the pilot bolenole du









9/	٩RC	ADI	S	Design & Consultancy for natural and built assets		Bo	ring	Log	g			Sh	neet: 1 of	11
Date S	Started:	11/	/17/2	019		Surface	Elevat	ion:	494.7 ft ams	<u> </u>	Bori	na No.	: IRZ-18 Pi	ilot
Date C	Comple	ted: <u>12/</u>	05/2	019		Northin	g (NAD	83):	2102884.7				· <u></u>	
Drilling			scad	le		Easting		3):	7615808.8		Client:	PG&E		
_	Metho					Total D	•		217 ft bgs		_ ,		W Remedy Ph	
	д Туре			<u>ic Truck Μοι</u>		Boreho			4-10 inches		Locatio	n: <u>PG&E</u>	Topock, Topoc	ck, California
Driller				ernandez		•			41.07 ft bgs			—		
Drilling				<u>ya / P. Almar</u>		Samplin				t Core Barrel	Project	Number:	RC000753.00	51
Logge				<u>onessi</u>		Samplin	•		Continuous					
Editor:		<u>Ke</u>	<u>ndra</u>	Keon		Conver	ed to V	Vell:	× Yes	No				
Depth (ft)	Recovery (in)	Sieve Sample		Groundwater Sample ID	Geologic Formation	USCS	USCS Class			Soil Description			Drilling Notes	Drilling Fluid
					Topock - Fi	II GW	17.			Well graded grave				
- 1 _ - 1 _ - 2 _ - 3 _ 	36				Topock - Fluvial Deposits	SW		subrou subang base (0.4 - 4 gravel coarse large p	nd to round; trace gular to subround 1.0') Topock - Flu (SW); very dark g grained, subang ebbles, subround	bbles, round; little se very fine to very cr; trace silt; trace clawial Deposits; Well gray (7.5YR 3/1); veular to subround; so to round; little smae silt; trace clay; dry	parse grained ay; dry; gravel graded sand or grained grained me grained by large column to large column grained by large column grained by large column grained by large column grained by large column grained by large column grained by large column grained by large column grained by large column grained by large column grained by large column grained by large column grained by large column grained by large column grained by large by	sand, road with to very to very	(3.0°) Hand auger refusal.	(3.0') 2 gallons of water used; 0 gallons of water
4 5 6 7	48				Topock - Fluvial Deposits	sw		gravel grained subrou	(SŴ); ḃrown (7.5 d, subangular to r ind to round; l <mark>ittle</mark>	vial Deposits; Well IYR 4/3); very fine g ound; little granules small cobbles, rou ibangular to round;	rained to med to very large nd; little medi	lium pebbles,		gallons of water recovered; 2 gallons of water lost (4.0 - 12.0') No water used
8 9 10	60				Topock - Fluvial Deposits Topock - Fluvial Deposits	GW / SW		sand (0 subang subang (9.5 - 1	GW); dark brown gular to round; an gular to round; tra l1.0') Topock - Fli	vial Deposits; Well (7.5YR 3/2); granul d very fine to very ci ce small cobbles, r uvial Deposits; Wel YR 4/3); very fine g	les to large pe oarse grained ound; trace si I graded sand	ebbles, sand, lt; dry with	(10.0 - 17.0') Formation	
111213					Topock - Fluvial Deposits	sw		grained subrou grading (11.0 - gravel grained subrou	d, subangular to r ind to round; little g coarser with dep 14.0') Topock - F (SW); brown (7.5 d, subangular to r ind to round; little	ound; little granules small cobbles, rou	s to very large nd; trace silt; ell graded san rained to med s to very large nd; little medi	pebbles, dry; d with lium pebbles,	(12.0 - 14.0') Drilled with water.	(12.0 - 14.0') 10 gallons of water used; 0 gallons of water recovered; 10 gallons of water lost
14 15 16	48				Topock - Fluvial Deposits	SW		gravel grained pebble trace s	(SW); brown (7.5 d, subangular to r s, subround to ro ilt; dry	Fluvial Deposits; W6 YR 5/3); very fine g ound; some granul und; little small to la	rained to very es to very larg arge cobbles,	coarse e round;	(14.0 - 34.0') Rough drilling.	(14.0 - 207.0') No water used
17	12				Topock - Fluvial	GW	17.	(16.5 - boulde		luvial Deposits; We	ell graded gra	vel (GW);		
18 18 19 20	48				Topock - Fluvial Deposits	SW-SM		(17.0 - and gra coarse pebble little sil	23.0') Topock - Favel (SW-SM); broggrained, subangons, subround to room	Fluvial Deposits; We own (7.5YR 4/3); ve ular to round; and s und; some small to erized cobbles resu	ery fine graine mall to very la large cobbles	d to very arge		
Ahhre	viations	. 11505	: = 11	nified Soil CI	assification	Systen	2 ft - fc	et ha	s – below aro	und curface ar	nel = ahove	mean se	ea level GW =	aroundwater

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 2 of	11
Date S					Surface			Boring	No.:	IRZ-18 Pi	lot
	•	ted: <u>12/05/</u>			Northing		•			-	
Drilling		<u>Casca</u>			Easting	•	•		G&E		
Drilling			•		Total De	•	217 ft bgs	-		W Remedy Ph	
Drill Ri Driller			nic Truck Mou Iernandez		Borehol		eter: 4-10 inches Vater: 41.07 ft bgs	Location: P	G&E	Topock, Topoc	k, Calliornia
Drilling			aya / P. Almar		Samplin		-	Project Nur	nber	RC000753.005	 51
Logge			Bonessi		Samplin	-		i rojourrui			
Editor:			a Keon		Convert	•					
	>			.5 E	1						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
	48										
21				Topock -							
-				Fluvial	SW-SM						
22				Deposits							
23					+		(23.0 - 32.0') Topock - Alluvium Deposits; We	Il graded sand v	with		
 24	60					1.00	silt and gravel (SW-SM); brown (7.5YR 4/2); very coarse grained, angular to subround; som	ne granules to v	ery		
							large pebbles, angular to subangular; little silt;	trace clay, dry			
25											
L _											
26											
27											
				Topock - Alluvium	SW-SM						
28				Deposits			(28'); increase in gravel, decrease in sand				
-							S /				
29											
					. 4						
30	96						(30'); decrease in gravel, increase in sand				
31											
32											
L _							(32.0 - 37.0') Topock - Alluvium Deposits; Wel silt and gravel (SW-SM); brown (7.5YR 4/2) wi	ith reddish brow			
33							moderate brown (5YR 4/4); very fine grained to grained, angular to subround; some granules				
ļ -							pebbles, angular to subangular; little silt; trace cobbles, subangular to subround; trace clay; d	small to large			
34				Tor!			<u>-</u>			(34.0 - 47.0')	
-				Topock - Alluvium	SW-SM					Rough drilling.	
35				Deposits							
<u> </u>											
36											
37	72	IRZ-18-SS- 35-40			1		(37.0 - 41.0') Topock - Alluvium Deposits; Silty				
38		12/6/2019 11:05					(SM); reddish brown / moderate brown (5YR 4 to very coarse grained, angular to subround; s	ome granules to	o		
00		11.00		Topock -	CM4		very large pebbles, angular to subangular; little	e siit; trace clay	; ary		
39				Alluvium Deposits	SM						
							(39'); moist				
40_					<u> </u>						

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet: 3 of	11
Date S	Started	<u>11/17</u>	/2019		Surface	Elevat	on: <u>494.7 ft amsl</u>	- Boring N	o.: <u>IRZ-18 Pi</u>	lot
Date C	Comple	ted: <u>12/05</u>	/2019		Northing	g (NAD	83): <u>2102884.7</u>		<u></u>	<u></u>
Drilling		<u>Casca</u>	ade		Easting	•	3): <u>7615808.8</u>	_ Client: PG8		
Drilling			Drilling		Total De	-	217 ft bgs	-	al GW Remedy Pha	
Drill Ri			nic Truck Mou		Borehol			Location: PG	<u>&E Topock, Topoc</u>	k, California
Driller			Hernandez (B. Al		-		Vater: 41.07 ft bgs			
Drilling			aya / P. Almar		Samplin	-		_ Project Numb	er: RC000753.005)1
Logge Editor:			Bonessi a Keon		Samplin Convert	-		-		
Luitoi.		rtenu	a Neon		T		Veii. A les Ino			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description		Drilling Notes	Drilling Fluid
 41				Topock - Alluvium Deposits	SM		(40'); wet; increase in coarse sand			
42 43 44 45	84	IRZ-18-SS- 40-45 12/6/2019 11:10	IRZ-18-VAS- 42-47 (580 ppb) 11/19/2019	Topock - Alluvium Deposits	SM		(41.0 - 47.0') Topock - Alluvium Deposits; Silf (SM); reddish brown / moderate brown (5YR to very coarse grained, angular to subround; s granules to very large pebbles, angular to sub moist; core was very hot upon extraction, moi biased	4/4); very fine graine some silt; little pangular; trace clay;	;	
46 46 47		IRZ-18-SS- 45-50	09:20				(47.0 - 57.5') Topock - Alluvium Deposits; Silt	ty sand with gravel	(47.0 - 67.0')	
48 49 50		12/6/2019 12:15					(SM); brown (7.5YR 4/3); very fine grained to subangular to subround; some silt; little granu angular to subround; trace clay; moist	very coarse grained	d, Rough drilling.	
51525354	120	IRZ-18-SS- 50-55 12/6/2019 11:20		Topock - Alluvium Deposits	SM		(52') brown (7.5YR 4/3) to brown (10YR 4/3);	little silt; wet		
55 56 57 58 59	120	IRZ-18-SS- 55-60 12/6/2019 11:25		Topock - Alluvium Deposits	SM		(57.5 - 67.0') Topock - Alluvium Deposits; Silt (SM); brown (7.5YR 4/3); very fine grained to angular to subround; some silt; little granules pebbles, angular to subangular; trace clay; we	very coarse grained to very large	ı,	
60										

9/	ARC	AD	S Design & Consultant for natural and built assets	у	Во	ring	Log		She	eet: 4 of	11
Date S	started:	: <u>11</u>	17/2019		Surface	Elevat	ion: 494.7 ft amsl	Borin	a No .	IRZ-18 Pi	ilot
Date C	omple	ted: 12	05/2019		Northing) (NAD	83): 2102884.7	DOI	ı y 1 1 0	<u> </u>	<u>1101</u>
Drilling	Co.:	<u>Ca</u>	scade		Easting	(NAD8	3): <u>7615808.8</u>	_ Client:	PG&E		
Drilling	Metho	od: <u>So</u>	nic Drilling		Total De	epth:	217 ft bgs	_ Project:	Final G\	N Remedy Ph	ase 1
Drill Ri	д Туре	e: <u>Pro</u>	sonic Truck M	ount	Borehol	e Diam	eter: <u>4-10 inches</u>	_ Location:	PG&E T	<u> Fopock, Topoc</u>	k, California
Driller I			se Hernandez		•		Water: 41.07 ft bgs	_			
Drilling			<u>Amaya / P. Alm</u>	<u>anza</u>	Samplin	-		_ Project N	lumber: <u>I</u>	RC000753.00	51
Logge			ris Bonessi		Samplin Convert	•		_			
Editor:		<u>ke</u>	ndra Keon		Convert	ea io v	Vell: ⊠ Yes □ No				I
Depth (ft)	Recovery (in)	Sieve Sample			USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
61 62 63	120	IRZ-18-S 60-65 12/6/201 11:30	S- 9 IRZ-18-VAS-	Topock - Alluvium Deposits	SM		(62'); some granules to large pebbles, suban little silt	gular to subro	ound;		
64 65 66			62-67 (<0.033 U ppb) 11/19/2019 13:05								
67 68 69	60	IRZ-18-S 65-70 12/6/201 11:35		Topock - Alluvium Deposits	SM		(67.0 - 70.0') Topock - Alluvium Deposits; Sil (7.5YR 4/3); very fine grained to very coarse subround; and silt; little granules to very large subangular; trace clay; wet	grained, angu	lar to		
70 71 72	50		ppb) 11/19/2019 16:00				(70.0 - 76.0') Topock - Alluvium Deposits; Sil (SM); brown (7.5YR 4/3); very fine grained to angular to subround; some granules to very l to subangular; little silt; trace clay; wet	very coarse g	rained,	(72.0 - 86.0')	
73 74 74		IRZ-18-S 70-76 12/6/201 11:40		Topock - Alluvium Deposits	SM		(74'); some silt; little granules to very large posubangular; wet to moist	ebbles, angula	ar to	Rough drilling.	
75 76 77 78 79	180	IRZ-18-S 76-80 12/6/201 11:45		Topock - Alluvium Deposits	ML		(76.0 - 80.0') Topock - Alluvium Deposits; Sa (7.5YR 4/3); low plasticity; some very fine to sand, subangular to subround; little granules subangular to subround; little clay; moist; ver	very coarse g to large pebb	ained		
79 80							(79') reddish brown / moderate brown (5YR 4	1/4)			

9/-	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	ı Log		Sh	eet: 5 of	11
Date S	started:	11/17	/2019		Surface	Elevat	tion: 494.7 ft amsl	Borin	a No.:	: <u>IRZ-18 Pi</u>	lot
		ted: <u>12/05</u>	/2019		Northing	g (NAD	083): <u>2102884.7</u>		9	<u></u>	<u></u>
Drilling		Casca	ade		Easting	(NAD8	83): <u>7615808.8</u>	_ Client:	PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	217 ft bgs	Project:	Final G	W Remedy Ph	ase 1
Drill Ri			nic Truck Mou	ınt	Borehol			_ Location:	PG&E	Topock, Topoc	k, California
Driller I			Hernandez		•		Water: <u>41.07 ft bgs</u>	_			
Drilling			aya / P. Almar	nza	Samplin	-		Project N	umber:	RC000753.005	51
Logge			Bonessi		Samplin	•		-			
Editor:		<u>Kendı</u>	ra Keon		Convert	ed to V	Well: ⊠ Yes ☐ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
	180	IRZ-18-SS- 80-85 12/6/2019 11:50					(80.0 - 92.0') Topock - Alluvium Deposits; Silt (SM); reddish brown / moderate brown (5YR to very coarse grained, angular to subround; very large pebbles, angular to subround; som	4/4); very fine some granule	grained s to		
86 87 88 89 90 91		IRZ-18-SS- 85-92 12/6/2019 11:55		Topock - Alluvium Deposits	SM		(87') brown (7.5YR 5/3); little granules to larg subround; wet	e pebbles, an	gular to	(90.0 - 102.0') Rough drilling.	
93 94 95 96	120	IRZ-18-SS- 92-96 12/6/2019 12:00		Topock - Alluvium Deposits	ML		(92.0 - 96.0') Topock - Alluvium Deposits; Sa (7.5YR 4/4); low plasticity; some very fine to sand, subangular to subround; little granules subangular to subround; little clay; moist; ver	very coarse gr to large pebb y stiff	ained les,		
97 98 99 100	60	IRZ-18-SS- 96-100 12/6/2019 12:05		Topock - Alluvium Deposits	SM		(96.0 - 104.0') Topock - Alluvium Deposits; S (SM); reddish brown / moderate brown (5YR (7.5YR 4/4); very fine grained to very coarse (subround; some silt; little granules to very lar to subround; trace clay; wet; coarseness incr	4/4) with brow grained, angul ge pebbles, a	/n lar to ngular		

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9/	4RC	CADIS	Design & Consultancy for natural and built assets		Во	ring	J Log		She	eet: 7 of	11
Date S	Started	: <u>11/1</u>	7/2019		Surface	Elevat	tion: <u>494.7 ft amsl</u>	Borin	a No .	IRZ-18 Pi	lot
Date C	omple	eted: <u>12/0</u>	5/2019		Northing	g (NAD	D83): <u>2102884.7</u>		ıg 110	1112-1011	<u>10t</u>
Drilling	Co.:	Case	cade		Easting	(NAD8	83): <u>7615808.8</u>	_ Client:	PG&E		
Drilling	Metho	od: <u>Son</u> i	c Drilling		Total De	epth:	217 ft bgs	_ Project:	Final G	W Remedy Ph	ase 1
Drill Ri	д Туре	e: <u>Pros</u>	onic Truck Mo	unt	Borehol	e Diam	neter: 4-10 inches	_ Location:	PG&E	<u> Fopock, Topoc</u>	k, California
Driller I	Name:	<u>Jose</u>	<u>Hernandez</u>		Depth to	First \	Water: 41.07 ft bgs	_			
Drilling	Asst:		<u>maya / P. Alma</u>	nza	Samplin	ig Meth	hod: 4 inch x 10 ft Core Barrel	_ Project N	lumber:	RC000753.00	51
Logge			s Bonessi		Samplin	-					
Editor:		Ken	dra Keon		Convert	ed to V	Well: ⊠ Yes ☐ No				
Depth (ft)	Recovery (in)	Sieve Sample II	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
	120	IRZ-18-SS- 120-127 12/6/2019 12:30		Topock - Alluvium Deposits	SM		(120'); some granules to very large pebbles, subangular; some silt; decrease in sand, de and pebbles, increase in silt (123'); little granules to very large pebbles, a increase in sand, decrease in silt, decrease pebbles	angular to suba	angular;	(126.0 - 130.0') Rough drilling.	
128				Topock - Alluvium Deposits	ML		. (127.0 - 128.5') Topock - Alluvium Deposits reddish brown / moderate brown (5YR 4/4); very fine to very coarse grained sand, angula granules to very large pebbles, angular to st moist; stiff	low plasticity; ar to subround ubround; trace	little ; trace clay;		
129 130 131	84	IRZ-18-SS- 127-131.5 12/6/2019 12:35		Topock - Alluvium Deposits	ML		(128.5 - 131.7') Topock - Alluvium Deposits (ML); reddish brown / moderate brown (5YR little granules to large pebbles, angular to st fine to very coarse grained grained sand, an trace clay, dry; hard; moderate cementation (129') reddish brown (5YR 5/4); dry; very stift (129.5'); moist; hard	(4/4); low plas ubangular; little igular to subro	ticity; e very		
132 _133 _134		IRZ-18-SS- 131.5-135 12/6/2019 12:40					(131.5'); dry (131.7 - 142.0') Topock - Alluvium Deposits reddish brown / moderate brown (5YR 4/4); very fine to very coarse grained sand, angulgranules to very large pebbles, angular to sum oist; very stiff	low plasticity; ar to subround	some ; little	(134.0 - 142.0')	
135 136 137 138 139 140_	96	IRZ-18-SS- 135-140 12/6/2019 12:45	IRZ-18-VAS- 137-142 (<0.17 U ppb) 11/21/2019 15:31	Topock - Alluvium Deposits	ML		(137'); wet; medium stiff			Very hard drilling.	

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	g Log Sheet: 8 of 11	
Date S	started:	11/17/	2019	_	Surface	Elevat	Boring No.: IRZ-18 Pilot	_
Date C	Comple	ted: <u>12/05/</u>	2019		Northing	g (NAD	AD83): 2102884.7	_
Drilling	Co.:	<u>Casca</u>	de		Easting	(NAD8	D83): <u>7615808.8</u> Client: <u>PG&E</u>	
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	217 ft bgs Project: Final GW Remedy Phase 1	_
	д Туре		nic Truck Mou		Borehol			<u>a</u>
	Name:		<u>lernandez</u>				st Water: 41.07 ft bgs	
Drilling			<u>aya / P. Almar</u>		Samplin	•	•	
Logge					Samplin	-		
Editor:		Kenur	a Keon		Convert	ted to v	o Well: ⊠ Yes □ No	_
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS		d
141	96		IRZ-18-VAS- 137-142 (<0.17 U ppb) 11/21/2019 15:31	Topock - Alluvium Deposits	ML		(140'); dry; hard	
142 143 144		IRZ-18-SS- 140-145 12/6/2019 12:50		Topock - Alluvium Deposits	SM		(142.0 - 145.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (2.5YR 4/4); very fine grained to very coarse grained, angular to subangular; some silt; little granules to very large pebbles, subangular to subround; little clay; wet	
_145							1. (145.0 - 147.0') Topock - Alluvium Deposits; Sandy silt (ML);	
146				Topock - Alluvium Deposits	ML		reddish brown (2.5YR 4/4); low plasticity; some very fine to very coarse grained sand, angular to subround; little granules to very large pebbles, angular to subround; little clay; wet; medium stiff	
147	120	IRZ-18-SS-					: :: (147.0 - 152.0') Topock - Alluvium Deposits; Silty sand with gravel	
148 149 		145-150 12/6/2019 12:55	IRZ-18-VAS- 147-152 (<0.17 U	Topock - Alluvium	SM		(SM); reddish brown (2.5YR 4/4); very fine grained to very coarse grained, angular to subangular; some silt; little granules to very large pebbles, subangular to subround; little clay; wet	
150 151 152		IRZ-18-SS-	ppb) 11/21/2019 13:20	Deposits				
 _153		150-155 12/6/2019 13:00					(152.0 - 157.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (2.5YR 4/4); medium grained to very coarse grained, angular to subangular; little granules to very large pebbles, subangular to subround; little silt; little clay; wet	
154 155	60		IRZ-18-VAS- 152-157 (<0.17 U ppb) 11/22/2019	Topock - Alluvium Deposits	SM			
156 1 =			09:30					
157		IRZ-18-SS-					(157.0 - 164.0') Topock - Alluvium Deposits; Silty sand with gravel (157.0') Multiple	
158 	60	155-160 12/6/2019 13:05	IRZ-18-VAS- 157-162 (870 ppb)	Topock - Alluvium	SM		(SM); reddish brown (2.5YR 4/4); medium grained to very coarse grained, angular to subround; some very fine to fine grained grained sand, angular to subround; little granules to very large pebbles, angular to subangular; little silt; trace clay; wet clean out runs to set sampler. Slough in casing.	
159 160			11/22/2019 12:15	Deposits				
		11000	1 .0 10 .0		~ ·			

9/-	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 9 of	11
Date S			/2019		Surface			Boring No.	· IR7_18 Pi	lot
Date C	Comple	ted: <u>12/05</u>	/2019		Northing	g (NAD	83): 2102884.7		. <u> 10 1</u>	<u>10t</u>
Drilling	Co.:	Casca	ade		Easting	(NAD8	33): <u>7615808.8</u>	Client: PG&E		
Drilling			Drilling		Total De	epth:	217 ft bgs	Project: Final G	W Remedy Ph	ase 1
Drill Ri			nic Truck Mou		Borehol		•	Location: PG&E	Topock, Topoc	k, California
Driller I			Hernandez		-		Water: 41.07 ft bgs			
Drilling			<u>aya / P. Almaı</u>		Samplin	-		Project Number:	RC000753.00	51
Logge			Bonessi		Samplin	-		-		
Editor:		<u>Kena</u>	ra Keon		Convert	ea to v	Vell: ⊠ Yes □ No	Т		I
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
 161 162	60		IRZ-18-VAS- 157-162 (870 ppb) 11/22/2019 12:15	Topock -						
163 164		IRZ-18-SS- 160-165 12/6/2019 13:10	IRZ-18-VAS-	Alluvium Deposits	SM					
165	60		162-167 (3300 ppb) 11/22/2019 15:00				(164.0 - 168.0') Topock - Alluvium Deposits; (SM); reddish brown (2.5YR 4/4); very fine grained, angular to subround; some coarse trained sand, angular to subround; little gran angular to subangular; little silt; trace clay; we	ained to medium o very coarse grained ules to large pebbles,		
166 167		ID7 40 CC		Topock - Alluvium Deposits	SM		2			
 168		IRZ-18-SS- 165-170 12/6/2019 13:15					(168.0 - 172.0') Topock - Alluvium Deposits; (SM); reddish brown (2.5YR 4/4); medium gra		(167.0 - 172.0') Slough fell in around the sampler had to retract and	
169 170	60		IRZ-18-VAS- 167-172 (4700 ppb) 11/23/2019 10:00	Topock - Alluvium Deposits	SM		grained, angular to subround; some granules pebbles, angular to subangular; some very fir grained sand, angular to subround; little silt; t clasts composed of metadiorite; wet (170'); little granules to very large pebbles, ar	to very large ne to fine grained trace clay; coarser ngular to subangular;	clean out casing.	
171 172				Берозіц			wet; increase in sand, decrease in granules a	and pebbles		
173		IRZ-18-SS-		Topock - Alluvium Deposits	ML		(172.0 - 173.5') Topock - Alluvium Deposits; reddish brown (5YR 4/3); low plasticity; some coarse grained sand, angular to subround; litt pebbles, angular to subangular; little clay; we	e very fine to very tle granules to large tt; medium stiff		
174 175	60	170-177.5 12/6/2019 13:20	IRZ-18-VAS- 172-177 (660 ppb) 12/3/2019 10:30				(173.5 - 177.5') Topock - Alluvium Deposits; (SM); reddish brown (2.5YR 4/4); medium gragrained, angular to subround; some very fine grained sand, angular to subround; little gran pebbles, angular to subangular; little silt; trac	ained to very coarse to fine grained ules to very large		
176 176			.333	Topock - Alluvium Deposits	SM					
177									(177.0 - 187.0')	
 178	60	IRZ-18-SS- 177.5-182	IRZ-18-VAS- 177-182 (390 ppb)	Topock -			(177.5 - 182.0') Topock - Alluvium Deposits; reddish brown (2.5YR 4/4) to red (2.5YR 4/6) very fine to very coarse grained sand, angular granules to large pebbles, angular to subang	; low plasticity; some r to subround; little	`Hard drilling.	
179 _180		177.5-182 12/6/2019 13:25	12/3/2019 14:40	Alluvium Deposits	ML		medium stiff			
	2-42	. 11000	11-36-4 0-3 0	: f :t:	. 0 1		oot has - holow around surface am		1 1 0 1 1 1	

9/-	ARC	CADIS	for natural and built assets		Во	ring	Log		She	et: 10 of	11
Date S	tarted	: <u>11/17</u>	/2019		Surface	Elevati	on: <u>494.7 ft amsl</u>	Borin	a No.:	IRZ-18 Pi	lot
Date C	omple	eted: <u>12/05</u>	/2019		Northing	g (NAD	83): 2102884.7				<u></u>
Drilling		Casca			Easting	•	•	Client:	PG&E		
Drilling			Drilling		Total De	-	217 ft bgs	Project:		V Remedy Ph	
Drill Ri			<u>nic Truck Mo</u>		Borehol			Location:	PG&E T	opock, Topoc	k, California
Driller I			Hernandez				Vater: 41.07 ft bgs	Dusiaat N		2000252.00	-1
Drilling Loggei			<u>aya / P. Alma</u> Bonessi		Samplin Samplin	•		Projectiv	umber: <u>r</u>	RC000753.005	01
Editor:		<u> </u>	a Keon		Convert	•		-			
		rtorial			T						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
 181 _182_	60	IRZ-18-SS- 177.5-182 12/6/2019 13:25	IRZ-18-VAS- 177-182 (390 ppb) 12/3/2019 14:40	Topock - Alluvium Deposits	ML		(181'); dry; hard; moderate cementation (181.3'); wet; medium stiff; decrease in sand,	increase in s	ilt		
							(182.0 - 190.0') Topock - Alluvium Deposits; § (SM); red (2.5YR 4/6); very fine grained to ver	y coarse grain	ned,		
183		IRZ-18-SS- 182-185 12/6/2019					angular to subround; low plasticity; some silt; large pebbles, angular to subangular; little cla	little granules ay; wet	to		
184		12/6/2019 13:30	IRZ-18-VAS- 182-187								
	60		(<0.17 U ppb)					•			
185			ppb) 12/4/2019 11:00				(185'); dry				
				Topock -			(185.2'); moist				
186				Alluvium Deposits	SM		(186'); dry				
 _187							(186.1'); moist				
		IRZ-18-SS- 185-190								(187.0 - 192.0') Hard drilling.	
188		12/6/2019 13:35								Lost last 2 feet downhole upon	
										extraction.	
_189			IRZ-18-VAS- 187-192								
	36		(<0.17 U								
190			ppb) 12/4/2019 15:35				(190.0 - 192.0') No recovery (NR); see drilling				
			10.00				(130.0 - 132.0) 140 1665 very (1414), 366 drilling	Hotes			
191					NR	$\mid X \mid$					
192				Topock -			(192.0 - 193.0') Topock - Alluvium Deposits; \$			(192.0 - 203.0')	
102				Alluvium Deposits	SM		(SM); reddish brown (2.5YR 4/4); very fine gra grained, angular to subround; low plasticity; s	ome silt; little		Rough drilling.	
193				:·	+		granules to large pebbles, angular to subangu (193.0 - 198.0') Topock - Weathered Bedrock				
194							Sandy silt with gravel (ML); reddish brown (5) plasticity; some very fine to very coarse grains	/R 4/3); low			
	60						subangular; little granules to very large pebble subangular; little clay; coarser clasts composi	es, angular to			
195	60			l			moist to wet; stiff	ou or motuuro	1110,		
				Topock - Weathered	ML		(195'); moist to dry; hard				
196				Bedrock - conglomerat							
197											
-											
198							(198.0 - 204.0') Topock - Weathered Bedrock	- conalomer	ate:		
-	120			Topock -			Sandy silt (ML); reddish brown (5YR 4/3); mer very fine to very coarse grained sand, angular	dium plasticit	y; some		
199				Weathered Bedrock -	IVIL		granules to large pebbles, angular to subanguto dry; hard				
-				conglomerat	e		wary, nam				
200			11 .c. 10 .l.o	N .c. (;		<u> </u>	oot has - bolow ground surface amo				

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Bo	ring	Log	9		Sh	eet: 11 of	11
Date S					Surface			494.7 ft amsl	Borin	ıq No.:	: <u>IRZ-18 Pi</u>	lot
	•	ted: <u>12/05/2</u>			Northin		,	2102884.7				
Drilling		Cascac			Easting		33):	7615808.8	_ Client:	PG&E		
Drilling			•		Total D	-	4	217 ft bgs	_ Project:		W Remedy Ph	
Drill Ri Driller			<u>ic Truck Mou</u> ernandez		Boreho			4-10 inches	_ Location:	PG&E	Topock, Topoc	ck, California
Drilling			<u>emanuez</u> ya / P. Almar		Samplin			41.07 ft bgs 4 inch x 10 ft Core Barrel	- Project N	lumher:	RC000753.00	 51
Logge		Chris B	-		Samplin	•		Continuous	_ 1 10,00011	idinibor.	110000700.00	<i>5</i> 1
Editor:		Kendra			Conver	•			_			
	>			0 E								
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS		Soil Description			Drilling Notes	Drilling Fluid
201	120		IDZ 40 VAS	Topock - Weathered Bedrock - conglomerat	ML				Ò		(203.0 - 207.0') Soft drilling.	
204 205 206			IRZ-18-VAS- 202-207 (<0.17 U ppb) 12/5/2019 13:10				Sandy plastici subang subang	- 211.0') Topock - Weathered Bedrock silt with gravel (ML); reddish brown (5' ty; some very fine to very coarse grain jular; little granules to very large pebbl jular; little clay; coarser clasts compos very stiff	YR 4/3)̈; low ed sand, ang es, angular to	ular to		
_207 _208_				Topock - Weathered Bedrock - conglomerat	IVIL						(207.0 - 214.0') Hard drilling.	(207.0 - 217.0') 500 gallons of water used; 50 gallons of water
												recovered; 450 gallons of water lost
210												
_211	100						Sandy coarse	- 214.0') Topock - Weathered Bedrock silt (ML); reddish brown (5YR 4/3); sor grained grained sand, angular to such	me very fine t angular; little (to very		
213	120			Topock - Weathered Bedrock - conglomerat	ML		to large	e pebbles, angular to subangular; little	ciay, moist			
_214							`); dry; hard				
215				Topock - Weathered Bedrock -	SM		Silty sa grained some s	 - 217.0') Topock - Weathered Bedrock ind with gravel (SM); reddish brown (2 if to very coarse grained, angular to sul silt; little granules to large pebbles, ang ay; coarser clasts composed of metad 	.5YR 4/4); ver bround; low p gular to subar	ry fine lasticity;	(214.0 - 217.0') Soft drilling, stopped drilling due to the collection of three ND	
216				conglomerat	te						samples below last detection.	
<u> </u>												
217								End of Boring at 217.0 'bo	ıs.			
								5. 25ig at 211.0 bg	, -			
218												
219												
220 Abbre	viations	s: USCS = I	Inified Soil Cl	lassification	Svsten	ղ. ft = fe	eet. ha	s = below ground surface, ams	sl = above	mean se	ea level. GW = 0	groundwater
				1 1 "	, 5.511	., !\	, ~g					J. 222

9/	ARCA	DIS Design & for natura built asse	Consultancy al and ets		Temporary I	Backfill Log	J	Sheet: 1 of 11			
Date C Drilling	g Co.:	12/06/2019 12/06/2019 Cascade			Surface Elevation: Northing (NAD83): Easting (NAD83):	494.7 ft amsl 2102884.7 7615808.8	Client: Po	IRZ-18 Pilot			
Driller Drilling	-	Sonic Drilling Jose Hernan L. Amaya / P	idez ² . Almai	nza	Total Depth: Borehole Diameter: Depth to First Water:	-	Location: Po	Location: PG&E Topock, Topock, California			
Logge	er:	Chris Bones	si T		Editor:	Kendra Keon	Project Num	Project Number: RC000753.0051			
Depth (ft)	Groundwate Sample ID	Geologic Formation	Code	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed			
		Topock - Fill	GW		(0.0 - 0.5') Steel Plate	. 0. 0. 0. 0. 0		Note: Steel plates with BMPs in			
1 2 3 4		Topock - Fluvial Deposits	SW		(0.5 - 5.0') Plastering Sand	(0.0 - 7.0 Borel	(0.5 - 5.0') 5.5 ba	(0.5 - 5.0') 10 bags (82%) Note: Wildcat Washed, used >20% of the calculated volume due to potential voids forming during drilling			
		Topock - Fluvial Deposits	SW								
9 _	-	Topock - Fluvial	GW								
10		Deposits Topock - Fluvial Deposits	SW								
11	-										
12_		Topock - Fluvial	SW		(5.0 - 180.0') Cemex:		(5.0 - 180.0') 70				
13_	_	Deposits			#3 MESH (8x10)		bags	of the calculated volume due to potential voids forming during drilling			
	_					(7.0 - 207 Borel	7.0') 6.0"				
14	-										
15		Topock - Fluvial Deposits	SW								
16		Deposits									
		Topock - Fluvial Deposits	GW								
		Topock - Fluvial	SW-SM								
19_		Deposits	344-310								
20 Abbre	viations: TI		l Soil C	<u>ŀ``•``</u> ∤ <u>`}•[∙</u> lassificat	tion System ft = feet ho	······	urface amsl = above me	 an sea level. GW = groundwater.			

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of

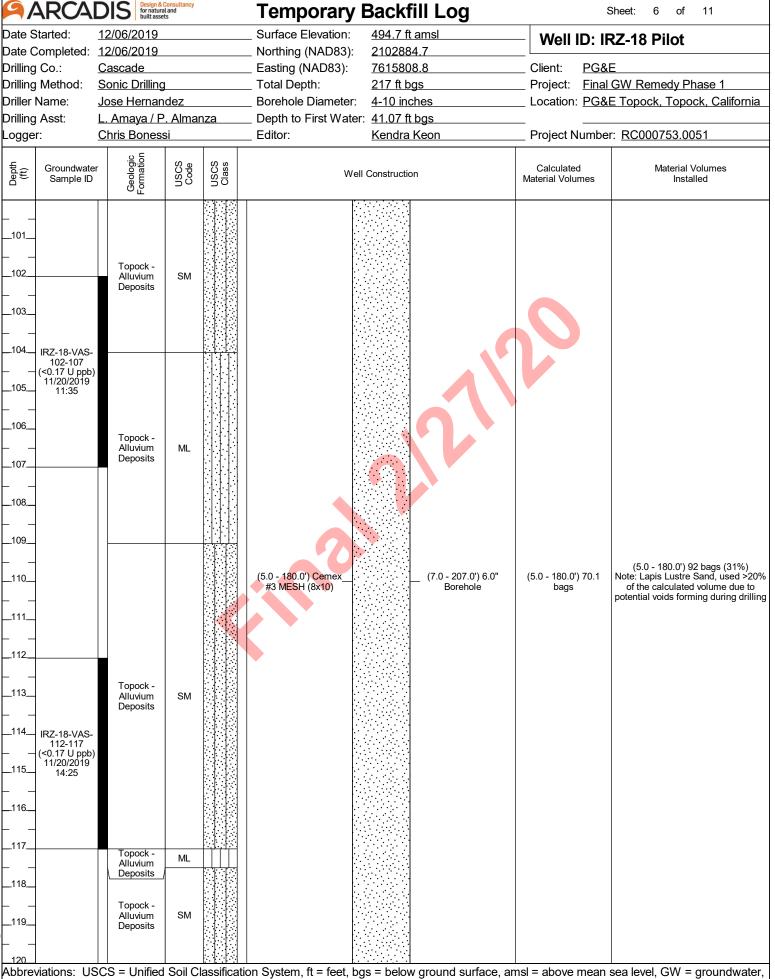
ARC/	Design & for natural built ass	& Consultancy ral and sets		Temporary I	Backfill Log	;	Sheet: 2 of 11			
Date Started: 12/06/2019 Date Completed: 12/06/2019 Drilling Co.: Cascade Drilling Method: Sonic Drilling Driller Name: Jose Hernand Drilling Asst: L. Amaya / P. Logger: Chris Bonessi		ng Indez P. Almanza		Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	494.7 ft amsl 2102884.7 7615808.8 217 ft bgs 4-10 inches 41.07 ft bgs Kendra Keon	Client: PG& Project: Final Location: PG&	E GW Remedy Phase 1 E Topock, Topock, California r: RC000753.0051			
Groundwa Sample		Code	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed			
21	Topock - Fluvial Deposits Topock - Alluvium Deposits	SW-SM		(5.0 - 180.0') Cemex #3 MESH (8x10)	(7.0 - 207.0') 6.0" Borehole	(5.0 - 180.0') 70.1 bags	(5.0 - 180.0') 92 bags (31%) Note: Lapis Lustre Sand, used >20% of the calculated volume due to potential voids forming during drilling			
	Topock - Alluvium Deposits Topock - Alluvium Deposits	SW-SM		ion System ft – foot ha	to - bolow ground surface	amel = above mean	sea level, GW = groundwater,			

AP	RCAI	DIS Design & for natural built ass	Consultancy ral and ets		Temporary I	Backfill Log	;	Sheet: 3 of 11			
Date Con Drilling Co Drilling Mo Driller Nai	illing Method: Sonic Drilling iller Name: Jose Hernandez illing Asst: L. Amaya / P. Almanza				 Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor: 	494.7 ft amsl 2102884.7 7615808.8 217 ft bgs 4-10 inches 41.07 ft bgs Kendra Keon	Client: PG& Project: Final Location: PG&	E GW Remedy Phase 1 E Topock, Topock, California r: RC000753.0051			
	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed			
41		Topock - Alluvium Deposits	SM	1							
L _ (Z-18-VAS- 42-47 580 ppb) 1/19/2019 09:20	Topock - Alluvium Deposits	SM								
48		Topock - Alluvium Deposits	SM		(5.0 - 180.0') Cemex #3 MESH (8x10)	(7.0 - 207.0') 6.0" Borehole	(5.0 - 180.0') 70.1 bags	(5.0 - 180.0') 92 bags (31%) Note: Lapis Lustre Sand, used >20% of the calculated volume due to potential voids forming during drilling			
58 59 60 Abbreviat	tions: US	Topock - Alluvium Deposits	SM	lassificati	ion System. ft = feet, ha	s = below ground surface a	msl = above mean	sea level, GW = groundwater,			

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

ARC/	ADIS Design & for nature built ass	Consultancy ral and ets		Temporary E	Backfill Log	;	Sheet: 4 of 11			
Date Started: Date Completed Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	Cascade Sonic Drilling Jose Hernar L. Amaya / F Chris Bones	ndez P. Alma	nza	Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	494.7 ft amsl 2102884.7 7615808.8 217 ft bgs 4-10 inches 41.07 ft bgs Kendra Keon	Client: PG& Project: Final Location: PG&	E GW Remedy Phase 1 E Topock, Topock, California r: RC000753.0051			
Groundwa Sample		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed			
	J	SM								
68 69 IRZ-18-VA (<0.033 L 70 11/19/201 71	J	SM		(5.0 - 180.0') Cemex #3 MESH (8x10)	(7.0 - 207.0') 6.0" Borehole	(5.0 - 180.0') 70.1 bags	(5.0 - 180.0') 92 bags (31%) Note: Lapis Lustre Sand, used >20% of the calculated volume due to potential voids forming during drilling			
72	Topock - Alluvium Deposits	SM								
	Topock - Alluvium Deposits JSCS = Unified	ML Soil C	lassificati	ion System, ft = feet, ba	s = below ground surface, a	msl = above mean	sea level, GW = groundwater,			

ARCA	DIS Design & for natural built ass	Consultancy ral and ets		Temporary Ba	ckfill Log	5	Sheet: 5 of 11			
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	ate Completed: 12/06/2019 rilling Co.: Cascade rilling Method: Sonic Drilling riller Name: Jose Hernandez rilling Asst: L. Amaya / P. Almanza ogger: Chris Bonessi		Northing (NAD83): 210 Easting (NAD83): 760 Total Depth: 211 Borehole Diameter: 4-1 Depth to First Water: 41.	4.7 ft amsl 02884.7 15808.8 7 ft bgs 0 inches 07 ft bgs ndra Keon	Client: PG& Project: Final Location: PG&	RZ-18 Pilot E GW Remedy Phase 1 E Topock, Topock, California r: RC000753.0051				
Groundwat Sample II		USCS Code	USCS Class	Well Cons	truction	Calculated Material Volumes	Material Volumes Installed			
	Topock - Alluvium Deposits	SM		(5.0 - 180.0') Cemex_#3 MESH (8x10)	(7.0 - 207.0') 6.0" Borehole	(5.0 - 180.0') 70.1 bags	(5.0 - 180.0') 92 bags (31%) Note: Lapis Lustre Sand, used >20% of the calculated volume due to potential voids forming during drilling			
93 - 94 - 95	Topock - Alluvium Deposits	ML								
 _ 96		<u></u>			20 20 20 20					
97 98 99 99	Topock - Alluvium Deposits	SM					sea level, GW = groundwater,			



9/-	ARCA	DIS Design & for natura built asset	Consultancy al and ets		Temporary B	Backfill Log	5	Sheet: 7 of 11
Date S Date C Drilling Drilling Driller I Drilling	Date Started: 12/06/2019 Date Completed: 12/06/2019 Drilling Co.: Cascade Drilling Method: Sonic Drilling Driller Name: Jose Hernandez Drilling Asst: L. Amaya / P. Almanza Logger: Chris Bonessi				Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water:	494.7 ft amsl 2102884.7 7615808.8 217 ft bgs 4-10 inches	Client: PG& Project: Final Location: PG&	RZ-18 Pilot GW Remedy Phase 1 Topock, Topock, California RC000753.0051
Depth (ft)	Groundwate Sample ID	Geologic Formation	Code	USCS Class	Well C	Construction	Calculated Material Volumes	Material Volumes Installed
		Topock - Alluvium Deposits Topock - Alluvium Deposits	SM					
129		Topock - Alluvium Deposits	ML		(5.0 - 180.0') Cemex_ #3 MESH (8x10)	(7.0 - 207.0') 6.0" Borehole	(5.0 - 180.0') 70.1 bags	(5.0 - 180.0') 92 bags (31%) Note: Lapis Lustre Sand, used >20% of the calculated volume due to potential voids forming during drilling
	IRZ-18-VAS- 137-142 (<0.17 U ppb) 11/21/2019 15:31	Topock - Alluvium Deposits	ML					

ARCA	DIS Design & for natura built asset	Consultancy al and ets		Temporary E	Backfill Log	;	Sheet: 8 of 11
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	Pate Completed: 12/06/2019 Orilling Co.: Cascade Orilling Method: Sonic Drilling Oriller Name: Jose Hernandez Orilling Asst: L. Amaya / P. Almanza		Surface Elevation: 494.7 ft amsl Northing (NAD83): 2102884.7 Easting (NAD83): 7615808.8 Total Depth: 217 ft bgs Borehole Diameter: 4-10 inches Depth to First Water: 41.07 ft bgs Editor: Kendra Keon		Client: PG& Project: Final Location: PG&	E GW Remedy Phase 1 E Topock, Topock, California r: RC000753.0051	
Groundwat Sample II		USCS	USCS Class	Well (Construction	Calculated Material Volumes	Material Volumes Installed
- IRZ-18-VAS 137-142 (<0.17 U ppt 11/21/2019 15:31	Topock - Alluvium	ML					
143	Topock - Alluvium Deposits	SM					
146	Topock - Alluvium Deposits	ML				·	
	Topock - Alluvium	SM		(5.0 - 180.0') Cemex #3 MESH (8x10)	(7.0 - 207.0') 6.0" Borehole	(5.0 - 180.0') 70.1 bags	(5.0 - 180.0') 92 bags (31%) Note: Lapis Lustre Sand, used >20% of the calculated volume due to potential voids forming during drilling
153 154 IRZ-18-VAS 	Topock -	SM					
157	Topock - Alluvium Deposits	SM 3 Soil C	lassificati	on System, ft = feet, bas	s = below ground surface. ar	msl = above mean	sea level, GW = groundwater,

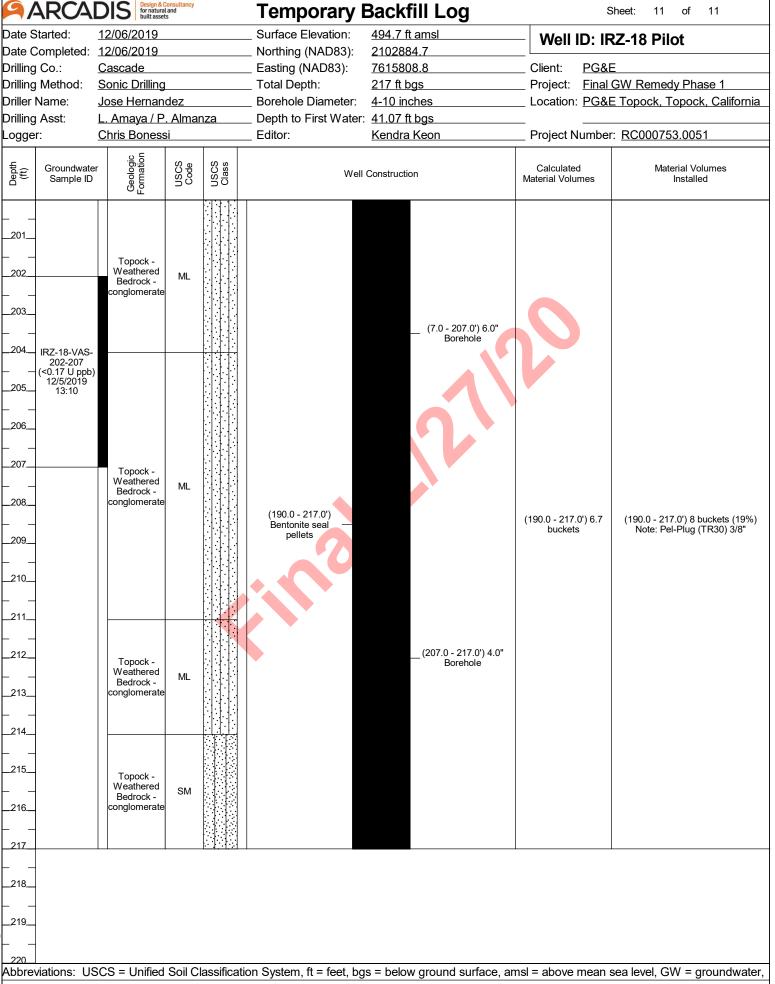
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

ARC	DIS Design & for natura built asset	Consultancy al and ets		Temporary E	Backfill Log	;	Sheet: 9 of 11			
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	Orate Completed: 12/06/2019 Orilling Co.: Cascade Orilling Method: Sonic Drilling Oriller Name: Jose Hernandez Orilling Asst: L. Amaya / P. Almanza			Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	494.7 ft amsl 2102884.7 7615808.8 217 ft bgs 4-10 inches 41.07 ft bgs Kendra Keon	Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Topock, California Project Number: RC000753.0051				
Groundwar Sample II		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed			
IRZ-18-VAS 157-162 (870 ppb) 11/22/2019 12:15 -162		SM								
		SM								
168 169 IRZ-18-VAS 167-172 (4700 ppb) 		SM		(5.0 - 180.0') Cemex_ #3 MESH (8x10)	(7.0 - 207.0') 6.0" Borehole	(5.0 - 180.0') 70.1 bags	(5.0 - 180.0') 92 bags (31%) Note: Lapis Lustre Sand, used >20% of the calculated volume due to potential voids forming during drilling			
172	Topock - Alluvium Deposits	ML								
	Topock - Alluvium Deposits	SM								
	Topock - Alluvium Deposits	ML A Soil C	assificati	on System ft = feet ba	s = below ground surface	amsl = above mean	sea level, GW = groundwater,			

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of

1100 1100	ARCA	DIS Design & for natura built asse	Consultancy al and its		Temporary E	Backfill Log	Sheet: 10 of 11		
RZ-16-VAS- 17-182 Topock ML	Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst:	12/06/2019 Cascade Sonic Drilling Jose Hernan L. Amaya / P	idez ⁾ . Almai	nza	Northing (NAD83):Easting (NAD83):Total Depth:Borehole Diameter:Depth to First Water:	2102884.7 7615808.8 217 ft bgs 4-10 inches 41.07 ft bgs	Client: PG& Project: Final Location: PG&	E GW Remedy Phase 1 E Topock, Topock, California	
181 (170.00)	Groundwate Sample ID	Geologic	USCS	USCS Class	Well	Construction			
	181	Topock - Alluvium	ML		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				
191		Topock - Alluvium Deposits	SM		Cemex # 2/12 MESH—(° 5°	(7.0 - 207.0') 6.0"		Note: Lapis Lustre Sand, used >20%	
199 Weathered ML	193	Topock - conglomerate Topock - Weathered Bedrock - conglomerate Topock - Weathered Bedrock -	SM ML		Bentonite seal —		(190.0 - 217.0') 6.7 buckets	(190.0 - 217.0') 8 buckets (19%) Note: Pel-Plug (TR30) 3/8"	

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of



ARCADIS Design & Consultancy for natural and built assets				Во	ring	Lo	g	Sheet: 1 of 10					
Date S	started:		10/18/2	2018		Surface	Elevati	on:	497.7 ft amsl	Borin	a No.:	: <u>IRZ-20 P</u>	ilot
Date C	Comple	ted:	10/31/2	2018		Northing	g (NAD	83):	2102761.4		9		σι
Drilling			Cascac	le		Easting	(NAD8	3):	7615814.2	Client:	PG&E		
Drilling			Sonic D			Total De	epth:		187 ft bgs	Project:		W Remedy Ph	
Drill Ri				<u>ic Truck Mou</u>		Borehol				Location:	PG&E	Topock, Needl	es, California
Driller				<u>ioes/S. Vasqı</u>		•			44.5 ft bgs				
Drilling	Asst:		-	er/C. Alverez		Samplin	-		4 inch x 10 ft Core Barrel	Project N	umber:	RC000753.00	51
Logge			Connor			Samplin	•		Continuous				
Editor:			Sean M	<u>1cGrane</u>		Convert	ed to V	Vell:	☐ Yes 区 No				
Depth (ft)	Recovery (in)		Sieve nple ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
1					Topock - Fluvial Deposits	GW-GM		and sa large p graine	4.0') Topock - Fluvial Deposits; Well gra and (GW-GM); very pale brown (10YR 8, bebbles, angular to subround; and very f d sand, angular to round; little silt; trace gular; dry	/3); granules ine to very c	to very parse		(0.0 - 187.0') No water used
4 5 5	60				Topock - Fluvial Deposits	SP-SM		(SP-SI graine	5.5') Topock - Fluvial Deposits; Poorly g M); very pale brown (10YR 8/3); very fine d, angular to subround; little silt; dry; ho	e grained to to mogeneous	ine		
6 _					Topock - Fluvial Deposits	SM		brown angula	7.0') Topock - Fluvial Deposits; Silty san (10YR 8/3); very fine grained to very coar or to round; and silt; trace granule to smaround; dry	arse grained	,		
- 8	66				Topock - Fluvial Deposits	SM		brown little si	13.0') Topock - Fluvial Deposits; Silty sa (10YR 8/3); fine grained to fine grained lt; dry	, angular to r	ound;		
14 14 15					Topock - Fluvial Deposits	SM		brown angula	(10YR 8/3); very fine grained to very coart to subround; little silt; trace granules tes, angular to subround; trace cobbles, a	arse grained o very large	,		
13 16 17					Topock - Fluvial Deposits	SM		brown	17.0') Topock - Fluvial Deposits; Silty s (10YR 8/3); very fine grained to fine gra and; little silt; dry				
18 18 19 20	120				Topock - Fluvial Deposits	GM		(GM); graine angula	33.0') Topock - Fluvial Deposits; Silty g grayish brown (10YR 5/2); very fine grai d, angular to round; some fine to very cu ir to round; little silt; little clay; trace cob gular; dry	ned to coars	e d sand,		

PARCADIS Design & Consultancy for a large statement of the statement of					Во	ring Lo	g	Sheet: 2 of 10			
Date S						Elevation:	497.7 ft amsl	Borii	na No.:	IRZ-20 Pi	ilot
	-	ted: <u>10/31/2</u>				g (NAD83):	2102761.4	_			
Drilling		Cascac			_	(NAD83):	7615814.2	_ Client:	PG&E		
Drilling			•		Total De	-	187 ft bgs	Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, Califo			
Drill Ri Driller			<u>ic Truck Mou</u> noes/S. Vasqı			e Diameter: S First Water	4-12 inches : 44.5 ft bgs	_ Location: FG&E Topock, Needles, Calilot			es, Calliornia
Drilling			ier/C. Alverez		-	g Method:	4 inch x 10 ft Core Barrel	- Proiect N	Jumber	RC000753.00	 51
Logge		Connor			-	g Interval:	Continuous		turibor.	110000100.00	0 1
Editor:			1cGrane		-	ed to Well:	☐ Yes 区 No				
_	چ			in P		10					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
	Ř			9.5	ļ -	h V 1				1	(0.0 - 187.0')
											No water used
21											
22										(22.0 - 36.0') Open borehole	
23										collapsed	
										overnight between	
24										10/18/18 to 10/19/18	
_						MAN					
25											
-											
26				Tanaak							
-				Topock - Fluvial	GM						
27				Deposits							
28	120					PJS					
29											
						Para					
30											
						Polo					
31											
32				· ·							
-											
33							- 36.0') Topock - Fluvial Deposits; Silty				
						∷ ∷ angul	brown (10YR 5/3); very fine grained to car to round; some silt; little clay; trace g				
34				Topock -		angul	ar to subround; dry				
35				Fluvial Deposits	SM						
36											
						∵ ∵ (SM);	- 39.0') Topock - Fluvial Deposits; Silty brown (10YR 4/3); very fine grained to v	very coarse o	grained,		
37						∷ ∷ angul	ar to subangular; little granule to very la pround; little silt; dry; strong cementatior	rge pebbles,			
-				Topock - Fluvial	SM						
38	96			Deposits							
-											
39				Topock -		(39.0	- 47.0') Topock - Alluvium Deposits; Silt	ty sand with	gravel		
				Alluvium Deposits	SM	∴ ∴ (SM),	grayish brown (10YR 5/2); very fine gra ed, angular to subangular; and granule t	ined to very	coarse		
40_			<u> </u>	Doposito	<u> </u>	17.4.1.1.1	. 5 5 , 9 18.0 1	, 35	. ',	<u> </u>	l

9/-	4RC	CADIS	for natural and built assets		Во	ring L	og	Sheet: 3 of 10			
Date S						Elevation:		Borii	na No.	: <u>IRZ-20 Pi</u>	ilot
	•	eted: 10/31/2			-	g (NAD83)		_		<u> </u>	
Drilling		Cascac			-	(NAD83):		_ Client:	PG&E		
Drilling					Total De	-	187 ft bgs	_ Project:		W Remedy Ph	
Drill Ri	• • •		nic Truck Mou			e Diamete		Location: PG&E Topock, Needles, Californ			es, California
Driller I			noes/S. Vasqı		-		ter: 44.5 ft bgs	- Drainat N		DC0007E2 00	
Drilling		<u>1. Alym</u> Connor	ner/C. Alverez	<u>-</u>	-	ng Method:		_ Project i	number:	RC000753.00	<u> </u>
Logge Editor:			// IVIIIIS //IcGrane		-	ng Interval: ted to Well		_			
Luitoi.		<u>Ocan iv</u>							1		1
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
41 42 43 44 45 46 47	96			Topock - Alluvium Deposits	SM		gular to subround; little silt; trace clay; dry	9		¥	(0.0 - 187.0') No water used
48		IRZ-20-SS- 45-50 10/30/2018 12:00				(GI	7.0 - 56.0") Topock - Alluvium Deposits; Silt M); brown (10YR 4/3); granules to large pe bangular; some very fine to coarse grained bround; little silt; moist	ebbles, angul	ar to	(48.0') Soil starts getting moist	
51 52 53 54 55	114	IRZ-20-SS- 50-55 10/30/2018 12:02	IRZ-20-VAS- 51-56 (150 ppb) 10/20/2018 11:40	Topock - Alluvium Deposits	GM						
 56				Topock -			6.0 - 57.0') Topock - Alluvium Deposits; Sill VI); dark grayish brown / dark yellowish bro				
57			1	Alluvium Deposits	SM	iii iii fine	e grained to coarse grained, angular to sub large pebbles, angular to subangular; some	oroùnd; some	e granule		
_ Ŭ		IRZ-20-SS- 55-60	1			(57	7.0 - 65.0') Topock - Alluvium Deposits; Silt	ty sand (SM)	;		
58		10/30/2018 12:04	1			yell	lowish brown / moderate yellowish brown(ained to fine grained, angular to subround;	10YR 5/4); v	ery fine		
	06		1	Topock -	CNA	gra	anule to medium pebbles, angular to subro	und; moist			
59	96			Alluvium Deposits	SM						
60	<u></u>		<u> </u>			<u> [:]::[:]</u>					

PARCADIS Design & Consultancy for natural and built assets					Во	ring	Log	Sheet: 4 of 10			
Date Completed: 10/31/2018					Surface	g (NAD	33): <u>2102761.4</u>	Boring No.	: <u>IRZ-20 P</u>	<u>ilot</u>	
-					Easting		•	Client: PG&E			
1 -			•		Total De Borehol	-	187 ft bgs	Project: Final G Location: PG&E	W Remedy Ph		
Drill Ri Driller			<u>iic Truck Mou</u> noes/S. Vasqı				eter: <u>4-12 inches</u> Vater: 44.5 ft bgs	_ Location. PG&E	Topock, Needi	es, California	
			ner/C. Alverez		Samplin			-	DC000753 00		
Drilling		<u>T. Alyli</u> Connoi			Samplin	•		_ Project Number.	KC000755.00	<u>31</u>	
Logge Editor:			/IcGrane		Convert	-		-			
Luitor.		Ocarriv	logiane		T	T T	103 🔠 103				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid	
61 62 63 64 65	96	IRZ-20-SS- 60-65 10/30/2018 12:06		Topock - Alluvium Deposits	SM		(65.0 - 69.0') Topock - Alluvium Deposits; Sal (10YR 5/3); no plasticity; some very fine to co			(0.0 - 187.0') No water used	
66 67 68 69		IRZ-20-SS- 65-70 10/30/2018 12:08		Topock - Alluvium Deposits	ML		angular to subround; little small pebbles, ang moist (69.0 - 71.0') Topock - Alluvium Deposits; Sa	ndy silt (ML); brown			
 70 71				Topock - Alluvium Deposits	ML		(7.5YR 4/4), no plasticity; some fine to coarse angular to subround; little granule to small pe subangular; moist (71.0 - 77.0') Topock - Alluvium Deposits; Silt	e grained sand, abbles, angular to			
72 73 74 75		IRZ-20-SS- 70-75 10/30/2018 12:10		Topock - Alluvium Deposits	ML		brown (7.5YR 4/4); no plasticity; little very fine sand, angular to subround; trace granule to mangular to subangular; trace clay; moist	e to coarse grained			
76 77 78 79	114	IRZ-20-SS- 75-80 10/30/2018 12:12		Topock - Alluvium Deposits	ML		(77.0 - 83.0') Topock - Alluvium Deposits; Sa (7.5YR 4/4); no plasticity; some very fine to m angular to subround; trace granule, angular to	nedium grained sand,			
80											

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g	Sh	neet: 5 of	10
					Surface	Elevation:	497.7 ft amsl	Boring No.	o.: IRZ-20 Pilot	
						g (NAD83):	2102761.4	_		
_					_	(NAD83):	7615814.2	_ Client: <u>PG&E</u>		
Drilling			-		Total De	-	187 ft bgs	•	W Remedy Ph	
Drill Ri Driller			<u>ic Truck Mou</u> noes/S. Vasqı			e Diameter: o First Water:	4-12 inches	Location: PG&E	гороск, мееаг	es, Calitornia
Drilling			<u>ioes/S. vasqi</u> i <u>er/C. Alverez</u>		-	g Method:	4 inch x 10 ft Core Barrel	 _ Project Number:	RC000753 00	51
Logge		Conno			-	g Interval:	Continuous	_ 1 Tojoot Humbon.	110000700.00	01
Editor:			/IcGrane		-	ed to Well:	☐ Yes ⊠ No	_		
	>			.º 5						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description		Drilling Notes	Drilling Fluid
81	114	IRZ-20-SS- 80-85 10/30/2018 12:14 IRZ-20-SS- 85-90 10/30/2018 12:16	IRZ-20-VAS- 82-87 (<0.033 U ppb) 10/21/2018 14:45	Topock - Alluvium Deposits	ML	(10YR	107.0') Topock - Alluvium Deposits; S 4/3); very fine grained to coarse graine ind; and silt; little granule to small pebl gular; wet	ed, angular to		(0.0 - 187.0') No water used
90	132	IRZ-20-SS- 90-95 10/30/2018 12:18 IRZ-20-SS- 95-100		Topock - Alluvium Deposits	SM					
98 99 99	120	11/30/2018 12:20								

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 6 of	10
Date Started: 10/18/2 Date Completed: 10/31/2 Drilling Co.: Cascad Drilling Method: Sonic I Drill Rig Type: Proson Driller Name: E. Ram Drilling Asst: T. Alym Logger: Conno			2018 2018 de Drilling nic Truck Mou noes/S. Vasq ner/C. Alverez	Surface Northing Easting Total De Borehol	Elevation (NAD8 epth: e Diam o First Volg Methors	on: 497.7 ft amsl 33): 2102761.4 3): 7615814.2 187 ft bgs eter: 4-12 inches Vater: 44.5 ft bgs od: 4 inch x 10 ft Core Barrel val: Continuous	Client: PG&E Project: Final G Location: PG&E Project Number:	nase 1 les, California		
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
	120	IRZ-20-SS- 100-105 10/30/2018 12:22		Topock - Alluvium Deposits	SM			9		(0.0 - 187.0') No water used
106 107 107		IRZ-20-SS- 105-110 10/30/2018		Topock -			(107.0 - 109.0') Topock - Alluvium Deposits; (SM); brown (7.5YR 4/3); fine grained to coar to subround; and silt; little granule to small pe	se grained, angular		
108 109 110		12:24		Alluvium Deposits	SM		(109.0 - 117.0') Topock - Alluvium Deposits; brown (10YR 4/3); no plasticity; some fine to angular to subround; trace granule, angular to clay; wet	Sandy silt (ML); coarse grained sand,		
 _111 	103.2	IRZ-20-SS- 110-115 10/30/2018 12:26	IRZ-20-VAS- 112-117 (<0.17 U ppb)	Topock - Alluvium Deposits	ML					
115 116 117			10/22/2018 14:02							
117	132	IRZ-20-SS- 115-120 10/30/2018 12:28		Topock - Alluvium Deposits	ML		(117.0 - 123.0') Topock - Alluvium Deposits; strong brown (7.5YR 4/6); no plasticity; little pebbles, angular to subangular; little fine to cangular to subround; wet	granule to medium		

9/-	ARC	ADIS	for natural and built assets		Во	ring	Log		She	et: 7 of	10
Date Started: <u>10/18/2018</u>					Surface	Elevati	on: <u>497.7 ft amsl</u>	Borin	a No:	o.: IRZ-20 Pilot	
•					Northing	g (NAD	83): <u>2102761.4</u>	_			<u></u>
Drilling Co.: <u>Cascade</u> l					Easting	(NAD8	3): <u>7615814.2</u>	Client: PG&E			
Drilling	Metho	od: <u>Sonic I</u>	Drilling		Total De	epth:	187 ft bgs	_ Project:	Final GV	N Remedy Ph	ase 1
Drill Ri	д Туре	e: <u>Prosor</u>	<u>nic Truck Mou</u>	ınt	Borehol	e Diam	eter: <u>4-12 inches</u>	_ Location:	PG&E T	opock, Needl	<u>es, California</u>
Driller I	Name:	E. Ran	noes/S. Vasq	uez	Depth to	o First V	Vater: 44.5 ft bgs	_			
Drilling	Asst:	T. Alyn	ner/C. Alverez	<u> </u>	Samplin	ig Meth	od: 4 inch x 10 ft Core Barrel	_ Project N	lumber: <u>F</u>	RC000753.00	51
Loggei	r:	<u>Conno</u>	r Mills		Samplin	•		_			
Editor:		Sean N	<u>/////////////////////////////////////</u>		Convert	ed to W	Vell: ☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
		IRZ-20-SS- 120-125 10/30/2018		Topock - Alluvium Deposits	ML			0			(0.0 - 187.0') No water used
123 124 	132	12:30		Topock - Alluvium Deposits	GM		(123.0 - 124.5') Topock - Alluvium Deposits; (GM); yellowish brown / moderate yellowish granules to very large pebbles, angular to su little very fine to coarse grained sand, angula moist (124.5 - 127.0') Topock - Alluvium Deposits;	brown(10YR 5 bangular; som ar to subangula	5/4); ne silt; ar;		
125 126 				Topock - Alluvium Deposits	ML		brown (7.5YR 4/3); no plasticity; little granule angular to subangular; little fine to coarse gr subround; moist	e to medium p	ebbles,		
128 129 130		IRZ-20-SS- 125-130 10/30/2018 12:32		Topock - Alluvium Deposits	ML		(127.0 - 131.0') Topock - Alluvium Deposits; reddish brown / moderate brown(5YR 4/4); r grained sand, angular to subround; trace grapebbles, angular to subangular; wet	no plasticity; so	_); ome fine		
131 132 133 134 135	132	IRZ-20-SS- 130-135 10/30/2018 12:34	IRZ-20-SS- 131-136 (<0.17 U ppb) 10/23/2018 13:25	Topock - Alluvium Deposits	SM		(131.0 - 136.5') Topock - Alluvium Deposits; brown (7.5YR 5/3); fine grained to coarse grasubround; some silt; little granule to medium to round; wet	ained, angular	to		
136		IRZ-20-SS-					(136.5 - 157.0') Topock - Alluvium Deposits; reddish brown (5YR 5/4); very fine grained to angular to subangular; and silt; little granule	o coarse graine to very large p	ed, ebbles,		
138 139 	132	135-140 10/30/2018 12:36		Topock - Alluvium Deposits	SM		angular to subangular; wet; granules and pel of metadiorite				

ARCADIS for natural and built assets					Во	ring Lo	g	Sheet: 8 of 10			
Date Started: 10/18/2018 Date Completed: 10/31/2018 Drilling Co.: Cascade Drilling Method: Sonic Drilling Drill Rig Type: Prosonic Truck Mount Driller Name: E. Ramoes/S. Vasquez Drilling Asst: T. Alymer/C. Alverez Logger: Connor Mills Editor: Sean McGrane				int uez	Northing Easting Total De Borehol Depth to Samplin Samplin	e Diameter:	497.7 ft amsl 2102761.4 7615814.2 187 ft bgs 4-12 inches 44.5 ft bgs 4 inch x 10 ft Core Barrel Continuous Yes X No	Boring No.: IRZ-20 Pilot Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, Cali Project Number: RC000753.0051			ase 1 es, California
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	SOSO	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
141 142 143 144 145 146	- 132	IRZ-20-SS- 140-145 10/30/2018 12:38						9			(0.0 - 187.0') No water used
147 148 149 150		IRZ-20-SS- 145-150 10/30/2018 12:40		Topock - Alluvium Deposits	SM						
151 152 153 154 155	- 132	IRZ-20-SS- 150-155 10/30/2018 12:42									
156 157 158 158	132	IRZ-20-SS- 155-160 10/30/2018 12:44		Topock - Weathered Bedrock - conglomerat	IVIL	Sandy coars	5 - 160.0') Topock - Weathered Bedroc silt (ML); brown (7.5YR 5/4); no plasti e grained sand, angular to subround; tr angular; trace clay; moist	city; and fine t	to	(157.0 - 167.0') Soil core hot and dry, lost approximately 2 ft. of core down hole, tripped back in to retrive lost core	
160 Abbro	viation	. HCCC - I	Initiad Sail Cl	ossification	System	: : : : ft = foot_br	rs = helow around surface am	al – abaya	maan aa	Novel CW =	groundwater

9/	ARC	CADIS	for natural and built assets		Во	ring	Log		Sh	eet: 9 of	10
Date S					Surface			Borin	ıg No.	: <u>IRZ-20 Pi</u>	lot
					Northing		•				
_					Easting	•	•	Client:	PG&E	NA Damadu Dh	
Drill Ri			ic Truck Mou		Total De	-	187 ft bgs eter: 4-12 inches	Project:		W Remedy Pha Topock, Needle	
Driller			noes/S. Vasq				Vater: 44.5 ft bgs	Location.	1 GaL	тороск, песак	55, Calliottia
Drilling			ner/C. Alverez		Samplin		_	Project N	lumber:	RC000753.005	 51
Logge		<u>Connor</u>			Samplin	-					
Editor:	:	Sean M	/IcGrane		Convert	ed to W	Vell: ☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
	132	IRZ-20-SS- 160-165 10/30/2018 12:46		Topock - Weathered Bedrock - conglomerate	CL		(160.0 - 166.0') Topock - Weathered Bedrock Lean clay with sand (CL); brown (10YR 4/3); I small to medium pebbles, angular to subangu coarse grained sand, angular to subround; litt angular to subangular; dry	ow plasticity; ılar; some fin	; some ne to	(157.0 - 167.0') Soil core hot and dry, lost approximately 2 ft. of core down hole, tripped back in to retrive lost core	(0.0 - 187.0') No water used
							(166.0 - 179.5') Topock - Weathered Bedrock Sandy silt with gravel (ML); dark yellowish bro	wn (10YR 3/	6);		
167		IRZ-20-SS-					medium plasticity; some fine to coarse graine subround; little granule to small pebbles, anguant				
168 1		165-170 10/30/2018 12:48					wet				
169											
170 171											
172	87.6	IRZ-20-SS-		Tanada							
173		170-175 10/30/2018 12:50		Topock - Weathered Bedrock - conglomerate	IVIL						
174											
175			IRZ-20-VAS- 173-178	1							
176			(<0.83 U ppb) 10/24/2018 14:12								
<u> </u>			17.12	1							
177		IRZ-20-SS-		1						(177.0 - 182.0')	
178	70.0	175-180 10/30/2018 12:52								Very rough drilling, had refusal at 182', tripped out and	
179	79.2									make another run for 182-187'.	
180	<u> </u>					<u>į</u>	(179.5 - 182.0') Topock - Competent Bedrock				

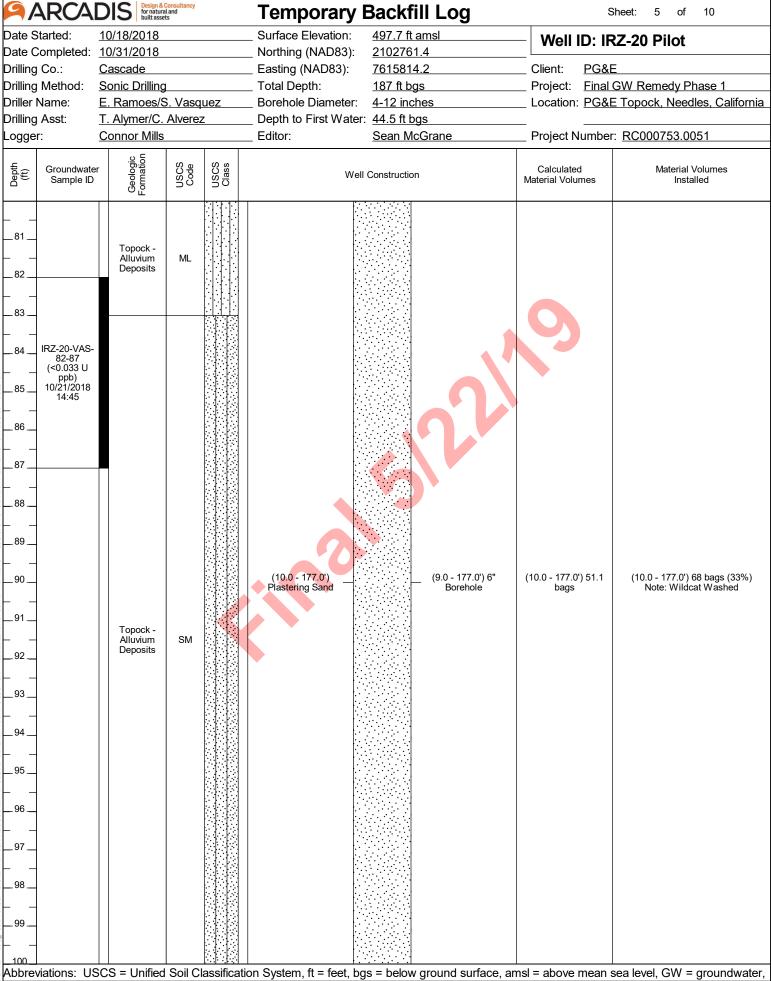
9/	4RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 10 of	10
Date S	Started:	10/18/2	2018		Surface	Elevati	on: 497.7 ft amsl	Borin	a No .	IRZ-20 Pi	lot
	-	ted: <u>10/31/2</u>	2018		Northing			- L			<u></u>
Drilling		Cascad			Easting				PG&E		
-	g Metho				Total De	-	187 ft bgs	-		V Remedy Ph	
	ig Type		ic Truck Mou		Borehol			Location:	PG&E T	opock, Needle	es, California
	Name:		ioes/S. Vasq				Vater: 44.5 ft bgs				
_	g Asst:	-	er/C. Alverez	<u>z</u>	Samplin			Project N	umber: <u>F</u>	RC000753.005	51
Logge		Connor			Samplin Convert	-		-			
Editor		<u>Sean iv</u>	lcGrane		Conven	ed to v	/ell: ☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	OSCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
 181 _182_	- - 79.2			Topock - Competent Bedrock - conglomera			dark yellowish brown (10YR 4/4); dry; modera friable	ate cementation	on;		(0.0 - 187.0') No water used
-							(182.0 - 187.0') Topock - Competent Bedrock yellowish red (5YR 4/6); moist; weak cementa	ation; friable	te;	(182.0 - 187.0') Had to vibe the core barrel and	
183		IRZ-20-SS- 180-187 10/30/2018 12:54								lost the core downhole, retrived with flapper bit,	
185	58.8	12.04		Topock - Competent Bedrock - conglomera			207			sediment were very wet due to lost of core in the borehole	
				Congiomera						the porchole	
187											
				1	'	12.7.7.2.4	End of Boring at 187.0 'bg	S.	'	,	
188											
189											
190											
191				X							
192											
193											
194											
195											
196											
197											
198											
199_											
200						<u> </u>					

ARCADIS Gornatural and built assets **Temporary Backfill Log** Sheet: 10/18/2018 Surface Elevation: 497.7 ft amsl Date Started: Well ID: IRZ-20 Pilot 2102761.4 Date Completed: 10/31/2018 Northing (NAD83): Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615814.2 Client: PG&E Drilling Method: Total Depth: Sonic Drilling 187 ft bgs Project: Final GW Remedy Phase 1 Driller Name: E. Ramoes/S. Vasquez Borehole Diameter: 4-12 inches Location: PG&E Topock, Needles, California T. Alymer/C. Alverez Depth to First Water: 44.5 ft bgs Drilling Asst: Editor: Sean McGrane Project Number: RC000753.0051 Logger: Connor Mills Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed (0.0 - 0.5') 1 plate (0.0 - 0.5') 1 plate (0%) Temporary Steel Plate with BMP Topock -Fluvial Deposits (0.0 - 9.0') 12" Topock -Borehole Fluvial SP-SM 5 Deposits (0.5 - 10.0') 8 bags (1%) Note: Lapis Lustre Sand (0.5 - 10.0') Cemex (0.5 - 10.0') 7.9 bags #0/30 MESH (30x50) Topock -Fluvial SM Deposits 8 Topock -SM Fluvial Deposits Topock -SM Fluvial Deposits (9.0 - 177.0') 6" Borehole (10.0 - 177.0')(10.0 - 177.0') 51.1 (10.0 - 177.0') 68 bags (33%) Plastering Sand Note: Wildcat Washed Topock -16 Fluvial SM Deposits 18 Topock -GM Fluvial Deposits Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

ARCADIS Design & Consultry for natural and for natural and unit assets **Temporary Backfill Log** Sheet: Surface Elevation: Date Started: 10/18/2018 497.7 ft amsl Well ID: IRZ-20 Pilot 10/31/2018 Northing (NAD83): 2102761.4 Date Completed: PG&E Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615814.2 Client: Drilling Method: Sonic Drilling Total Depth: 187 ft bgs Project: Final GW Remedy Phase 1 Driller Name: E. Ramoes/S. Vasquez Borehole Diameter: 4-12 inches Location: PG&E Topock, Needles, California Drilling Asst: T. Alymer/C. Alverez Depth to First Water: 44.5 ft bgs Connor Mills Editor: Sean McGrane Project Number: RC000753.0051 Logger: Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed 21 22 23 25 26 Topock -Fluvial Deposits 28 29 (10.0 - 177.0') (9.0 - 177.0') 6" (10.0 - 177.0') 51.1 (10.0 - 177.0') 68 bags (33%) 30 Plastering Sand Borehole bags Note: Wildcat Washed 31 32 Topock -Fluvial Deposits 35 36 37 Topock -SM Fluvial Deposits 38 .39 Topock -Alluvium SM Deposits Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

ARCADIS Design & Consultry for natural and for natural and unit assets **Temporary Backfill Log** Sheet: Date Started: Surface Elevation: 10/18/2018 497.7 ft amsl Well ID: IRZ-20 Pilot 10/31/2018 Northing (NAD83): 2102761.4 Date Completed: PG&E Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615814.2 Client: Drilling Method: Total Depth: Project: Final GW Remedy Phase 1 Sonic Drilling 187 ft bgs Driller Name: E. Ramoes/S. Vasquez Borehole Diameter: 4-12 inches Location: PG&E Topock, Needles, California Drilling Asst: T. Alymer/C. Alverez Depth to First Water: 44.5 ft bgs Connor Mills Editor: Sean McGrane Project Number: RC000753.0051 Logger: Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed 42 43 Topock -Alluvium SM Deposits 45 (10.0 - 177.0') (9.0 - 177.0') 6" (10.0 - 177.0') 51.1 (10.0 - 177.0') 68 bags (33%) 50 Plastering Sand Borehole bags Note: Wildcat Washed 51 Topock -GM Alluvium Deposits 52 IRZ-20-VAS-51-56 (150 ppb) 10/20/2018 11:40 55 Topock -Alluvium SM Deposits 57 58 Topock -SM Alluvium Deposits 59 Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

ARCA	DIS for natura built asse	l and ts		Temporary E	Backfill Log	S	heet: 4 of 10
Date Started:	10/18/2018			Surface Elevation:	497.7 ft amsl	Well ID: IR	7-20 Pilot
Date Completed:	10/31/2018			Northing (NAD83):	2102761.4		L LOT HOU
Drilling Co.:	<u>Cascade</u>			Easting (NAD83):	7615814.2	Client: PG&E	
Drilling Method:	Sonic Drilling			Total Depth:	187 ft bgs	Project: Final 0	GW Remedy Phase 1
Driller Name:	E. Ramoes/S	S. Vasq	uez	Borehole Diameter:	4-12 inches	Location: PG&E	Topock, Needles, California
Drilling Asst:	T. Alymer/C.	Alvere	Z	Depth to First Water:	44.5 ft bgs		
Logger:	Connor Mills			Editor:	Sean McGrane	Project Number:	RC000753.0051
Groundwate Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
	Topock - Alluvium Deposits	SM				9	
66676869	Topock - Alluvium Deposits	ML					
	Topock - Alluvium Deposits	ML		(10.0 - 177.0') Plastering Sand	(9.0 - 177.0') 6" Borehole	(10.0 - 177.0') 51.1 bags	(10.0 - 177.0') 68 bags (33%) Note: Wildcat Washed
	Topock - Alluvium Deposits	ML					
	Topock - Alluvium Deposits	ML	assification	tion System ft - foot ha	s = below ground surface o	mel = above moon o	ea level, GW = groundwater,



ARCADIS Design & Consultry for natural and for natural and unit assets **Temporary Backfill Log** Sheet: Date Started: Surface Elevation: 10/18/2018 497.7 ft amsl Well ID: IRZ-20 Pilot Northing (NAD83): 2102761.4 Date Completed: 10/31/2018 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615814.2 Client: PG&E Drilling Method: Total Depth: Project: Final GW Remedy Phase 1 Sonic Drilling 187 ft bgs Driller Name: E. Ramoes/S. Vasquez Borehole Diameter: 4-12 inches Location: PG&E Topock, Needles, California T. Alymer/C. Alverez Depth to First Water: 44.5 ft bgs Drilling Asst: Connor Mills Editor: Sean McGrane Project Number: RC000753.0051 Logger: Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed _101_ 102 _103_ Topock -Alluvium SM Deposits 104 _105_ _106_ 107 Topock -_108_ Alluvium SM Deposits 109 (10.0 - 177.0')(9.0 - 177.0') 6" (10.0 - 177.0') 51.1 (10.0 - 177.0') 68 bags (33%) 110 Plastering Sand Borehole bags Note: Wildcat Washed Topock -Alluvium ML Deposits IRZ-20-VAS-112-117 (<0.17 U ppb) 10/22/2018 14.02 116 _118_ Topock -ML Alluvium Deposits _119_ Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

ARCADIS | Design & Consultant of the Consultant **Temporary Backfill Log** Sheet: Date Started: Surface Elevation: 10/18/2018 497.7 ft amsl Well ID: IRZ-20 Pilot Northing (NAD83): 2102761.4 Date Completed: 10/31/2018 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615814.2 Client: PG&E Drilling Method: Total Depth: Project: Final GW Remedy Phase 1 Sonic Drilling 187 ft bgs Driller Name: E. Ramoes/S. Vasquez Borehole Diameter: 4-12 inches Location: PG&E Topock, Needles, California T. Alymer/C. Alverez Depth to First Water: 44.5 ft bgs Drilling Asst: Connor Mills Editor: Sean McGrane Project Number: RC000753.0051 Logger: Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed _121_ Topock -Alluvium ML Deposits 122 _123. Topock -GM Alluvium 124 Deposits 125 Topock -Alluvium ML _126_ Deposits 127 _128_ Topock -129 Alluvium Deposits ML (10.0 - 177.0') (9.0 - 177.0') 6" (10.0 - 177.0') 51.1 (10.0 - 177.0') 68 bags (33%) 130 Plastering Sand Borehole bags Note: Wildcat Washed 131 132 IRZ-20-SS-131-136 (<0.17 U ppb) 10/23/2018 Topock -Alluvium 13:25 Deposits _135. 136 137 138_ Topock -Alluvium SM Deposits _139_ Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

9/	ARCAI	DIS Design & for natura built asse	Consultancy Land ts		Temporary I	Backfill Log	s	heet: 8 of 10
Date S	Started:	10/18/2018			_ Surface Elevation:	497.7 ft amsl	Well ID: IR	7-20 Pilot
Date 0	Completed:	10/31/2018			_ Northing (NAD83):	2102761.4		2011100
Drilling	Co.:	Cascade			_ Easting (NAD83):	7615814.2	Client: PG&E	<u> </u>
Drilling	Method:	Sonic Drilling			_ Total Depth:	187 ft bgs	Project: Final 0	GW Remedy Phase 1
Oriller ⁻	Name:	E. Ramoes/S	S. Vasq	uez	_ Borehole Diameter:	4-12 inches		Topock, Needles, California
Drilling	Asst:	T. Alymer/C.	Alverez	<u>z</u>	_ Depth to First Water:	44.5 ft bgs		•
Logge		Connor Mills			Editor:	Sean McGrane	Project Number:	: RC000753.0051
Depth (ft)	Groundwate Sample ID	Geologic Formation	USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
141	viations: IIS	Topock - Alluvium Deposits Topock - Weathered Bedrock - conglomerate		assificat	(10.0 - 177.0') Plastering Sand	(9.0 - 177.0') 6" Borehole s = below ground surface, a	(10.0 - 177.0') 51.1 bags	(10.0 - 177.0') 68 bags (33%) Note: Wildcat Washed

ARCADIS Design & Consult for natural and built assets **Temporary Backfill Log** Sheet: Surface Elevation: 10/18/2018 497.7 ft amsl Date Started: Well ID: IRZ-20 Pilot 2102761.4 Date Completed: 10/31/2018 Northing (NAD83): Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615814.2 Client: PG&E Drilling Method: Total Depth: Project: Final GW Remedy Phase 1 Sonic Drilling 187 ft bgs Driller Name: E. Ramoes/S. Vasquez Borehole Diameter: 4-12 inches Location: PG&E Topock, Needles, California T. Alymer/C. Alverez Depth to First Water: 44.5 ft bgs Drilling Asst: Connor Mills Editor: Sean McGrane Project Number: RC000753.0051 Logger: Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed _161_ _162_ Topock -Weathered _163. CL Bedrock conglomerate 164 _165_ _166_ _167 _168_ (10.0 - 177.0') 68 bags (33%) Note: Wildcat Washed (10.0 - 177.0')(9.0 - 177.0') 6" (10.0 - 177.0') 51.1 Plastering Sand Borehole bags 169 170 172 Topock -Weathered Bedrock onglomerate IRZ-20-VAS-173-178 <0.83 U ppb) 10/24/2018 176 14.12 177 (177.0 - 187.0') Cemex #0/30 MESH-(177.0 - 187.0') 4" (177.0 - 187.0') 2.8 (177.0 - 187.0') 2 bags (-29%) Borehole Note: Lapis Lustre Sand (30x50)_179. Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

ARCA	DIS Design & Co for natural built assets	onsultancy and		Temporary E	Backfill Log	5	Sheet: 10 of 10		
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	illing Co.: Cascade Sonic Drilling E. Ramoes/S. Vasquez illing Asst: T. Alymer/C. Alverez gger: Connor Mills			Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	497.7 ft amsl 2102761.4 7615814.2 187 ft bgs 4-12 inches 44.5 ft bgs Sean McGrane	Well ID: IRZ-20 Pilot Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, California Project Number: RC000753.0051			
ttd (t) Groundwate Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed		
 _181 _182	Topock - Competent Bedrock - conglomerate								
	Topock - Competent Bedrock - conglomerate			(177.0 - 187.0') Cemex #0/30 MESH— (30x50)	(177.0 - 187.0') 4" Borehole	(177.0 - 187.0') 2.8 bags	(177.0 - 187.0') 2 bags (-29%) Note: Lapis Lustre Sand		
					, , , , , , , , , , , , , , , , , , ,				
							sea level, GW = groundwater,		
_									
196 197									
 198 									
199									

9/-	ARC	A[DIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 1 of	9
Date S	tarted:		12/15/2	018		Surface	Elevati	on: <u>498.7 ft amsl</u>	Borin	a No:	IRZ-21-P	ilot
Date C	omple	ted:	12/19/2	018		Northing	g (NAD	83): <u>2102688.4</u>		9		<u></u>
Drilling	Co.:		<u>Cascad</u>	e		Easting	(NAD8	3): <u>7615817.1</u>	Client:	PG&E		
Drilling	Metho	od:	Sonic D	Drilling		Total De	epth:	<u>166 ft bgs</u>	Project:	Final G	<u>roundwater Re</u>	emedy Phase
Drill Ri	д Туре	:	<u>Prosoni</u>	<u>ic Truck Mou</u>	ınt	Borehol	e Diam	eter: <u>4-12 inches</u>	Location:	1		
Driller I	Name:		Steve V	'asquez		Depth to	First \	Vater: 44.5 ft bgs	-	PG&E	<u> Topock, Needl</u>	es, California
Drilling	Asst:		N. Dom	<u>iinguez/C. Al</u>	verez	Samplin	g Meth	od: 4 inch x 10 ft Core Barrel	Project N	umber: ˌ	RC000753.00	51
Logge	r:		Connor	Mills		Samplin	g Inter	/al: <u>Continuous</u>	_			
Editor:			Sean M	lcGrane		Convert	ed to V	/ell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)		ieve nple ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
1	84				Topock - Fluvial Deposits	SP		(0.0 - 4.5') Topock - Fluvial Deposits; Poorly gravel (SP); yellowish brown / moderate yello 5/4); very fine grained to medium grained, subsubround; some granules to very large pebble subround; trace silt; dry	wish brown(10 pangular to pes, subangula	OYR r to		(0.0 - 158.0') No water used
5 6 7 8 9 10 11					Topock - Fluvial Deposits	GW		(4.5 - 11.5') Topock - Fluvial Deposits; Well g sand (GW); brown (10YR 5/3); granules to ve subangular to subround; some very fine to me angular to subround; trace cobbles, angular to silt; dry	ery large pebbledium grained	es, sand,		
							• 6	(11.5 - 13.0') Topock - Fluvial Deposits; Poorl	ly graded sand	d (SP);		
12 13	120				Topock - Fluvial Deposits	SP		yellowish brown (10YR 5/6); very fine grained subangular to round; trace granules, angular silt; dry				
14 15 16					Topock - Fluvial Deposits	GW		(13.0 - 16.0') Topock - Fluvial Deposits; Well sand (GW); yellowish brown / moderate yello 5/4); granules to very large pebbles, subangu some very fine to medium grained sand, suba trace silt; dry	wish brown(10 lar to subroun	DYR d;		
10 17					Topock - Fluvial Deposits	SP		(16.0 - 17.0') Topock - Fluvial Deposits; Poorl yellowish brown (10YR 5/6); very fine grained subangular to round; trace granules, angular cobbles, angular to subangular; trace silt; dry	to fine graine to subround; t	d,		
 18 19	120				Topock - Fluvial Deposits	SP		(17.0 - 19.0') Topock - Fluvial Deposits; Poorl gravel (SP); yellowish brown / moderate yello 5/4); very fine grained to medium grained, subsubround; some granules to very large pebble subround; trace silt; dry	ly graded sand wish brown(10 pangular to es, subangula	r to		
20					Topock - Fluvial Deposits	GM		(19.0 - 23.0') Topock - Fluvial Deposits; Silty (GM); light yellowish brown (10YR 6/4); grant pebbles, angular to subround; little very fine to	iles to very lar	ge		

9/	ARC		DIS	Design & Consultancy for natural and built assets		Во	ring	Log	9				Sh	eet: 2 of	9
Date S			12/15/2			Surface	Elevat	ion:	498.7 ft ar			Borin	a No.:	: IRZ-21-P	ilot
	•	ted:	<u>12/19/2</u>			Northing			2102688.4						
Drilling			Cascad			Easting	•	33):	<u>7615817.</u>			Client:	PG&E		
Drilling			Sonic E	•		Total De	•		166 ft bgs			Project:		roundwater Re	emedy Phase
Drill Ri	• • •	:		ic Truck Mou		Borehol			4-12 inche			Location:		TI- NII	l O-lif:-
Driller I				/asquez		-			44.5 ft bgs			Duningt N		•	les, California
Drilling				ninguez/C. Al		Samplin	-				rrei	Project N	umber:	RC000753.00	J51
Loggeı Editor:			Connor	lcGrane		Samplin Convert	-		Continuou	s No					
Luitoi.	-		<u>Scarr iv</u>	logiane		Conven		V CII.	<u> </u>						1
Depth (ft)	Recovery (in)		Sieve mple ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class			Soil Descri	iption			Drilling Notes	Drilling Fluid
21					Topock - Fluvial Deposits	GM				angular; little si			basalt		(0.0 - 158.0') No water used
23 24 25	120				Topock - Fluvial Deposits	GM		(GM); I granule little ve trace b	ight brownish es to very large ry fine to very oulders; dry; p	- Fluvial Depos gray / pale yello a pebbles, suba coarse grained ulverized bould	owish brow angular to sand, and der from 23	vn(<mark>10YR</mark> 6/2 subround; so gular to suba 3-24); ome silt; ngular;		
2626272829303132333334	120				Topock - Alluvium Deposits	GM		(GM); y granule very fin	vellowish brow es to large peb e to very coars	- Alluvium Dep n / moderate yebles, angular to ee grained sand	ellowish bi o subangu d, angular	rown(10YR 5 llar; some sil to subangula	i/4); t; little ar; dry		
35 36 37					Topock - Alluvium Deposits	GM		(GM); I large p	ight reddish br	- Alluvium Dep own / light brov very fine to coa dry	wn(5YR 6/	4); granules	to very		
38	60				Topock - Alluvium Deposits	GM		(GM); (granuĺes to ver	- Alluvium Dep y large pebbles ained sand, an	s, angular	to subangula	ar; some		

9/	ARC	CADIS	for natural and built assets		Во	ring	Log		She	eet: 3 of	9
Date S					Surface			Borin	na No.:	IRZ-21-P	ilot
	•	ted: <u>12/19/</u>			Northin	• •	•	_			
Drilling		<u>Casca</u>			Easting	•	•	_ Client:	PG&E		
Drilling			Drilling		Total D	•	<u>166 ft bgs</u>	_ Project:		roundwater Re	emedy Phase
Drill Ri			<u>nic Truck Mou</u>	<u>ınt </u>	Boreho			_ Location:			
Driller			Vasquez		-		Water: 44.5 ft bgs			<u> Fopock, Needl</u>	
Drilling			minguez/C. Al	<u>verez</u>	Samplin	-		_ Project N	lumber:	RC000753.00	51
Logge Editor:			or Mills McGrane		Samplin Convert	-		_			
Euitoi.		<u>Sean</u>	VICGIANE		Conven	ted to v	rveii. A fes I No				T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
 41 42	60			Topock - Alluvium Deposits	GM						(0.0 - 158.0') No water used
43				Topock - Alluvium Deposits	SM		(42.0 - 43.5') Topock - Alluvium Deposits; S yellowish brown / moderate yellowish brown grained to very coarse grained, subangular granules to medium pebbles, angular to sub	(10YR 5/4); fir to subround; lit	ne ttle		
 44							(43.5 - 52.0') Topock - Alluvium Deposits; S yellowish brown (10YR 6/4); fine grained to				
44							angular to subround; some silt; little granule	es to large pebl	bles,		
45	60						angular to subround; little clay; moist (44.5'); wet			(44.5') Approximate	
		IRZ-21-SS- 43-48								depth of water table	
46		12/19/2018 08:35								table	
		55.55							1	<u>.</u>	
47											
				Topock -							
48				Alluvium	SM						
				Deposits							
49											
		ID7 04 00									
50		IRZ-21-SS- 48-53									
L -		12/19/2018 08:40									
51											
<u> </u>											
52	120						(52.0 - 57.0') Topock - Alluvium Deposits; S	ilty cand with a	ravol		
53							(SM); light yellowish brown (10YR 6/4); no p fine to very coarse grained sand grained san subangular; some silt; little granules to sma	plasticity; some nd, angular to	very		
ļ -							subangular; little clay; wet				
54		IRZ-21-SS-	IRZ-21-VAS-	- .							
		52-57 12/19/2018	52-57 (97 ppb)	Topock - Alluvium	SM						
55		08:45	12/15/2018 14:14	Deposits							
-											
56											
-											
57							: (57.0 - 62.0') Topock - Alluvium Deposits; G	ravelly silt with	n sand		
-						600	(ML); yellowish brown / moderate yellowish plasticity; some granules to very large pebb	brown(10YR 5			
58		IRZ-21-SS-		Topock -		00	subangular; little very fine to coarse grained subangular; little clay; wet		to		
<u> </u>	108	57-62 12/19/2018		Alluvium Deposits	ML	699	Sasangaiai, nais olay, wet				
59		08:50		Pehosits							
						699					
60		. 11000 -				<u>ra lol</u>	oot has - bolow ground surface am			- 11 (0)4/	

9/	ARC	ADIS	for natural and built assets		Во	ring	Log		She	eet: 4 of	9
Date S					Surface		-	Borir	ng No.:	IRZ-21-P	ilot
	-	ted: <u>12/19/</u> 2			Northing	- '	•				
Drilling		Casca			Easting	•	•	_ Client:	PG&E		
Drilling			Drilling iic Truck Mou		Total De Borehol	•	166 ft bgs	_ Project: _ Location		roundwater Re	emedy Phase
Drill Ri Driller			/asquez				eter: <u>4-12 inches</u> Vater: 44.5 ft bgs	_ Location		Гороск, Need	les California
Drilling			ninguez/C. Al		Samplin			- Proiect N		_	
Logge		Conno	•		Samplin	•		,			
Editor:			/IcGrane		Convert	•					
_	<u> </u>			in P	T						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
61 62		IRZ-21-SS- 57-62 12/19/2018 08:50		Topock - Alluvium Deposits	ML						(0.0 - 158.0') No water used
63 63 64	108	IRZ-21-SS- 62-67		Topock - Alluvium Deposits	SM		(62.0 - 64.5') Topock - Alluvium Deposits; Sil (SM); brown (7.5YR 5/3); very fine grained to angular to subangular; some granules to very angular to subangular; some silt; wet; @ 64.5 cobbles of weathered metadiorite	very coarse of large pebble	grained, es,		
65 66 66		12/19/2018 08:55		Topock - Alluvium Deposits	SM		(64.5 - 67.0') Topock - Alluvium Deposits; Sil (10YR 5/3); fine grained to very coarse graine round; some silt; little granules to small pebb subround; wet	ed, subround	to		
68	400	IRZ-21-SS- 67-72 12/19/2018 09:00		Topock - Alluvium Deposits	SC		(67.0 - 74.5') Topock - Alluvium Deposits; Cla (SC); yellowish red (5YR 4/6); very fine grain, grained, angular to subangular; some clay; lit medium pebbles, angular to subangular; little	ed to very coa	arse		
73 74 74	108	IRZ-21-SS- 72-77 12/19/2018 09:05					(74.5 - 82.0') Topock - Alluvium Deposits; Sil	ty sand with (gravel		
75 76 77 78 79	120	IRZ-21-SS- 77-82 12/19/2018 09:10	IRZ-21-VAS- 77-82 (1.1 ppb) 12/16/2018 09:25	Topock - Alluvium Deposits	SM		(SM); reddish brown / moderate brown(5YR 4 very coarse grained, angular to subround; so large pebbles, angular to subangular; some slarge pebbles	me granules	to very		

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 5 of	9
Date S					Surface		•	Borin	a No.:	IRZ-21-P	ilot
		ted: <u>12/19</u>			Northing	• •	,				
Drilling		<u>Casca</u>			Easting	•	•	_ Client:	PG&E		
Drilling			Drilling		Total De	•	<u>166 ft bgs</u>	_ Project:		oundwater Re	emedy Phase
Drill Ri			<u>nic Truck Μοι</u>		Borehol			_ Location:			
Driller I			Vasquez				Vater: 44.5 ft bgs			•	les, California
Drilling		-	minguez/C. Al		Samplin	•		_ Project N	umber: <u>I</u>	RC000753.00)51
Logge			or Mills		Samplin	-		_			
Editor:		Sean	McGrane		Convert	ed to v	Vell: ⊠ Yes □ No				T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
 81 82		IRZ-21-SS- 77-82 12/19/2018 09:10	IRZ-21-VAS- 77-82 (1.1 ppb) 12/16/2018 09:25	Topock - Alluvium Deposits	SM						(0.0 - 158.0') No water used
02							(82.0 - 87.0') Topock - Alluvium Deposits; Sa (ML); brown (7.5YR 5/4); no plasticity; some	ndy silt with g	ravel nules to		
83							large pebbles, angular to subangular; little ve grained sand, angular to subangular; trace be	ery fine to med	lium		
	120						subangular; dry to moist; tightly packed				
84		IRZ-21-SS- 82-87		Topock -							
		12/19/2018 09:15		Alluvium Deposits	ML		.0\				
_											
86											
							(86.6'); trace 4 inch boulder fragment				
87							(87.0 - 89.5') Topock - Alluvium Deposits; Sili (SM); reddish brown (5YR 5/4); very fine grain	ty sand with g	ravel		
88				Topock -			grained, subangular to subround; some silt; li large pebbles, angular to subangular; little cla	ittle mediúm t	o very		
				Alluvium Deposits	SM		large possible, angular to casangular, intio ote	ay, wor			
89		IRZ-21-SS-		,							
		87-92 12/19/2018					(89.5 - 92.0') Topock - Alluvium Deposits; Sili				
90		09:20					(SM); reddish brown (5YR 5/4); very fine grain grained, subangular to subround; some medi	ium to very lar	arse ge		
				Topock - Alluvium	SM		pebbles, angular to subangular; little silt; little	e clay; wet			
91				Deposits							
92	120										
	120						(92.0 - 97.0') Topock - Alluvium Deposits; Sili (SM); reddish brown (5YR 5/4); very fine grain				
93							grained, angular to subangular; some granule angular; some silt; little clay; wet	es to large pe	bbles,		
-											
94		IRZ-21-SS-									
-		92-97 12/19/2018		Topock - Alluvium	SM						
95		09:25		Deposits							
96											
F											
97					+		(97.0 - 117.0') Topock - Alluvium Deposits; S				
 98							(SM); reddish brown / moderate brown(5YR 4 to very coarse grained, angular to subround;	some small to	large		
30	400	IRZ-21-SS- 97-102		Topock -	0		pebbles, angular to subangular; some silt; we metadiorite	et; composed	OT		
99	120	12/19/2018 09:30		Alluvium Deposits	SM						
100											

9/	AKC	ADIS	for natural and built assets		Во	ring Lo	og		She	eet: 6 of	9
Date S						Elevation:	498.7 ft amsl	Borir	na No.:	IRZ-21-P	ilot
	-	eted: <u>12/19/</u> 2				g (NAD83):		_			<u></u>
Drilling		Casca			_	(NAD83):	<u>7615817.1</u>	_ Client:	PG&E		
Drilling			•		Total De	epth: e Diameter	166 ft bgs 4-12 inches	_ Project: _ Location		roundwater Re	emedy Phase
Drill Ri Driller			nic Truck Mou Vasquez				er: 44.5 ft bgs	_ Location		Гороск, Need	les California
Drilling			ninguez/C. Al			g Method:	4 inch x 10 ft Core Barrel	_ _ Project N		RC000753.00	
Logge		Conno	-		-	ig Interval:	Continuous	_ ,			
Editor:		<u>Sean N</u>	<u> McGrane</u>		Convert	ed to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
	120	IRZ-21-SS- 97-102 12/19/2018 09:30 IRZ-21-SS- 102-107 12/19/2018 09:35					67.	9			(0.0 - 158.0') No water used
108 109 110 111 111	120	IRZ-21-SS- 107-112 12/19/2018 09:40		Topock - Alluvium Deposits	SM	(111	.5'); trace cobbles				
113 114 115 116 117		IRZ-21-SS- 112-117 12/19/2018 09:45	IRZ-21-VAS- 112-117 (< 0.17 U ppb) 12/16/2018 14:47								
118	120	IRZ-21-SS- 117-122 12/19/2018 09:50		Topock - Alluvium Deposits	SM	(SM)	7.0 - 121.0') Topock - Alluvium Deposits); reddish brown / moderate brown(5YR ery coarse grained, subangular to round oles, angular; little silt; little clay; wet; gr adiorite	4/4); very fine ; little small to	grained large		

9/-	ARC	AD	IS	Design & Consultancy for natural and built assets		Во	ri	ng	J Log			She	et: 7 of	9
Date S	tarted:	12	2/15/2	2018		Surface	ŧΕ	leva	tion: 498.7 ft amsl	Bor	ina N	O.:	IRZ-21-P	ilot
Date C	omple	ted: <u>12</u>	2/19/2	2018		Northin	g (NAE	D83): <u>2102688.4</u>		9			<u></u>
Drilling	Co.:	<u>Ca</u>	ascad	le		Easting	j (N	AD	83): <u>7615817.1</u>	Client:	PG8	ßΕ		
Drilling	Metho	od: <u>Sc</u>	nic D	Drilling		Total D	ept	h:	166 ft bgs	Project	: <u>Fina</u>	l Gr	<u>oundwater Re</u>	emedy Phase
Drill Ri	д Туре	: <u>Pr</u>	osoni	<u>ic Truck Mou</u>	nt	Boreho	le I	Dian	neter: 4-12 inches	Locatio	n: <u>1</u>			
Driller I	Name:	St	eve V	/asquez		Depth t	o F	irst	Water: 44.5 ft bgs		P <u>G8</u>	<u>RE T</u>	opock, Needl	<u>es, California</u>
Drilling	Asst:	<u>N.</u>	Dom	<u>inguez/C. Al</u>	verez	Sampli	ng	Met	hod: 4 inch x 10 ft Core Barrel	Project	Numbe	er: <u>F</u>	RC000753.00	51
Logge	r:	<u>Cc</u>	onnor	Mills		Sampli	_							
Editor:		<u>Se</u>	ean M	lcGrane		Conver	ted	to \	Well: ⊠ Yes ☐ No					
Depth (ft)	Recovery (in)	Sieve Sample		Groundwater Sample ID	Geologic Formation	USCS	9	Class	Soil Description				Drilling Notes	Drilling Fluid
 _121		IRZ-21-S 117-12	2		Topock - Alluvium Deposits	SM								(0.0 - 158.0') No water used
- 122 - 123		12/19/20 09:50	18						(121.0 - 127.0') Topock - Alluvium Deposi yellowish red (5YR 4/6); low plasticity; sor medium pebbles, angular to subangular; l coarse grained sand, angular to subrounc of metadiorite	ne clay; little o	granules t o verv			
 124	120	IRZ-21-S 122-12			Topock - Alluvium Deposits	ML								
 125		12/19/20 09:55	18		, '				107					
 126														
127_														
					Topock - Alluvium Deposits	ML			. (127.0 - 129.5') Topock - Alluvium Deposi reddish brown (5YR 5/4); low plasticity; lit pebbles, angular to subangular; little very grained sand, angular to subround; wet; g metadiorite	tle granules to fine to very co	large arse			
129		IRZ-21-S					4							
130 131 		127-13: 12/19/20 10:00	18		Topock - Alluvium Deposits	SM			(129.5 - 132.0') Topock - Alluvium Deposi reddish brown (5YR 5/4); very fine grainer angular to subangular; and silt; little grant angular to subangular; wet; gravel compo	I to very coars les to mediun	e grained n pebbles			
132	1644								(132.0 - 136.0') Topock - Alluvium Deposi	ta. Clavav ara	طائند امر	_		
 133 					Topock -		18 18 18 18 18 18 18 18 18 18 18 18 18 1		sand (GC); reddish brown (5YR 5/4); grar angular to subangular; some clay; little ve grained sand, angular to subangular; little composed of metadiorite	ules to large property	oebbles, coarse			
134		IRZ-21-S 132-13 12/19/20	7 118	IRZ-21-VAS- 132-137 (< 0.17 U ppb)	Alluvium Deposits	GC	9							
135		10:05		12/17/2018 11:12			988							
136 137									. (136.0 - 146.0') Topock - Alluvium Deposi reddish brown (5YR 5/4); no plasticity; so medium pebbles, angular to subangular; coarse grained sand, angular to subangul composed of metadiorite	ne clay; little ittle very fine t	granules t o very	to		
138 138 139	120	IRZ-21-S 137-14: 12/19/20 10:10	2		Topock - Alluvium Deposits	ML								
 _140									:					

9/	4K(ADIS	for natural and built assets		Во	ring	Log	She	eet: 8 of	9
Drilling	Comple 1 Co.:	eted: <u>12/19/</u> <u>Casca</u>	/2018 ide		Surface Northin Easting	g (NAD (NAD8	33): <u>2102688.4</u> 3): <u>7615817.1</u>	Boring No.:		
Drilling Drill Ri	•		Drilling nic Truck Mo	t	Total Do	-	166 ft bgs eter: 4-12 inches	_ Project: <u>Final G</u> _ Location: <u>1</u>	roundwater Re	medy Phase
Driller			Vasquez	uni			Vater: 44.5 ft bgs		Topock, Needle	es California
Drilling			minguez/C. A	lverez	Samplin		_	Project Number:	•	
Logge		Conno	or Mills		Samplin	-		_		
Editor:	:	Sean I	<u>McGrane</u>		Conver	ted to V	/ell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
 _141 _142		IRZ-21-SS- 137-142 12/19/2018 10:10								(0.0 - 158.0') No water used
143				Topock -	ML					
	120			Deposits						
144		IRZ-21-SS- 142-147								
145		12/19/2018 10:15					.0\			
146							(146.0 - 153.0') Topock - Alluvium Deposits;	Silty sand with gravel		
							(SM); reddish brown / moderate brown(5YR very coarse grained, subangular to round; so	4/4); fine grained to		
147							to medium pebble, subangular to subround; of metadiorite	wet; gravel composed		
 148										
149		IRZ-21-SS-	IRZ-21-VAS-							
	54	147-152 12/19/2018	147-152 (3600 ppb)	Topock - Alluvium	SM					
150		10:20	12/18/2018 10:07	Deposits						
 151										
-131-										
152										
153							(153.0 - 158.0') Topock - Weathered Bedrock			
 154							Sandy silt (ML); yellowish red (5YR 4/6); no plane to very coarse grained sand, angular to s	subround; little		
134_							granule to large pebble, subangular to subrogravel composed of metadiorite, some metadiorite.			
155		IRZ-21-SS- 152-158		Tanaak			oxidation			
		12/19/2018 10:25		Topock - Weathered Bedrock -						
156	102			conglomera						
157										
158										
				Toncols			(158.0 - 166.0') Topock - Competent Bedrock (2.5YR 5/6); dry; friable	c - conglomerate; red	(158.0 - 161.0') Rough drilling	
159				Topock - Competen Bedrock -					encountered bedrock at	
-				conglomera					approximately 158 feet bgs	
160 Abbro	viation	-: USCS - I	Unified Soil C	lassification	n Sveton	0 ft - fc	et has = helow around surface am	sl = abovo moan so	a level GW - r	groundwater

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 9 of	9
Date S	Started:	<u>12/15/2</u>	2018		Surface	Elevation	n: <u>498.7 ft amsl</u>	Borine	· ou r	IRZ-21-Pi	lot
Date 0	Comple	ted: <u>12/19/2</u>	2018		Northing	g (NAD8	3): <u>2102688.4</u>		J 140	1112-21-11	<u>10t</u>
Drilling	g Co.:	Cascac	le		Easting	(NAD83	3): <u>7615817.1</u>	Client:	PG&E		
Drilling	g Metho	od: <u>Sonic E</u>	Drilling		Total De	epth:	166 ft bgs	Project:	Final Gr	oundwater Re	medy Phase
Drill R	ig Type	: <u>Proson</u>	<u>ic Truck Μοι</u>	ınt	Borehol	e Diame	ter: 4-12 inches	Location:	1		
Driller	Name:		/asquez		Depth to	First W	/ater: 44.5 ft bgs		PG&E Topock, Needles, California		
Drilling	rilling Asst: <u>N. Dominguez/C. Alverez</u>				Samplin	ig Metho	od: 4 inch x 10 ft Core Barrel	Project Nu	ımber: <u>I</u>	nber: RC000753.0051	
Logge		Connor			Samplin			<u>-</u>			
Editor	:	<u>Sean M</u>	<u>lcGrane</u>		Convert	ed to W	ell: 🗵 Yes 🗌 No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
161	102										
										(161.0 - 166.0') Rough drilling	
162										Rough drilling drilled an additional 5 feet to confirm	
163				Topock - Competen	t					bedrock	
	00			Bedrock - conglomera							
164	- 60			J							
-101-											
165							.0				
166											
5							End of Boring at 166.0 'bg	S.			
167											
<u> </u>											
168											
169											
	-										
170											
<u>-</u>	-										
171	-										
-	-										
172	1										
-	-										
173	1										
	-										
174	1										
175	-										
-	1										
176	1										
	1										
177	†										
	1										
178	1										
	1										
179	†										
	1										
180_											

ARCADIS | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultation | Design & Consultatio **Temporary Backfill Log** Sheet: 12/15/2018 Surface Elevation: 498.7 ft amsl Date Started: Well ID: IRZ-21-Pilot 2102688.4 Date Completed: 12/19/2018 Northing (NAD83): Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615817.1 Client: PG&E Project: Final GW Remedy Phase 1 Drilling Method: Total Depth: Sonic Drilling 166 ft bgs Driller Name: Steve Vasquez Borehole Diameter: 4-12 inches Location: PG&E Topock, Needles, California N. Dominguez/C. Alverez Depth to First Water: 44.5 ft bgs Drilling Asst: Editor: Sean McGrane Project Number: RC000753.0051 Logger: Connor Mills Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed (0.0 - 0.5') 1 (0.0 - 0.5') 1 (0%) Temporary Steel Plate with BMP Topock -SP Fluvial (0.0 - 5.0') 12" Deposits (0.5 - 5.0') Cemex # (0.5 - 5.0') 7 bags (-11%) Borehole (0.5 - 5.0') 7.9 bags 2/12 Mesh (16x30) Note: Lapis Lustre Sand 5 Topock -Fluvial Deposits Topock -SP Fluvial - 156.0') Pea (5.0 - 156.0') 6" (5.0 - 156.0') 63.3 (5.0 - 156.0') 61 bags (-4%) Deposits Borehole Note: Cal-silica 3/8" x 1/4" Topock -Fluvial Deposits 16 Topock -Fluvial SP Deposits Topock -18 Fluvial Deposits Topock -Fluvial Deposits

ARCADIS Design & Consultancy for natural and built assets				Temporary I	Backfill Log	Sh	Sheet: 2 of 9		
Date Started:	12/15/2018			Surface Elevation:	498.7 ft amsl	Well ID: IR	Z-21-Pilot		
Date Completed				Northing (NAD83):	2102688.4				
Drilling Co.:	Cascade			Easting (NAD83):	7615817.1	Client: <u>PG&E</u>			
Drilling Method: Sonic Drilling Driller Name: Steve Vasquez			Total Depth:	166 ft bgs		W Remedy Phase 1			
		Borehole Diameter:	4-12 inches	Location: <u>PG&E</u>	Topock, Needles, California				
Drilling Asst:	Orilling Asst: N. Dominguez/C. Alverez		Depth to First Water:	_		_			
Logger:	Connor Mil	S		Editor:	Sean McGrane	Project Number:	RC000753.0051		
Groundwa Sample I		nscs Code	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed		
	Topock - Fluvial Deposits	GM							
	Topock - Fluvial Deposits	GM							
	Topock - Alluvium Deposits	GM		(5.0 - 156.0') Pea Gravel	(5.0 - 156.0') 6" Borehole	(5.0 - 156.0') 63.3 bags	(5.0 - 156.0') 61 bags (-4%) Note: Cal-silica 3/8" x 1/4"		
35 36 37	Topock - Alluvium Deposits	GM							
38	Topock - Alluvium Deposits	GM							

ARCADIS Design & Consultry for natural and for natural and unit assets **Temporary Backfill Log** Sheet: Date Started: Surface Elevation: 12/15/2018 498.7 ft amsl Well ID: IRZ-21-Pilot 12/19/2018 Northing (NAD83): 2102688.4 Date Completed: PG&E Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615817.1 Client: Drilling Method: Total Depth: Project: Final GW Remedy Phase 1 Sonic Drilling 166 ft bgs Driller Name: Steve Vasquez Borehole Diameter: 4-12 inches Location: PG&E Topock, Needles, California N. Dominguez/C. Alverez Depth to First Water: 44.5 ft bgs Drilling Asst: Connor Mills Editor: Sean McGrane Project Number: RC000753.0051 Logger: Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed Topock -Alluvium Deposits 42 Topock -SM Alluvium 43 Deposits 45 Topock -Alluvium SM Deposits (5.0 - 156.0') 61 bags (-4%) Note: Cal-silica 3/8" x 1/4" (5.0 - 156.0') Pea (5.0 - 156.0') 6" (5.0 - 156.0') 63.3 50 Gravel Borehole 51 52 53 IRZ-21-VAS-52-57 Topock -(97 ppb) 12/15/2018 Alluvium Deposits 55 14:14 56 57 58 Topock -ML Alluvium Deposits 59 Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

ARCADIS Design & Consult for natural and built assets **Temporary Backfill Log** Sheet: Surface Elevation: Date Started: 12/15/2018 498.7 ft amsl Well ID: IRZ-21-Pilot Northing (NAD83): 2102688.4 Date Completed: <u>12/19/2018</u> Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615817.1 Client: PG&E Drilling Method: Total Depth: Project: Final GW Remedy Phase 1 Sonic Drilling 166 ft bgs Driller Name: Steve Vasquez Borehole Diameter: 4-12 inches Location: PG&E Topock, Needles, California N. Dominguez/C. Alverez Depth to First Water: 44.5 ft bgs Drilling Asst: Editor: Sean McGrane Project Number: RC000753.0051 Logger: Connor Mills Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed Topock -61 Alluvium Deposits 62 63 Topock -Alluvium Deposits 64 65 Topock -Alluvium SM 66 Deposits 68 69 (5.0 - 156.0') 61 bags (-4%) Note: Cal-silica 3/8" x 1/4" (5.0 - 156.0') Pea (5.0 - 156.0') 6" (5.0 - 156.0') 63.3 Gravel Borehole Topock -SC Alluvium Deposits Topock -Alluvium Deposits IRZ-21-VAS-77-82 (1.1 ppb) 12/16/2018 09:25

ARCADIS Design & Consultancy for natural and built assets					Temporary I	Backfill Log	Sheet: 5 of 9		
Date Starte	ed: <u>1</u>	2/15/2018			Surface Elevation:	498.7 ft amsl	Well ID: IR	7-21-Pilot	
Date Comp	oleted: 1	2/19/2018			Northing (NAD83):	2102688.4		2-21-1 1100	
Drilling Co.:	.: <u>(</u>	Cascade			_ Easting (NAD83):	7615817.1	Client: PG&E		
Drilling Met		Sonic Drilling	1		Total Depth: 166 ft bgs			GW Remedy Phase 1	
Driller Nam		Steve Vasqu			Borehole Diameter:	4-12 inches		Topock, Needles, California	
Drilling Ass	•		_ _ Depth to First Water:		_				
Logger:		Connor Mills		Editor:	Sean McGrane	Project Number: RC000753.0051			
	oundwater ample ID	Geologic Formation	USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed	
81 7 81 (1.1 12/1	21-VAS- 77-82 .1 ppb) 16/2018 09:25	Topock - Alluvium Deposits	SM						
83		Topock - Alluvium Deposits	ML				9		
88 89		Topock - Alluvium Deposits	SM						
90 91 92		Topock - Alluvium Deposits	SM		(5.0 - 156.0') Pea Gravel	(5.0 - 156.0') 6" Borehole	(5.0 - 156.0') 63.3 bags	(5.0 - 156.0') 61 bags (-4%) Note: Cal-silica 3/8" x 1/4"	
9394959697		Topock - Alluvium Deposits	SM						
98 99 	one: 1190	Topock - Alluvium Deposits	Soil C	assificat	ion System It = feet bo	s = below ground surface, ar	nsl = ahove mean s	ea level GW = groundwater	

ARCADIS Design & Consult for natural and built assets **Temporary Backfill Log** Sheet: Surface Elevation: Date Started: 12/15/2018 498.7 ft amsl Well ID: IRZ-21-Pilot Northing (NAD83): 2102688.4 Date Completed: <u>12/19/2018</u> PG&E Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615817.1 Client: Drilling Method: Total Depth: Project: Final GW Remedy Phase 1 Sonic Drilling 166 ft bgs Driller Name: Steve Vasquez Borehole Diameter: 4-12 inches Location: PG&E Topock, Needles, California N. Dominguez/C. Alverez Depth to First Water: 44.5 ft bgs Drilling Asst: Connor Mills Editor: Sean McGrane Project Number: RC000753.0051 Logger: Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed _101_ 102 _103_ 104 _105_ _106_ 107 108 Topock -Alluvium Deposits 109_ (5.0 - 156.0') 61 bags (-4%) Note: Cal-silica 3/8" x 1/4" (5.0 - 156.0') Pea (5.0 - 156.0') 6" (5.0 - 156.0') 63.3 Gravel Borehole IRZ-21-VAS-112-117 (< 0.17 U ppb) 12/16/2018 116 _118_ Topock -Alluvium Deposits SM _119_ Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

ARCADIS Design & Consultry for natural and for natural and unit assets **Temporary Backfill Log** Sheet: Date Started: Surface Elevation: 12/15/2018 498.7 ft amsl Well ID: IRZ-21-Pilot Northing (NAD83): 2102688.4 Date Completed: 12/19/2018 PG&E Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615817.1 Client: Drilling Method: Total Depth: Project: Final GW Remedy Phase 1 Sonic Drilling 166 ft bgs Driller Name: Steve Vasquez Borehole Diameter: 4-12 inches Location: PG&E Topock, Needles, California N. Dominguez/C. Alverez Depth to First Water: 44.5 ft bgs Drilling Asst: Connor Mills Editor: Sean McGrane Project Number: RC000753.0051 Logger: Geologic Formation USCS Class USCS Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed Topock -Alluvium Deposits _121. 122 _123. Topock -124 Alluvium ML Deposits 125 _126_ 128 Topock -ML Alluvium Deposits 129 (5.0 - 156.0') 61 bags (-4%) Note: Cal-silica 3/8" x 1/4" (5.0 - 156.0') Pea (5.0 - 156.0') 6" (5.0 - 156.0') 63.3 130 Gravel Borehole Topock -SM Alluvium Deposits 131 132 133 Topock -IRZ-21-VAS-GC Alluvium Deposits (< 0.17 U ppb) 12/17/2018 _135. 136 137 Topock -138_ Alluvium Deposits _139_ Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

ARCADIS Design & Consultry for natural and for natural and unit assets **Temporary Backfill Log** Sheet: 12/15/2018 Surface Elevation: 498.7 ft amsl Date Started: Well ID: IRZ-21-Pilot 2102688.4 Date Completed: 12/19/2018 Northing (NAD83): Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615817.1 Client: PG&E Drilling Method: Total Depth: Project: Final GW Remedy Phase 1 Sonic Drilling 166 ft bgs Driller Name: Steve Vasquez Borehole Diameter: 4-12 inches Location: PG&E Topock, Needles, California N. Dominguez/C. Alverez Depth to First Water: 44.5 ft bgs Drilling Asst: Editor: Sean McGrane Project Number: RC000753.0051 Logger: Connor Mills Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed _141_ 142 Topock -_143. ML Alluvium Deposits 144 _145_ _146_ (5.0 - 156.0') 61 bags (-4%) Note: Cal-silica 3/8" x 1/4" (5.0 - 156.0') 6" (5.0 - 156.0') Pea (5.0 - 156.0') 63.3_148_ Borehole Gravel bags 149 IRZ-21-VAS-147-152 Topock -(3600 ppb) 12/18/2018 Alluvium SM Deposits 150 10:07 151 152 153 _155_ Topock -Weathered ML Bedrock onglomerate 156 157 (156.0 - 166.0') (156.0 - 166.0') 4" (156.0 - 166.0') 2.8 (156.0 - 166.0') 3 bags (7%) 158_ Cemex # 2/12 Mesh Borehole Note: Lapis Lustre Sand (16x30) Topock -Competent Bedrock -_159_ conglomerate Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

	DIS Design & for natura built asse	Consultancy al and its		Temporary E	Backfill Log	SI	neet: 9 of 9	
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	Completed: 12/19/2018 ng Co.: Cascade ng Method: Sonic Drilling or Name: Steve Vasquez ng Asst: N. Dominguez/C. Alverez ger: Connor Mills		Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	498.7 ft amsl 2102688.4 7615817.1 166 ft bgs 4-12 inches 44.5 ft bgs Sean McGrane	Client: PG&E Project: Final (Location: PG&E			
Groundwat Sample ID		SOSO	USCS Class	Well (Construction	Calculated Material Volumes	Material Volumes Installed	
	Topock - Competent Bedrock - conglomerate			(156.0 - 166.0') Cemex # 2/12 Mesh — (16x30)	(156.0 - 166.0') 4" Borehole	(156.0 - 166.0') 2.8 bags	(156.0 - 166.0') 3 bags (7%) Note: Lapis Lustre Sand	

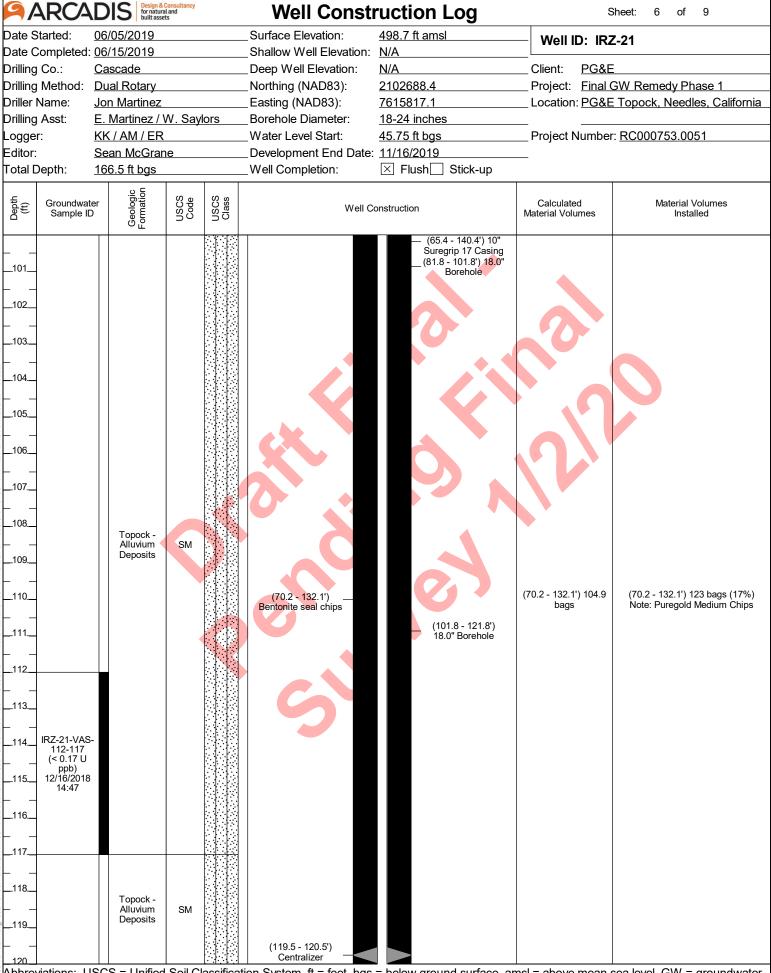
ARC4	DIS Design & for natura built asse	Consultancy al and its	Well Const	ruction Log	5	Sheet: 1 of 9	
Date Started:	06/05/2019		Surface Elevation:	498.7 ft amsl	Well ID: IRZ	Z-21	
Date Completed:			Shallow Well Elevation:	N/A			
Drilling Co.:	Cascade		Deep Well Elevation:	N/A	Client: PG&E		
Drilling Method:	Dual Rotary		Northing (NAD83):	2102688.4	•	GW Remedy Phase 1	
Driller Name:	Jon Martinez		Easting (NAD83):	7615817.1	Location: <u>PG&E</u>	Topock, Needles, California	
Drilling Asst:	E. Martinez / \		Borehole Diameter:	18-24 inches			
Logger:	KK / AM / ER		Water Level Start:	45.75 ft bgs	Project Number	r: RC000753.0051	
Editor:	Sean McGran	ne	Development End Date:		_		
Total Depth:	166.5 ft bgs		Well Completion:				
Groundwar Sample II		USCS Code USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed	
1	Topock - Fluvial Deposits	SP	(0.0 - 47.4') 10" — Suregrip 17 Casing (0.0 - 4.0') Cemex — #8 0/30 Mesh		(0.0 - 4.0') 20.8 bags	(0.0 - 4.0') 29 bags (39%) Note: Lapis Lustre Sand, used >20% of calculated volume due to potential voids forming during drilling	
	Topock - Fluvial Deposits	GW		(0.0 - 21.8') 24.0" Borehole			
12 13	Topock - Fluvial Deposits	SP	(4.0 - 35.2') Portland Cement 3% Bentonite		(4.0 - 35.2') 459.2 gallons	(4.0 - 35.2') 523 gallons (14%) Note: Type I, II and V and Benseal	
14	Topock - Fluvial Deposits	GW					
16 17	Topock - Fluvial Deposits	SP					
18	Topock - Fluvial Deposits	SP					
20	Topock - Fluvial Deposits	GM O					

Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	06/05/2019 : 06/15/2019 Cascade Dual Rotary			_Surface Elevation: _Shallow Well Elevation:	498.7 ft amsl N/A	Well ID: IR	Z-21	
Orilling Co.: Orilling Method: Oriller Name: Orilling Asst:	Cascade			_Shallow Well Elevation:	N/A			
Orilling Method: Oriller Name: Orilling Asst:								
Oriller Name: Orilling Asst:	Dual Rotary			_Deep Well Elevation:	N/A	Client: PG&E		
Orilling Asst:	-			_Northing (NAD83):	2102688.4	Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, Cal		
_	Jon Martinez	N C	la ua	_Easting (NAD83):	7615817.1	Location: <u>PG&L</u>	<u>- Lopock, Needles, Califor</u>	
	E. Martinez / Y	-	iors	_Borehole Diameter: _Water Level Start:	18-24 inches 45.75 ft bgs	— Project Numbe	r: RC000753.0051	
Editor:	Sean McGrar			_ vv aler Lever Start. _Development End Date:		Froject Numbe	1. <u>NC000733.0031</u>	
Total Depth:	166.5 ft bgs							
Groundwar Sample II		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed	
			P. P.	(0.0 - 47.4') 10" ———————————————————————————————————	4 KA			
_21				Suregrip 17 Casing	(0.0 - 21.8') 24.0" Borehole			
	Topock - Fluvial	GM			Dorentide			
_22	Deposits	0.01	PIN					
			12 P					
_23								
_24	Topock - Fluvial	GM	PI					
	Deposits							
25			PIN					
26								
27			PJ 65					
				(4.0 - 35.2') Portland		(4.0 - 35.2') 459.2	(4.0 - 35.2') 523 gallons (14	
28			20769	Cement 3% Bentonite		gallons	Note: Type I, II and V and Be	
_			6 X D					
.29			199					
_	Topock -		P P					
.30	Alluvium Deposits	GM	1913					
4			620					
31		4	SPIC		(21.8 - 41.8') 18.0" Borehole			
4		Ì	PP					
.32			BHIC					
4			H fol					
.33			15 PIC					
4			1461					
.34			15 PJd					
-			1461					
.35			6 PIG	(34.5 - 35.5')				
-	Topock -	CN4	[39]			(25.0. 26.7) 0.5	(35.2 - 36.7') 3 bags (20%	
.36	Alluvium Deposits	GM	607	(35.2 - 36.7') Bentonite seal chips		(35.2 - 36.7') 2.5 bags	Note: Puregold Medium Ch drillers requested to add bent	
-			[HB]		. 0. 0. 0		chip seal to prevent grout mig	
.37			[4]					
-			6 PIZ	 				
_38	Topock -		H63	(36.7 - 40.4') Cemex		(00.7 15.17.5	(36.7 - 40.4') 10 hags (119	
-	Alluvium	GM	607	Bunker # 8 0/30 - 00000000000000000000000000000000		(36.7 - 40.4') 9 bags	(36.7 - 40.4') 10 bags (119 Note: Lapis Lustre Sand	
_39	Deposits		[Hell	0,00				
-			[66]	0,0,0 0,0,0				
hbrovistis '	1000 - 11-:4	Coil Ci	1200 15 -	Hon Custom # = ft	ু ু ১৯৯ = below ground surface, ঃ		ess level CM =	

9/	ARCA	DIS Design 8 for nature built ass	Consultancy ral and ets		Well Const	ruction Log	5	Sheet: 3 of 9
		06/05/2019			_Surface Elevation:	498.7 ft amsl	Well ID: IR	Z-21
	-	06/15/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
_		<u>Dual Rotary</u>			_Northing (NAD83):	2102688.4	•	GW Remedy Phase 1
	Name:	Jon Martinez		4	_Easting (NAD83):	7615817.1	Location: <u>PG&E</u>	Topock, Needles, California
_	Orilling Asst: E. Martinez / W. Saylors ogger: KK / AM / ER			iors	_Borehole Diameter:	18-24 inches	— — — — — — — — — — — — — — — — — — —	m DC0007E2 00E4
Logge Editor:		Sean McGra			_Water Level Start: _Development End Date:	45.75 ft bgs	Project Number	r: RC000753.0051
Total D		166.5 ft bgs	ne		_Development End Date. _Well Completion:			
Total	Т				_ Well completion.	- Ottok-up	<u> </u>	
Depth (ft)	Groundwat Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
 41 42		Topock - Alluvium Deposits	GM		(0.0 - 47.4') 10" — % % % Suregrip 17 Casing	(21.8 - 41.8') 18.0" Borehole	(36.7 - 40.4') 9 bags	
43		Topock - Alluvium Deposits	SM					
44 45 								
46 47 		Topock -	SM		(47.4 - 65.4') 10"			
48 49 		Alluvium Deposits	SIVI		25-slot 316L SS Wire Wrap Screen			
50 51			•		(40.4 - 69.1') Cemex # 2/16 mesh (16x30)	(41.8 - 61.8') 18.0" Borehole	(40.4 - 69.1') 70.1 bags	(40.4 - 69.1') 91 bags (30%) Note: Lapis Lustre Sand, used >20% of calculated volume due to potential voids forming during drilling
52 53					6			
54 55 56	- IRZ-21-VAS 52-57-EB (97 ppb) 12/15/2018 14:50	Topock -	SM					
5758		Topock - Alluvium Deposits	ML					
bu		000 11 :6	10 10	<u>1910</u>	1 0 1 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1	<u> </u>	1 1 0 1 1

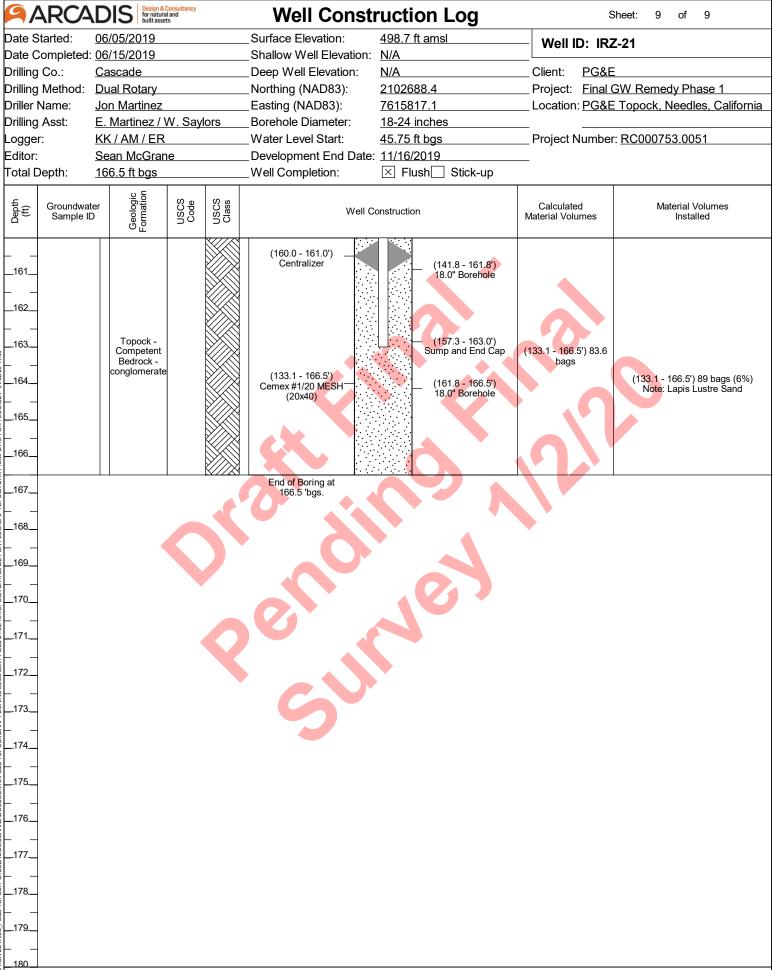
9/	ARCA	DIS Design & for natura built asse	Consultancy al and ts		Well Const	ruction Log	:	Sheet: 4 of 9	
		06/05/2019			_Surface Elevation:	498.7 ft amsl	Well ID: IRZ-21		
	-	06/15/2019			_Shallow Well Elevation:	N/A			
Drilling		Cascade Dual Rotary			_Deep Well Elevation: _Northing (NAD83):	N/A 2102688.4	Client: PG&E Project: Final GW Remedy Phase 1		
_		Jon Martinez			Northing (NAD83):	<u>7615817.1</u>	Location: PG&E Topock, Needles, California		
Drilling		E. Martinez / \		lors	Borehole Diameter:	18-24 inches	Location. <u>r Gar</u>	2 Topook, Necales, California	
_	Logger: KK / AM / ER				 _Water Level Start:	45.75 ft bgs	 Project Numbe	r: RC000753.0051	
Editor:	•	Sean McGrar	ne		Development End Date:	11/16/2019			
Total [Depth:	166.5 ft bgs			_Well Completion:				
Depth (ft)	Groundwate Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed	
61 61 62		Topock - Alluvium Deposits	ML		(47.4 - 65.4') 10" 25-slot 316L SS Wire Wrap Screen	(41.8 - 61.8') 18.0" Borehole			
63 64		Topock - Alluvium Deposits	SM		(40.4 - 69.1') Cemex # 2/16 mesh		(40.4 - 69.1') 70.1	(40.4 - 69.1') 91 bags (30%) Note: Lapis Lustre Sand, used >20%	
65 66 67		Topock - Alluvium Deposits	SM		# 2/16 mesn (16x30)	(65.4 - 140.4') 10" Suregrip 17 Casing	bags	of calculated volume due to potential voids forming during drilling	
68 69 70		•			(69.1 - 70.2') Cemex Bunker #8 0/30 Mesh		(69.1 - 70.2') 2.8 bags	(69.1 - 70.2') 4 bags (43%) Note: Lapis Lustre Sand, used >20% of calculated volume due to potential voids forming during drilling	
71		Topock - Alluvium Deposits	sc		6	(61.8 - 81.8') 18.0" Borehole			
75 76 77 78 79	- IRZ-21-VAS- 77-82 (1.1 ppb) 12/16/2018 09:25	Topock - Alluvium Deposits	SM		(70.2 - 132.1') — Bentonite seal chips (79.5 - 80.5') Centralizer		(70.2 - 132.1') 104.9 bags	(70.2 - 132.1') 123 bags (17%) Note: Puregold Medium Chips	
80 Abbro	viotiona. I I	CCC - Unifica	l Cail C	lessifies		= bolow ground ourfood s	mal = abaya maan	and level CW = groundwater	

9/-	ARCA	DIS	or natural and ouilt assets	,		Well Consti	ruction Log		Sheet: 5 of 9	
Date S		06/05/20				_Surface Elevation:	498.7 ft amsl	- Well ID	D: IRZ-21	
	completed:	06/15/20	19			_Shallow Well Elevation:	N/A			
Drilling		Cascade				_Deep Well Elevation:	N/A		PG&E	
_		Dual Rota	-			_Northing (NAD83):	2102688.4	•	Final GW Remedy Phase 1	
Driller Name: <u>Jon Martinez</u>						_Easting (NAD83):	7615817.1	Location:	PG&E Topock, Needles, California	
	Drilling Asst: <u>E. Martinez / W. Saylors</u>					_Borehole Diameter:	18-24 inches	Danie at Namel and D0000750 0054		
Logge		KK / AM /				_Water Level Start:	45.75 ft bgs	Project Ni	umber: RC000753.0051	
Editor:		Sean Mc				_Development End Date: <u>11/16/2019</u> _Well Completion: ⊠ Flush ☐ Stick-ı				
Total D	лерии.	166.5 ft b				_ vveii Completion.	△ Flush	T		
Depth (ft)	Groundwater Sample ID		Geologic Formation USCS Code		USCS Class	Well Co	onstruction	Calculated Material Volun		
 81 82	IRZ-21-VAS- 77-82 (1.1 ppb) 12/16/2018 09:25	Topog	um S	М			(65.4 - 140.4') 10" Suregrip 17 Casing (61.8 - 81.8') 18.0" Borehole			
83 84 85 86		Topor Alluvi Depos	um M	/IL				7		
87 88 89 89		Topod Alluvi Depod	um S	M						
90 91 92		Topod Alluvi Depod	um S	М		(70.2 - 132.1') — Bentonite seal chips	(81.8 - 101.8') 18.0" Borehole	(70.2 - 132.1') bags	(70.2 - 132.1') 123 bags (17%) Note: Puregold Medium Chips	
9394959697		Topo: Alluvi Depo:	um S	М						
98 99 		Topoc Alluvi Depo:	um S	M :						



9/-	ARCA	DIS Design for na built	n & Consultancy atural and assets		Well Const	ruction Log	Sheet: 7 of 9		
Date S		06/05/2019			_Surface Elevation:	498.7 ft amsl	Well ID: IRZ-21		
	-	06/15/2019	<u> </u>		_Shallow Well Elevation:	N/A			
Drilling	Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E		
Drilling	Method:	Dual Rotary	/		_Northing (NAD83):	2102688.4	•	GW Remedy Phase 1	
Driller I	riller Name: <u>Jon Martinez</u>				_Easting (NAD83):	7615817.1	Location: <u>PG&</u> E	Topock, Needles, California	
Drilling	ig Asst: E. Martinez / W. Saylors				_Borehole Diameter:	<u>18-24 inches</u>			
Logge	r:	KK / AM / E	:R		_Water Level Start:	45.75 ft bgs	Project Numbe	r: RC000753.0051	
Editor:		Sean McGr	ane		_Development End Date:	11/16/2019			
Total D	Depth:	166.5 ft bgs	3		_Well Completion:				
Depth (ft)	Groundwat Sample II		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed	
		Topock - Alluvium				— (65.4 - 140.4') 10" Suregrip 17 Casing			
121		Deposits				(101.8 - 121.8') 18.0" Borehole			
						10.0 Borenole			
122									
122									
100									
123									
		Topock -	.						
124		Alluvium Deposits	ML ML						
		Deposits	'						
125									
126					(70.2 - 132.1')		(70.2 - 132.1') 104.9 bags	(70.2 - 132.1') 123 bags (17%) Note: Puregold Medium Chips	
					Bentonite seal chips		Jugo	Note: 1 drogera Mediam Chipe	
127									
128		Topock -				· ·			
		Alluvium	ML						
129		Deposits	'						
130									
150									
404		Topock -				(121.8 - 141.8')			
131		Deposits	3			18.0" Borehole			
132				67272	%. %. %			(132.1 - 133.1') 4 (54%)	
					(132.1 - 133.1') #6 — \$ \$ \$ \$ \$		(132.1 - 133.1') 2.6	Note: Lapis Lustre Sand, used >20% of calculated volume due to potential	
133					ou mesh sand			voids forming during drilling	
		Topock -							
134	IRZ-21-VAS 132-137-EE	Alluvium	ı GC						
	(< 0.17 U ppb)	Deposits	3						
135	12/17/2018								
	17:24								
136									
					(133.1 - 166.5') Cemex#1/20 MESH		(133.1 - 166.5') 83.6	(133.1 - 166.5') 89 bags (6%)	
137					Cemex #1/20 MESH :::: (20x40)		bags	Note: Lapis Lustre Sand	
138		Topock -							
150		Alluvium Deposits				1 接到			
L									
139									
<u> </u>									
140				111111			1	1	

1	4KO4	DIS for natura built asset	l and ts		well Consti	ruction Log	S	Sheet: 8 of 9
Date S	Started:	06/05/2019			_Surface Elevation:	498.7 ft amsl	Well ID: IR	Z-21
	•	06/15/2019			_Shallow Well Elevation:	N/A		
Drilling	J Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
Drilling	Method:	Dual Rotary			_Northing (NAD83):	2102688.4	Project: Final	GW Remedy Phase 1
Driller	Name:	Jon Martinez			_Easting (NAD83):	7615817.1	Location: PG&E	Topock, Needles, California
Drilling	Asst:	E. Martinez / \	N. Say	lors	_Borehole Diameter:	18-24 inches		
Logge	r:	KK / AM / ER			_Water Level Start:	45.75 ft bgs	Project Number	r: RC000753.0051
Editor:		Sean McGran	ie		_Development End Date:	11/16/2019		
Total [Depth:	166.5 ft bgs			_Well Completion:			
		0 5						
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
		a P. P.	50	50				
						(140.4 - 157.3') 10"		
141						15-slot 316L SS		
						Wire Wrap Screen		
142						Hill		
142						(121.8 - 141.8')		
-		Topock -				18.0" Borehole		
143		Alluvium	ML					
-		Deposits						
144								
L _								
145								
146								
140						H:A		
F -								
147								
148								
149	IRZ-21-VAS	_				H		
	147-152	Topock -	CM					
150	(3600 ppb) 12/18/2018	Deposits	SM		(133.1 - 166.5')		(133.1 - 166.5') 83.6	(133.1 - 166.5') 89 bags (6%)
130	10:07				Cemex #1/20 MESH (20x40)		bags	Note: Lapis Lustre Sand
├ -	-				(ZOX+0)	(141.8 - 161.8')		
151						18.0" Borehole		
	-					□ ∴ :		
152								
						□ ∷		
153								
						$\exists \vdots \exists$		
154								
	-							
155		Topock -						
-		Weathered Bedrock -	ML					
156		conglomerate						
L -						H : \Box		
157								
						井 公計		
158								
130	1			N/A				
	1	Topock -						
159	-	Competent Bedrock -						
<u> </u>	-	conglomerate						
160	intino - · · · ·	000 - 11-2	0-".0		liam Curatama ft = ft] [::::::::::::::::::::::::::::::::::::		noo lovol CW = groundwater



9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Lo	g		Sh	eet: 1 of	8
Date S	tarted	: <u>11/28/2</u>	2018		Surface	Eleva	tion:	500.0 ft amsl	Borin	a No.:	: <u>IRZ-23 P</u>	ilot
		ted: <u>12/03/2</u>	2018		Northing	g (NAE	083):	2102535.3	_			
Drilling	Co.:	<u>Cascac</u>	de		Easting	(NAD	83):	7615825.8	_ Client:	PG&E		
Drilling	Meth		<u> Drilling</u>			-		147 ft bgs	-		<u>Froundwater Re</u>	emedy Phase
Drill Ri	д Туре	e: <u>Proson</u>	ic Truck Mou	unt	Borehol	e Diar	neter:	6-12 inches	_ Location:	1		
Driller					-			: <u>47 ft bgs</u>	_		<u>Topock, Needl</u>	
Drilling	Asst:		ninguez/C. A		-	-		4 inch x 10 ft Core Barrel	_ Project N	lumber:	RC000753.00	51
Logge		Connoi			Samplin	-		Continuous	_			
Editor:		<u>Sean N</u>	<u>//cGrane</u>		Convert	ed to	Well:	☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
 _ 1 _ 				Topock - Fluvial Deposits	SP-SM		gravel grained	2.0') Topock - Fluvial Deposits; Poorly g (SP-SM); brown (7.5YR 5/3); very fine ; d, angular to subround; little granule to v gular to round; little silt; trace cobbles, su	grained to medi ery large pebbl	um es,		(0.0 - 147.0') No water used
2 3 4	84			Topock - Fluvial Deposits	GM		brown some v silt; tra	4.5') Topock - Fluvial Deposits; Silty grav (7.5YR 5/3); granules to large pebbles, very fine to medium grained sand, angul ce cobbles, angular to subangular; dry; sh silt is through out the core	angular to subrear to subrear to subround;	ound;		
				Topock -	SW-SM			5.0') Topock - Fluvial Deposits; Well gra				
_ 5 _				Fluvial Deposits		M		iM); very pale brow <mark>n / grayi</mark> sh or <mark>an</mark> ge(10 d to coarse grained, angular to round; lit		ine		
				Topock -			(5.0 - 7	7.0') Topock - Fluvial Deposits; Silty grav (7.5YR 5/3); granules to large pebbles,	vel with sand (G	iM);		
6				Fluvial Deposits	GM		some \	very fine to medium grained sand, angul				
				Берозію			cobble	s, ang <mark>ular to subangula</mark> r; dry				
7 8 9 10 11 12 13 14 15 16 16	120			Topock - Fluvial Deposits	SP-SM		and gra to subr	17.0') Topock - Fluvial Deposits; Poorly avel (SP-SM); very fine grained to medicound; some granule to very large pebble, trace cobbles, angular to subround; di	um grained, sub es, angular to ro	angular		
17 18 19 20	60			Topock - Fluvial Deposits	SM		brown 6/6); vo trace b (18') vo boulde	19.5') Topock - Fluvial Deposits; Silty s (5YR 5/3) with brownish yellow / dark ye ery fine grained to fine grained, angular oulders; dry ery dark grayish brown (10YR 3/2); 1.5 r with a frothy texture, basalt 23.0') Topock - Fluvial Deposits; Silty s	ellowish orange to subround; litt ft solid core fror and with gravel	doyR le silt; n a (SM);		

Date Star Date Con Drilling Con		11/28/2	2018		<u> </u>						
Orilling C	npleted:				Surface	e Eleva	tion: <u>500.0 ft amsl</u>	- Rorin	a No .	<u>IRZ-23 P</u>	ilot
-					Northin		·	_		11 VE-EU F	<u></u>
Arillina NA		Cascac			Easting	•	•		PG&E		
	1ethod:	Sonic D	•		Total D		<u>147 ft bgs</u>	-		<u>oundwater R</u>	<u>emedy Pha</u>
Orill Rig T	• •		<u>ic Truck Mou</u>		Boreho						
oriller Na			/asquez		=		Water: 47 ft bgs			opock, Need	
ogger:	SSI:	N. Dom	ninguez/C. A		-	-		_ Project N	umber: <u>I</u>	<u> </u>	51
.ogger: Editor:			//////////////////////////////////////		Samplii Conver	-		_			
Depth (ft) ecovery		Sieve mple ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Flui
	2			9 P	150		brown (10YR 5/3); very fine grained to coarse	arained angular	- to	Ι	(0.0 - 147.0')
_216	60			Topock - Fluvial Deposits	SM		subround; some granule to very large pebbles, some silt; trace cobbles, angular to subangular	angular to subre			water used
_23				Topock -			(23.0 - 23.5') Topock - Fluvial Deposits; Silt wi	th cond (MII); gr	21/		
_24				Fluvial Deposits	ML		(10YR 5/1); no plasticity; little very fine to coar angular to subround; trace granule to medium subround; dry; soft	se gr <mark>ained</mark> sand, pebbles, angular	rto		
	50			Topock - Fluvial	GW-GM		(23.5 - 27.0') Topock - Fluvial Deposits; Well of and sand (GW-GM); light brown (7.5YR 6/3); pebbles; some very fine to coarse grained san little silt; dry	granules to very	large		
_26				Deposits			6				
_27							(27.0 - 30.5') Topock - Fluvial Deposits; Silty g (10YR 5/3); granules to very large pebbles, an	gular to subroun	id; and		
_28				Topock - Fluvial	GM		silt; little fine to medium grained sand, angular cobbles, angular; dry; large pebbles and cobble metadiorite, cobbles were pulverized into a silty	es composed of			
_29 10 30	08			Deposits							
_31				Topock - Fluvial	SM	• Q C	(30.5 - 31.5') Topock - Fluvial Deposits; Silty s light yellowish brown (10YR 6/4); very fine gra	ned to coarse gr	rained,		
32				Deposits Topock - Fluvial Deposits	ML		subangular to subround; and granule to large p subround; some silt; dry (31.5 - 32.0') Topock - Fluvial Deposits; Silt wi (10YR 5/1); no plasticity; little very fine to coar	th sand (ML); grasse grained sand,	ay		
_33				Topock - Alluvium Deposits	ML		angular to subround; trace granule to medium subround; dry; soft; 4.5 inch boulder of basalt. (32.0 - 35.0') Topock - Alluvium Deposits; Sar brown (7.5YR 5/3); no plasticity; some very fin sand, angular to subround; little granule to larg subangular; dry	at end of core dy silt with grave e to coarse grair	el (ML); ned		
_35							(05.0. 07.0) Transle Albuma Dansite Cor				
_36 ₁₂	20			Topock - Alluvium Deposits	ML		(35.0 - 37.0') Topock - Alluvium Deposits; Gra brown (7.5YR 5/3); no plasticity; some granule angular to subangular; little very fine to coarse to subangular; dry	to very large pe	bbles,		
_37				Topock - Alluvium	ML		(37.0 - 47.0') Topock - Alluvium Deposits; San no plasticity; some very fine to coarse grained subangular; little small to medium pebbles, and soft	sand, angular to)		
_39				Deposits							
40 L Abbrevia	tions: U	SCS = I	Jnified Soil (L Classificati	on Svst	<u> </u>	l = feet, bgs = below ground surface,	amsl = abo	ve mear	ı sea level. G	iW =
							he laboratory reporting limit, blue w				

9/	4R (CADIS	Design & Consultancy for natural and built assets		Bo	ring	Log	S	heet: 3 of	8
Date S					Surface			Boring No	.: <u>IRZ-23 Pi</u>	ilot
1	-	eted: <u>12/03/</u>			Northin		•	_		
Drilling	-	<u>Casca</u>			Easting	•	•	_ Client: PG&E		
Drilling	-		Drilling		Total D	-	147 ft bgs	•	Groundwater Re	emedy Phase
Drill R			nic Truck Mo		Boreho			_ Location: 1	Tanasir Nasali	aa Califarnia
Driller Drilling			Vasquez ninguez/C. A		Samplin		Water: <u>47 ft bgs</u> nod: <u>4 inch x 10 ft Core Barrel</u>		Topock, Needl	
Logge	•	Conno	-	iiverez	Samplin	-			. 10000733.000	J I
Editor			McGrane		Conver	-		_		
	1				T					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
41 42	120									(0.0 - 147.0') No water used
43				Topock - Alluvium	ML			9)		
44				Deposits	IVIL				(44.047.01)	
									(44.0 - 47.0') Moist Sediments	
45										
46										
47	108	IRZ-23-SS-					(47.0 - 49.5') Topock - Alluvium Deposits; Silty	sand (SM); fine	(47.0')	
		45-50 12/4/2018					grained to very coarse grained, subangular to s little granule to large pebbles, angular to subang	subround; some silt;	Approximate depth of water	
48		09:00		Topock - Alluvium	SM		wet state of the s	g, p	table	
	-			Deposits	"					
49					.					
 50	-						(49.5 - 52.0') Topock - Alluvium Deposits; Silty very fine grained to coarse grained, angular to	sand with gravel (SM);	- - 	
30				Tanada			little granule to very large pebbles, angular to si			
 51				Topock - Alluvium	SM		cobbles, angular to subangular; wet			
				Deposits						
52										
		IRZ-23-SS- 50-55					(52.0 - 59.5') Topock - Alluvium Deposits; Silt v plasticity; little fine to coarse grained sand, ang		(52.0 - 57.0') Tight formation	
53		12/4/2018 09:05					medium to very large pebble, angular to subano	gular; wet		
54										
-										
55										
-				Topock - Alluvium	ML					
56	120			Deposits	IVIL					
57		IRZ-23-SS-								
F0	-	55-60 12/4/2018 09:15	JB7 00 :							
58		09.10	IRZ-23-VAS- 57-62							
59	1		(5.3 ppb) 11/30/2018							
			12:46							
60					SM		(59.5 - 62.0') Topock - Alluvium Deposits; Silty	sand with gravel (SM);		
				a		•				

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	J Log	S	heet: 4 of	8
Date S					Surface			Boring No	.: <u>IRZ-23 Pi</u>	lot
		eted: <u>12/03/</u>			Northin		•			
Drilling		<u>Casca</u>			Easting	•	•	Client: PG&E		
Drilling					Total D	•	147 ft bgs	•	Groundwater Re	emedy Phase
Drill Ri Driller			nic Truck Mou		Borehol		meter: <u>6-12 inches</u> : Water: <u>47 ft bgs</u>		Topock, Needl	oo California
Drilling			Vasquez ninguez/C. A		Samplin		G		•	
Logge			ninguezio. A or Mills		Samplir	•		i roject Number	. <u>1.C000733.00.</u>	<i>)</i>
Editor:			McGrane		Convert	-				
		<u>'</u>			1					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
 61 62	120		IRZ-23-VAS- 57-62 (5.3 ppb) 11/30/2018 12:46	Topock - Alluvium Deposits	SM		brown (7.5YR 5/3); very fine grained to very to subround; some silt; little granule to mediu subround; wet		(57.0 - 62.0') Sample screen had ~4 ft of water and did not produce well, driller thought 6-inch casing to	(0.0 - 147.0') No water used
63 64 65		IRZ-23-SS- 60-65 12/4/2018 09:15					(62.0 - 69.5') Topock - Alluvium Deposits; Si brown (7.5YR 5/3); fine grained to very coars subround; some granule to very large pebble subround; little silt; trace cobbles, subangula	se grained, angular to es, subangular to	be broken down hole, pulled 6-inch casing from borehole it was plugged with sediment, issues with the casing resulted in the sample being collected greater than 5 ft below first water	
66 67 68	120	IRZ-23-SS- 65-70 12/4/2018 09:20		Topock - Alluvium Deposits	SM				(62.0 - 72.0') Sediments were very saturated, driller indicated that there was cave in of the borehole	
69 70 71 			IRZ-23-VAS- 67-72 (85 ppb) 12/1/2018 08:50	Topock - Alluvium Deposits	SM		(69.5 - 72.0') Topock - Alluvium Deposits; Si brown (7.5YR 5/3); fine grained to very coars subround; little granules to very large pebble subround; little silt; trace cobbles, subangula	se grained, angular to s, subangular to		
72 73 74 75		IRZ-23-SS- 70-75 12/4/2018 09:25					(72.0 - 82.0') Topock - Alluvium Deposits; Si brown (5YR 5/3); no plasticity; little very fine angular to subround; trace granule to small p subangular; dry; potential contact of older an	to medium grained sand, bebbles, angular to	(72.0 - 82.0') Drilling was tough, core came out hot and steaming	
	120	IRZ-23-SS- 75-80 12/4/2018 09:30		Topock - Alluvium Deposits	ML					
	viation	s: LISCS =	Linified Soil (lassificati	ion Syste	m ft :	= feet has = helow around surface	a amel = ahove me	an sea level G	\\/ =

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 5 of	8
Date S	tarted	: <u>11/28</u>	/2018		Surface	Eleva	tion: <u>500.0 ft amsl</u>	Boring No.	· IR7-23 Pi	ilot
Date C	omple	eted: <u>12/03</u>	/2018		Northing	JAN) g	983): <u>2102535.3</u>	_ Borning No.	. <u>IIXZ-201</u>	1101
Drilling	Co.:	Casca	ade		Easting	(NAD	33): <u>7615825.8</u>	Client: PG&E		
Drilling	Meth	od: <u>Sonic</u>	Drilling		Total D	epth:	<u>147 ft bgs</u>	Project: Final G	<u> Froundwater Re</u>	emedy Phase
Drill Ri	д Тур	e: <u>Proso</u>	nic Truck Mou	unt	Borehol	e Diar	neter: 6-12 inches	Location: 1		
Driller I	Name	: <u>Steve</u>	· Vasquez		Depth to	o First	Water: <u>47 ft bgs</u>	PG&E	Topock, Needl	es, California
Drilling	Asst:	N. Do	minguez/C. A	lverez	Samplin	ng Met	hod: 4 inch x 10 ft Core Barrel	Project Number:	RC000753.00	51
Logger	-:	Conn	or Mills		Samplin	ıg Inte	rval: <u>Continuous</u>	<u>-</u>		
Editor:		<u>Sean</u>	McGrane		Conver	ed to	Well: ☐ Yes ⊠ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
81	120			Topock - Alluvium Deposits	ML				(72.0 - 82.0') Drilling was tough, core came out hot and steaming	(0.0 - 147.0') No water used
82 83 84		IRZ-23-SS- 80-85 12/4/2018 09:35		Topock - Alluvium Deposits	SM		(82.0 - 84.5') Topock - Alluvium Deposits; Silty (7.5YR 4/4); very fine grained to coarse grained subangular; and silt; little granule to large pebble subangular; wet	l, angular to as, angular to		
85 86 87	108			Topock - Alluvium Deposits	ML		(84.5 - 87.0") Topock - Alluvium Deposits; Sand brown (5YR 5/4); no plasticity; little granule to m angular to subangular; little very fine to coarse on to subangular; moist; medium stiff	nedium pebbles,		
88 89 90	106	IRZ-23-SS- 85-90 12/4/2018 09:40		Topock -			(87.0 - 94.5') Topock - Alluvium Deposits; Silty (7.5YR 4/4); very fine grained to coarse grained subangular; some silt, little granule to large pebl subangular; little clay; wet	l, angular to		
91 92 93		IRZ-23-SS- 90-95 12/4/2018 09:45		Alluvium Deposits	SM					
94 95 96	54		IRZ-23-VAS- 92-97 (<0.033 U ppb) 12/3/2018 11:47	Topock - Alluvium Deposits	SM		(94.5 - 97.0') Topock - Alluvium Deposits; Silty brown (5YR 5/4); fine grained to very coarse graubround; some silt; little granule to medium pel subround; wet	ained, angular to		
 97 98		IRZ-23-SS- 95-100 12/4/2018 09:50		Topock -			(97.0 - 102.0') Topock - Alluvium Deposits; Silty yellowish brown (10YR 4/4); fine grained to very angular to subround; some silt; trace granule to to subangular; wet	/ coarse grained,		
 99 _100	120			Alluvium Deposits	SM					

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 6 of	8
Date S					Surface	Eleva	ion: <u>500.0 ft amsl</u>	Boring No.	IR7-23 P	ilot
		eted: <u>12/03/</u> 2	2018		Northing	g (NAC	83): <u>2102535.3</u>	_	IIVE EU I	<u></u>
Drilling	g Co.:	<u>Casca</u>	de		Easting	(NAD	33): <u>7615825.8</u>	Client: PG&E		
Drilling	g Meth	od: <u>Sonic I</u>	Drilling		Total De	epth:	147 ft bgs	_ Project: Final G	<u>roundwater R</u>	<u>emedy Phase</u>
Drill Ri			<u>nic Truck Μοι</u>	unt	Borehol	e Dian	eter: <u>6-12 inches</u>			
Driller			Vasquez		-		Water: <u>47 ft bgs</u>		Topock, Need	
Drilling			ninguez/C. A		Samplin	-		Project Number:	RC000753.00	51
Logge		<u>Conno</u>			Samplin	-		-		
Editor:		<u>Sean N</u>	<u>/////////////////////////////////////</u>		Convert	ted to \	Vell: ☐ Yes ☒ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
101				Topock - Alluvium Deposits	SM					(0.0 - 147.0') No water used
102 103		IRZ-23-SS- 100-105 12/4/2018 09:55		Topock - Alluvium Deposits	GM		(102.0 - 103.0') Topock - Alluvium Deposits; Sil (7.5YR 4/4); granules to very large pebbles, and some silt; little very fine to medium grained sand trace cobbles, angular to subangular; dry	gular to subangular;		
 104 105	120			Topock - Alluvium	SM		(103.0 - 107.0") Topock - Alluvium Deposits; Sil (SM); dark yellowish brown (10YR 4/4); fine gra grained, subangular to subround; some silt; little pebbles, angular to subangular; wet	ined to very coarse		
106 107				Deposits	CIVI		6			
		IRZ-23-SS- 105-110 12/4/2018 10:00					(107.0 - 117.0') Topock - Alluvium Deposits; Sil (10YR 4/3); granules to large pebbles, subangu fine to very coarse grained sand, angular to sub clay; dry; potential contact of older and younger	lar to subround; little bround; little silt; little		
 111 _112_ _113_ _114_ 	120	IRZ-23-SS- 110-115 12/4/2018 10:05		Topock - Alluvium Deposits	GM					
115 116 117		IRZ-23-SS-					(117.0 - 122.0') Topock - Alluvium Deposits; Sil		(117.0 - 127.0')	
 118 _119_ 	120	115-120 12/4/2018 10:10		Topock - Alluvium Deposits	SM		(SM); brown (7.5YR 4/4); very fine grained to co to subround; and silt; little granule to medium pe subangular; wet; tight formation, potential contact bedrock.	ebbles, angular to	Hard driling, dry	
	viation	e: 118CS = 1	Unified Soil C	laccificati	ion Systa	m ft =	feet has = helow around surface	amsl = ahove mea	n sea level G	\\/ =

-	4K(CADIS	Design & Consultancy for natural and built assets		Во	rıng	Log	S	Sheet: 7 of	8
	Started				Surface			Boring No	.: <u>IRZ-23 P</u>	ilot
		eted: <u>12/03/</u>			Northin		· ·	_		
Orilling	g Co.: g Meth	Casca	age Drilling		Easting Total D	•	3): <u>7615825.8</u> <u>147 ft bgs</u>	_ Client: <u>PG&E</u> _ Project: <u>Final</u>	<u>=</u> Groundwater Re	amody Phas
_	ig Typ		nic Truck Moi			•	eter: 6-12 inches	_ Location: <u>1</u>	Groundwater in	emeuy Frias
	Name		Vasquez				Vater: <u>47 ft bgs</u>		E Topock, Needl	es, Californ
Prilling	g Asst:	N. Do	minguez/C. A	lverez	Samplii	ng Metl	od: 4 inch x 10 ft Core Barrel	_ Project Numbe	r: RC000753.00	51
ogge			or Mills		Samplii	-		_		
ditor:		<u>Sean</u>	McGrane	_	Conver	ted to \	/ell: ☐ Yes ⊠ No		T	T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
121				Topock - Alluvium Deposits	SM				(117.0 - 127.0') Hard driling, dry	(0.0 - 147.0') N water used
122_		IRZ-23-SS-			L					
123		120-125 12/4/2018 10:15					(122.0 - 127.0') Topock - Alluvium Deposits; S (ML); yellowish red (5YR 4/6); no plasticity; litt pebbles, angular to subangular; little fine to me angular to subangular; wet	le granule to medium		
- 124_	120		IRZ-23-VAS- 122-127 (2000 ppb)	Topock - Alluvium	ML					
125_			12/2/2018 09:24	Deposits	IVIL					
126_ - 127_										
.121		IRZ-23-SS- 125-130					(127.0 - 133.0') Topock - Alluvium Deposits; S 4/8); fine grained to coarse grained, angular to			-
		12/4/2018 10:20					little granule to medium pebbles, angular to su and pebbles composed of trace pieces of meta	bangular; wet; granules		
							and peoples composed of trace pieces of meta	aulonie 1-4 in. dia.		
129_										
-				Topode						
130_				Topock - Alluvium	SM					
404				Deposits						
131_										
_ 132_	111									
	114	IRZ-23-SS- 130-135								
133_		12/4/2018 10:25					(400 0 400 FI) T			
_							(133.0 - 136.5') Topock - Alluvium Deposits; S brown (5YR 4/3); no plasticity; some very fine	to medium grained		
134_							sand, angular to subround; trace granule to moto subround; wet	edium pebbles, angular		
				Topock - Alluvium	ML					
135				Deposits	"""					
- _136										
-100_					<u></u>					
137_		ID7 00 00		Topock - Alluvium	GM		(136.5 - 137.0') Topock - Alluvium Deposits; S gray (7.5YR 4/1); granules to very large pebble			
_		IRZ-23-SS- 135-140 12/4/2018		Deposits	4		subangular; some silt; little very fine to mediun to subangular; dry		1	
_138 - _139	120	10:30		Topock - Alluvium Deposits	GM	2000	(137.0 - 139.5') Topock - Alluvium Deposits; S (GM); reddish brown / moderate brown(5YR 4, pebbles, angular to subangular; some silt; little sand, angular to subround; trace clay; wet; tra metadiorite 20-70 mm	(4); granules to large fine to coarse grained		
446						+	(139.5 - 142.0') Topock - Weathered Bedrock	- conglomerate; Silty	1	
_ <u>140_l</u> \bbre\	viation	s: USCS =	Unified Soil (Classification		em, ft =	feet, bgs = below ground surface	amsl = above me	ean sea level, G	W =
							e laboratory reporting limit, blue w			
	ىلم لم مىر	ring the fire	st VAS interva	J						

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 8 of	8
Date S					Surface			Borin	a No.:	IRZ-23 Pi	lot
	-	eted: <u>12/03/</u> 2			Northin		•				<u></u>
Drilling	-	<u>Casca</u>			Easting	•	•	Client:	PG&E		
Drilling	-		-		Total Do	•	147 ft bgs	Project:		<u>oundwater Re</u>	medy Phase
Drill R			nic Truck Mou		Borehol			Location:			0-1:4:-
Driller Drilling			Vasquez ninguez/C. A		Samplir		Water: <u>47 ft bgs</u> od: <u>4 inch x 10 ft Core Barrel</u>	Project N		opock, Needl	
Logge	-	Conno			Samplir	•		Fiojectiv	iuiiibei. <u>I</u>	<u>\C000/33.00\</u>) I
Editor			//cGrane		Convert	-					
		`		_	1						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
141			IRZ-23-VAS- 139-144	Topock - Weathered Bedrock - conglomerate	SM		sand (SM); yellowish red (5YR 4/6); very fine gra grained, angular to subround; and silt; trace gran pebbles, angular to subround; wet; trace pieces of mm	ule to mediun	n		(0.0 - 147.0') No water used
142			(3000 ppb) 12/2/2018 14:17				(142.0 - 147.0') Topock - Competent Bedrock - cyellowish red (5YR 4/6); little very fine to coarse subangular to round; dry; hard; strong cementation	grained sand,		(142.0 - 147.0') Drill was tough with rig	
143	120	IRZ-23-SS- 140-147 12/4/2018 10:35								chattering.	
['- 		10.00		Topock - Competent							
145				Bedrock - conglomerate							
146											
147			<u>i</u>			X //X	End of Boring at 147.0 'bgs	<u> </u>			
148											
149_							O				
151											
152											
153											
151											
154											
155											
5											
156											
157											
158											
-											
159											
160											
160 Abbre	viation	s: USCS = I	Unified Soil C	Classification	on Syste	em, ft =	feet, bgs = below ground surface, a	amsl = abo	ove mear	n sea level, G\	N =

Temporary Backfill Log Sheet: Surface Elevation: 500.0 ft amsl 11/28/2018 Well ID: IRZ-23 Pilot Date Completed: <u>12/03/2018</u> Northing (NAD83): 2102535.3 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615825.8 Client: PG&E Drilling Method: Project: Final Groundwater Remedy Phase Sonic Drilling Total Depth: 147 ft bgs Driller Name: Steve Vasquez Borehole Diameter: 6-12 inches Location: 1 Drilling Asst: N. Dominguez/C. Alverez Depth to First Water: 47 ft bgs PG&E Topock, Needles, California Project Number: RC000753.0051 Logger: Connor Mills Editor: Sean McGrane Geologic Formation USCS Class USCS Code Depth (ft) Calculated Material Volumes Groundwater Well Construction Sample ID Material Volumes Installed (0.0 - 0.5') Temporary (0.0 - 0.5') 1 plate (0.0 - 0.5') 1 plate (0%) Steel Plate with BMF Topock -Fluvial SP-SM Deposits (0.0 - 4.0') 12"Borehole (0.5 - 5.0') Cemex (0.5 - 5.0') 6 bags (-24%) (0.5 - 5.0') 7.9 bags #0/30 MESH (30x50) Note: Lapis Lustre Sand Topock -Fluvial Deposits Topock -SW-SM Fluvial Deposits Topock -Fluvial Deposits Topock -(4.0 - 147.0') 6" Fluvial SP-SM Borehole Deposits (5.0 - 137.0') Cemex (5.0 - 137.0') 55.3 (5.0 - 137.0') 68 bags (23%) #3 MESH (8x10) Note: Lapis Lustre Sand bags Topock -Fluvial SM Deposits Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =

groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the

ARCADIS Design & Consumor for natural and hullt assets **Temporary Backfill Log** Sheet: Surface Elevation: 500.0 ft amsl 11/28/2018 Well ID: IRZ-23 Pilot Date Completed: <u>12/03/2018</u> Northing (NAD83): 2102535.3 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615825.8 Client: PG&E Drilling Method: Sonic Drilling Total Depth: Project: Final Groundwater Remedy Phase 147 ft bgs Driller Name: Steve Vasquez Borehole Diameter: 6-12 inches Location: 1 N. Dominguez/C. Alverez Drilling Asst: Depth to First Water: 47 ft bgs PG&E Topock, Needles, California Project Number: RC000753.0051 Logger: Connor Mills Editor: Sean McGrane Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed .21 Topock -Fluvial SM Deposits 22 23 Topock -Fluvial Deposits 25 Topock -Deposits 26 28 Topock -Fluvial 29 Deposits (5.0 - 137.0') Cemex (4.0 - 147.0') 6" (5.0 - 137.0') 55.3 (5.0 - 137.0') 68 bags (23%) 30 #3 MESH (8x10) Borehole Note: Lapis Lustre Sand Topock -31 Fluvial Deposits Topock -ML 32 Fluvial Deposits 33 Topock -ML Alluvium Deposits 35 Topock -36 MI Alluvium Deposits 37 38 Topock -MI Alluvium Deposits 39 Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, blue water table symbol represents depth to water

measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

ARCADIS Design & Consumor for natural and built assets **Temporary Backfill Log** Sheet: Surface Elevation: 500.0 ft amsl 11/28/2018 Well ID: IRZ-23 Pilot Date Completed: <u>12/03/2018</u> Northing (NAD83): 2102535.3 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615825.8 Client: PG&E Drilling Method: Sonic Drilling Total Depth: Project: Final Groundwater Remedy Phase 147 ft bgs Driller Name: Steve Vasquez Borehole Diameter: 6-12 inches Location: 1 N. Dominguez/C. Alverez Drilling Asst: Depth to First Water: 47 ft bgs PG&E Topock, Needles, California Project Number: RC000753.0051 Logger: Connor Mills Editor: Sean McGrane Geologic Formation USCS Class USCS Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed 42 43 Topock -Alluvium MLDeposits 45 46 Topock -SM Alluvium Deposits 49 (5.0 - 137.0') Cemex (4.0 - 147.0') 6" (5.0 - 137.0') 55.3 (5.0 - 137.0') 68 bags (23%) 50 #3 MESH (8x10) Borehole Note: Lapis Lustre Sand Topock -Alluvium SM 51 Deposits 52 53 55 Topock -Alluvium ML 56 Deposits 57 IRZ-23-VAS-57-62 (5.3 ppb) 11/30/2018 12:46 Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =

groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

ARCA	DIS Design & for natura built asse	Consultancy al and ets		Temporary Backfill Log	Sh	eet: 4 of 8
Date Started:	11/28/2018			Surface Elevation: 500.0 ft amsl	Well ID: IRZ	7-23 Pilot
Date Completed:	12/03/2018			_ Northing (NAD83): 2102535.3		
Drilling Co.:	<u>Cascade</u>			_ Easting (NAD83): <u>7615825.8</u>	Client: PG&E	
Orilling Method:	Sonic Drilling	g		_ Total Depth: <u>147 ft bgs</u>	Project: <u>Final G</u>	roundwater Remedy Phas
Oriller Name:	Steve Vasqu	uez		Borehole Diameter: 6-12 inches	Location: <u>1</u>	
Orilling Asst:	N. Domingu		lverez	_ Depth to First Water: <u>47 ft bgs</u>		Topock, Needles, Californ
_ogger:	Connor Mills	3		_ Editor: <u>Sean McGrane</u>	Project Number:	RC000753.0051
Groundwate Sample ID		USCS	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
- IRZ-23-VAS- 57-62 (5.3 ppb) 11/30/2018 - 12:46	- Topock -	SM				
	Topock - Alluvium Deposits	SM				
70 12/1/2018 71 71 72	Topock - Alluvium Deposits	SM		(5.0 - 137.0') Cemex #3 MESH (8x10) (4.0 - 147.0') 6" Borehole	(5.0 - 137.0') 55.3 bags	(5.0 - 137.0') 68 bags (23%) Note: Lapis Lustre Sand
	Topock - Alluvium Deposits	ML				
	JSCS = Unifie	d Soil (Classifica	ation System, ft = feet, bgs = below ground surf	ace, amsl = above mea	n sea level, GW =
ا Abbreviations: ا				detected above the laboratory reporting limit, blu		
	b = parts ner l	billion I	J = not (refected above the laboratory reporting intri- this		
groundwater, ppl				Granule backfill material will be excavated from		

ARCADIS Design & Consumor for natural and hullt assets **Temporary Backfill Log** Sheet: Surface Elevation: 500.0 ft amsl 11/28/2018 Well ID: IRZ-23 Pilot Date Completed: <u>12/03/2018</u> Northing (NAD83): 2102535.3 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615825.8 Client: PG&E Drilling Method: Sonic Drilling Total Depth: Project: Final Groundwater Remedy Phase 147 ft bgs Driller Name: Steve Vasquez Borehole Diameter: 6-12 inches Location: 1 N. Dominguez/C. Alverez Drilling Asst: Depth to First Water: 47 ft bgs PG&E Topock, Needles, California Project Number: RC000753.0051 Logger: Connor Mills Editor: Sean McGrane Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed Topock -.81. Alluvium ML Deposits 82 83 Topock -Alluvium Deposits 84 85 Topock -Alluvium ML .86 Deposits 87 88 89 (5.0 - 137.0') Cemex (4.0 - 147.0') 6" (5.0 - 137.0') 55.3 (5.0 - 137.0') 68 bags (23%) 90 #3 MESH (8x10) Borehole Note: Lapis Lustre Sand Topock -Alluvium SM Deposits 92 93 IRZ-23-VAS-(<0.033 U ppb) 12/3/2018 .95 11:47 Topock -Alluvium SM 96 Deposits 97 98 Topock -SM Alluvium Deposits Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, blue water table symbol represents depth to water

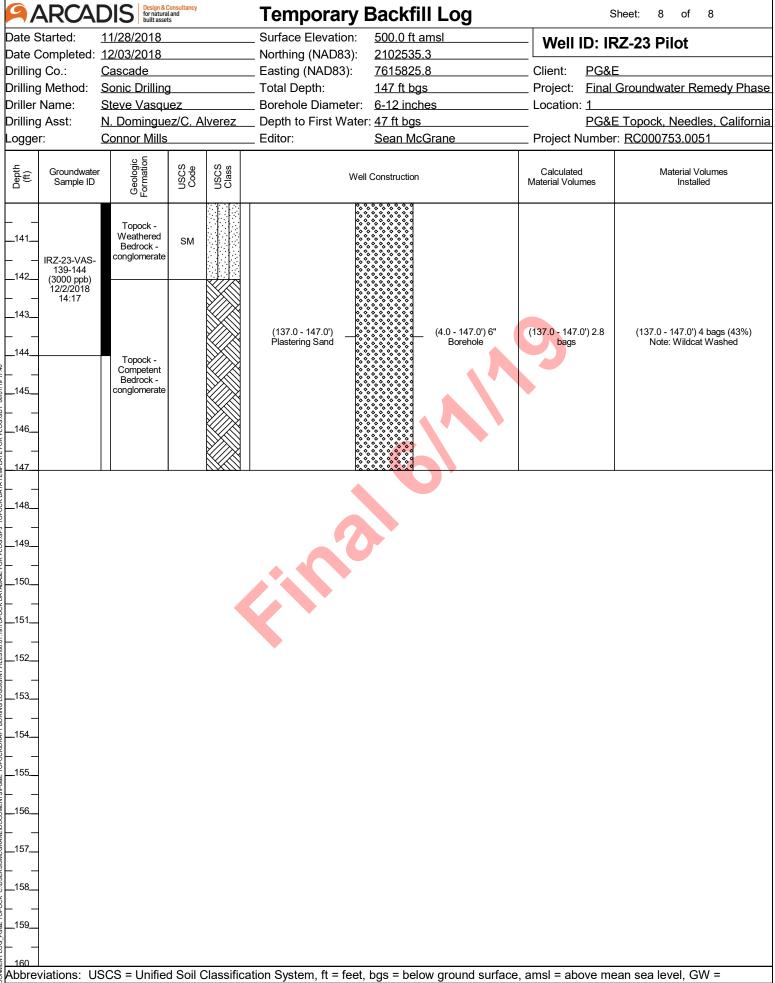
measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

Date Started: 11/28/2018	9 _A	RCA	DIS Design & for natura built asse	Consultancy all and ts		Temporary	Backfill Log	S	Sheet: 6 of 8
Date Completed: 1/20/20/18 Sonit Drilling Care Service Servi						Surface Elevation:	'	Well ID: IR	RZ-23 Pilot
Drilling Mothod: Sonic Prilling Project Rian Groundwater Remody Phase Drilling Asst: N Dominjuez/C. Averez Depth to First Water 47ft bgs Oceanor Mills Common Mills Editor: Sean McGrano Project Number: RC000753.0051 Editor: Sean McGrano Project Number: RC000753.0051 Project N	Date Co	ompleted:	12/03/2018			Northing (NAD83):	2102535.3		12 20 1 110 t
Drilling Asstr. Commonwealth Co	Drilling	Co.:	Cascade			Easting (NAD83):	<u>7615825.8</u>	Client: PG&E	<u> </u>
Definition First Water 47.ft bgs. Connor Mills Connor Mills Editor: Sean McGrane. Project Number: RC200753.0051 Figure 10 Fi	Drilling	Method:	Sonic Drilling			Total Depth:	<u>147 ft bgs</u>	Project: <u>Final</u>	Groundwater Remedy Phase
Definition First Water 47.ft bgs. Connor Mills Connor Mills Editor: Sean McGrane. Project Number: RC200753.0051 Figure 10 Fi	_		-	-				•	·
Control Mills Editor: Sean McGrane Project Number: RC000753.0051	Drilling	Asst:	-		lverez	Depth to First Water	r: <u>47 ft bgs</u>	PG&E	E Topock, Needles, California
Corondodor Section S	_		-			•	_		
Topochs SM Topoch Topoch Advours Deposits SM Topoch Advours Deposits Topoch Advours Deposits SM Topoch Advours Deposits Topoch Ad			0 5					<u> </u>	
Toposa- 102 103 104 105 106 107 108 109 109 109 109 109 109 109	Depth (ft)		Geologi Formatic	USCS	USCS	Wel	l Construction		
Toposition of Aduluum Disposition of Aduluum SM Disposition of SM	-		Alluvium	SM					
Topock Albutum Deposits SM 100 100 100 100 100 100 100 1	-		Alluvium	GM			4. 4. 4 4. 4.4. 7. 7. 1. 1.		
110	104 		Alluvium	SM					
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, blue water table symbol represents depth to water			Alluvium	GM	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	(5.0 - 137.0') Cemex			
groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, blue water table symbol represents depth to water			Alluvium Deposits						

measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

ARCADIS Design & Consumor for natural and hullt assets **Temporary Backfill Log** Sheet: Surface Elevation: 500.0 ft amsl 11/28/2018 Well ID: IRZ-23 Pilot Date Completed: <u>12/03/2018</u> Northing (NAD83): 2102535.3 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615825.8 Client: PG&E Drilling Method: Sonic Drilling Total Depth: Project: Final Groundwater Remedy Phase 147 ft bgs Driller Name: Steve Vasquez Borehole Diameter: 6-12 inches Location: 1 Drilling Asst: N. Dominguez/C. Alverez Depth to First Water: 47 ft bgs PG&E Topock, Needles, California Project Number: RC000753.0051 Logger: Connor Mills Editor: Sean McGrane Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed Topock -_121_ Alluvium SM Deposits 122 123 IRZ-23-VAS-Topock -122-127 (2000 ppb) 12/2/2018 Alluvium ML Deposits 125 09:24 _126_ 127 128 (5.0 - 137.0') Cemex (5.0 - 137.0') 55.3 (5.0 - 137.0') 68 bags (23%) #3 MESH (8x10) bags Note: Lapis Lustre Sand 129 Topock -(4.0 - 147.0') 6" 130 SM Alluvium Borehole Deposits 131 132 133 Topock -Alluvium ML _135_ Deposits 136 Topock -GM Alluvium 137 Deposits 138 Topock -Alluvium GM (137.0 - 147.0')(137.0 - 147.0') 2.8 (137.0 - 147.0') 4 bags (43%) Deposits Plastering Sand Note: Wildcat Washed _139_ Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =

groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the



groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the

ARCA	DIS for buil	sign & Consultan natural and ilt assets	псу	Drilling Log			Sheet: 1 of 8		
Date Started:	06/17/201	19	S	urface Elevation:	500.01	ft amsl	Borin	g No.: IRZ	7-23
Date Completed:	06/25/201	19		orthing (NAD83):	21025				<u> </u>
Drilling Co.:	Cascade			asting (NAD83):	<u>76158</u> 2		Client:	PG&E	
Drilling Method:	Dual Rota	-		otal Depth:	<u>150.4</u> 1	-	Project:	Final GW Rer	•
Drill Rig Type:	Foremost			onductor Casing Diameter:			Location:	PG&E Topoc	k, Needles, California
Driller Name:	Jon Marti			rill Casing Diameter:	18 inch				
Drilling Asst:	-				17 Tric		Project N	umber: RC00	0753.0051
Tool-Pusher:				epth to First Water: onverted to Well:	49.49		-		
Rig Geologist:	E. Redne	I / A. IVI	ack C		× Yes	S No			T
Depth Drilling Ru		USCS	Casing	Description		D. 181	. N. d		D.1111 - Electric
(ft) and Averag	le Codo	Class	Diameter	(See Pilot boring log for full geologic descriptions)		Drilling	y Notes		Drilling Fluid
			1	(0.0 - 2.0') Topock - Fluvial	(0.0	- 21.5') Loss of drilling fl	uid.		(0.0 - 21.5') 24.4 gallons
			1	Deposits; Poorly graded sand with silt and gravel (SP-SM); brown		2 7 2000 or ag			of water used; 0 gallons of water recovered; 24.4
_ 1 _	SP-SM		1	(7.5YR 5/3)					gallons of water lost
			1						
_ 2	-		1	(2.0 - 4.5') Topock - Fluvial	\dashv				
		60%		Deposits; Silty gravel with sand					
_ 3		190	-	(GM); brown (7.5YR 5/3)					
	GM		9						
_ 4		Polo							
		12P.							
_ 5	SW-SM		>	(4.5 - 5.0') Topock - Fluvial Deposits: Well graded sand with					
				Deposits; Well graded sand with silt (SW-SM); very pale brown / grayish orange (10YR 7/4)		Observed trace amoun Lustre Sand and some			
[_ 6 _]	ll ou	200		(5.0 - 7.0') Topock - Fluvial	MĖS	H (30/50) Lapis Lustre S			
	GM	19 P.		Deposits; Silty gravel with sand (GM); brown (7.5YR 5/3)	FIIO	o Log).			
		SYK		(-1.1), -1.1 (1.10.1.1.1)					
']	(7.0 - 17.0') Topock - Fluvial	7				
				Deposits; Poorly graded sand with silt and gravel (SP-SM)	'				
- 8 -]						
<u> </u>			}						
- 9 -			}	44					
 			(0.0 - 21.5')						
10 (0.0 - 21.5) 4.24 mins/ft			24.0" Steel Casing		(10.0)') Observed trace amou	ints of Cemex	(#3 MESH (8x10)	
			Casing		Lapi	s Lustre Sand in drill cut	tings (see Ph	oto Log).	
11			}						
			1	*					
12	SP-SM		1						
			1						
13									
			}						
_14			1			45.00 B			
			1		(14.0) - 15.0') Rough drilling.			
15			1						
					(15.0 amo) - 17.0') Normal drilling, unts of Cemex #3 MESH	observed tra	ce to little Lustre Sand in	
16			}			cuttings (See Photo Log)			
			1						
17]						
⊢ '' ⊣			1	(17.0 - 19.5') Topock - Fluvial	(17.0) - 18.0') Rough drilling.			
10			1	Deposits; Silty sand (SM); reddish brown (5YR 5/3) with brownish	'				
18	SM		1	yellow / dark yellowish orange (10YR 6/6)					
├ <u>.</u>			}						
19			}						
<u> </u>	SM		1	(19.5 - 23.0') Topock - Fluvial	+				
L_20_J Abbreviations: U\$		<u>ı∷i∷i∴.</u> fied Soil	Classificati	ion System, ft = feet, bgs = l	below a	round surface ams	sl = above i	mean sea level	. GW = aroundwater

ARC4	DIS for buil	sign & Consultan natural and It assets	су	Drilling Log					Sheet:	2 of 8
Date Started:	06/17/201			urface Elevation:	500.0 ft	am	sl	Borir	ng No.: IRZ	Z-23
Date Completed:		19		orthing (NAD83):	210253			_		<u></u>
Drilling Co.:	Cascade			asting (NAD83):	761582			_ Client:	PG&E	
Drilling Method:	Dual Rota	•		otal Depth:		_	3	•		medy Phase 1
Drill Rig Type:	Foremost			onductor Casing Diameter:				_ Location	: PG&E Topod	k, Needles, California
Driller Name: Drilling Asst:	Jon Martin		Di <u>Saylors</u> Di	rill Casing Diameter:	18 inche			- Droiget N	lumber: RC00	0752 0051
Tool-Pusher:	Arnold La		•	epth to First Water:	49.49 ft			_ Project i	iumber. <u>KC00</u>	0733.0031
Rig Geologist:	E. Redne			onverted to Well:	× Yes		No	_		
				Description	100] 110			
Depth (ft) Drilling Ri and Avera Penetration	ge Codo	USCS Class	Casing Diameter	(See Pilot boring log for full geologic descriptions)			Drillin	g Notes		Drilling Fluid
	ML GW-GM		(21.5 - 39.2) 18.0" Steel Casing	(23.0 - 23.5') Topock - Fluvial Deposits; Silt with sand (ML); gra (10YR 5/1) (23.5 - 27.0') Topock - Fluvial Deposits; Well graded gravel wit silt and sand (GW-GM); light brown (7.5YR 6/3) (27.0 - 30.5') Topock - Fluvial Deposits; Silty gravel (GM); brown (10YR 5/3) (30.5 - 31.5') Topock - Fluvial Deposits; Silty gravel (GM); brown (10YR 5/3) (31.5 - 32.0') Topock - Fluvial Deposits; Silt with sand (ML); gra (10YR 5/1) (32.0 - 35.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML); brown (7.5YR 5/3)	(21.5 d) (21.5 d) (25.0) (25.0) (26.0 d) (28.0 d) (28.0 d) (28.1 d) (28.0 d) (35.0)	- 39.2 - 39.2 - 38.0 - 38.0	served trace amoure Sand in drill cu 2') Loss of drilling served trace amoure Sand in drill cu 0') Rough drilling. 0') Slow drilling, e ift. bgs.	fluid. Introduction of Ceme titings (See Planta of Ceme variety) Introduction of Ceme variety (See Planta of Ceme variety)	x #3 MESH (8x10) hoto Log). ery hard boulder x #3 MESH (8x10)	(21.5 - 39.2') 30.5 gallons of water used; 0 gallons of water recovered; 30.5 gallons of water lost
36 37 38 39	ML			(ML); brown (7.5YR 5/3) (37.0 - 47.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML)						
(39.2 - 59.0 2.02 mins/			(39.2 - 59.0') 18.0" Steel		(39.2	- 59.0	0') Loss of drilling	fluid.		(39.2 - 59.0') 6.1 gallons of water used; 0 gallons of
40		iied Soil	Classificati	on System, ft = feet, bgs =	below are		d surface am	sl = above	mean sea leve	
		5011	J.5.55IOUL		2.2 910		, all,	42010		., z groundwater

9/	ARCA	DIS	5 Des for i	ign & Consult natural and t assets	ancy	Drillin	g Log				She	et: :	3 of 8
	Started:		7/201			Surface Elevation			0.0 ft amsl	Borin	g No.:	IRZ	'-23
	Completed:			9		Northing (NAD83)	•		02535.3				
Drilling		Case				Easting (NAD83):			15825.8	Client:	PG&E		
_	g Method:		Rota	-		Total Depth:	.		0.4 ft bgs				nedy Phase 1
	ig Type:			DR-24		Conductor Casing	•			Location:	PG&E I	opoci	k, Needles, California
	Name:		<u>Martir</u>			Drill Casing Diame	eter:		inches	Drainat N		2000	752 0051
_	g Asst: Pusher:		old La		<u>Saylors</u>	Depth to First Wa	tor:		Tricone .49 ft bgs	Projectiv	umber. <u>r</u>	<u> </u>	0753.0051
	eologist:			· / A. M		Converted to Wel		×					
9	T T				I				10310				
Depth (ft)	Drilling Ru and Averag Penetration F	ge I'	JSCS Code	USCS Class	Casing Diamete		ring log for		Drilling	Notes			Drilling Fluid
41_ 42_ 43_													water recovered; 6.1 gallons of water lost
44			ML					*	(45.0') Observed trace amou Lapis Lustre Sand in drill cut	nts of Cemex tings (See Ph	#3 MESH oto Log).	(8x10)	
- 48 - 48 	(39.2 - 59.0 2.02 mins/fi		SM		(39.2 - 59. 18.0" Ste		d (SM)	¥					
50	2.02 111110311		SM		Casing	Deposits; Silty sand (SM)	d with gravel						
53		l				Deposits; Silt with	sand (ML)						
56			ML						(55.0') Observed trace amou Lapis Lustre Sand in drill cut	nts of Cemex tings (See Ph	#3 MESH loto Log).	(8x10)	
58													
60	(59.0 - 79.0 1.65 mins/fi		SM		(59.0 - 79. 18.0" Ster Casing	el (59.5 - 62.0') Topo			(59.0 - 79.0') Loss of drilling				(59.0 - 79.0') 6.1 gallons of water used; 0 gallons of water recovered; 6.1
<u> </u>						•			ow ground surface, ams	l = above r	mean sea	a level	, GW = groundwater
Rema	rks: blue w	ater t	able s	ymbol	represent	s depth to water m	neasured du	ırinç	g the first VAS interval				

AF	RCAI	DIS	Design & C for natural built asset	Consultar Land es	псу	Drilling Log					Sheet:	4 of 8
Date Start Date Com		06/17/2				urface Elevation:		00.0 ft amsl 102535.3	Во	rin	g No.: IR	<u>Z-23</u>
	-					orthing (NAD83):			Client		PG&E	
Drilling Co		Cascad				asting (NAD83):		615825.8				mady Dhana 1
Drilling Me		Dual Ro Foremo	•	2.4		otal Depth: onductor Casing Diameter:		50.4 ft bgs	Projec			medy Phase 1 ck, Needles, California
Drill Rig Ty Driller Nan		Jon Ma				rill Casing Diameter:		8 inches	Local	ЮП.	PG&E TOPOC	ck, Needles, Calliornia
Drilling As					Saylors D	_		7 Tricone	Droio	ot NI	umber: RC00	0.752.0051
Tool-Push		Arnold			-				rioje	CLIN	umber. <u>RC00</u>	0733.0031
Rig Geolo		E. Redi				epth to First Water: onverted to Well:		9.49 ft bgs				
Ng Geolo	yısı.	L. Neul	ICI / F	1. IVI	ack C			Yes No				T
Depth C	Orilling Run	usc	25 119	scs	Casing	Description						
/fi\ al	nd Average netration Ra	9 000		lass	Diameter	(See Pilot boring log for full geologic descriptions)		Drilling	Notes			Drilling Fluid
						Deposits; Silty sand with gravel (SM); brown (7.5YR 5/3)						gallons of water lost
61						(SW), DIOWIT (7.51 K 5/5)						
61		SM	1									
					}							
62				#	1	(62.0 - 69.5') Topock - Alluvium						
					-	Deposits; Silty sand with gravel (SM); brown (7.5YR 5/3)						
63					1	(OM), Brown (1.0110 Gro)						
					1							
64												
					}							
65					1			(CE 01) Ob 1:M1	.tt O		#2 MECH (0-40)	
					1			(65.0') Observed little amoun Lapis Lustre Sand in drill cutt				
66		SM	1		1							
					.]		4					
67					}		ľ					
					}							
68					1							
60												
69	9.0 - 79.0)] (59.0 - 79.0')							
「	65 mins/ft				18.0" Steel Casing	(69.5 - 72.0') Topock - Alluvium						
70					. J Gasg	Deposits; Silty sand with gravel (SM); brown (7.5YR 5/3)						
		SM	, 🔛									
71			' :		1							
<u> </u>						·						
72			_ <u> </u>	1	1	(72.0 - 82.0') Topock - Alluvium	-	(72.0 - 73.0') Drill rods chatte	ering rou	ıah d	rilling potential	-
<u> </u>						Deposits; Silt with sand (ML); reddish brown (5YR 5/3)		hard rock	,,,,g,,,e,	-g u	g poterida	
73						readish brown (5YR 5/3)						
74												
75												
								(75.0') Observed little amoun Lapis Lustre Sand in drill cutt	its of Cei	mex a	#3 MESH (8x10)	
76								Lapio Labiio Gaira III aliii Gai	90 (00		.e.e 20g/.	
<u> </u>		ML	.									
₇₇												
77												
t <u> </u>												
78												
 												
79					(79.0 - 94.0')	-		(79.0 - 98.6') Drilled with wat	er.			(79.0 - 98.6') 24.4 gallons
	9.0 - 94.0) 53 mins/ft				18.0" Steel			, , , , , , , , , , , , , , , , , , , ,				of water used; 157 gallons of water recovered; 132.6
80		200 - 11	lnifi!	C-:	Classificati	on Custom ft = fact h == =	<u> </u>	low ground confess	J		maan ass ls:	
Municipal (uns: US	00 = U	nined	30II	Ciassificati	on System, ft = feet, bgs =	υel	iow ground surface, ams	ı – abo	ve r	nean sea leve	i, Gvv – groundwater

9/	ARCA	DIS	Desi for n built	ign & Consult natural and t assets	tancy	Drilling Log						Sheet:	5 of 8
	Started:	06/17				Surface Elevation:		0.0 ft			Borir	ıg No.: <u>I</u>	RZ-23
	Completed:			9		Northing (NAD83):		10253					
Drilling	g Co.: g Method:	Casca Dual		m /		Easting (NAD83): Total Depth:		51582 50.4 ft			Client: Project:	PG&E	Remedy Phase 1
1	ig Type:			DR-24		างเลเ Deptri. Conductor Casing Diameter:			•		•		ock, Needles, California
	Name:	Jon N				Drill Casing Diameter:		3 inche			Location	· · · · · · · · · · · · · · · · · · ·	rook, recedes, Gamorna
	g Asst:				Saylors	_		7 Tricc			Project N	lumber: RC	000753.0051
Tool-F	Pusher:	Arnol	d Laı	mon		Depth to First Water:	49	9.49 ft	bgs				
Rig G	eologist:	E. Re	dner	/ A. N	lack	Converted to Well:	×	Yes	No				
Danath	Drilling Ru	n	000	LICOS	0	Description							
Depth (ft)	and Average Penetration F	le l C	SCS ode	USCS Class		(See Pilot boring log for full geologic descriptions)				Drilling	Notes		Drilling Fluid
						· · · · · · · · · · · · · · · · · · ·							gallons of water gained
81	-												
01	-		ML										
82													
						(82.0 - 84.5') Topock - Alluvium Deposits; Silty sand (SM); brown							
83					퇇	(7.5YR 4/4)							
-		:	SM										
84	-				실								
20 15:43	-				극	(84.5 - 87.0') Topock - Alluvium							
85	-					Deposits; Sandy silt (ML); reddis brown (5YR 5/4)	۱	(85.0')) Observed li	ttle amoun	ts of Cemex	#3 MESH (8x1)	0)
	_		ML			Sistem (6 111 6) 1			Lustre Sand				
일 86	-				. :								
발 실87	(79.0 - 94.0)				(79.0 - 94.0								
	3.53 mins/ft				: 18.0" Stee Casing	(87.0 - 94.5') Topock - Alluvium Deposits; Silty sand (SM); brown		Ĭ					
X88						(7.5YR 4/4)							
10P00													
89	-							(00.0	00.01\ D	.L. J.::::			
OR PLC	-							(89.0	- 90.0') Roug	gn arilling.			
90	-												
ATA -			SM		A .								
[91	-	III '	JIVI		젊								
02.19	-												
92	-												
93					설								
SPOTO													
94								(2.1.2					
- PRAFT	-				쐮	(04.5. 07.01) T-11-11. All 11 in in-11-		(94.0	- 96.0') Slow	drilling.			
<u>95_</u>	-					(94.5 - 97.0') Topock - Alluvium Deposits; Silty sand (SM); reddis	h						
SE TO	-		214			brown (5YR 5/4)							
96	(94.0 - 98.6)		SM		(94.0 - 98.0 18.0" Stee	5')							
- OCCUME	4.18 mins/ft				Casing	51 							
<u>-</u> 97_	-				ä	(97.0 - 102.0') Topock - Alluvium							
SMCGF	-					Deposits; Silty sand (SM); dark yellowish brown (10YR 4/4)							
98	1		214		3								
ਰੋ <u> </u>			SM		· (08 6 110	3'\		(98.6	- 118.3') Drill	led with wa	iter.		(98.6 - 118.3') 2403.4 gallons of water used;
DAD -	(98.6 - 118.3 4.41 mins/ft				18.0" Stee								4200 gallons of water recovered; 1796.6 gallons
100					Casing								of water gained
						ation System, ft = feet, bgs =					I = above	mean sea le	evel, GW = groundwater
≝ <mark>kema</mark>	rks: Diue W	aler ta	nie s	yrnbol	represents	depth to water measured d	urin	ig the	IIISL VAS I	nterval			

9/	ARCA	DIS	for n built	gn & Consultan atural and assets	су	Drilling Log				Shee	et: 6	6 of 8
Date S	Started:	06/17	/201	9	S	urface Elevation:	<u>50</u>	00.0 ft amsl	Borin	g No.:	IRZ	'-23
	Completed:			9		orthing (NAD83):	<u>2</u> 1	102535.3				
Drilling		Casca				asting (NAD83):		615825.8	Client:	PG&E		
_	Method:	<u>Dual I</u>		•		otal Depth:		50.4 ft bgs	Project:			nedy Phase 1
	ig Type: Name:	Jon M		DR-24		onductor Casing Diameter: rill Casing Diameter:		inches :	Location:	PG&E I	ороск	k, Needles, California
	g Asst:				Saylors D			7 Tricone	Project N	umber R	SCUUC	753.0051
_	Pusher:	Arnole			-	epth to First Water:		9.49 ft bgs	1 10,00011	umbor. <u>1-</u>	10000	77 00.000 1
	eologist:			/ A. Ma		onverted to Well:		Yes No				
						Description	Ŧ					
Depth (ft)	Drilling Ru and Averag Penetration F	je 0,	SCS ode	USCS Class	Casing Diameter	(See Pilot boring log for full geologic descriptions)		Drilling	Notes			Drilling Fluid
101		\$	SM					(101.0') Rough drilling.				
102			3M			(102.0 - 103.0') Topock - Alluviun Deposits; Silty gravel (GM); brow (7.5YR 4/4)	n					
103	-			00		(103.0 - 107.0') Topock - Alluviun Deposits; Silty sand with gravel			V			
104						(SM); dark yellowish brown (10YF 4/4)	3					
105			SM					(105.0') Observed trace amou (8x10) Lapis Lustre Sand in o				
106	1							(0x10) Lapis Lustre Sand in C	ariii cuttirigs (See Filoto L	-og).	
107	-	н		3 4 1 3		(107.0 - 117.0') Topock - Alluviun	1					
						Deposits; Silty gravel (GM); brow (10YR 4/3)	à					
109_	(98.6 - 118.3 4.41 mins/ft				(98.6 - 118.3' 18.0" Steel Casing							
110												
111												
112			GM -									
113												
114												
115								(115.0') Observed trace amou (8x10) Lapis Lustre Sand in c	drill cuttings (ex #3 MESH See Photo L	_og).	
116								(115.1 - 118.3') Slow drilling/l				
117						(117.0 - 122.0') Topock - Alluviun Deposits; Silty sand with gravel	1					
118	-					(SM); brown (7.5YR 4/4)						
	(118.3 - 139.: 4.30 mins/ff	2)	SM		(118.3 - 139.2') 18.0" Steel Casing			(118.3 - 147.0') Drilled with w	ater.			(118.3 - 147.0') 608.48 gallons of water used; 6040 gallons of water recovered; 5431.52 gallons of water gained
120_ Abbre	uiations: Us	SCS =	Unifi	ed Soil	L Classificati	ion System, ft = feet, bgs =	 bel	 ow ground surface. ams	l = above i	mean sea	level	GW = groundwater
2						depth to water measured du		<u> </u>	3,23,31			J. 2 3.14 (140)

9/	ARCA	DIS	for r built	ign & Consultan natural and t assets	су	Drilling Log					She	et: 7	of 8
	Started:	06/17				urface Elevation:		00.0 ft		Borin	g No.:	IRZ	-23
	Completed:			9		orthing (NAD83):		10253		_			
Drilling		Casca				asting (NAD83):		61582		_ Client:	PG&E	N D = ==	and Dhana 4
_	g Method: ig Type:	<u>Dual F</u>		ry DR-24		otal Depth: onductor Casing Diameter:		<u>50.4 ft</u> 4 inch <i>e</i>	-	_ Project:			nedy Phase 1 x, Needles, California
	Name:	Jon M				rill Casing Diameter:		8 inche		_ Location.	1 OUL 1	ороск	, recaics, Camorria
Drilling				z/W. S		rill Bit:		7 Trico		_ _ Project N	umber: <u>F</u>	RC000	753.0051
	Pusher:	Arnolo				epth to First Water:	4	9.49 ft	bgs	_			
Rig G	eologist:	E. Re	dner	/ A. Ma	ack C	onverted to Well:	×	Yes	☐ No				
Depth	Drilling Ru		SCS	USCS	Casing	Description							
(ft)	and Average Penetration F	ge C	ode	Class	Diameter	(See Pilot boring log for full geologic descriptions)			Drillir 	ng Notes			Drilling Fluid
121	-	S	SM										
122	_					(122.0 - 127.0') Topock - Alluviun Deposits; Sandy silt with gravel	 1						
123		ш				(ML); yellowish red (5YR 4/6)							
124	_	ш											
125		N	ИL										
									0') Observed trace to I I (8x10) Lapis Lustre S				
126	-	ш						Log).					
127	_												
		ш				(127.0 - 133.0') Topock - Alluviun Deposits; Silty sand (SM); (5YR 4/8)	ו						
128	-	ш				70-							
129	- - (118.3 - 139.:	2)			(118.3 -								
130	4.30 mins/ft	: []	SM		139.2') 18.0" Steel Casing								
131	-	ш											
132		ш				•							
		ш											
133	-	-				(133.0 - 136.5') Topock - Alluviun	1						
134]					Deposits; Sandy silt (ML); reddish brown (5YR 4/3)	1						
: 	1	Ш.	_										
135	1		ИL					(135.0	0') Observed trace am	ounts of Ceme	ex #3 MESH	ı	
	+) Lapis Lustre Sand in				
136	†							(136.0	0 - 139.0') Rough drilli	ng.			
127	-		SM	474		(136.5 - 137.0') Topock - Alluviun	ı						
137	1					Deposits; Silty gravel (GM); dark gray (7.5YR 4/1)							
138]					(137.0 - 139.5') Topock - Alluviun Deposits; Silty gravel with sand (GM); reddish brown / moderate	ו ו						
			ΘM			(GM); reddish brown / moderate brown (5YR 4/4)							
139	1			PJOS									
-	(139.2 - 147.0	0)				(139.5 - 142.0') Topock -							
140 Abbre	2.57 mins/ft		SM Llnif	ied Soil	Classificati	on System, ft = feet, bgs =	he	low ar	ound surface am	isl = ahove i	mean sea	ו ופעפו	GW = aroundwater
Long	viauoris. U	- 200	UIII	icu OUII	Jiassiillali	on Oysioni, it - ieet, bys -	26	JOW GIL	Juliu Juliace, alli		ilicali SC	a icvei,	OVV - groundwater

9/	ARCA	DIS	Design & Consultar for natural and built assets	псу	Drilling Log		Sheet:	8 of 8
Date S	Started:	06/17/2	2019	S	urface Elevation:	500.0 ft amsl	Boring No.: IRZ	7 -23
Date 0	Completed:	06/25/2	2019	N	orthing (NAD83):	2102535.3		
Drilling	g Co.:	Casca	de	E	asting (NAD83):	7615825.8	Client: <u>PG&E</u>	
Drilling	Method:	<u>Dual R</u>	otary	To	otal Depth:	150.4 ft bgs	Project: Final GW Rer	medy Phase 1
Drill Ri	ig Type:	<u>Forem</u>	ost DR-24	HDC	onductor Casing Diameter:	24 inches	Location: PG&E Topoc	<u>k, Needles, California</u>
Driller	Name:	Jon Ma	artinez	D	rill Casing Diameter:	18 inches		
Drilling	Asst:	E. Mar	tinez / W. :	<u>Saylors</u> D	rill Bit:	17 Tricone	Project Number: RC00	0753.0051
Tool-F	Pusher:	<u>Arnold</u>	Lamon	D	epth to First Water:	49.49 ft bgs	_	
Rig G	eologist:	E. Red	ner / A. Ma	ackC	onverted to Well:	× Yes No		
	Drilling Ru	n			Description			
Depth (ft)	and Averag	je 030		Casing Diameter	(See Pilot boring log for	Drilling	g Notes	Drilling Fluid
()	Penetration F	Rate			full geologic descriptions)			
141 142 143 144	(139.2 - 147.(2.57 mins/ft		VI	(139.2 - 147.0') 17.5" Open Hole	Weathered Bedrock - conglomerate; Silty sand (SM); yellowish red (5YR 4/6) (142.0 - 150.4') Topock - Competent Bedrock - conglomerate; yellowish red (5YR 4/6); No Recovery overdrilled with DR rig for well installation	cuttings (See Photo Log).	ounts of Plastering Sand in drill	
-								
145								
- - -				3				
146	-			1				
-	-							
147					-	(147.0 - 150.4') Drilled with v	water.	
-	-							
148								
	(147.0 - 150.4			(147.0 - 150.4') 17.5"				
149	20.59 mins/f			Open Hole				
	-							
150	-			4				
151					End of Boring at 150.4 'bgs.			
151								
152								
132	•							
152								
153	1							
154	1							
1.04	1							
155	1							
155	1							
150	1							
156	1							
	-							
157	1							
	-							
158	1							
-								
159	+							
- - -								
160 Abbre	viations: T1	SCS = I	Inified Soil	Classificati	ion System, ft = feet, bgs =	below ground surface amo	sl = above mean sea level	GW = aroundwater
					depth to water measured di		s. above mean sea ievei	, orr groundwater

ARCA	DIS Design & for natura built asset	Consultancy al and its		Well Consti	ruction Log	:	Sheet: 1 of 8
Date Started:	06/26/2019			_Surface Elevation:	500.0 ft amsl	- Well ID: IR	Z-23
Date Completed:	06/30/2019			_Shallow Well Elevation:	N/A		
Drilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	<u> </u>
	Dual Rotary			_Northing (NAD83):	2102535.3	Project: <u>Final</u>	GW Remedy Phase 1
Driller Name:	Jon Martinez			_Easting (NAD83):	7615825.8	Location: PG&E	Topock, Needles, California
Drilling Asst:	E. Martinez /	W. Sayl	ors	_Borehole Diameter:	17.5-24 inches		
Logger:	Athony Mack			_Water Level Start:	46.85 ft bgs	Project Numbe	r: RC000753.0051
Editor:	Sean McGrar	ne		Development End Date:			
Total Depth:	150.4 ft bgs	1		_Well Completion:			I
Groundwat Sample IE		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
	Topock - Fluvial Deposits	SP-SM		(0.0 - 92.1') 10" — % % Suregrip 17 Casing			
3 4	Topock - Fluvial Deposits	GM		(0.0 - 6.0') #0/30 — sand		(0.0 - 6.0') 31.1 bags	(0.0 - 6.0') 35 bags (13%) Note: Lapis Lustre Sand
_ 5 _	Topock - Fluvial Deposits	SW-SM		\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\			
_ 6 _	Topock - Fluvial	GM		\$\frac{\dagger}}}}}}}}}}}\dagger{\dagger{\dagger{\dagger{\dagg			
	Deposits	Oivi					
7 8 9 10 11 12 13 14 15 16 17 18 19 19 19 19 19 10 17 18 19 19 10 10 11 12 12 13 14 15 16 17 18 19 19 19 10 10 10 11 12 13 14 15 16 17 18 19 19 19 10 10 10 11 12 13 14 15 16 17 18 19 19 19 10 10 10 11 12 13 14 15 16 17 18 19 19 19 10 10 10 10 11 12 13 14 15 17 18 19 19 19 19 10 10 10 10 11 12 13 14 15 17 18 19 19 19 10	Topock - Fluvial Deposits Topock - Fluvial Deposits	SP-SM SM	<u> </u>	(6.0 - 66.5') Portland Cement 3% Bentonite	(0.0 - 21.5') 24.0" Borehole	(6.0 - 66.5') 737.1 gallons	(6.0 - 66.5') 1060 gallons (44%) Note: Type I, II and V and Benseal, used >20% of the calculated volume due to potential grout migration and voids forming during drilling
20) <u>V</u>		1

ARC ⁴	DIS Design & for natura built asse	Consultancy al and its		Well Const	ruction Log	5	Sheet: 2 of 8
Date Started:	06/26/2019			_Surface Elevation:	500.0 ft amsl	Well ID: IR	Z-23
Date Completed				_Shallow Well Elevation:	N/A		
Drilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
Drilling Method:	<u>Dual Rotary</u>			_Northing (NAD83):	2102535.3	•	GW Remedy Phase 1
Driller Name:	Jon Martinez			_Easting (NAD83):	7615825.8	Location: <u>PG&E</u>	Topock, Needles, California
Drilling Asst:	E. Martinez / \	-	ors	_Borehole Diameter: _Water Level Start:	17.5-24 inches 46.85 ft bgs	— — — — — — — — — — — — — — — — — — —	r: RC000753.0051
Logger: Editor:	Athony Mack Sean McGrar			_vvaler Lever Start. _Development End Date:	•	Project Number	1. KC000753.0051
Total Depth:	150.4 ft bgs	ie		_Development End Date. _Well Completion:		<u> </u>	
Total Beptili.				_ vvcii Compiction.	7 I Idon Cuok-up		
Groundwa Sample II		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
21	Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Fluvial Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits	SM :		(27.5 - 28.5') Centralizer (6.0 - 66.5') Portland Cement 3% Bentonite	(21.5 - 39.2') 18.0" Borehole	(6.0 - 66.5') 737.1 gallons	(6.0 - 66.5') 1060 gallons (44%) Note: Type I, II and V and Benseal, used >20% of the calculated volume due to potential grout migration and voids forming during drilling
40					(39.2 - 59.0') 18.0" Borehole		
1							

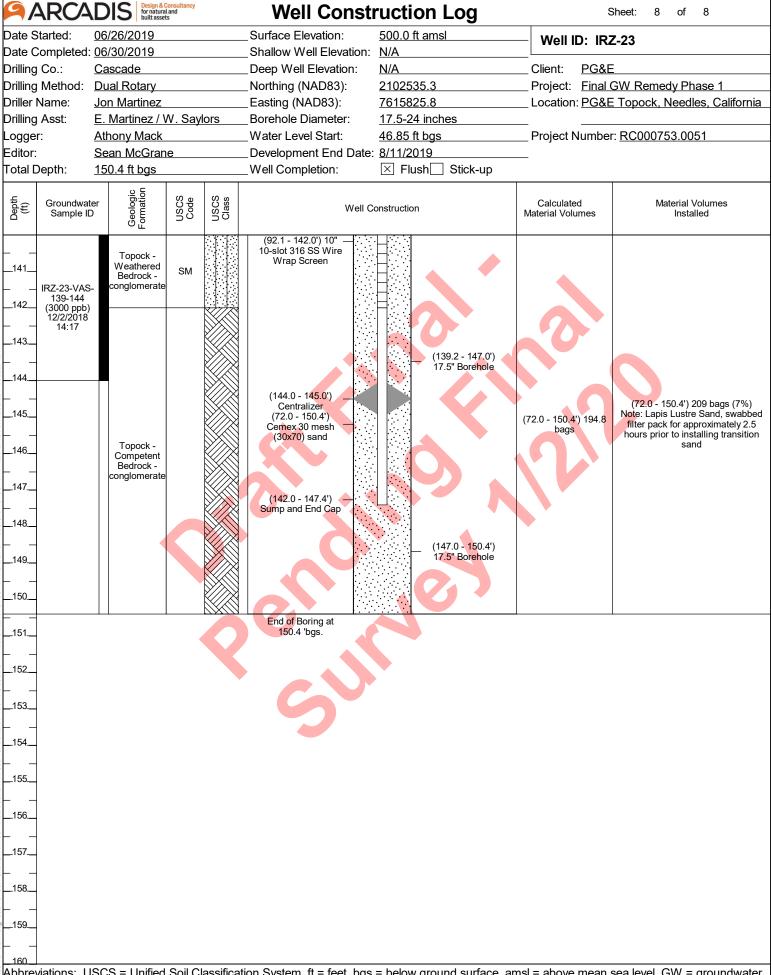
9/	ARCA	DIS Design & for natura built asse	Consultancy al and ts		Well Const	ruction Log	\$	Sheet: 3 of 8
	Started:	06/26/2019			Surface Elevation:	500.0 ft amsl	Well ID: IR	Z-23
	-	06/30/2019			Shallow Well Elevation:	N/A		_
Drilling		<u>Cascade</u>			Deep Well Elevation:	N/A	Client: PG&E	
_	Method: Name:	Dual Rotary Jon Martinez			Northing (NAD83): Easting (NAD83):	2102535.3 7615825.8	•	GW Remedy Phase 1 Topock, Needles, California
Drilling		E. Martinez / \	W Sav	lors	Borehole Diameter:	17.5-24 inches	Location. <u>F Gxt</u>	Topock, Needles, Calliottia
Logge		Athony Mack	-	1010	Water Level Start:	46.85 ft bgs	Proiect Numbe	r: RC000753.0051
Editor:		Sean McGrar			Development End Date:			
Total D		150.4 ft bgs			Well Completion:			
_		.≌ 6		(0				
Depth (ft)	Groundwat Sample ID		Code	USCS		onstruction	Calculated Material Volumes	Material Volumes Installed
41	IRZ-23-VAS 57-62 (5.3 ppb) 11/30/2018	Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits	SM SM		(6.0 - 66.5') Portland Cement 3% Bentonite	(39.2 - 59.0') 18.0" Borehole	(6.0 - 66.5') 737.1 gallons	(6.0 - 66.5') 1060 gallons (44%) Note: Type I, II and V and Benseal, used >20% of the calculated volume due to potential grout migration and voids forming during drilling
59	12:46					(59.0 - 79.0') 18.0"		
			SM			Borehole		
60		CCC - Unific d		<u> [] </u>	**************************************	4 V/Al		and level CW = groundwater

9/	ARCA	DIS Design 8 for natur built ass	al and ets		Well Const	ruction Log	\$	Sheet: 4 of 8
		06/26/2019			_Surface Elevation:	500.0 ft amsl	Well ID: IR	Z-23
	=	06/30/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_ Deep Well Elevation:	N/A	Client: PG&E	
_		Dual Rotary			_Northing (NAD83):	2102535.3		GW Remedy Phase 1
Driller		Jon Martinez		loro	_Easting (NAD83): Borehole Diameter:	7615825.8	Location: PG&E	Topock, Needles, California
Drilling		E. Martinez / Athony Mack		iors	Borenole Diameter. Water Level Start:	17.5-24 inches 46.85 ft bgs	— Project Numbe	r: <u>RC000753.0051</u>
Logge Editor:		Sean McGrai			_ vv ater Lever Start. _Development End Date:	_	Floject Nullibe	1. NC000733.0031
Total D		150.4 ft bgs	10		Well Completion:			
							1	
Depth (ft)	Groundwate Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
61 62 63 64 65 66 67	IRZ-23-VAS 57-62 (5.3 ppb) 11/30/2018 12:46	Topock -	SM		(6.0 - 66.5') Portland Cement 3% Bentonite (63.6 - 64.6') Centralizer		(6.0 - 66.5') 737.1 gallons	(6.0 - 66.5') 1060 gallons (44%) Note: Type I, II and V and Benseal, used >20% of the calculated volume due to potential grout migration and voids forming during drilling (66.5 - 68.6') 4 bags (12%)
68 69 70	IRZ-23-VAS- 67-72 (85 ppb) 12/1/2018	-			(66.5 - 68.6') Bentonite seal chips	(59.0 - 79.0') 18.0" Borehole	(66.5 - 68.6') 3.56 bags	Note: Puregold Medium Chips, installed bentonite seal at the request of the drillers to prevent grout migration (68.6 - 72.0') 11 bags (51%)
71	08:50	Topock - Alluvium Deposits	SM		(68.6 - 72.0') Cemex— #60 (40x70 mesh)		(68.6 - 72.0') 7.3 bags	Note: Lapis Lustre Sand, used >20% of the calculated volume due to potential voids forming during drilling
		Topock - Alluvium Deposits	ML		(72.0 - 150.4') Cemex 30 mesh (30x70) sand	(79.0 - 94.0') 18.0" Borehole	(72.0 - 150.4') 194.8 bags	(72.0 - 150.4') 209 bags (7%) Note: Lapis Lustre Sand, swabbed filter pack for approximately 2.5 hours prior to installing transition sand
	viations: II	SCS = Unified	l Soil C	lassifica	tion System ft = feet has	= below ground surface a	msl = ahove mean	sea level. GW = groundwater.

9/-	ARCA	DIS Design & for natura built asse	al and ets		Well Const	ruction Log	\$	Sheet: 5 of 8
Date S		06/26/2019			_Surface Elevation:	500.0 ft amsl	Well ID: IR	Z-23
	-	06/30/2019			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_ Deep Well Elevation:	N/A	Client: PG&E	
Drilling Driller N		Dual Rotary Jon Martinez			_Northing (NAD83): _Easting (NAD83):	2102535.3 7615825.8		GW Remedy Phase 1 Topock, Needles, California
Drilling		E. Martinez / \		lors	Borehole Diameter:	17.5-24 inches	Location. 1 Gal	_ TOPOCK, Necules, Calliottila
Logger		Athony Mack	-		Water Level Start:	46.85 ft bgs	Project Numbe	r: RC000753.0051
Editor:		Sean McGrar			 _Development End Date:	_	<i>,</i>	
Total D	epth:	150.4 ft bgs			_Well Completion:	⊠ Flush⊡ Stick-up		
Depth (ft)	Groundwat Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
 81 82		Topock - Alluvium Deposits	ML		(0.0 - 92.1') 10" —			
83 84		Topock - Alluvium Deposits	SM					0
85 86 		Topock - Alluvium Deposits	ML			(79.0 - 94.0') 18.0"	2	
		Topock - Alluvium Deposits	SM		(72.0 - 150.4') Cemex 30 mesh (30x70) sand (92.1 - 142.0') 10" 10-slot 316 SS Wire Wrap Screen	Borehole	(72.0 - 150.4') 194.8 bags	(72.0 - 150.4') 209 bags (7%) Note: Lapis Lustre Sand, swabbed filter pack for approximately 2.5 hours prior to installing transition sand
94 95	IRZ-23-VAS- 92-97 (<0.033 U ppb) 12/3/2018							
 96 97	11:47	Topock - Alluvium Deposits	SM			(94.0 - 98.6') 18.0" Borehole		
98 99 		Topock - Alluvium Deposits	SM			(98.6 - 118.3') 18.0" Borehole		aca lovel CW = groundwater

9/-	ARCA	DIS for natural built as	iral and sets		Well Const	ruction Log	\$	Sheet: 6 of 8	
Date S		06/26/2019			_Surface Elevation:	500.0 ft amsl	Well ID: IR	Z-23	
	-	06/30/2019			_Shallow Well Elevation:	·			
Drilling Co.: <u>Cascade</u>				_ Deep Well Elevation:	N/A	Client: PG&E			
Drilling Method: <u>Dual Rotary</u>				_Northing (NAD83):	2102535.3	•	GW Remedy Phase 1		
Driller Name: <u>Jon Martinez</u> Drilling Asst: <u>E. Martinez / W. Saylors</u>			lore	_Easting (NAD83): Borehole Diameter:	7615825.8 17.5-24 inches	Location: PG&E Topock, Needles, California			
Logger: Athony Mack			1013	Water Level Start:	46.85 ft bgs	Project Number: <u>RC000753.0051</u>			
Editor:		Sean McGrane			Development End Date:	_			
Total Depth:		150.4 ft bgs			Well Completion:				
_		in G	Τ.,						
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed	
		Q.G.				1 1			
					(92.1 - 142.0') 10" — · · · · · · · · · · · · · · · · · ·				
101		Topock - Alluvium	SM		Wrap Screen				
		Deposits							
102		Tanada				H			
		Topock -	GM	600					
103		Deposits		0 0			0		
104									
		Topock -							
105		Alluvium Deposits	SM						
_									
100									
 107									
108				196					
				600					
109				200		(98.6 - 118.3') 18.0"			
						(98.6 - 118.3') 18.0" Borehole		(72.0 - 150.4') 209 bags (7%)	
_110				PJ 69	(72.0 - 150.4')		(72.0 - 150.4') 194.8	Note: Lapis Lustre Sand, swabbed filter pack for approximately 2.5	
				640	Cemex 30 mesh (30x70) sand		bags	hours prior to installing transition sand	
111			•	205					
		Topock -							
112		Alluvium Deposits	GM	Polo					
		Deposits							
113				PI					
114				P					
_									
115				PI					
116									
				PIN					
117									
L]									
118									
L _		Topock - Alluvium	SM			H:			
119		Deposits				(118.3 - 139.2')			
<u> </u>						18.0" Borehole			
120		000 - 11-:5-	-1.0-:1.0					oog lovel CW = groundwater	

9/-	ARCA	DIS for natura built asse	al and ts		Well Const	ruction Log	\$	Sheet: 7 of 8	
Date S		06/26/2019			_Surface Elevation:	500.0 ft amsl	Well ID: IR	Z-23	
Date Completed:					_Shallow Well Elevation:	•			
Drilling Co.:		Cascade			_Deep Well Elevation:	N/A	Client: PG&E		
Drilling Method:		Dual Rotary			_Northing (NAD83):	2102535.3	Project: Final GW Remedy Phase 1		
		Jon Martinez	AL Cov		_Easting (NAD83):	7615825.8	Location: PG&E Topock, Needles, Ca		
_		E. Martinez / \	-	iors	_Borehole Diameter: _Water Level Start:	17.5-24 inches 46.85 ft bgs	Project Number: <u>RC000753.0051</u>		
Logger: Editor:		Athony Mack			vvaler Level Start. Development End Date:	_	Project Number	. KC000755.0051	
Total D		Sean McGrane 150.4 ft bgs			Bevelopment End Bate. Well Completion:				
1									
Depth (ft)	Groundwate Sample ID		USCS Code USCS Class			onstruction	Calculated Material Volumes	Material Volumes Installed	
 121 		Topock - Alluvium Deposits	SM		(92.1 - 142.0') 10" — 10-slot 316 SS Wire Wrap Screen				
	IRZ-23-VAS- 122-127 (2000 ppb) 12/2/2018 09:24	Topock - Alluvium Deposits	ML						
		Topock - Alluvium Deposits	SM		(72.0 - 150.4') Cemex 30 mesh (30x70) sand	(118.3 - 139.2') 18.0" Borehole	(72.0 - 150.4') 194.8 bags	(72.0 - 150.4') 209 bags (7%) Note: Lapis Lustre Sand, swabbed filter pack for approximately 2.5 hours prior to installing transition sand	
134 135 136		Topock - Alluvium Deposits	ML						
H		Topock -	GM	HH H					
137		Alluvium Deposits	 	l'Y I					
138 139		Topock - Alluvium Deposits	GM						
<u> </u>			01.			(139.2 - 147.0') 17.5" Borehole			
140			SM			J [::::]	<u> </u>	and layer CW = groundwater	



9/	ARC	A	DIS	Design & Consultancy for natural and built assets		Во	ring	Log	g			Sh	eet: 1 of	9
			12/04/2		_ Surface Elevation:			500.4 ft am	sl	Borir	na No.:	: <u>IRZ-25-</u> P	ilot	
Date Completed: 12/12/					Northing (NAD83):			2102414.6					<u></u>	
Drilling Co.:			Cascade			Easting (NAD83):			<u>7615824.5</u>		Client:	PG&E		
•			Sonic E	•	Total Depth:			172 ft bgs 6-12 inches		Project:		roundwater Re	emedy Phase	
• • • • • • • • • • • • • • • • • • • •										3	Location: 1 PG&E Topock, Needles, Californi			0 1:0
I =					Depth to First Water:			_	ft Cara Barral	— Droiget N		•		
_							Sampling Method: Sampling Interval:			ft Core Barrel	Project i	number.	RC000753.00	31
Logger: Editor:				lcGrane					Continuous X Yes	No	_			
			<u>ocan n</u>	10014110		1								
Depth (ft)	Recovery (in)		ieve nple ID	Groundwater Sample ID	Geologic Formation	Code	USCS			Soil Description			Drilling Notes	Drilling Fluid
1	84				Topock - Fluvial Deposits	SP-SM		and grato subance (4.0 - 4) (4.5 - 1) (SP-SN) angula	avel (SP-SM); wound; little gran gular; little silt; d e.5'); lens of gra 2.0') Topock - F l); pale brown (r to subround; li	uvial Deposits; Poorlery fine grained to finules to very large pellry nules to medium peb Fluvial Deposits; PoorloyR 6/3); very fine of the silt, trace granule, and; trace cobbles, si	bles rly graded sand grained to fine se to very large	d with silt grained,	(7.0') Rough	(0.0 - 172.0') No water used
_ 8 _ _ 9 _ _ 10 _ _ 11 _ _ 12 _	120				Topock - Fluvial Deposits	SP-SM		(420	47.0° Tanak	- Fluvial Danasita W		uvith cile	drilling	
13	.20				Topock - Fluvial Deposits	SW-SM		and gra coarse pebble subanc (14') ve	avel (ŚW-SM); p grained, angula s, angular to su gular; trace boul	Fluvial Deposits; We bale brown (10YR 6/3 par to subround; some bangular; little silt; traders, angular to subabrown (10YR 3/2); so frothy texture	B); very fine gra granules to ve ace cobbles, an angular; dry	ined to ery large ngular to		
18 18 19 20	120				Topock - Fluvial Deposits	SM		(SM); k angula pebble subang	prown (10YR 5/3 r to subangular; s, angular to su gular; trace boul 20.5') gray (7.5	Fluvial Deposits; Silfs); very fine grained to some silt; little grant bround; trace cobbleders, angular to subattle (1) and white (1) d of metadiorite, very	o coarse graine ules to very larg s, angular to angular; dry 0YR 8/1); rock	ed, ge		

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 2 of	9
Date S	Started:	12/04/2	2018		Surface	Elevat	ion: <u>500.4 ft amsl</u>	Boring No.	: IR7-25-P	ilot
Date Completed:		ted: <u>12/12/2</u>	<u> 2018 </u>		Northin	g (NAD	83): <u>2102414.6</u>		· <u></u>	
Drilling Co.:		<u>Cascac</u>	<u>de</u>		Easting	(NAD8	33): <u>7615824.5</u>	Client: PG&E		
Drilling Method: Sor			Drilling		Total D	epth:	172 ft bgs	•	<u> Froundwater Re</u>	emedy Phase
Drill Rig Type: <u>Prosonic Truck Mount</u>			ınt	Boreho	le Diam	eter: 6-12 inches	Location: 1			
-			Depth t	o First \	Nater: 48.4 ft bgs		Topock, Needles, California			
Drilling	Asst:		ninguez/C. Al	verez	Samplin	•		Project Number:	RC000753.00	51
Logge		<u>Conno</u>			Samplir	-		-		
Editor:		<u>Sean N</u>	Sean McGrane			ted to V	Vell: ⊠ Yes ☐ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID		USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
					SM					(0.0 - 172.0')
21	21			Topock - Fluvial Deposits		(ML); to larg grains subro	(20.5 - 32.0') Topock - Fluvial Deposits; Sand (ML); light yellowish brown (10YR 6/4); no plat to large pebbles, angular to subround; little we grained sand, angular to subround; trace cob subround; trace boulders, angular to subangular to subround; trace boulders, angular to subangular to subround; trace boulders, and solid corecomposed of metadiorite. (32.0 - 40.0') Topock - Fluvial Deposits; Silty: (SM); pale brown (10YR 6/3); every fine grained and granules for very large and granules for very large.	saticity; little granules ery fine to fine bles, angular to alar; dry		(0.0 - 172.0') No water used
3334353637383940	108			Topock - Fluvial Deposits	SM		angúlár to subround; and gránules to very lar subangular to subround; little silt; trace cobbl subround; dry	ge pebbles, es, angular to		

9/	ARC	CAD	IS	Design & Consultancy for natural and built assets		Во	ring	Lo	g		She	eet: 3 of	9
Date S	Started	: 12	2/04/2	2018		Surface	Elevat	tion:	500.4 ft amsl	Borine	a No .	IRZ-25-P	ilot
Date C	Comple	ted: <u>12</u>	2/12/2	2018		Northing	g (NAE	083):	2102414.6		y 110	11 VE-20-1	<u></u>
Drilling	Co.:	<u>C</u>	ascac	de		Easting	(NAD	33):	7615824.5	Client:	PG&E		
Drilling	Metho					Total De	-		172 ft bgs	Project:	Final G	roundwater Re	medy Phase
Drill Ri				<u>ic Truck Mou</u>	nt	Borehol			6-12 inches	Location:			
Driller				/asquez		•			48.4 ft bgs			Topock, Needl	
Drilling				ninguez/C. Alv	/erez	Samplin	-		4 inch x 10 ft Core Barrel	Project No	umber:	RC000753.00	51
Logge				r Mills		Samplin	-		Continuous				
Editor:		<u>S</u>	ean N	<u>//cGrane</u>		Convert	ed to \	Vell:					Г
Depth (ft)	Recovery (in)	Siev Sampl		Groundwater Sample ID	Geologic Formation	USCS	USCS		Soil Description			Drilling Notes	Drilling Fluid
 41					Topock - Fluvial Deposits	GM		(GM); angula angula	 41.5') Topock - Fluvial Deposits; Silty g pale brown (10YR 6/3); granules to very ar to subround; some very fine to mediur ar to subangular; little silt; trace cobbles, and; dry 	, large pebble m grained sar	s,		(0.0 - 172.0') No water used
42 43 44 45 46 47	108				Topock - Fluvial Deposits	GW-GM		(41.5 - silt and large p subrou round;	49.5') Topock - Fluvial Deposits; Well of sand (GW-GM); light brown (7.5YR 6/bebbles, subangular to subround; some und; little very fine to medium grained salittle silt; dry	 granules to cobbles, angi 	o very ular to		
48 49 50 51 52	114	IRZ-25- 47-52 12/14/20 10:35	2 018		Topock - Alluvium Deposits	SM		(SM); I suban angula	52.0') Topock - Alluvium Deposits; Silty brown (10YR 5/3); very fine grained to w gular to subround; some granules to me ar to subangular; some silt; wet	ery coarse gra edium pebbles	ained,	(49.5') Approximate depth to water table	
53545556		IRZ-25-5 52-57 12/14/20 10:40	7 018	IRZ-25-VAS- 52-57 (3500 ppb) 12/5/2018 10:40	Topock - Alluvium Deposits	GM		(GM); fine to	· 57.0') Topock - Alluvium Deposits; Silty reddish brown (5YR 5/4); angular to sub coarse grained sand, angular to subang lry to moist	oangular; som	ne very		
57 58 59	120	IRZ-25-5 57-62 12/14/20 10:45	2 018		Topock - Alluvium Deposits	ML		brown sand, angula	59.5') Topock - Alluvium Deposits; Sar (5YR 5/4); no plasticity; and very fine to angular to subangular; little granules to ar to subangular; wet to dry; stiff; strong	very coarse of small pebble, cementation	grained		
60						GM	1.7.	(59.5 -	· 68.0') Topock - Alluvium Deposits; Silty	y gravei with s	sand		

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	neet: 4 of	9
Date S	tarted	: <u>12/04/</u>	2018		Surface	Elevat	ion: <u>500.4 ft amsl</u>	Boring No.	: IRZ-25-P	ilot
Date C	comple	eted: <u>12/12/</u>	2018		Northing	g (NAD	83): <u>2102414.6</u>		<u> </u>	<u></u>
Drilling		<u>Casca</u>	<u>de</u>		Easting	(NAD8	3): <u>7615824.5</u>	_ Client: <u>PG&E</u>		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	172 ft bgs	_ Project: Final C	<u> Groundwater Re</u>	emedy Phase
Drill Ri	g Type	: <u>Prosor</u>	<u>nic Truck Μοι</u>	<u>unt</u>	Borehol	le Diam	eter: <u>6-12 inches</u>	_ Location: <u>1</u>		
Driller			Vasquez		•		Water: 48.4 ft bgs		Topock, Needl	
Drilling			minguez/C. Al	verez	Samplin	_		Project Number:	RC000753.00	51
Logge		<u>Conno</u>			Samplin	•		_		
Editor:		<u>Sean I</u>	McGrane		Convert	ted to V	Vell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
 61 62		IRZ-25-SS- 57-62 12/14/2018 10:45					(GM); reddish brown (5YR 5/4); granules to value angular to subangular; some very fine to coal angular to subangular; some silt; little clay; d	rse grained sand,		(0.0 - 172.0') No water used
63	120							9		
64		IRZ-25-SS- 62-67 12/14/2018	IRZ-25-VAS- 62-67 (620 ppb) 12/5/2018	Topock - Alluvium Deposits	GM					
65 66		10:55	14:17							
 67							' 0'			
68					_		(68.0 - 72.0') Topock - Alluvium Deposits; Sil (SM); reddish brown (5YR 5/4); very fine grai			
69		IRZ-25-SS- 67-72 12/14/2018		Topock -			grained, subangular to subround; some silt; l medium pebble, angular to subangular; wet			
70 71		10:55		Alluvium Deposits	SM					
72	120						(72.0 - 77.0') Topock - Alluvium Deposits; Sil (SM); yellowish brown / moderate yellowish b	prown(10YR 5/4); fine		
73 							grained to very coarse grained, subangular to little granules to medium pebble, angular to s	o subround; some silt; subround; wet		
74 75		IRZ-25-SS- 72-77 12/14/2018 11:05		Topock - Alluvium Deposits	SM					
 78	60	IRZ-25-SS- 77-82 12/14/2018 11:05		Topock - Alluvium Deposits	GM		(77.0 - 79.5') Topock - Alluvium Deposits; Sil (GM); reddish brown (5YR 5/4); granules to l to subangular; some very fine to very coarse angular to subround; little silt; wet	arge pebbles, angular		
79		11:05			SM		(79.5 - 87.0') Topock - Alluvium Deposits; Sil	ty sand with gravel		

9/	IRC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sh	eet: 5 of	9
Date St					Surface			Borin	a No.:	IRZ-25-P	ilot
	•	ted: <u>12/12/2</u>			Northing		•				
Drilling		Cascac			Easting	•		Client:	PG&E		
Drilling			•		Total De	•	172 ft bgs	Project: Location:		roundwater Re	medy Phase
Drill Rig Driller N	• • •		iic Truck Mou ∕asquez		Borehol		eter: <u>6-12 inches</u> Water: <u>48.4 ft bgs</u>	_ Location:		Topock, Needl	es California
Drilling .			ninguez/C. Al		Samplin			- Project N		RC000753.00	
Logger		Connoi	•		Samplin	•		_ 1 10,00011	idinibor.	110000700.00	01
Editor:			/lcGrane		Convert	-		_			
	7			υ <u>Ε</u>							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
81 81 82	60	IRZ-25-SS- 77-82 12/14/2018 11:05					(SM); reddish brown (5YR 5/4); very fine grain grained, subangular to round; little granules to angular to subangular; little silt; trace cobbles subangular; wet; cobbles composed of metac	o medium pe s, angular to			(0.0 - 172.0') No water used
83 84		IRZ-25-SS- 82-87		Topock - Alluvium Deposits	SM						
85 86 87		12/14/2018 11:10									
88 89 90 91	108	IRZ-25-SS- 87-92 12/14/2018 11:15		Topock - Alluvium Deposits	SM		(87.0 - 94.5') Topock - Alluvium Deposits; Silt (SM); reddish brown (5YR 5/4); fine grained to grained, subangular to round; some silt; little pebble, angular to subangular; wet; trace larg	o very coarse granules to n			
93 94 	100	IRZ-25-SS- 92-97 12/14/2018	IRZ-25-VAS- 92-97 (130 ppb) 12/6/2018	Topock -		<u> </u>	(94.5 - 95.5') Topock - Alluvium Deposits; Gra	avelly silt (ML):		
95		11:20	09:07	Alluvium Deposits	ML		reddish brown (5YR 5/4); no plasticity; little gr pebble, angular to subangular; little very fine t grained sand, angular to subangular; dry to m	ranules to me to very coarse	edium e		
96 97				Topock - Alluvium Deposits	SM	* • • • • • • • • • • • • • • • • • • •	composed of metadiorite (95.5 - 97.0') Topock - Alluvium Deposits; Silt (SM); reddish brown / moderate brown(5YR 4 to very coarse grained, angular to subround; selarge pebble, angular to subangular; some sil	ty sand with g l/4); very fine some granule	gravel grained es to		
98 99 99	114	IRZ-25-SS- 97-102 12/14/2018 11:25		Topock - Alluvium Deposits	SW-SM		cobbles composed of metadiorite (97.0 - 102.0') Topock - Alluvium Deposits; W silt and gravel (SW-SM); light reddish brown / 6/4); fine grained to very coarse grained, ang small to large pebbles, angular to subangular trace very large pebbles composed of metadional composed	/ light brown(ular to round; r; some silt; w	5YR some		

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Lo	g		S	Sheet: 6 of	9
Date S	tarted:	12/04	1/2018		Surface	Elevat	tion:	500.4 ft amsl	Boi	ina No	.: <u>IRZ-25-P</u>	Pilot
Date C	Comple	ted: <u>12/12</u>	2/2018		Northing	g (NAE	083):	2102414.6		9 110	<u>II LE LO I</u>	<u> </u>
Drilling	Co.:	Casc	ade		Easting	(NAD	33):	7615824.5	Client:	PG&E	<u> </u>	
Drilling	Metho	od: <u>Soni</u>	Drilling		Total De	epth:		172 ft bgs	Projec	t: <u>Final</u>	Groundwater Re	emedy Phase
Drill Ri	д Туре	: <u>Prose</u>	onic Truck Mou	<u>ınt</u>	Borehol	e Dian	neter:	6-12 inches	Locati	on: <u>1</u>		
Driller	Name:	Steve	· Vasquez		Depth to	First	Water:	48.4 ft bgs		PG&E	E Topock, Need	les, California
Drilling	Asst:	<u>N. Do</u>	minguez/C. Al	verez	Samplin	ig Meth	nod:	4 inch x 10 ft Core Barrel	Projec	t Number	: RC000753.00)51
Logge	r:	<u>Conr</u>	or Mills		Samplin	ıg Inter	val:	Continuous				
Editor:		<u>Sean</u>	McGrane		Convert	ed to \	Nell:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS		Soil Description			Drilling Notes	Drilling Fluid
 101 102		IRZ-25-SS- 97-102 12/14/2018 11:25		Topock - Alluvium Deposits	SW-SM		0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					(0.0 - 172.0') No water used
103				Topock - Alluvium Deposits	ML		(ML); li large p	 103.5') Topock - Alluvium Depos ght reddish brown / light brown(5Y ebbles, angular to subangular; little d sand, subangular to subround; litt 0 mm cobble composed of metadi 	R 6/4); little g e very fine to v tle clay; trace	ranules to ery coarse		
104	114	IRZ-25-SS- 102-107 12/14/2018					reddish subrou	- 109.5') Topock - Alluvium Depos n brown (5YR 5/4); granules to larg nd; some silt; little very fine to very r to subround; trace; wet; trace ver	e pebbles, an coarse grain	gular to ed sand,		
105 106 107		11:30		Topock - Alluvium Deposits	GM			6/1/1/1				
108 109		IRZ-25-SS- 107-112			*							
110111111	120	12/14/2018 11:35					(SM); (subrou subrou	- 117.0') Topock - Alluvium Depos 5YR 4/); fine grained to very coars nd; some granules to very large pe nd; some silt; trace cobbles; wet; v s composed of trace amounts of m	e grained, sub bbles, angula very large peb	angular to r to		
	120											
113				Topock -								
114			IRZ-25-VAS-	Alluvium Deposits	SM							
114		IRZ-25-SS- 112-117	112-117 (< 0.17 U									
115		12/14/2018 11:40	ppb) 12/11/2018									
L -			10:34									
_116												
L _							:					
_117				L			1 ,				<u> </u>	
118	120	IRZ-25-SS- 117-122 12/14/2018		Topock - Alluvium Deposits	SM		(SM); r	 - 119.5') Topock - Alluvium Depos eddish brown / moderate brown(5) coarse grained, subangular to sub n pebbles, angular to subround; lit 	/R 4/4); very f round; little g	ne grained anules to		
119		11:45										
120					ML		(119.5	- 124.5') Topock - Alluvium Depos	its; Sandy silt	with gravel		

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 7 of	9
Date S	tarted:	: <u>12/04</u>	/2018		Surface	Elevat	on: <u>500.4 ft amsl</u>	Borin	a No:	IRZ-25-P	ilot
Date C	omple	eted: <u>12/12</u>	<u>/2018</u>		Northing	g (NAD	83): <u>2102414.6</u>		9	<u></u>	<u></u>
Drilling		<u>Casca</u>	ıde		Easting	(NAD8	3): <u>7615824.5</u>	Client:	PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	epth:	<u>172 ft bgs</u>	Project:	Final G	<u>roundwater Re</u>	emedy Phase
Drill Ri	д Туре	e: <u>Proso</u>	<u>nic Truck Μοι</u>	<u>unt</u>	Borehol	e Diam	eter: 6-12 inches	Location:	1		
Driller I	Name:	<u>Steve</u>	Vasquez		Depth to	First \	Vater: 48.4 ft bgs		PG&E	<u> Topock, Needl</u>	es, California
Drilling	Asst:	N. Do	<u>minguez/C. Al</u>	lverez	Samplin	ig Meth	od: 4 inch x 10 ft Core Barrel	Project N	umber: ˌ	RC000753.00	51
Logge	r:		or Mills		Samplin	-		-			
Editor:		<u>Sean</u>	McGrane		Convert	ed to V	Vell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
	120	IRZ-25-SS- 117-122 12/14/2018 11:45		Topock - Alluvium Deposits	ML		(ML); reddish brown / moderate brown(5YR 4, very coarse grained sand, angular to subroun-medium pebbles, angular to subangular; wet	d; little granul	es to		(0.0 - 172.0°) No water used
125 126 127		12/14/2018 10:50		Topock - Alluvium Deposits	SM		(124.5 - 127.0') Topock - Alluvium Deposits; S reddish brown / moderate brown(5YR 4/4); ve coarse grained, subangular to subround; som to medium pebbles, angular to subangular; we	ery fine graine le silt; little gra et	d to anules		
	120	IRZ-25-SS- 127-132 12/14/2018 11:55		Topock - Alluvium Deposits	GM		(127.0 - 132.0') Topock - Alluvium Deposits; S (GM); reddish brown (57R 5/4); granules to la to subangular; and silt; little very fine to coarse angular to subangular; dry to moist; moderate	arge pebbles, e grained san e cementation	angular d,		
133 134 135 136 137	120	IRZ-25-SS- 132-137 12/14/2018 12:00		Topock - Alluvium Deposits	ML		(132.0 - 137.0') Topock - Alluvium Deposits; S (ML); reddish brown / moderate brown(5YR 4. granules to medium pebbles, angular to subato very coarse grained sand, angular to subro	/4); no plastic ngular; little v	ity; little ery fine		
138 138 139	120	IRZ-25-SS- 137-142 12/14/2018 12:05		Topock - Alluvium Deposits	ML		(137.0 - 139.5') Topock - Alluvium Deposits; S reddish brown / moderate brown(5YR 4/4); no very fine to coarse grained sand, angular to su granules to medium pebbles, angular to suba wet; dessicated (139.5 - 147.0') Topock - Alluvium Deposits; S	o plasticity; so ubround; little ngular; little c	me lay;		
140					ML	<u> 11:11:</u>	(100.0 - 147.0) Topook - Alluvium Deposits, e	Januay Jul Willi	gravel		

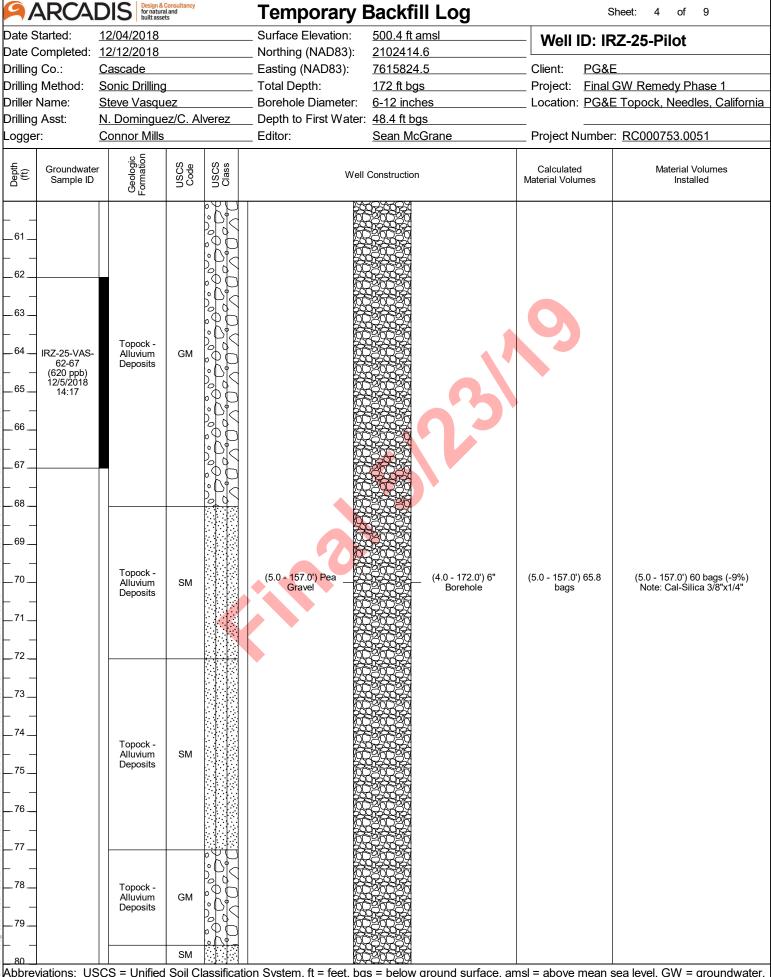
9/	4K(ADIS	for natural and built assets		Во	ring	Log	She	eet: 8 of	9
Date S					Surface			Boring No.:	IRZ-25-P	ilot
	-	eted: <u>12/12/</u>			Northin		•	_		
Drilling		Casca			Easting	•	•	_ Client: PG&E		
Drilling					Total De	-	172 ft bgs	•	roundwater Re	medy Phase
Drill Ri Driller			nic Truck Mou Vasquez	unt	Borehol		eter: 6-12 inches Water: 48.4 ft bgs	Location: 1	Topock, Needl	oc California
Drilling			<u>vasquez</u> minguez/C. Al	lverez	Samplin		_		•	
Logge		Conno	•	110102	Samplin	-		_ r rojout rtarribor.	110000700.00	01
Editor			McGrane		Convert	-		_		
t) of	very (r	Sieve	Groundwater	ogic ation	g e S	SS	Coll Description		Deillin v Natas	Daillia - Elvid
Depth (ft)	Recovery (in)	Sample ID	Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
141142143		IRZ-25-SS- 137-142 12/14/2018 12:05					(ML); reddish brown / moderate brown(5YR 4 granules to medium pebbles, angular to subato coarse grained sand, angular to subangular	angular; little very fine		(0.0 - 172.0') No water used
-	120			Topock - Alluvium	ML					
144	-	IRZ-25-SS-		Deposits						
 145		142-147 12/14/2018 00:10					.0\	*		
 146										
140										
147							(147.0 - 157.0') Topock - Alluvium Deposits;	Silty sand with gravel	(147.0 - 157.0')	
 148			i i				(SM); reddish brown (5YR 4/3); fine grained t grained, subangular to round; some granules angular to subround; little silt; trace cobbles,	to large pebbles,	Very saturated material with potential to	
							subangular; wet; cobbles composed of metad		poduce water	
149	-	IRZ-25-SS- 147-152	IRZ-25-VAS- 147-152							
150		12/14/2018 12:15	(3600 ppb) 12/11/2018 13:54							
151			i i							
			i i	Topock -						
152	108			Alluvium Deposits	SM					
153										
154		IRZ-25-SS-								
155	-	152-157 12/14/2018 00:20								
156	<u> </u>									
	1									
157				<u> </u>			(157.0 - 162.0') Topock - Weathered Bedrock	c - conglomerate;		
158				Topode			Gravelly silt (ML); reddish brown (5YR 5/4); n granules to large pebbles, angular to subang medium grained sand, angular to subangular	ular; little very fine to		
L -	108			Topock - Weathered Bedrock -	d ML		,ga.igaia.			
159				conglomera	te	الم الم				
-										
160 Abbro	viation	e: 11909 - 1	Inified Soil C	laccification	n Sveton	<u> </u>	eet has = helow around surface amo	sl – ahove mean se	a level GW =	groundwater

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Bo	ring	Log	9		She	eet: 9 of	9
Date S	started	12/04/2	2018		Surface	Elevati	on:	500.4 ft amsl	Borir	na No.:	IRZ-25-Pi	ilot
	-	ted: <u>12/12/2</u>	2018		Northin	g (NAD	83):	2102414.6	_		<u></u>	
Drilling		Cascac			Easting	•	3):	7615824.5	_ Client:	PG&E		
Drilling			•		Total D	•		172 ft bgs	Project:		<u>roundwater Re</u>	medy Phase
Drill Ri	• • •		<u>ic Truck Mou</u>		Boreho			6-12 inches	Location			
Driller			/asquez		-			48.4 ft bgs	- D!4.N		Topock, Needle	
Drilling		N. Don Conno	ninguez/C. A		Samplin	-		4 inch x 10 ft Core Barrel	_ Project N	iumber:	RC000753.00	51
Logge Editor:			/IcGrane		Samplir Convert	-		Continuous	-			
Luitoi.		<u>ocan n</u>					v Cii.					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS		Soil Description			Drilling Notes	Drilling Fluid
161				Topock - Weathered Bedrock - conglomerat	IVIL							(0.0 - 172.0') No water used
162							Gravell	- 166.0') Topock - Weathered Bedrock y silt (ML); reddish brown / moderate ty; some granules to medium pebbl <mark>es</mark> ,	prown(5YR 4	rate; (4); low	(162.0 - 172.0') Drill rods chattering,	
163 164	108	IRZ-25-SS- 162-166	ID7 65 1 1 5	Topock - Weathered			subrou	nd; little very fine to coarse grained saind; wet; stiff	nd, angular to		rough drilling	
165_		12/14/2018 12:25	IRZ-25-VAS- 162-167 (3000 ppb) 12/13/2018	Bedrock - conglomerat	IVIL							
-100			10:37									
166							//					
<u> </u>							(166.0 reddish	- 172 <mark>.0') Topock - Co</mark> mpetent Bedrock brown (5YR 5/4); dry; moderate ceme	: - conglomer entation; friat	ate; ole		
167												
<u> </u>												
168												
				Topock -								
169				Competent Bedrock -								
	60			conglomerat	е							
170												
172												
								End of Boring at 172.0 'bg	JS.			
173												
<u> </u>												
_174												
175												
176												
477												
177												
5 –												
5 5179												
180												
Abbrev	viations	s: USCS = L	Jnified Soil C	lassificatior	Svsten	n. ft = fe	et. bas	s = below ground surface, ams	sl = above	mean se	a level. GW = o	groundwater.

ARCADIS Design & Consult for natural and built assets **Temporary Backfill Log** Sheet: Surface Elevation: 500.4 ft amsl Date Started: 12/04/2018 Well ID: IRZ-25-Pilot 2102414.6 Date Completed: 12/12/2018 Northing (NAD83): Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615824.5 Client: PG&E Drilling Method: Total Depth: Project: Final GW Remedy Phase 1 Sonic Drilling 172 ft bgs Location: PG&E Topock, Needles, California Driller Name: Steve Vasquez Borehole Diameter: 6-12 inches N. Dominguez/C. Alverez Depth to First Water: 48.4 ft bgs Drilling Asst: Editor: Sean McGrane Project Number: RC000753.0051 Logger: Connor Mills Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed (0.0 - 0.5') 1 (0.0 - 0.5') 1 (0%) Temporary Steel Plate with BMP (0.0 - 4.0') 12"Topock -Borehole SP-SM Fluvial Deposits (0.5 - 5.0') 4 bags (-49%) Note: Wildcat Washed (0.5 - 5.0') Plastered (0.5 - 5.0') 7.9 bags Sand 5 Topock -Fluvial SP-SM Deposits (4.0 - 172.0') 6" Borehole - 157.0') Pea (5.0 - 157.0') 65.8 (5.0 - 157.0') 60 bags (-9%) Note: Cal-Śilica 3/8"x1/4" Topock -SW-SM Fluvial Deposits 16 18 Topock -SM Fluvial Deposits Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

/ -	ARCAI	DIS Design 8 for natur built ass	Consultancy ral and ets		Temporary Bac	kfill Log	S	heet: 2 of 9
Date S	tarted:	12/04/2018			_ Surface Elevation: 500	4 ft amsl	Well ID: IR	7-25-Pilot
Date C	completed:	12/12/2018			_ Northing (NAD83): 2103	414.6	_ VVCII ID. IIV	2-20-1 1100
Drilling	Co.:	Cascade			_ Easting (NAD83): 761	824.5	_ Client: PG&E	
_		Sonic Drilling	a			ft bgs		GW Remedy Phase 1
ں Driller I		Steve Vasqu	-			inches		Topock, Needles, California
Drilling		N. Domingu		lverez	 _ Depth to First Water: <u>48.4</u>			
Loggei		Connor Mills			-	McGrane	 _ Project Number	: RC000753.0051
		og G	(0 =	(0, 10				
Depth (ft)	Groundwater Sample ID	Geologic Formation	Code	USCS	Well Constr	action	Calculated Material Volumes	Material Volumes Installed
			SM					
21								
						35		
22						35		
						39		
_						39		
23						39		
						3 5		
24								
						3 5		
25							•	
26		Topock - Fluvial	ML					
		Deposits	IVIL					
27								
28								
_20								
29								
30					(5.0 - 157.0') Pea	(4.0 - 172.0') 6"	(5.0 - 157.0') 65.8	(5.0 - 157.0') 60 bags (-9%) Note: Cal-Silica 3/8"x1/4"
					Gravel	Borehole	bags	Note: Cal-Silica 3/8 x1/4
31								
31								
32			+			30 2		
_						3 3		
33						<u> </u>		
_ 54						29		
35								
						35		
36		Topock - Fluvial	SM			3 9		
		Deposits	Sivi			<u>39</u>		
						\$6		
37								
- 4								
38								
39								
			1					

ARCA	DIS Design & for nature built asset	Consultancy al and ets	Temporary Back	र्ताll Log	Sheet: 3 of 9
Date Started:	12/04/2018			ft amsl Wel	II ID: IRZ-25-Pilot
Date Completed:	12/12/2018		Northing (NAD83): 21024	414.6	
Drilling Co.:	<u>Cascade</u>		Easting (NAD83): <u>76158</u>	324.5 Client:	PG&E
Drilling Method:	Sonic Drilling	g	Total Depth: <u>172 ft</u>	<u>bgs</u> Project	t: Final GW Remedy Phase 1
Driller Name:	Steve Vasqu	ıez	Borehole Diameter: 6-12 i	nches Locatio	on: PG&E Topock, Needles, California
Drilling Asst:	N. Domingu	ez/C. Alverez	Depth to First Water: 48.4 f	t bgs	
Logger:	Connor Mills	3	Editor: <u>Sean</u>	McGrane Project	t Number: RC000753.0051
Groundwate Sample ID		USCS Code USCS Class	Well Construc	ction Calcula Material Vo	
41 41 42	Topock - Fluvial Deposits	GM 0			
	Topock - Fluvial Deposits	GW-GM			
50 51 52	Topock - Alluvium Deposits	SM	(5.0 - 157.0') Pea Gravel	(4.0 - 172.0') 6" (5.0 - 157 Borehole bag	
5354 IRZ-25-VAS- 52-57 (3500 ppb) 12/5/201855 10:405657	Topock - Alluvium Deposits	GM GM			
58 59 60	Topock - Alluvium Deposits	ML GM			

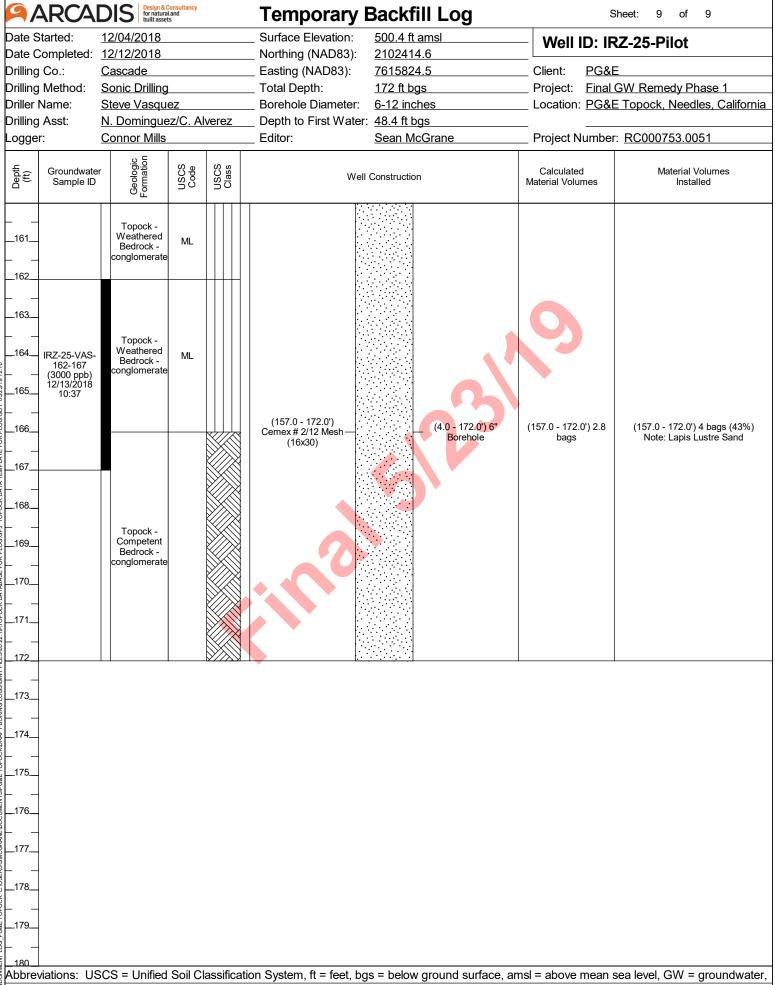


ARCADIS Design & Consultry for natural and for natural and unit assets **Temporary Backfill Log** Sheet: Date Started: Surface Elevation: 12/04/2018 500.4 ft amsl Well ID: IRZ-25-Pilot Northing (NAD83): 2102414.6 Date Completed: 12/12/2018 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615824.5 Client: PG&E Drilling Method: Total Depth: Project: Final GW Remedy Phase 1 Sonic Drilling 172 ft bgs Driller Name: Steve Vasquez Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California N. Dominguez/C. Alverez Depth to First Water: 48.4 ft bgs Drilling Asst: Connor Mills Editor: Sean McGrane Project Number: RC000753.0051 Logger: Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed 81 82 83 Topock -Alluvium SM Deposits 85 .86 88 89 (5.0 - 157.0') Pea (4.0 - 172.0') 6" (5.0 - 157.0') 65.8 (5.0 - 157.0') 60 bags (-9%) 90 Gravel Borehole Note: Cal-Silica 3/8"x1/4" Topock -Alluvium Deposits SM 91 92 93 IRZ-25-VAS-92-97 (130 ppb) 12/6/2018 Topock -.95 M 09:07 Alluvium Deposits 96 Topock -SM Alluvium Deposits 97 98 Topock -SW-SM Alluvium Deposits .99 Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

ARCADIS Design & Consultry for natural and for natural and unit assets **Temporary Backfill Log** Sheet: Date Started: Surface Elevation: 12/04/2018 500.4 ft amsl Well ID: IRZ-25-Pilot 12/12/2018 Northing (NAD83): 2102414.6 Date Completed: Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615824.5 Client: PG&E Drilling Method: Total Depth: Project: Final GW Remedy Phase 1 Sonic Drilling 172 ft bgs Driller Name: Steve Vasquez Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California N. Dominguez/C. Alverez Depth to First Water: 48.4 ft bgs Drilling Asst: Connor Mills Editor: Sean McGrane Project Number: RC000753.0051 Logger: Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed Topock -_101_ SW-SM Alluvium Deposits 102 Topock -ML Alluvium _103_ Deposits 104 _105_ _106_ Topock -Alluvium Deposits 107 108 109 (5.0 - 157.0') Pea (4.0 - 172.0') 6" (5.0 - 157.0') 65.8 (5.0 - 157.0') 60 bags (-9%) Note: Cal-Śilica 3/8"x1/4" Gravel Borehole Topock -Alluvium SM Deposits IRZ-25-VAS-112-117 (< 0.17 U ppb) 12/11/2018 116 _118_ Topock -Alluvium SM Deposits _119_

Date Satient 12/04/2018 Surface Elevation 500.4 ft amal Date Completed 12/12/2018 Notified Completed	9/-	ARCA	DIS Design & for natur built ass	Consultancy al and ets		Temporary I	Backfill Log		Sheet: 7 of 9
Date Completed 12/12/2018								─ Well ID: I	RZ-25-Pilot
Total Depth: Some Drilling Total Depth: 172 ft bgs		•				- '			
Drief Name Steve Vasquez Borshole Diameter 6-12 mches Location: PG&E Topock, Needles, California Drief Name Connor Mills Editor: Editor: Project Number: RC000753.0051	-								
Deling Asset N. Deminguez/C. Alwereu Pethro Fra Water 48.4 ft Discourse Project Number RC000753.0051	_		-	-			G	•	-
Connot Mile Feline Sean McGrane Project Number RC000753.0051					lverez			Location. PGo	kE TOPOCK, Needles, Calliomia
Secure S	_		-		IVCICZ			Project Numbe	er: RC000753.0051
122									
122	Depth (ft)		Geologi Formatic	Code	USCS	Well	Construction		
Topock Alluvium Deposits SM (5.0 - 157.0') 80 Bags (6.0 - 157.0') 80	122 123 		Alluvium	ML				9	
130. 130. 131. 132. 133. 134. 135. 136. 137. 138. 140. ML ML ML ML ML ML ML ML ML M	 126 		Alluvium	SM					
	128 129 130 131		Alluvium	GM		(5.0 - 157.0') Pea Gravel	(4.0 - 172.0') 6" Borehole		(5.0 - 157.0') 60 bags (-9%) Note: Cal-Silica 3/8"x1/4"
	134 135 136		Alluvium	ML					
	138 139 140		Alluvium Deposits	ML					

ARCADIS Design & Consult for natural and built assets **Temporary Backfill Log** Sheet: 12/04/2018 Surface Elevation: 500.4 ft amsl Date Started: Well ID: IRZ-25-Pilot 2102414.6 Date Completed: 12/12/2018 Northing (NAD83): Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615824.5 Client: PG&E Drilling Method: Total Depth: Project: Final GW Remedy Phase 1 Sonic Drilling 172 ft bgs Driller Name: Steve Vasquez Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California N. Dominguez/C. Alverez Depth to First Water: 48.4 ft bgs Drilling Asst: Editor: Sean McGrane Project Number: RC000753.0051 Logger: Connor Mills Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed _141_ 142 _143. Topock -Alluvium ML Deposits 144 _145_ _146_ _148_ (5.0 - 157.0') 60 bags (-9%) Note: Cal-Silica 3/8"x1/4" (5.0 - 157.0') Pea (5.0 - 157.0') 65.8 Gravel bags 149 IRZ-25-VAS-147-152 (3600 ppb) 12/11/2018 (4.0 - 172.0') 6" 150 13:54 Borehole 151 Topock -152 Alluvium Deposits 153 _155_ 156 157 158_ Topock -(157.0 - 172.0') Weathered (157.0 - 172.0') 2.8 (157.0 - 172.0') 4 bags (43%) Cemex # 2/12 Mesh ML Bedrock -Note: Lapis Lustre Sand (16x30) conglomerate _159_ Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,



ppb = parts per billion, U = not detected above the laboratory reporting limit, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

ARCA	DIS	esign & Consultan or natural and uilt assets	су	Drilling Log						Sheet:	1 of 9
Date Started:	04/26/20	19	Sı	urface Elevation:	50	00.4 ft a	amsl		Borin	ng No.: IRZ	7-25
Date Completed:	05/12/20	19	N	orthing (NAD83):	<u>2</u>	102414	l.6			ig 140 <u>ii u</u>	<u>20</u>
Drilling Co.:	Cascade	:	E	asting (NAD83):	76	315824	l.5		Client:	PG&E	
Drilling Method:	Dual Rot	ary	To	otal Depth:	17	74 ft bg	ıs		Project:	Final GW Re	medy Phase 1
Drill Rig Type:	Foremos	t DR-24	HDC	onductor Casing Diameter:	<u>18</u>	3 inche	s		Location	: PG&E Topod	k, Needles, California
Driller Name:	Jon Mart			rill Casing Diameter:	<u>16</u>	3 inche	s		_		
Drilling Asst:	E. Martin	ez / W. S	<u>Saylors</u> D	rill Bit:	<u>15</u>	5.5 & 1	7.5 inc	<u>h Tri-cone</u>	Project N	lumber: RC00	0753.0051
Tool-Pusher:	Arnold L			epth to First Water:		3.4 ft bo			_		
Rig Geologist:	A. Mack	/ D Corn	ell C	onverted to Well:	×	Yes	No)			T
Depth Drilling Run		USCS	Casing	Description							
(ft) and Averag Penetration R	e Cada		Diameter	(See Pilot boring log for full geologic descriptions)				·	g Notes		Drilling Fluid
1	SP-SM SP-SM		(0.0 - 21.2') 18.0" Steel Casing	(0.0 - 4.5') Topock - Fluvial Deposits; Poorly graded sand wit silt and gravel (SP-SM) (4.5 - 12.0') Topock - Fluvial Deposits; Poorly graded sand wit silt (SP-SM); pale brown (10YR 6/3) (12.0 - 17.0') Topock - Fluvial Deposits; Well graded sand with silt and gravel (SW-SM); pale brown (10YR 6/3) (17.0 - 20.5') Topock - Fluvial Deposits; Silty sand with gravel (SM); brown (10YR 5/3)				ough drilling.	er.		(0.0 - 21.2') 845.46 gallons of water used; 615.18 gallons of water recovered; 230.28 gallons of water lost
20											
Abbreviations: US	SCS = Un	ified Soil	Classificati	on System, ft = feet, bgs =	bel	ow gro	und si	ırface, ams	sl = above	mean sea leve	l, GW = groundwater

Remarks: blue water table symbol represents depth to water measured during the first VAS interval of the pilot borehole

ARC		S Desi	ign & Consultani natural and t assets	cy	Drilling Log					Sheet:	2 of 9
Date Started:	04/	26/201	9	Sı	urface Elevation:	50	00.4 ft a	amsl	Borin	ng No.: IRZ	'-25
Date Completed	pleted: <u>05/12/2019</u> .: <u>Cascade</u> thod: <u>Dual Rotary</u>				orthing (NAD83):	21	102414	6	Dom	ig 110 <u>iitz</u>	<u>20</u>
Drilling Co.:	<u>Cas</u>	scade		E	asting (NAD83):	<u>76</u>	315824	5	Client:	PG&E	
Drilling Method:	<u>Dua</u>	al Rota	ry	To	otal Depth:	<u>17</u>	74 ft bg	S	Project:	Final GW Rer	nedy Phase 1
Drill Rig Type:	For	emost	DR-24	HDC	onductor Casing Diameter:	<u>18</u>	3 inche	<u>s</u>	Location:	PG&E Topoc	k, Needles, California
Driller Name:		<u>Martir</u>			rill Casing Diameter:		inche:				
Drilling Asst:				<u>Saylors</u> Di				7.5 inch Tri-cone	Project N	lumber: RC000	0753.0051
Tool-Pusher:		<u>ıold Laı</u>			epth to First Water:		3.4 ft bo				
Rig Geologist:	<u>A. I</u>	Mack /	D Corn	ell Co	onverted to Well:	×	Yes	No			
Depth Drilling	Run	USCS	USCS	Cooling	Description						
(ft) and Aver		Code	Class	Casing Diameter	(See Pilot boring log for full geologic descriptions)			Drilling	Notes		Drilling Fluid
		SM		(0.0 - 21.2')							
(0.0 - 21. 8.02 mins	2) - s/ft -			18.0" Steel	(20.5 - 32.0') Topock - Fluvial						
_21	,,,,			Casing	Deposits; Sandy silt with gravel (ML); light yellowish brown (10YF		(04.0	00.00 4.1			(04.0, 04.0), 4005.00
					6/4)		àdvanc	30.0') Advanced 9 ft d ement during 3rd hou	r. Volume of	waste water	(21.2 - 31.0') 1065.06 gallons of water used;
22								d from beginning to en the from backflow to cu			-121.6 gallons of water recovered; 1186.66
											gallons of water lost
23											
24											
25											
_ (21.2 - 30	.0)			(21.2 - 30.0') 18.0" Steel							
26 23.89 min	s/ft			Casing		1					
		ML				4					
27								•			
_28											
29											
30											
(30.0 - 31				(30.0 - 31.0') 18.0" Steel				31.0') Borehole only a on a boulder.	dvanced 1 fc	oot in 4 hrs, likely	
197.18 mii	ns/ft			Casing							(0.4.0
							(31.0 -	41.0') Drilled with wat	er.		(31.0 - 41.0') 1087.02 gallons of water used;
32											2478 gallons of water recovered; 1390.98
					(32.0 - 40.0') Topock - Fluvial Deposits; Silty sand with gravel						gallons of water gained
_33					(SM); pale brown (10YR 6/3)						
_34											
(31.0 - 41	.0)			(31.0 - 41.0')							
12.09 min				18.0" Steel Casing							
		SM									
37											
-3'-											
38											
39											
Abbreviations:	USCS	= Unif	ied Soil	Classificati	on System, ft = feet, bgs =	bel	ow aro	und surface. ams	l = above	mean sea level	GW = groundwater

Remarks: blue water table symbol represents depth to water measured during the first VAS interval of the pilot borehole

9/	ARCA	DIS	S Des for buil	i <mark>gn & Consultan</mark> natural and t assets	су	Drilling Log			Sheet:	3 of 9	
Date S	Started:	04/2	6/201	9	Sı	urface Elevation:	500.4 ft amsl	Borin	g No.: IR	7-25	
	Completed:	05/1	2/201	9	N	orthing (NAD83):	2102414.6		19 110 <u>II 1</u>	<u> </u>	
Drilling	Co.:	Caso	cade		E	asting (NAD83):	7615824.5	Client:	PG&E		
Drilling	Method:	<u>Dual</u>	l Rota	ry	To	otal Depth:	174 ft bgs	Project:	Final GW Re	emedy Phase 1	
Drill Ri	g Type:	Fore	most	DR-24	HDC	onductor Casing Diameter:	18 inches	Location:	PG&E Topo	ck, Needles, California	
Driller	Name:	<u>Jon</u>	Martir	nez	Dı	rill Casing Diameter:	16 inches	,			
Drilling	Asst:	<u>E. M</u>	lartine	z/W.	<u>Saylors</u> Di	rill Bit:	15.5 & 17.5 inch Tri-cone	Project N	lumber: RC0	00753.0051	
Tool-P	usher:	Arno	old La	mon	D	epth to First Water:	48.4 ft bgs	:			
Rig Ge	eologist:	<u>A. M</u>	lack /	D Corn	ell Co	onverted to Well:	× Yes No				
Depth (ft)	Drilling Rur and Averag Penetration R	e '	USCS Code	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling	Notes		Drilling Fluid	
41	(31.0 - 41.0) 12.09 mins/ft		GM		(31.0 - 41.0') 18.0" Steel Casing	(40.0 - 41.5') Topock - Fluvial Deposits; Silty gravel with sand (GM); pale brown (10YR 6/3)	(41.0 - 43.0') Drilled with wat	er.		(41.0 - 43.0') 230.58	
 42 43	(41.0 - 43.0) 8.50 mins/ft				(41.0 - 43.0') 16.0" Steel Casing	(41.5 - 49.5') Topock - Fluvial Deposits; Well graded gravel with silt and sand (GW-GM); light brown (7.5YR 6/4)	1			gallons of water used; 0 gallons of water recovered; 230.58 gallons of water lost	
44 44							(43.0 - 61.5') Drilled with wat	er.		(43.0 - 61.5') 684.42 gallons of water used; 526.16 gallons of water recovered; 158.26 gallons of water lost	
45 		G	W-GM								
46 47		ı									
 48		ı									
 49 		ŀ				(49.5 - 52.0') Topock - Alluvium					
50 51		ı	SM			Deposits; Silty sand with gravel (SM); brown (10YR 5/3)					
 52	(43.0 - 61.5) 7.04 mins/ft	L			(43.0 - 61.5') 16.0" Steel Casing	(52.0 - 57.0') Topock - Alluvium					
 53		ı				Deposits; Silty gravel with sand (GM); reddish brown (5YR 5/4)					
54		ı	GM								
55		ı	Givi								
56 56 57											
58			(57.0 - 59.5') Topock - Alluvium Deposits; Sandy silt (ML); reddish brown (5YR 5/4)								
 59 						(59.5 - 68.0') Topock - Alluvium	uvium				
60	l		GM	10 (Vol. o						1 011/	

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater Remarks: blue water table symbol represents depth to water measured during the first VAS interval of the pilot borehole

Date Surface D4/26/20/19 Surface Elevation 500.4 ft amb 20/24/19 Description 500.20/20 Control	9/	ARCA				Drilling Log		Sheet: 4 of 9			
Diffusion Dif	Date S	Started:	04/26/2	019	Sı	urface Elevation:	500.4 ft amsl	Borin	a No · IR	7-25	
Drilling Mathematics Drilling Assets Frequent Final GW Remedy Phase Location: PG&E Topock, Needles, California Sinches Location: PG&E Topock, Needles, California Location: PG&E Topock, Needles, California Sinches Location: PG&E Topock, Needles, California Location: PG&		-	05/12/2	019	N	orthing (NAD83):	2102414.6		.g.110 <u></u>	<u> </u>	
Dotal R Type:	Drilling	Co.:	Cascad	е	E	asting (NAD83):	7615824.5	Client:	PG&E		
Delition Assist Delition Assist American Delition Assist American Delition Assist American Delition Assist American Delition Delition Assist American Delition	Drilling	Method:	Dual Ro	tary	To	otal Depth:	174 ft bgs	Project:	Final GW Re	medy Phase 1	
Description Convention Description Convented to Wells Description Convent	Drill Ri	g Type:	Foremo	st DR-24	HDC	onductor Casing Diameter:	18 inches	Location:	PG&E Topo	ck, Needles, California	
Tool-Purples Amold Lamon	Driller	Name:	Jon Ma	tinez	D	rill Casing Diameter:	16 inches	,			
Description Description	Drilling	Asst:	E. Marti	nez / W.	Saylors D	rill Bit:	15.5 & 17.5 inch Tri-cone	Project N	umber: RC00	0753.0051	
Description California Ca	Tool-P	usher:	Arnold I	<u>amon</u>	D	epth to First Water:	48.4 ft bgs				
Depth Control Contro	Rig Ge	eologist:	A. Mack	/ D Corr	nell C	onverted to Well:	× Yes No				
43.0 - 81.5 7.04 mine		and Averag	e 030			(See Pilot boring log for full geologic descriptions)	Drilling	Notes		Drilling Fluid	
SA	61			54K	16.0" Steel	Deposits; Silty gravel with sand (GM); reddish brown (5YR 5/4)				(04.5.04.5) 507.04	
	636465666677071727374757677576		SM		16.0" Steel	Deposits; Silty sand with gravel (SM); reddish brown (5YR 5/4) (72.0 - 77.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); yellowish brown / moderate yellowish brown (10YR 5/4) (77.0 - 79.5') Topock - Alluvium Deposits; Silty gravel with sand		er.		gallons of water used; 848.24 gallons of water recovered; 321.2 gallons	
i ————————————————————————————————————			SM		q	(79.5 - 87.0') Topock - Alluvium					

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater Remarks: blue water table symbol represents depth to water measured during the first VAS interval of the pilot borehole

9/-	ARCA				псу	Drilling Log					5 of 9		
Date S					Sı	urface Elevation:	<u>50</u>	0.4 ft a	amsl		Borin	g No.: IRZ	Z-25
	completed:			9		orthing (NAD83):		<u>02414</u>					<u></u>
Drilling			scade			asting (NAD83):		15824			Client:	PG&E	
	Method:		al Rota	-		otal Depth:		4 ft bg			Project:		medy Phase 1
Driller I	g Type:		<u>remost</u> n Martir			onductor Casing Diameter: rill Casing Diameter:		inche			Location:	PG&E TOPOC	k, Needles, California
Drilling					Saylors D	-				ri-cone	Project N	umber: RC00	0753 0051
Tool-P			nold La		-	epth to First Water:		.4 ft bo		11 00110		14000	0100.0001
	ologist:		Mack /			onverted to Well:		Yes	No				
	Drilling Ru	,				Description							
Depth (ft)	and Averag Penetration R	e l	USCS Code	USCS Class	Casing Diameter	(See Pilot boring log for full geologic descriptions)				Drilling	Notes		Drilling Fluid
					(04.504.51)	Deposits; Silty sand with gravel (SM); reddish brown (5YR 5/4)							
	(61.5 - 81.5) 3.67 mins/ft				(61.5 - 81.5') 16.0" Steel	(SM); reddish brown (SYR 5/4)							
	0.07				Casing								
82								(81.5 -	101.5') Drille	ed with wa	iter.		(81.5 - 101.5') 475.8 gallons of water used;
					1								1816.12 gallons of water recovered; 1340.32
83													gallons of water gained
			SM										
84													
					1								
85					.]								
					}								
86					1								
 87					.]		Y						
0/					1	(87.0 - 94.5') Topock - Alluvium Deposits; Silty sand with gravel	1	Ť					
88					1	(SM); reddish brown (5YR 5/4)							
					-}								
89													
					}								
90													
	(81.5 - 101.5)	014		(81.5 - 101.5'								
91	4.60 mins/ft		SM		16.0" Steel Casing								
					1	·							
92													
 93					1								
93													
94													
]								
95			ML	. 0.	,	(94.5 - 95.5') Topock - Alluvium Deposits; Gravelly silt (ML);							
						reddish brown (5YR 5/4)							
96						(95.5 - 97.0') Topock - Alluvium Deposits; Silty sand with gravel							
			SM		1	(SM); reddish brown / moderate brown (5YR 4/4)							
97					·}	(97.0 - 102.0') Topock - Alluvium	\dashv						
-					•	Deposits; Well graded sand with silt and gravel (SW-SM); light							
98					o o	reddish brown / light brown (5YR 6/4)							
F			SW-SM		•	J ,							
99					•								
100				o o									
	iotiono: III		_ I I _ :c	C-:	Classificati	on System ft - fact has -	<u>.</u>				l — alaassa		L CM - analysis divistan

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater Remarks: blue water table symbol represents depth to water measured during the first VAS interval of the pilot borehole

9/	ARCAI	DIS for buil	sign & Consultar natural and lt assets	псу	Drilling Log			Sheet:	6 of 9
	Started:	04/26/201		Sı	urface Elevation:	500.4 ft amsl	Borin	ng No.: IRZ	7-25
	Completed:	05/12/201	19	N	orthing (NAD83):	2102414.6			<u></u>
Drilling		Cascade			asting (NAD83):	7615824.5	Client:	PG&E	
_		Dual Rota	-		otal Depth:	174 ft bgs	Project:	Final GW Rei	_
	g Type:	Foremost			onductor Casing Diameter:		Location	: PG&E Topoc	k, Needles, California
	Name:	Jon Marti			rill Casing Diameter:	16 inches			
Drilling				Saylors D		15.5 & 17.5 inch Tri-cone	Project N	lumber: RC00	0753.0051
	usher:	Arnold La			epth to First Water: onverted to Well:	48.4 ft bgs			
rig Ge	eologist:	A. Wack /	D Com	leli C	T	× Yes No			
Depth	Drilling Rur and Averag	_ 0303	USCS	Casing	Description	Drilling	Notes		Drilling Fluid
(ft)	Penetration R	ate Code	Class	Diameter	(See Pilot boring log for full geologic descriptions)	Drilling	Notes		Drilling Fluid
				•	in georgic accorpanie,				
-	(81.5 - 101.5)			(81.5 - 101.5') 16.0" Steel					
101	4.60 mins/ft	SW-SM		Casing					
				•		(101.5 - 121.5') Drilled with w	vater.		(101.5 - 121.5') 325.74
102				•	(102.0 - 103.5') Topock - Alluvium	1			gallons of water used; 4086.84 gallons of water
		ML			Deposits; Sandy silt with gravel (ML); light reddish brown / light				recovered; 3761.1 gallons
103		IVIL			brown (5YR 6/4)				of water gained
			: : : : 	-	(103.5 - 109.5') Topock - Alluvium				
104			60°C	9	Deposits; Silty gravel (GM); reddish brown (5YR 5/4)				
				1	reddish brown (311(3/4)				
105				d					
			Pal P	-					
106				9					
		GM	PJO.]					
107			120						
]					
108			12 P						
			BY.K						
109			690						
			19 P.C		(400 F 447 0)) T 1 All a i a				
110					(109.5 - 117.0') Topock - Alluvium Deposits; Silty sand with gravel	1			
L -	(101.5 - 121.5			(101.5 -	(SM); (5YR 4/)				
111	6.21 mins/ft	"		121.5') 16.0" Steel Casing					
L _									
112				}					
				.]					
113				1					
L _		SM		1					
_114				.]					
				}					
115				1					
				.]					
116				1					
117				1					
		T]	(117.0 - 119.5') Topock - Alluvium Deposits; Silty sand with gravel	i']			
118				1	(SM); reddish brown / moderate				
		SM		1	brown (5YR 4/4)				
119				1					
				1					
120		ML		<u>.</u>	(119.5 - 124.5') Topock - Alluviun	1			
		 		 					

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater Remarks: blue water table symbol represents depth to water measured during the first VAS interval of the pilot borehole

9/	ARCA	DI	S Des	sign & Consultar natural and ilt assets	ncy	Drilling Log		Sheet:	7 of 9
Date S	Started:	04/	26/201	19	S	urface Elevation:	500.4 ft amsl	Boring No.: IRZ	7-25
Date 0	Completed:	05/	12/201	19	N	orthing (NAD83):	2102414.6	Donnig iton ita	<u> </u>
Drilling		<u>Cas</u>	<u>scade</u>		E	asting (NAD83):	7615824.5	Client: PG&E	
Drilling	Method:	<u>Dua</u>	al Rota	ary	T	otal Depth:	174 ft bgs	Project: Final GW Rei	medy Phase 1
Drill R	g Type:	<u>For</u>	<u>remost</u>	DR-24	HDC	onductor Casing Diameter:	18 inches	Location: PG&E Topoc	k, Needles, California
	Name:		<u> Martii</u>			rill Casing Diameter:	16 inches		
Drilling		<u>E. I</u>	Martine	ez / W. :	<u>Saylors</u> D		15.5 & 17.5 inch Tri-cone	Project Number: RC00	0753.0051
	usher:		<u>ıold La</u>			epth to First Water:	48.4 ft bgs		
Rig G	eologist:	<u>A. I</u>	Mack /	D Corn	nell C	onverted to Well:	× Yes No		
Depth	Drilling Ru		USCS	USCS	Casing	Description			
(ft)	and Average Penetration F	ge Rate	Code	Class	Diameter	(See Pilot boring log for full geologic descriptions)	Drilling	Notes	Drilling Fluid
						Deposits: Sandy silt with gravel			
-	(101.5 - 121.				(101.5 - 121.5') 16.0"	(ML); reddish brown / moderate brown (5YR 4/4)			
121	6.21 mins/ft	t			Steel Casing				
-					<u> </u>	_	(121.5 - 141.5') Drilled with w	ater.	(121.5 - 141.5') 118.34
122							(12116 11116) 2111164 1111111		gallons of water used; 1244.4 gallons of water
			ML						recovered; 1126.06
123									gallons of water gained
124									
16.2					:				
125						(124.5 - 127.0') Topock - Alluvium Deposits; Silty sand (SM); reddish			
						brown / moderate brown (5YR 4/4	4)		
126			SM						
Ę									
					1				
<u> </u>				440		(127.0 - 132.0') Topock - Alluvium Deposits; Silty gravel with sand	(127.0') During the first attem	pt of installing the well the emoval of the drill casing. The	(127.0 - 174.0') 280 gallons of water used;
128_				P. Y.		(GM); reddish brown (5YR 5/4)	well was removed from the bo	orehole and the borehole was	12440 gallons of water
120_				620			redrilled. Cascasde recomme casing and install the well in a		recovered; 12160 gallons of water gained
				BYK]				
J_123_				90					
5 5 <u>- 130</u>			GM	1°4°K	q T				
				199	1				
٠	(121.5 - 141. 1.75 mins/fi			60°C	(121.5 - 141.5') 16.0"				
131	1.75 111115/11				Steel Casing				
122					d				
132					-	(132.0 - 137.0') Topock - Alluvium	1		
<u>-</u>					:	Deposits; Sandy silt with gravel (ML); reddish brown / moderate			
<u>133_</u>						brown (5YR 4/4)			
134					1				
			ML						
135									
<u> </u>									
136					-				
5					1				
137]	(407.0. 400.50.7	_		
						(137.0 - 139.5') Topock - Alluvium Deposits; Sandy silt (ML); reddish	ı		
138					:	brown / moderate brown (5YR 4/4	9)		
180			ML]				
139_									
					·				
140			ML		<u> </u>	(139.5 - 147.0') Topock - Alluvium	1		
	viations: U	SCS	= Unit	fied Soil	Classificat	ion System. ft = feet. bas =	below ground surface ams	= above mean sea leve	I. GW = groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW Remarks: blue water table symbol represents depth to water measured during the first VAS interval of the pilot borehole

9/	ARCA	04/26/2019			псу	Drilling Log					8 of 9
Date St						urface Elevation:		0.4 ft amsl	Borir	ng No.: IRZ	Z-25
	-			9		orthing (NAD83):		02414.6			
Drilling		Casc				asting (NAD83):		315824.5	Client:	PG&E	
_	Method:	<u>Dual</u>		-		otal Depth:		'4 ft bgs	Project:	Final GW Rer	-
Drill Rig Driller N		Jon N		DR-24		onductor Casing Diameter: rill Casing Diameter:		inches	Location	PG&E TOPOC	k, Needles, California
Drilling					Saylors D	-		5.5 & 17.5 inch Tri-cone	Project N	lumber: RC00	0753 0051
Tool-Pu		Arnol			-	epth to First Water:		8.4 ft bgs		.abor. <u>11000</u>	0100.0001
Rig Ge				O Corn		onverted to Well:		Yes No			
	Drilling Rui	n				Description					
Depth (ft)	and Averag Penetration R	e C	SCS Code	USCS Class	Casing Diameter	(See Pilot boring log for full geologic descriptions)		Drilling	Notes		Drilling Fluid
						Deposits; Sandy silt with gravel (ML); reddish brown / moderate	+				
	(121.5 - 141.5				(121.5 - 141.5') 16.0"	(ML); reddish brown / moderate brown (5YR 4/4)					
_141	1.75 mins/ft				Steel Ćasing						
142								(141.5 - 161.5') Drilled with w	/ater.		(141.5 - 161.5') 161.04 gallons of water used;
142			-								1726.08 gallons of water
143			ŀ								recovered; 1565.04 gallons of water gained
			ML :								
_144			IVIL								
_145					•			$\Delta \Omega \lambda^{*}$			
146					•						
							4				
147					1	(147.0 - 157.0') Topock - Alluviun	\vdash				
					1	Deposits; Silty sand with gravel (SM); reddish brown (5YR 4/3)					
148					1	(OW), reddish brown (OTT 4/0)					
					1						
_149					}						
 150											
130					4415						
151	(141.5 - 161.5 2.10 mins/ft				(141.5 - 161.5') 16"						
					Steel Casing						
152			SM :		}						
153					}						
					1						
154					1						
155					1			(155.0') During redrill the loss	s returns due	e to a plug in the	
			[:		1			drill pipe tripped out drill rods hole assembly.	and installe	d normal bottom	
156			ŀ		1						
 			:		1						
157				֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓֓		(157.0 - 162.0') Topock -					
150						Weathered Bedrock - conglomerate; Gravelly silt (ML);					
158				, p [ф		reddish brown (5YR 5/4)					
159			ML		_						
			d								
160											
، د ح ما ما ۱۸	iotiono: IIC	- 202	Linifi	~4 C~!!	Closoificati	on System ft - foot has -	hala	ow around ourfood ama	I - abova	moon oog level	CM - aroundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater Remarks: blue water table symbol represents depth to water measured during the first VAS interval of the pilot borehole

A	RCA	DIS	Design & Consultar for natural and puilt assets	псу	Drilling Log					Shee	et: 9	of 9
Date St	tarted:	04/26/20)19	Sı	urface Elevation:	500	0.4 ft a	amsl	Borin	ng No.:	IRZ-2	25
	ompleted:				orthing (NAD83):		02414					<u></u>
Drilling		Cascade			asting (NAD83):		15824		Client:	PG&E		
_	Method:	Dual Ro	-		otal Depth:		4 ft bg		Project:			dy Phase 1
Drill Rig Driller N		Foremos Jon Mar			onductor Casing Diameter: rill Casing Diameter:		inche:		Location	: PG&E TO	ороск, і	Needles, California
Drilling A				Di <u>Saylors_</u> Di	_			5. 7.5 inch Tri-cone	Project N	Jumber: R	C0007!	53 0051
Tool-Pu		Arnold L		•	epth to First Water:		.4 ft bo		, i rojocci			00.0001
Rig Geo		A. Mack			onverted to Well:		Yes	No				
	D.:II: D				Description	Ŧ		<u> </u>				
Depth (ft)	Drilling Rui and Averag	e Codo		Casing Diameter	(See Pilot boring log for			Drilling	Notes			Drilling Fluid
	Penetration F	ate			full geologic descriptions)							
	(4.44.5404.5	-,	1.0.	(141.5 -								
_161	141.5 - 161.5) 2.10 mins/ft			161.5') 16" Steel Casing								
			.00	100000000000000000000000000000000000000			(404.5	470 01\ D :11 1 :11				
162		-			(400 0 400 0l) Tl	41	bedroc	 173.0') Drilled with w k attempted to dislodg 	ge while adva			
F 4			[.0.]		(162.0 - 166.0') Topock - Weathered Bedrock -		Circula	ted water to clean out	borehole.			
163					conglomerate; Gravelly silt (ML); reddish brown / moderate brown							
 					(5YR 4/4)							
164		ML										
165				-								
2166				1	(166.0 - 174.0') Topock -	$+$ \mathbb{R}						
3					Competent Bedrock - conglomerate; reddish brown (5Y	R		•				
167	(161.5 - 173.0			(161.5 - 173.0') 15.5"	5/4)							
<u></u> 400 −	6.22 mins/ft			Open Hole								
<u>168</u>												
				1								
170												
A I ABAS												
171_												
172_				1								
				1								
173		-		(470.0	-							
	(173.0 - 174.0 mins/ft	0)		(173.0 - 174.0') 15.5"								
174			V//)X	Open Hole	End of Boring at 174.0 'bgs.							
*												
Ž175												
<u>176</u>												
177												
3 470												
178												
ਫ਼ਿੱ <mark>– 179</mark> _												
D 1/9												
180												
Abbrevi					ion System, ft = feet, bgs =						level, G	GW = groundwater
Remark	cs: blue w	ater table	symbol r	enresents o	depth to water measured du	ırina	the fi	rst VAS interval o	f the pilot	horehole		

IRZ DF

ARCA	DIS	esign & Consultan or natural and uilt assets	су	Drilling Log						Sheet:	1 of 9
Date Started:	04/26/20	19	Sı	urface Elevation:	50	00.4 ft a	amsl		Borin	ng No.: IRZ	7-25
Date Completed:	05/12/20	19	N	orthing (NAD83):	<u>2</u>	102414	l.6			ig 140 <u>ii u</u>	<u>20</u>
Drilling Co.:	Cascade	:	E	asting (NAD83):	76	315824	l.5		Client:	PG&E	
Drilling Method:	Dual Rot	ary	To	otal Depth:	17	74 ft bg	ıs		Project:	Final GW Re	medy Phase 1
Drill Rig Type:	Foremos	t DR-24	HDC	onductor Casing Diameter:	<u>18</u>	3 inche	s		Location	PG&E Topod	k, Needles, California
Driller Name:	Jon Mart			rill Casing Diameter:	<u>16</u>	3 inche	s		_		
Drilling Asst:	E. Martin	ez / W. S	<u>Saylors</u> D	rill Bit:	<u>15</u>	5.5 & 1	7.5 inc	<u>h Tri-cone</u>	Project N	lumber: RC00	0753.0051
Tool-Pusher:	Arnold L			epth to First Water:		3.4 ft bo			_		
Rig Geologist:	A. Mack	/ D Corn	ell C	onverted to Well:	×	Yes	No)			T
Depth Drilling Run		USCS	Casing	Description							
(ft) and Averag Penetration R	e Cada		Diameter	(See Pilot boring log for full geologic descriptions)				·	g Notes		Drilling Fluid
1	SP-SM SP-SM		(0.0 - 21.2') 18.0" Steel Casing	(0.0 - 4.5') Topock - Fluvial Deposits; Poorly graded sand wit silt and gravel (SP-SM) (4.5 - 12.0') Topock - Fluvial Deposits; Poorly graded sand wit silt (SP-SM); pale brown (10YR 6/3) (12.0 - 17.0') Topock - Fluvial Deposits; Well graded sand with silt and gravel (SW-SM); pale brown (10YR 6/3) (17.0 - 20.5') Topock - Fluvial Deposits; Silty sand with gravel (SM); brown (10YR 5/3)				ough drilling.	er.		(0.0 - 21.2') 845.46 gallons of water used; 615.18 gallons of water recovered; 230.28 gallons of water lost
20											
Abbreviations: US	SCS = Un	ified Soil	Classificati	on System, ft = feet, bgs =	bel	ow gro	und si	ırface, ams	sl = above	mean sea leve	l, GW = groundwater

Remarks: blue water table symbol represents depth to water measured during the first VAS interval of the pilot borehole

ARC		S Desi	ign & Consultani natural and t assets	cy	Drilling Log					Sheet:	2 of 9
Date Started:	04/	26/201	9	Sı	urface Elevation:	50	00.4 ft a	amsl	Borin	ng No.: IRZ	'-25
Date Completed	d: <u>05/</u>	12/201	9	N	orthing (NAD83):	21	102414	6	Dom	ig 110 <u>iitz</u>	<u>20</u>
Drilling Co.:	<u>Cas</u>	scade		E	asting (NAD83):	<u>76</u>	315824	5	Client:	PG&E	
Drilling Method:	<u>Dua</u>	al Rota	ry	To	otal Depth:	<u>17</u>	74 ft bg	S	Project:	Final GW Rer	nedy Phase 1
Drill Rig Type:	For	emost	DR-24	HDC	onductor Casing Diameter:	<u>18</u>	3 inche	<u>s</u>	Location:	PG&E Topoc	k, Needles, California
Driller Name:		<u>Martir</u>			rill Casing Diameter:		inche:				
Drilling Asst:				<u>Saylors</u> Di				7.5 inch Tri-cone	Project N	lumber: RC000	0753.0051
Tool-Pusher:		<u>ıold Laı</u>			epth to First Water:		3.4 ft bo				
Rig Geologist:	<u>A. I</u>	Mack /	D Corn	ell Co	onverted to Well:	×	Yes	No			
Depth Drilling	Run	USCS	USCS	Cooling	Description						
(ft) and Aver		Code	Class	Casing Diameter	(See Pilot boring log for full geologic descriptions)			Drilling	Notes		Drilling Fluid
		SM		(0.0 - 21.2')							
(0.0 - 21. 8.02 mins	2)			18.0" Steel	(20.5 - 32.0') Topock - Fluvial						
_21	,,,,			Casing	Deposits; Sandy silt with gravel (ML); light yellowish brown (10YF		(04.0	00.00 4.1			(04.0, 04.0), 4005.00
					6/4)		àdvanc	30.0') Advanced 9 ft d ement during 3rd hou	r. Volume of	waste water	(21.2 - 31.0') 1065.06 gallons of water used;
22								d from beginning to en be from backflow to cu			-121.6 gallons of water recovered; 1186.66
											gallons of water lost
23											
24											
25											
_ (21.2 - 30	.0)			(21.2 - 30.0') 18.0" Steel							
26 23.89 min	s/ft			Casing		1					
		ML				4					
27								•			
_28											
29											
30											
(30.0 - 31				(30.0 - 31.0') 18.0" Steel				31.0') Borehole only a on a boulder.	dvanced 1 fc	oot in 4 hrs, likely	
197.18 mii	ns/ft			Casing							(0.4.0
							(31.0 -	41.0') Drilled with wat	er.		(31.0 - 41.0') 1087.02 gallons of water used;
32											2478 gallons of water recovered; 1390.98
					(32.0 - 40.0') Topock - Fluvial Deposits; Silty sand with gravel						gallons of water gained
_33					(SM); pale brown (10YR 6/3)						
_34											
(31.0 - 41	.0)			(31.0 - 41.0')							
12.09 min				18.0" Steel Casing							
		SM									
37											
-3'-											
38											
39											
Abbreviations:	USCS	= Unif	ied Soil	Classificati	on System, ft = feet, bgs =	bel	ow aro	und surface. ams	l = above	mean sea level	GW = groundwater

Remarks: blue water table symbol represents depth to water measured during the first VAS interval of the pilot borehole

9/	ARCA	DIS	S Des for buil	i <mark>gn & Consultan</mark> natural and t assets	су	Drilling Log			Sheet:	3 of 9	
Date S	Started:	04/2	6/201	9	Sı	urface Elevation:	500.4 ft amsl	Borin	g No.: IR	7-25	
	Completed:	05/1	2/201	9	N	orthing (NAD83):	2102414.6		19 110 <u>II 1</u>	<u> </u>	
Drilling	Co.:	Caso	cade		E	asting (NAD83):	7615824.5	Client:	PG&E		
Drilling	Method:	<u>Dual</u>	l Rota	ry	To	otal Depth:	174 ft bgs	Project:	Final GW Re	emedy Phase 1	
Drill Ri	g Type:	Fore	most	DR-24	HDC	onductor Casing Diameter:	18 inches	Location:	PG&E Topo	ck, Needles, California	
Driller	Name:	<u>Jon</u>	Martir	nez	Dı	rill Casing Diameter:	16 inches	,			
Drilling	Asst:	<u>E. M</u>	lartine	z/W.	<u>Saylors</u> Di	rill Bit:	15.5 & 17.5 inch Tri-cone	Project N	lumber: RC0	00753.0051	
Tool-P	usher:	Arno	old La	mon	D	epth to First Water:	48.4 ft bgs	:			
Rig Ge	eologist:	<u>A. M</u>	lack /	D Corn	ell Co	onverted to Well:	× Yes No				
Depth (ft)	Drilling Rur and Averag Penetration R	e '	USCS Code	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling	Notes		Drilling Fluid	
41	(31.0 - 41.0) 12.09 mins/ft		GM		(31.0 - 41.0') 18.0" Steel Casing	(40.0 - 41.5') Topock - Fluvial Deposits; Silty gravel with sand (GM); pale brown (10YR 6/3)	(41.0 - 43.0') Drilled with wat	er.		(41.0 - 43.0') 230.58	
 42 43	(41.0 - 43.0) 8.50 mins/ft				(41.0 - 43.0') 16.0" Steel Casing	(41.5 - 49.5') Topock - Fluvial Deposits; Well graded gravel with silt and sand (GW-GM); light brown (7.5YR 6/4)	1			gallons of water used; 0 gallons of water recovered; 230.58 gallons of water lost	
44 44							(43.0 - 61.5') Drilled with wat	er.		(43.0 - 61.5') 684.42 gallons of water used; 526.16 gallons of water recovered; 158.26 gallons of water lost	
45 		G	W-GM								
46 47		ı									
 48		ı									
 49 		ŀ				(49.5 - 52.0') Topock - Alluvium					
50 51		ı	SM			Deposits; Silty sand with gravel (SM); brown (10YR 5/3)					
 52	(43.0 - 61.5) 7.04 mins/ft	L			(43.0 - 61.5') 16.0" Steel Casing	(52.0 - 57.0') Topock - Alluvium					
 53		ı				Deposits; Silty gravel with sand (GM); reddish brown (5YR 5/4)					
54		ı	GM								
55		ı	Givi								
56 56 57											
58			(57.0 - 59.5') Topock - Alluvium Deposits; Sandy silt (ML); reddish brown (5YR 5/4)								
 59 						(59.5 - 68.0') Topock - Alluvium	uvium				
60	l		GM	10 (Vol. o						1 011/	

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater Remarks: blue water table symbol represents depth to water measured during the first VAS interval of the pilot borehole

Date Surface D4/26/20/19 Surface Elevation 500.4 ft amb 20/24/19 Description 500.20/20 Control	9/	ARCA				Drilling Log		Sheet: 4 of 9			
Diffusion Dif	Date S	Started:	04/26/2	019	Sı	urface Elevation:	500.4 ft amsl	Borin	a No · IR	7-25	
Drilling Mathematics Drilling Assets Frequent Final GW Remedy Phase Location: PG&E Topock, Needles, California Sinches Location: PG&E Topock, Needles, California Location: PG&E Topock, Needles, California Sinches Location: PG&E Topock, Needles, California Location: PG&		-	05/12/2	019	N	orthing (NAD83):	2102414.6		.g.110 <u></u>	<u> </u>	
Dotal R Type:	Drilling	Co.:	Cascad	е	E	asting (NAD83):	7615824.5	Client:	PG&E		
Delition Assist Delition Assist American Delition Assist American Delition Assist American Delition Assist American Delition Delition Assist American Delition	Drilling	Method:	Dual Ro	tary	To	otal Depth:	174 ft bgs	Project:	Final GW Re	medy Phase 1	
Description Convention Description Convented to Wells Description Convent	Drill Ri	g Type:	Foremo	st DR-24	HDC	onductor Casing Diameter:	18 inches	Location:	PG&E Topo	ck, Needles, California	
Tool-Purples Amold Lamon	Driller	Name:	Jon Ma	tinez	D	rill Casing Diameter:	16 inches	,			
Description Description	Drilling	Asst:	E. Marti	nez / W.	Saylors D	rill Bit:	15.5 & 17.5 inch Tri-cone	Project N	umber: RC00	0753.0051	
Description California Ca	Tool-P	usher:	Arnold I	<u>amon</u>	D	epth to First Water:	48.4 ft bgs				
Depth Control Contro	Rig Ge	eologist:	A. Mack	/ D Corr	nell C	onverted to Well:	× Yes No				
43.0 - 81.5 7.04 mine		and Averag	e 030			(See Pilot boring log for full geologic descriptions)	Drilling	Notes		Drilling Fluid	
SA	61			54K	16.0" Steel	Deposits; Silty gravel with sand (GM); reddish brown (5YR 5/4)				(04.5.04.5) 507.04	
	636465666677071727374757677576		SM		16.0" Steel	Deposits; Silty sand with gravel (SM); reddish brown (5YR 5/4) (72.0 - 77.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); yellowish brown / moderate yellowish brown (10YR 5/4) (77.0 - 79.5') Topock - Alluvium Deposits; Silty gravel with sand		er.		gallons of water used; 848.24 gallons of water recovered; 321.2 gallons	
i ————————————————————————————————————			SM		q	(79.5 - 87.0') Topock - Alluvium					

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater Remarks: blue water table symbol represents depth to water measured during the first VAS interval of the pilot borehole

9/-	ARCA				псу	Drilling Log					5 of 9		
Date S					Sı	urface Elevation:	<u>50</u>	0.4 ft a	amsl		Borin	g No.: IRZ	Z-25
	completed:			9		orthing (NAD83):		<u>02414</u>					<u></u>
Drilling			scade			asting (NAD83):		15824			Client:	PG&E	
	Method:		al Rota	-		otal Depth:		4 ft bg			Project:		medy Phase 1
Driller I	g Type:		<u>remost</u> n Martir			onductor Casing Diameter: rill Casing Diameter:		inche			Location:	PG&E TOPOC	k, Needles, California
Drilling					Saylors D	-				ri-cone	Project N	umber: RC00	0753 0051
Tool-P			nold La		-	epth to First Water:		.4 ft bo		11 00110		14000	0100.0001
	ologist:		Mack /			onverted to Well:		Yes	No				
	Drilling Ru	,				Description							
Depth (ft)	and Averag Penetration R	e l	USCS Code	USCS Class	Casing Diameter	(See Pilot boring log for full geologic descriptions)				Drilling	Notes		Drilling Fluid
					(04.504.51)	Deposits; Silty sand with gravel (SM); reddish brown (5YR 5/4)							
	(61.5 - 81.5) 3.67 mins/ft				(61.5 - 81.5') 16.0" Steel	(SM); reddish brown (SYR 5/4)							
	0.07				Casing								
82								(81.5 -	101.5') Drille	ed with wa	iter.		(81.5 - 101.5') 475.8 gallons of water used;
					1								1816.12 gallons of water recovered; 1340.32
83													gallons of water gained
			SM										
84													
					1								
85					.]								
					}								
86					1								
 87					.]		Y						
0/					1	(87.0 - 94.5') Topock - Alluvium Deposits; Silty sand with gravel	1	Ť					
88					1	(SM); reddish brown (5YR 5/4)							
					-}								
89													
					}								
90													
	(81.5 - 101.5)	014		(81.5 - 101.5'								
91	4.60 mins/ft		SM		16.0" Steel Casing								
					1	·							
92													
 93					1								
93													
94													
]								
95			ML	. 0.	,	(94.5 - 95.5') Topock - Alluvium Deposits; Gravelly silt (ML);							
						reddish brown (5YR 5/4)							
96						(95.5 - 97.0') Topock - Alluvium Deposits; Silty sand with gravel							
			SM		1	(SM); reddish brown / moderate brown (5YR 4/4)							
97					·}	(97.0 - 102.0') Topock - Alluvium	\dashv						
-					•	Deposits; Well graded sand with silt and gravel (SW-SM); light							
98					o o	reddish brown / light brown (5YR 6/4)							
F			SW-SM		•	J ,							
99					•								
100				o o									
	iotiono: III		_ I I _ :c	C-:	Classificati	on System ft - fact has -	<u>.</u>				l — alaassa		L CM - analysis divistan

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater Remarks: blue water table symbol represents depth to water measured during the first VAS interval of the pilot borehole

9/	ARCA	DIS for buil	sign & Consultar natural and ilt assets	псу	Drilling Log			Sheet:	6 of 9
Date S	Started:	04/26/201	19	Sı	urface Elevation:	500.4 ft amsl	Borin	g No.: IR	7-25
	Completed:	05/12/201	19	N	orthing (NAD83):	2102414.6		19 110 <u>1111</u>	
Drilling	Drilling Co.: <u>Cascade</u>			E	asting (NAD83):	7615824.5	Client:	PG&E	
Drilling	Orilling Method: <u>Dual Rotary</u>		To	otal Depth:	<u>174 ft bgs</u>	Project:	Final GW Re	medy Phase 1	
	g Type:	<u>Foremost</u>			onductor Casing Diameter:		Location:	PG&E Topoc	ck, Needles, California
Driller I		Jon Marti			rill Casing Diameter:	16 inches		_	
Drilling				<u>Saylors</u> Dı		15.5 & 17.5 inch Tri-cone	Project N	lumber: RC00	0753.0051
	usher:	Arnold La			epth to First Water:	48.4 ft bgs			
Rig Ge	eologist:	A. Mack /	D Corn	iell Co	onverted to Well:	× Yes No			1
Depth	Drilling Rur and Averag		USCS	Casing	Description	Drilling	Notos		Drilling Fluid
(ft)	Penetration R	ate Code	Class	Diameter	(See Pilot boring log for full geologic descriptions)	Drilling	Notes		Drilling Flaid
				•					
	(81.5 - 101.5)			(81.5 - 101.5') 16.0" Steel					
101	4.60 mins/ft	SW-SM		Casing					
				•		(101.5 - 121.5') Drilled with w	vater.		(101.5 - 121.5') 325.74
102				•	(102.0 - 103.5') Topock - Alluvium	1			gallons of water used; 4086.84 gallons of water
-		ML		:	Deposits; Sandy silt with gravel (ML); light reddish brown / light				recovered; 3761.1 gallons of water gained
103		IVIL			brown (5YR 6/4)				oi watei gained
-			641CF	-	(103.5 - 109.5') Topock - Alluvium				
104			10 P°C	d T	Deposits; Silty gravel (GM); reddish brown (5YR 5/4)				
			3	1	Toddion brown (01100/1)				
105				9					
			199	=					
106				9					
		GM	20	_					
107				9					
			Polo	}					
108									
			Por]					
109			12 P						
			1,00		(109.5 - 117.0') Topock - Alluvium	<u></u>			
_110					Deposits; Silty sand with gravel	'			
	(101.5 - 121.5	,		(101.5 -	(SM); (5YR 4/)				
111	6.21 mins/ft			121.5') 16.0" Steel Casing					
				.]					
112				}					
				•}					
113				.]					
		SM		}					
114				.}					
115				1					
116				}					
				•}					
117					7447 0 476 70 7				
					(117.0 - 119.5') Topock - Alluvium Deposits; Silty sand with gravel	'			
118				1	(SM); reddish brown / moderate brown (5YR 4/4)				
		SM		†					
_119									
				}	(110 5 124 51) Tang-1, Allin 1				
120		ML			(119.5 - 124.5') Topock - Alluvium	<u>' </u>			

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater Remarks: blue water table symbol represents depth to water measured during the first VAS interval of the pilot borehole

9/	ARCA	DI	S Des	sign & Consultar natural and lt assets	псу	Drilling Log		Sheet:	7 of 9
Date S	Started:	04/	26/201	19	S	urface Elevation:	500.4 ft amsl	Boring No.: IRZ	7-25
Date 0	Completed:	05/	12/201	19	N	orthing (NAD83):	2102414.6		<u> </u>
Drilling		Cas	scade		E	asting (NAD83):	7615824.5	Client: PG&E	
Drilling	Method:	<u>Dua</u>	al Rota	ary	To	otal Depth:	174 ft bgs	Project: Final GW Rei	medy Phase 1
Drill R	g Type:	For	emost	DR-24	HDC	onductor Casing Diameter:	18 inches	Location: PG&E Topoc	k, Needles, California
	Name:		<u>Martii</u>			rill Casing Diameter:	16 inches		
Drilling		<u>E. N</u>	<u>Martine</u>	ez / W. S	<u>Saylors</u> D		15.5 & 17.5 inch Tri-cone	Project Number: RC00	0753.0051
	usher:		<u>iold La</u>			epth to First Water:	48.4 ft bgs		
Rig G	eologist:	<u>A. N</u>	Mack /	D Corn	iell C	onverted to Well:	× Yes No		
Depth	Drilling Ru		USCS	USCS	Casing	Description			
(ft)	and Average Penetration F	ge Rate	Code	Class	Diameter	(See Pilot boring log for full geologic descriptions)	Drilling	Notes	Drilling Fluid
					•	Deposits: Sandy silt with gravel			
-	(101.5 - 121.				(101.5 - 121.5') 16.0"	(ML); reddish brown / moderate brown (5YR 4/4)			
121	6.21 mins/ft	t			Steel Casing				
-					 	_	(121.5 - 141.5') Drilled with w	ater.	(121.5 - 141.5') 118.34
122]		(12116 11116) 2111164 1111111		gallons of water used; 1244.4 gallons of water
			ML]				recovered; 1126.06
123									gallons of water gained
]				
124									
16.2					-				
125						(124.5 - 127.0') Topock - Alluvium Deposits; Silty sand (SM); reddish			
					}	brown / moderate brown (5YR 4/4	4)		
126			SM		.]				
Ę									
					1				
<u> </u>				444		(127.0 - 132.0') Topock - Alluvium Deposits; Silty gravel with sand	(127.0') During the first attem	pt of installing the well the emoval of the drill casing. The	(127.0 - 174.0') 280 gallons of water used;
128_				P. Y.		(GM); reddish brown (5YR 5/4)	well was removed from the bo	prehole and the borehole was	12440 gallons of water
120_				69 p			redrilled. Cascasde recomme casing and install the well in a		recovered; 12160 gallons of water gained
5123_									
5 5 <u>- 130</u>			GM		g T				
130									
٠	(121.5 - 141.			605	(121.5 - 141.5') 16.0"				
131	1.75 mins/ft	'			Steel Casing				
122					9				
132					†	(132.0 - 137.0') Topock - Alluvium			
						Deposits; Sandy silt with gravel (ML); reddish brown / moderate			
133						brown (5YR 4/4)			
134									
<u> </u>			ML						
135									
2 ∦					<u> </u>				
136									
<u> </u>					-				
137]		_		
]	(137.0 - 139.5') Topock - Alluvium Deposits; Sandy silt (ML); reddish	ı		
						brown / moderate brown (5YR 4/4	4)		
			ML]				
5 –									
-100-					•				
140			ML]	(139.5 - 147.0') Topock - Alluvium	1		
	viations: LI	SCS	= Unit	fied Soil	Classificati	ion System. ft = feet. bas =	below ground surface ams	= above mean sea leve	GW = groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW Remarks: blue water table symbol represents depth to water measured during the first VAS interval of the pilot borehole

9/	ARCA	DIS	Design for n built	gn & Consultar atural and assets	псу	Drilling Log				Sheet:	8 of 9
Date Started: <u>04/26/2019</u>					urface Elevation:		0.4 ft amsl	Boring No.: IRZ-25			
	completed:			9		Northing (NAD83): <u>2102414.6</u>			-		
Drilling Co.: <u>Cascade</u> Drilling Method: <u>Dual Rotary</u>				asting (NAD83):		315824.5	Client:	PG&E			
_	Method:			-		otal Depth:		'4 ft bgs	Project:	Final GW Rer	-
Driller I	g Type:		<u>mosτ</u> Martin	DR-24		onductor Casing Diameter: rill Casing Diameter:		inches	Location:	PG&E TOPOC	k, Needles, California
Drilling					Saylors D			5.5 & 17.5 inch Tri-cone	Project N	umber: RC00	0753 0051
Tool-P			ld Lar		-	epth to First Water:		8.4 ft bgs		14111501. <u>14000</u>	0100.0001
	ologist:			D Corn		onverted to Well:		Yes No			
	Drilling Ru	,				Description					
Depth (ft)	and Averag Penetration R	e 2	JSCS Code	USCS Class	Casing Diameter	(See Pilot boring log for full geologic descriptions)		Drilling	Notes		Drilling Fluid
						Deposits; Sandy silt with gravel (ML); reddish brown / moderate	+				
	(121.5 - 141.5				(121.5 - 141.5') 16.0"	(ML); reddish brown / moderate brown (5YR 4/4)					
_141	1.75 mins/ft				Steel Ćasing						
 142								(141.5 - 161.5') Drilled with w	ater.		(141.5 - 161.5') 161.04 gallons of water used;
142											1726.08 gallons of water
143											recovered; 1565.04 gallons of water gained
			ML								
_144			IVIL								
_145					•			$\Delta \Omega \lambda^{*}$			
146					•						
							4				
147					<u>.</u>	(147.0 - 157.0') Topock - Alluviun	1				
					}	Deposits; Silty sand with gravel (SM); reddish brown (5YR 4/3)					
148											
 149					}						
143											
					(141.5 -						
151	(141.5 - 161.5 2.10 mins/ft				161.5') 16" Steel Casing						
					Stoor Gaoing						
152			SM		•						
					1						
153					1						
					1						
154					1						
455					1						
155					1			(155.0') During redrill the loss drill pipe tripped out drill rods	s returns due	to a plug in the	
156]			hole assembly.	and installe	u normai bollom	
,50					}						
 157						L					
					4	(157.0 - 162.0') Topock - Weathered Bedrock -					
158						conglomerate; Gravelly silt (ML); reddish brown (5YR 5/4)					
			ML		,	(5 5, . ,)					
159											
-				. [9						
160	iotiona: III	200 -	- I I :6:		Classificati	on System ft - feet has -	<u> </u>		l — ah avra		CM = maximalisates

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater Remarks: blue water table symbol represents depth to water measured during the first VAS interval of the pilot borehole

9/	RCA	DIS	Des for i	sign & Consulta natural and It assets	псу	Drilling Log					Sh	eet: 9	9 of 9
Date St	tarted:	04/26	/201	19	Sı	urface Elevation:	50	00.4 ft	amsl	Bori	ng No.:	: IRZ	'-25
	ompleted:			19		orthing (NAD83):		102414					
Drilling		Casca				asting (NAD83):		315824		Client:	PG&E		
_	Method:	Dual F		-		otal Depth:		74 ft bg	-	Project:			nedy Phase 1
Drill Rig Driller N		Forem Jon M		DR-24		onductor Casing Diameter: rill Casing Diameter:		3 inche 3 inche		Location	: PG&E	<u> горосі</u>	k, Needles, California
Drilling					Saylors Di	_			7.5 inch Tri-cone	Project l	Jumber	RCOOC	753 0051
Tool-Pu		Arnolo			•	epth to First Water:		3.4 ft b		. 1 10,000	tarribor.	11000	77 00.000 1
Rig Ge				D Corr		onverted to Well:	×	_	No				
	D.1111 D.					Description	Ī						
Depth (ft)	Drilling Ru and Averag	je C	SCS ode	USCS Class	Casing Diameter	(See Pilot boring log for			Drilling	Notes			Drilling Fluid
	Penetration F	kate				full geologic descriptions)							
	(4.44.5	_,		. 0.	(141.5 -								
161	141.5 - 161.5 2.10 mins/ft		ИL		161.5') 16" Steel Casing								
1 1				.00	, cusing			(404.5	470 0l) D 'll 1 'll				
162		-				(400 0 400 0l) Tl	_	bedroo	 173.0') Drilled with w ck attempted to dislodg 	e while adv			
F 4				[.0.]	e e	(162.0 - 166.0') Topock - Weathered Bedrock -		Circula	ated water to clean out	borehole.			
163						conglomerate; Gravelly silt (ML); reddish brown / moderate brown							
- -					,	(5YR 4/4)							
164		N	ЛL										
				600	•								
165													
				600	ا								
2166		-			\$	(166.0 - 174.0') Topock -	+						
						Competent Bedrock - conglomerate; reddish brown (5Y	R						
167	(161.5 - 173.0				(161.5 - 173.0') 15.5"	5/4)							
400	6.22 mins/ft				Open Hole								
<u>168</u>													
					\$								
507													
170													
A I ABAS					1								
Ž171													
172					\$								
173					(470.0	-							
	(173.0 - 174.0 mins/ft	0)			(173.0 - 174.0') 15.5"								
174				<u> </u>	Open Hole	End of Boring at 174.0 'bgs.							
<u> </u>													
Ž175													
<u>176</u>													
177													
3 470													
178													
ਲੋ –													
D 1/9													
180													
Abbrev						ion System, ft = feet, bgs =							GW = groundwater
Remark	ks: blue w	ater tak	ole s	vmhol i	renresents (depth to water measured du	ırin	a the f	irst VAS interval o	f the pilot	horehole		

IRZ DF

ARCA	DIS built asset	Consultancy al and ts		Well Consti	ruction Log	;	Sheet: 1 of 9
Date Started:	05/12/2019			_Surface Elevation:	500.4 ft amsl	Well ID: IR	Z-25
Date Completed				_Shallow Well Elevation:	N/A		_
Drilling Co.:	Cascade			_ Deep Well Elevation:	N/A	Client: PG&I	
Drilling Method:	Dual Rotary			_Northing (NAD83):	2102414.6		GW Remedy Phase 1
Driller Name: Drilling Asst:	Jon Martinez E. Martinez / Y	M Sayl	ore	_Easting (NAD83): _Borehole Diameter:	7615824.5 15.5-18 inches	Location: PG&L	E Topock, Needles, California
Logger:	D Cornell / K.	-	015	Boreriole Diameter. Water Level Start:	44.95 ft bgs	— Project Numbe	r: <u>RC000753.0051</u>
Editor:	Sean McGrar			Development End Date:		r roject rumbe	1. 11. 11. 11. 11. 11. 11. 11. 11. 11.
Total Depth:	174 ft bgs			Well Completion:			
	o 5			·	·		
Groundwa Sample I		Code	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
	Topock - Fluvial Deposits	SP-SM		(0.0 - 50.1') 10" Suregrip 17 Casing (0.0 - 4.0') Cemex #0/30 MESH		(0.0 - 4.0') 9 bags	(0.0 - 4.0') 17 bags (89%) Note: Lapis Lustre Sand, used >20% of the calculated volume due to potentialvoids forming during drilling
	Topock - Fluvial Deposits	SP-SM		(4.0 - 31.1') Grout	(0.0 + 21.2') 18.0" Borehole	(4.0 - 31.1') 211.4	(4.0 - 31.1') 413 gallons (95%) Note: Type I, II, and V 3% Benseal, grout not tagged will be tagged in morning, used > 20% of the
13	Topock - Fluvial Deposits	SW-SM				gallons	calculated volume due to potentail grout migration and voids forming during drilling
18	Topock - Fluvial Deposits	SM					and level. CW = groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, groundwater data was collected during drilling of the pilot borehole

Date Completed D5/29/2019 Shallow Well Elevation: NA	ARC	DIS for natural built assets	and s		Well Const	ruction Log	:	Sheet: 2 of 9	
Deling D	Date Started:						Well ID: IR	Z-25	
Deling Method: Dual Rotatory Northing (NAD83): 2102414.6 Project Final GW Remedy Phase 1	<u> </u>								
Diller Name: On Martinez Easting (NADB3); 7618824.5 Location: PG&E Topock, Needles, California Diller Name: Loger: E. Martinez (W. Saviors Saviors California Diller Name: Loger: Elevir Saun McGrane Development End Date: 155-18 inches Project Number: RC000753.0051	_								
Dilling Asst. E. Martinez / W. Saylors Borehole Diameter 15.5.18 inches Logger Docesting	-	-			- ', '		•		
Description Description			V Sav	lors	- , ,		Location. <u>F Gxi</u>	E TOPOCK, Needles, California	
Development End Date: 10/1/2019 174 ft bgs	_		-	1010			Proiect Numbe	er: RC000753.0051	
Calculated Material Volumes Meterial Volumes Material Volumes	Editor:						, 		
SM SM Surgept 17 Casing Surgept 17 Casing Co. 2-12 (18.0° Borotrola Co. 2-12 (18.0° Borotrola Co. 2-12 (18.0° Co. 2-12	Total Depth:	<u>174 ft bgs</u>			_Well Completion:				
21 2 3 3 3 4 4 4 4 4 4 4	Groundwar Sample II	Geologic Formation	USCS Code USCS Class		Well Construction				
32	22	Fluvial			Suregrip 17 Casing	(21.2 - 30.0') 18.0" Borehole		Note: Type I, II, and V 3% Benseal, grout not tagged will be tagged in morning, used > 20% of the calculated volume due to potentail grout migration and voids forming	
		Fluvial	SM		(31.1 - 35.1') Bentonite seal chips (35.1 - 45.0') Cemex Bunker #6 60 Mesh		(35.1 - 45.0') 16.6	Note: Puregold Medium Chips, bentonite installed because of concerns with grout migration due potential large void from 29 to 32 ft. bgs, used >20% of the calculated volume due to potential voids forming during drilling (35.1 - 45.0') 51 bags (207%) Note: Lapis Lustre Sand, used >20% of the claulated volume due to	
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,	Abbreviations:		Soil C	accifico	tion System ft - fact has	The low ground surface of	mel = above meen	sea level GM = groundwater	

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater by be possible problems. Used = parts per billion, U = not detected above the laboratory reporting limit, groundwater data was collected during drilling of the pilot borehole.

## Bunker ## 60 Mesh Lapis Lustre Sand ## 1	ARCA	DIS Design & Consultancy for natural and built assets	Well Const	ruction Log	Sheet: 3 of 9			
Drilling Method: Drilling Method: Dual Rotary Drilling Method: Dual Rotary Northing (NAD83): Drilling Asst: Location: PG&E Topock. Needles, Cal Drilling Asst: Logger: Drilling Asst: Logger: Documel K. Keon Water Level Start: Sean McGrane Development End Date: Dovelopment End Date: Dov					Well ID: IR	Z-25		
Driller Marriez Driller Name:	•							
Driller Asset: Driller Asset: Driller Asset: Development End Date: Cogger: Development End Date: Control IV. Keon Development End Date: Control IV. Keon Development End Date: Control IV. Keon Development End Date: Control IV. Keon Development End Date: Control IV. Keon Development End Date: Control IV. Keon Development End Date: Control IV. Keon Development End Date: Control IV. Keon Development End Date: Control IV. Keon Development End Date: Control IV. Keon Development End Date: Control IV. Keon Development End Date: Control IV. Control Development End Date: Control IV. Control Development End Date: Control Development End Da	-		-					
Defining Asst: E. Martinez / W. Saylors Borrehole Diameter: 15.5-18 inches	-	•	<u> </u>		•	-		
Content Con			,		Location: <u>PG&E</u>	<u> Topock, Needles, California</u>		
Editor: Sean McGrane	-	·			— Project Numbe	r: RC000753 0051		
Topock - Fluvial Deposits 174 ft bgs Well Completion: Flush Stick-up Stick-up					1 10,000114011150	1. 11.0000100.0001		
1								
1	_	ig o g						
1	Groundwate Sample ID	Code Code	Well C	onstruction				
43	41	Topock - GM	(0.0 - 50.1') 10" — % % % % % % % % % % % % % % % % % %					
Topock - Fluvial Deposits GW-GM Depo	43 - 44	Deposits	Bunker #6 60 Mesh — ႏွိႏွိ∘ို			(35.1 - 45.0') 51 bags (207%) Note: Lapis Lustre Sand, used >20% of the claulated volume due to potential voids forming during drilling		
Topock - Alluvium Deposits SM (50.1 - 67.1') 10" (10-slot 316 SS Wire Wrap Screen Size Size Size Size Size Size Size Size	46	Fluvial GW-GM						
- 53 - 54 - IRZ-25-VAS- 52-57 Topock - (3500 ppb) Alluvium GM 12/5/2018 Deposits (45.0 - 69.0') Cemex Bunker #11 (30x70) Lapis Lustre Sand (45.0 - 69.0') 36.5 bags (45.0 - 69.0') 36.5 bags (45.0 - 69.0') 36.5 bags (45.0 - 69.0') 36.5 bags of calculated volume due to voids forming during dri swabbed filter pack for approximately 1.5 hours pri installation of the bentonity of the	_ 51 <u>_</u> _	Alluvium SM	10-slot 316 SS Wire			(45.0 - 69.0') 200 bags (448%) Note: Lapis Lustre Sand, used >20%		
	54 — IRZ-25-VAS- 52-57 (3500 ppb) 12/5/2018 10:40 56 —	Topock - O O O O	Bunker #11 (30x70)			of calculated volume due to potential voids forming during drilling, swabbed filter pack for approximately 1.5 hours prior to the installation of the bentonite seal		
Topock - Alluvium Deposits ML	_ 58 _	Alluvium ML						
	60	GM 6						

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, groundwater data was collected during drilling of the pilot borehole

ARC	DIS Design & for natura built asse	Consultancy Il and ts		Well Const	ruction Log	:	Sheet: 4 of 9
Date Started:	05/12/2019			_Surface Elevation:	500.4 ft amsl	Well ID: IR	Z-25
Date Completed	05/29/2019			_Shallow Well Elevation:	N/A		
Drilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&I	
Drilling Method:	Dual Rotary			_Northing (NAD83):	2102414.6	•	GW Remedy Phase 1
Driller Name:	Jon Martinez		1	_Easting (NAD83):	7615824.5	Location: <u>PG&I</u>	E Topock, Needles, California
Drilling Asst:	E. Martinez / \\ D Cornell / K.	-	iors	_Borehole Diameter: Water Level Start:	15.5-18 inches 44.95 ft bgs	— Project Numbe	r: RC000753.0051
Logger: Editor:	Sean McGran			Water Level Start. _Development End Date:	_	Froject Numbe	1. <u>NC000733.0031</u>
Total Depth:	174 ft bgs	ic		_Bevelopment End Bate. _Well Completion:			
'				'			
Groundwa Sample II		Code	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
6162636362-67620 ppb) 12/5/2018	Deposits	GM		(45.0 - 69.0') Cemex Bunker #11 (30x70) Lapis Lustre Sand (68.0 - 69.0') Centralizer	(43.0 - 61.5') 16.0" Borehole (67.1 - 77.1') 10" Suregrip 17 Casing	(45.0 - 69.0') 36.5 bags	(45.0 - 69.0') 200 bags (448%) Note: Lapis Lustre Sand, used >20% of calculated volume due to potential voids forming during drilling, swabbed filter pack for approximately 1.5 hours prior to the installation of the bentonite seal
	Topock - Alluvium Deposits	SM		(70.5 - 71.5') — Centralizer (69.0 - 74.0') Bentonite seal chips	(61.5 - 81.5') 16.0" Borehole	(69.0 - 74.0') 5.3 bags	(69.0 - 74.0') 28 bags (428%) Note: Puregold Medium Chips, used >20% of the calculated volume due to potential voids forming during drilling
	Topock - Alluvium Deposits	SM		(74.0 - 103.8') Cemex #3 Mesh (8x20)	— (77.1 - 100.0') 10" 30-slot 316 SS Wire Wrap Screen	(74.0 - 103.8') 45.3 bags	(74.0 - 103.8') 172 bags (280%) Note: Lapis Lustre Sand, used >20% of the calculated volume due to potential voids forming during drilling, filter pack was swabbed for approximately 30 minutes prior to installation of the bentonite seal
	Topock - Alluvium Deposits	SM		tion System # - foot has		mel – above meen	sea level, GW = groundwater,

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater ppb = parts per billion, U = not detected above the laboratory reporting limit, groundwater data was collected during drilling of the pilot borehole

9/-	ARCA	DIS Design & for natura built asse	consultancy al and ts		Well Const	ruction Log	Sheet: 5 of 9		
	Started:	05/12/2019			_Surface Elevation:	500.4 ft amsl	Well ID: IR	Z-25	
	-	05/29/2019			_Shallow Well Elevation:	•			
Drilling		Cascade			_ Deep Well Elevation:	N/A	Client: PG&I		
Driller I		Dual Rotary Jon Martinez			_Northing (NAD83): _Easting (NAD83):	2102414.6 7615824.5	•	GW Remedy Phase 1 E Topock, Needles, California	
Drilling		E. Martinez / \	W Sav	lors	Borehole Diameter:	15.5-18 inches	Location. <u>F Gxt</u>	_ Topock, Needles, Calliottia	
Logge		D Cornell / K.	-	1013	Water Level Start:	44.95 ft bgs	Project Numbe	r: RC000753.0051	
Editor:		Sean McGrar			_ Development End Date:	_	r rojoce rearriso	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	
Total D		174 ft bgs			 Well Completion:				
		in P							
Depth (ft)	Groundwat Sample ID		Code	USCS Class	Well C	construction	Calculated Material Volumes	Material Volumes Installed	
	IRZ-25-VAS 92-97 (130 ppb) 12/6/2018 09:07	Topock - Alluvium Deposits Topock - Alluvium Deposits	SM SM		(74.0 - 103.8°) Cemex #3 Mesh (8x20)	(81.5 - 101.5') 16.0" Borehole	(74.0 - 103.8') 45.3 bags	(74.0 - 103.8') 172 bags (280%) Note: Lapis Lustre Sand, used >20% of the calculated volume due to potential voids forming during drilling, filter pack was swabbed for approximately 30 minutes prior to installation of the bentonite seal	
98 —		Topock - Alluvium Deposits	SW-SM						
100 Abbrev	viations: II	SCS = Unified	l Soil Cl	assifica	tion System ft = feet has	= below ground surface :	amsl = ahove mean	sea level. GW = groundwater.	

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater ppb = parts per billion, U = not detected above the laboratory reporting limit, groundwater data was collected during drilling of the pilot borehole

9/-	ARCA	DIS of built	gn & Consultancy eatural and tassets		Well Const	ruction Log	\$	Sheet: 6 of 9
Date S		05/12/2019			_Surface Elevation:	500.4 ft amsl	Well ID: IR	Z-25
I .	-	05/29/2019)		_Shallow Well Elevation:	N/A		
Drilling		Cascade			_ Deep Well Elevation:	N/A	Client: PG&E	
Driller I		Dual Rotary Jon Martine	•		_Northing (NAD83): _Easting (NAD83):	2102414.6 7615824.5	-	GW Remedy Phase 1 Topock, Needles, California
Drilling		E. Martinez		lors	Easting (NADos). Borehole Diameter:	15.5-18 inches	Location. <u>PG&E</u>	z Topock, Needles, Calliomia
Logge		D Cornell /	-	1010	Water Level Start:	44.95 ft bgs	Proiect Numbe	r: RC000753.0051
Editor:		Sean McG			_ _Development End Date:		, 	
Total D	Depth:	174 ft bgs			_Well Completion:			
Depth (ft)	Groundwat Sample ID		USCS Code	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
 101 102		Topock Alluviun Deposit	n SW-SM		(74.0 - 103.8') Cemex#3 Mesh	(81.5 - 101.5') 16.0" (81.5 - 101.5') 16.0" Borehole	(74.0 - 103.8') 45.3 bags	(74.0 - 103.8') 172 bags (280%) Note: Lapis Lustre Sand, used >20% of the calculated volume due to potential voids forming during
 103		Topock Alluviun Deposit	n ML		(8x20)		Days	drilling, filter pack was swabbed for approximately 30 minutes prior to installation of the bentonite seal
104 105 106 107 108 109		Topock Alluviun Deposit	n GM					
110111112113114115116	IRZ-25-VAS 112-117 (< 0.17 U ppb) 12/11/2018 10:34		n SM		(103.8 - 126.0') Bentonite seal chips (114.5 - 115.5') Centralizer	(101.5 - 121.5') 16.0" Borehole	(103.8 - 126.0') 23.4 bags	(103.8 - 126.0') 34 bags (45%) Note: Puregold Medium Chips, used >20% of the calculated volume due to potential voids forming during drilling
118 118 119		Topock Alluviun Deposit	n SM					
120	<u> </u>	<u> </u>	IVIL	<u> 14:14:</u>			L	1

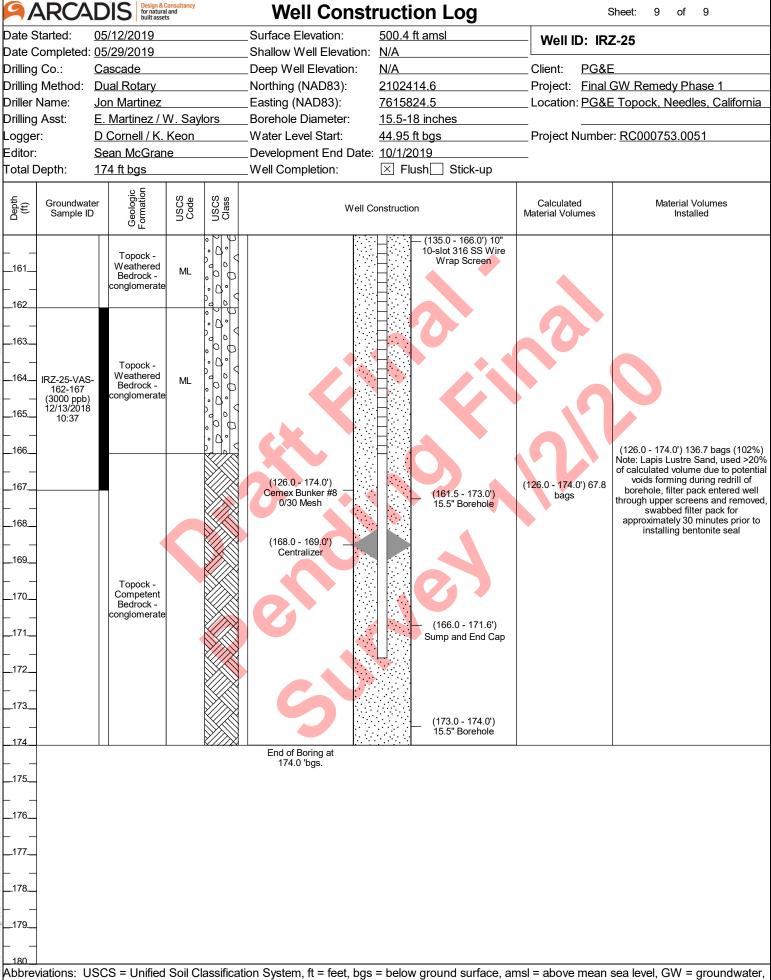
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, groundwater data was collected during drilling of the pilot borehole

SA	RCA	DIS Design & for natura built asse	l and ts		Well Const	ruction Log	\$	Sheet: 7 of 9
Date St		05/12/2019			_Surface Elevation:	500.4 ft amsl	Well ID: IR	Z-25
		05/29/2019			_Shallow Well Elevation:	N/A		<u> </u>
Drilling (Cascade Dual Rotary			Deep Well Elevation: Northing (NAD83):	N/A 2102414.6	Client: PG&E	= GW Remedy Phase 1
Driller N		Jon Martinez			Resting (NAD83):	7615824.5	•	E Topock, Needles, California
Drilling A		E. Martinez / \		lors	Borehole Diameter:	15.5-18 inches		
Logger:		D Cornell / K.	-		 Water Level Start:	44.95 ft bgs	Project Numbe	r: RC000753.0051
Editor:		Sean McGrar	<u>1e</u>		Development End Date:			
Total De	epth:	174 ft bgs			Well Completion:		_	
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
121 122 123 124		Topock - Alluvium Deposits	ML		(103.8 - 126.0') — Bentonite seal chips	— (100.0 - 135.0') 10" Suregrip 17 Casing — (101.5 - 121.5') 16.0" Borehole	(103.8 - 126.0') 23.4 bags	(103.8 - 126.0') 34 bags (45%) Note: Puregold Medium Chips, used >20% of the calculated volume due to potential voids forming during drilling
125 126 		Topock - Alluvium Deposits	SM					
128 129 130 131 132		Topock - Alluvium Deposits	GM			(121.5 - 141.5') 16.0" Borehole		(126.0 - 174.0') 136.7 bags (102%)
133 134 135 136 		Topock - Alluvium Deposits	ML		(126.0 - 174.0') Cemex Bunker #8 0/30 Mesh	(135.0 - 166.0') 10" 10-slot 316 SS Wire Wrap Screen	(126.0 - 174.0') 67.8 bags	Note: Lapis Lustre Sand, used >20% of calculated volume due to potential voids forming during redrill of borehole, filter pack entered well through upper screens and removed, swabbed filter pack for approximately 30 minutes prior to installing bentonite seal
138		Topock - Alluvium Deposits	ML					
_140		1	ML				1	and lovel CW = groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, groundwater data was collected during drilling of the pilot borehole

9/-	ARCA	DIS for natur built ass	al and ets		Well Const	ruction Log	Sheet: 8 of 9			
	Started:	05/12/2019			_Surface Elevation:	500.4 ft amsl	Well ID: IR	Z-25		
	-	05/29/2019			_Shallow Well Elevation:	N/A				
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: <u>PG&E</u>			
_		Dual Rotary			_Northing (NAD83):	2102414.6	-	GW Remedy Phase 1		
	Name:	Jon Martinez		l = u =	_Easting (NAD83):	7615824.5	Location: PG&E Topock, Needles, Califor			
Drilling		E. Martinez / D Cornell / K.	-	iors	_Borehole Diameter: _Water Level Start:	15.5-18 inches 44.95 ft bgs	Project Number: <u>RC000753.0051</u>			
Logge Editor:		Sean McGrai			vvaler Level Start. Development End Date:		Project Number. RC000753.0051			
Total D		174 ft bgs	10		Well Completion:					
	' 									
Depth (ft)	Groundwat Sample II		Code	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed		
						(135.0 - 166.0') 10" 10-slot 316 SS Wire Wrap Screen				
141						wrap Screen				
142										
143		Topock -								
<u> </u>		Alluvium Deposits	ML							
144		Boposito								
145										
146						H				
146						H: (1				
 147										
14/						H				
 148										
140							•			
 149	ID7 05 VAC							(126.0 - 174.0') 136.7 bags (102%)		
	1RZ-25-VAS 147-152	-				H		Note: Lapis Lustre Sand, used >20% of calculated volume due to potential		
150	(3600 ppb) 12/11/2018				(126.0 - 174.0')		(126.0 - 174.0') 67.8	voids forming during redrill of borehole, filter pack entered well		
	13:54				Cemex Bunker #8	FI. VI	bags	through upper screens and removed,		
151						(141.5 - 161.5') 16" Borehole		swabbed filter pack for approximately 30 minutes prior to		
								installing bentonite seal		
152		Topock - Alluvium	SM							
		Deposits								
153										
154										
L _										
155										
156										
<u> </u>										
157										
<u> </u>				600						
158		Topock -								
<u> </u>		Weathered Bedrock -	ML	[.4.]						
159		conglomerate	e							
<u> </u>						H:::				
160	viations: II		1 Soil C	PallolY	tion System ft - feet has	= below ground surface or	mel = ahove mean	sea level GW = groundwater		

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater ppb = parts per billion, U = not detected above the laboratory reporting limit, groundwater data was collected during drilling of the pilot borehole



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwate ppb = parts per billion, U = not detected above the laboratory reporting limit, groundwater data was collected during drilling of the pilot borehole

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	She	eet: 1 of	8
Date S	started	: 03/14/2	2019	;	Surface	Eleva	tion: 501.2 ft amsl	Boring No.:	IR7-27-Pi	ilot
Date C	omple	ted: <u>03/21/2</u>	2019		Northing	g (NAE	083): <u>2102236.8</u>	_ Borning 140	1112-21-1	<u>1101</u>
Drilling	Co.:	<u>Casca</u>	de		Easting	(NAD	33): <u>7615803.1</u>	Client: PG&E		
Drilling	Meth	od: <u>Sonic I</u>	Drilling		Total De	epth:	<u>159 ft bgs</u>	Project: Final G	W Remedy Ph	ase I
Drill Ri	д Туре	e: <u>Proson</u>	ic Truck Mou	unt l	Borehol	e Dian	neter: 4-12 inches	Location: PG&E	Topock, Needle	es, California
Driller	Name	Steve '	Vasquez		Depth to	First	Water: <u>47.15 ft bgs</u>			
Drilling	Asst:	O. Flor	es/L. Amaya	<u> </u>	Samplir	g Met	hod: 4 inch x 10 ft Core Barrel	_ Project Number:	RC000753.005	51
Logge	r:	Judd V	Vanner	;	Samplir	g Inte	rval: <u>Continuous</u>	_		
Editor:		<u>Gantt</u>	Jeffers		Convert	ed to \	Well: ⊠ Yes □ No			
	>			.º 5						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
1				Topock - Fill	SM		(0.0 - 5.0') Topock - Filty Silty sand (SM); yellow yellowish brown(10YR 5/4); very fine grained to angular to subround; some silt; little clay; trace gebbles, angular to subround; trace cobbles, su	very coarse grained, granules to small bangular; dry	(0.0 - 5.0") Hand cleared for utility locate	(0.0 - 7.0') No used
	32.4			Fluvial Deposits	SW		(SW); brown (10YR 4/3); very fine grained to ve angular to round; and very fine to very coarse g	ery coarse grained,		
6	32.4			Topock - Fluvial	SW-SM		granules to very large pebbles, angular to subro clay; dry			
				Deposits	L CNAY CNA		(5.5 - 6.5') Topock - Fluvial Deposits: Well grad	ed sand with gravel		
_ 7 _				Topock - Fluvial	SW-SM		(SW-SM); dark yellowish brown (10YR 4/4) to be fine grained to very coarse grained, angular to r	orown (10YR 4/3); very	(7.0 - 11.0')	(7.0 - 17.0') 200
				Deposits	1		large pebbles, angular to subround; and very fin	ne to very coarse	Drilled through	gal of water
_ 8 _				Topock - Fluvial	GP	60	grained sand, subangular to subround; trace co round; trace silt; trace clay; dry	bbles, subangular to	boulder	used
				Deposits	l Gr	ρŏC	(6.5 - 7.0') Topock - Fluvial Deposits; Well grad	ed sand with gravel		
 						000	(SW-SM); dark yellowish brown (10YR 4/4); ve	ry fine grained to very		
_ 9 _				Topock -	sc	7///	coarse grained, subangular to round; little granu subangular to round; trace silt; trace clay; dry	lies to large peoples,		
				Fluvial Deposits	- 50	1////	(7.0 - 9.0') Topock - Fluvial Deposits; Poorly gra	aded gravel (GP); weak		
10				Topock -	sw		red (2.5YR 5/2) to pale brown (10YR 6/3); small subangular to round; trace clay; dry; boulder of			
L 4				Fluvial Deposits	SVV		pulverized during drilling			
11							(9.0 - 9.5') Topock - Fluvial Deposits; Clayey sa dark yellowish brown (10YR 4/4); very fine grair			
				Topock - Fluvial	GW-GM		grained, angular to round; some granules to ver	y large pebbles,		
12				Deposits			subangular to round; little clay; trace cobbles, su (9.5 - 10.8') Topock - Fluvial Deposits; Well gra			
12	134.4			Topock -		وکّر ۲	(SW); brown (10YR 5/3); very fine grained to ve	ery coarse grained,		
				Fluvial	GP		angular to round; little granules to large pebbles trace silt; dry	, subangular to round;		
13				Deposits		0 0	(10.8 - 12.0') Topock - Fluvial Deposits; Well gr			
				Topock -			and sand (GW-GM); grayish brown (10YR 5/2); pebbles, angular to round; little very fine to very			
14				Fluvial Deposits	SM		subangular to round; little silt; trace cobbles, sul			
				Вороско			clay; dry; cobbles have been pulverized (12.0 - 13.0') Topock - Fluvial Deposits; Poorly	araded aravel (GP):		
15							gray (10YR 5/1); small pebbles to boulders, sub			
_ 13_							and bouldrs have been pulverized by drilling	and with around (CM).		
				Topock - Fluvial	SW-SM		(13.0 - 14.5') Topock - Fluvial Deposits; Silty sa brown (7.5YR 5/3); very fine grained to very coa	arse grained,		
16				Deposits	300-300		subangular to round; some granules to very larg	ge pebbles, subangular		
L							to round; little silt; little clay; trace cobbles, suba dry; cobbles have been pulverized	rigular to subrourid,		
17							(14.5 - 17.0') Topock - Fluvial Deposits; Well gr			
				T 1			gravel (SW-SM); brown (10YR 5/3); very fine g grained, subangular to round; some granules to			(17.0 - 127.0') No used
۲ <u>۱</u> ۱				Topock - Fluvial	GW-GC		subangular to round; little silt; trace cobbles, sul			INO USEG
18				Deposits			trace clay; dry (17.0 - 18.5') Topock - Fluvial Deposits; Well gr	aded gravel with clay		
	60			Tamari	-		and sand (GW-GC); brown (7.5YR 4/4); granule	es to very large		
19				Topock - Fluvial	GW-GM		pebbles, subangular to round; little very fine to v sand, angular to subround; little silt; trace cobble	ery coarse grained		
				Deposits			sand, angular to subround, little slit, trace cobbit subround; trace clay; dry	co, oubanyulai lu		
20					GM	rxt T	(18.5 - 19.5') Topock - Fluvial Deposits; Well gr	aded gravel with silt		
	/iation	e: 118CS - 1	Inified Soil C	laccification	n Sveta	m ft	feet has = helow around surface	amel = ahove mea	n sea level Cl	Λ/ =

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 2 of	8
Date S	started	: <u>03/14/</u> 2	2019		Surface	Eleva	tion: 501.2 ft amsl	Boring No.	: IR <i>7-</i> 27-P	ilot
Date C	omple	ted: <u>03/21/</u>	2019		Northing	g (NAD	083): <u>2102236.8</u>	Borning No.	. <u>1142 27 1</u>	<u></u>
Drilling	Co.:	<u>Casca</u>	de		Easting	(NAD8	83): <u>7615803.1</u>	Client: PG&E		
Drilling	Meth	od: <u>Sonic I</u>	Drilling		Total D	epth:	<u>159 ft bgs</u>	Project: Final C	W Remedy Ph	nase I
Drill Ri	д Туре	e: <u>Prosor</u>	nic Truck Mou	unt	Borehol	e Dian	neter: 4-12 inches	Location: PG&E	Topock, Need	les, California
Driller	Name	Steve '	Vasquez		Depth to	First	Water: 47.15 ft bgs			
Drilling	Asst:	O. Flor	<u>es/L. Amaya</u>		Samplin	ng Meth	hod: 4 inch x 10 ft Core Barrel	Project Number:	RC000753.00	51
Logge		<u>Judd V</u>	Vanner		Samplin	ng Inter	rval: <u>Continuous</u>			
Editor:		<u>Gantt</u> .	Jeffers		Conver	ed to \	Well: 🗵 Yes 🗌 No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
				Topock - Fluvial Deposits	GM		and sand (GW-GM); dark grayish brown / dark y 4/2); granules to very large pebbles, subround to to very coarse grained sand, subangular to subro	o round; little very fine ound; little silt; trace		(17.0 - 127.0') No used
	60			Topock -	1		cobbles, subangular to subround; trace clay; trac cobble to boulder fragments, larger clasts consist			
				Fluvial Deposits	GW-GM		(19.5 - 21.0') Topock - Fluvial Deposits; Silty gra grayish brown (10YR 5/2) to dark grayish brown	avel with sand (GM);		
				-			brown(10YR 4/2); granules to very large pebbles	s, angular to		
23							subangular; some fine to medium grained sand, a subangular; little silt; little clay; trace cobbles, <mark>an</mark> g	gular; trace mica; dry;		
23							trace coarse to very coarse sand, larger clasts co (21.0 - 22.0') Topock - Fluvial Deposits; Well gra			
							and sand (GW-GM); brown (7.5YR 5/3) to brown granules to very large pebbles, angular to subrou	n (7.5YR 4/3);		
				Topock -			cobbles, angular to subround; trace clay; little fra boulder fragments			
 25	66			Fluvial Deposits	SW-SM		(22.0 - 27.0') Topock - Fluvial Deposits; Well gra			
							gravel (SW-SM); dark yellowish brown (10YR 4/4 5/3); very fine grained to very coarse grained, an			
26							granules to very large pebbles, subangular to rous subround to round; little silt; dry; little fractured co	und; little cobbles,		
							fragments, larger clasts consist of metadiorite	525.5 4.14 554.45.		
							(27.0 - 32.0') Topock - Alluvium Deposits; Silty so brown (7.5YR 4/4) with brown (7.5YR 5/2); very f			
							coarse grained, angular to subangular; some gra	anules to large		
							pebbles, angular to subangular; little silt; trace mi consist of metadiorite	ica; dry; larger clasts		
	70.0			Topock -						
30	70.8			Alluvium Deposits	SM					
00										
31										
52				Topock - Alluvium	SM		(32.0 - 32.8') Topock - Alluvium Deposits; Silty so brown / moderate brown(5YR 4/4); some silt; pos			
33				Deposits			which is subangular, very fine to medium			
00							(32.8 - 44.5') Topock - Alluvium Deposits; Silty silty silty brown (7.5YR 4/4) with brown (7.5YR 5/2); very f	fine grained to very		
							coarse grained, angular to subangular, little grant pebbles, angular to subangular, little silt; increase			
	00.0						pebbles, color change	J		
	93.6									
36										
				Topock - Alluvium	SM					
				Deposits						
38										
	123.6									
39	123.0									
40							(39.5') brown (10YR 5/3) to pale brown (10YR 6/	•		
ΙΛ I- I	.: - 4:	- 11000 -	I lateral Carl C	N:£:4:	C+	ft -	- foot has - holow ground curfoos a		on coo lovel C	\ A /

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	SI	neet: 3 of	8	
Date S	Started	: <u>03/14/</u>	/2019		Surface	Eleva	tion: <u>501.2 ft amsl</u>	Boring No.	.: <u>IRZ-27-P</u>	ilot	
Date C	Comple	eted: <u>03/21/</u>	/2019		Northing	g (NAD	983): <u>2102236.8</u>		. <u> </u>	<u></u>	
Drilling	Co.:	Casca	ide		Easting	(NAD8	33): <u>7615803.1</u>	Client: PG&E			
Drilling	y Meth	od: <u>Sonic</u>	Drilling		Total D	epth:	<u>159 ft bgs</u>	Project: <u>Final (</u>	<u>GW Remedy Ph</u>	nase I	
Drill Ri	ig Тур	e: <u>Proso</u>	<u>nic Truck Μοι</u>	<u>unt</u>	Borehol	le Dian	neter: 4-12 inches	4-12 inches Location: PG&E Topock,		k, Needles, California	
Driller	Name	: <u>Steve</u>	Vasquez		Depth to	o First	Water: <u>47.15 ft bgs</u>				
Drilling	y Asst:	O. Flo	<u>res/L. Amaya</u>		Samplin	•		Project Number:	RC000753.00	51	
Loggei					Samplin	-					
Editor:		<u>Gantt</u>	Jeffers		Conver	ted to \	Well: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid	
41 42 43 44 45 46	123.6			Topock - Alluvium Deposits Topock - Alluvium Deposits	SM		(44.5 - 47.0') Topock - Alluvium Deposits; Si (7.5YR 4/3); very fine grained to very coarse granules to very large pebbles, angular to su cobbles	grained, angular; some		(17.0 - 127.0') No used	
47 48 49		IRZ-27-SS- 47.0-52.0		Topock - Alluvium Deposits	ML		(47.0 - 49.5') Topock - Alluvium Deposits; S. brown (7.5YR 4/4); low plasticity; some fine tangular to subangular; little granules to very subround; little clay; moist; stiff to very stiff	o medium grained sand, large pebbles, angular to	Y		
50 51 _52	116.4	3/21/2019 13:44					(49.5 - 57.0') Topock - Alluvium Deposits; Si brown (7.5YR 4/3); granules to very large pe subangular; some very fine to very coarse gr subround; little silt; trace mica; dry; larger cla metadiorite	bbles, angular to rained sand, angular to	(50.0') Approximate depth to water		
53545556		IRZ-27-SS- 52.01-57.0 3/21/2019 13:48	IRZ-27-VAS- 52-57 (4400 ppb) 3/15/2019 15:55	Topock - Alluvium Deposits	GM		(54.5') brown (7.5YR 5/3) to brown (10YR 4/	3); color change			
57 58 59 60	60	IRZ-27-SS- 57.0-62.0 3/21/2019 13:50		Topock - Alluvium Deposits	SM	0.0	(57.0 - 61.0') Topock - Alluvium Deposits; Si brown (7.5YR 4/4); very fine grained to very to subangular; some silt; little granules to ver to subangular; trace cobbles, angular; trace c cementation; larger clasts consist of metadio (59.25') brown (7.5YR 4/4) and dark yellowis trace clay; mottling	coarse grained, angular y large pebbles, angular nica; moist; blocky; weak rite			

9/	VRC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Lo	g		She	eet: 4 of	8
Date S	tarted	: <u>03/14/</u>	2019		Surface	Eleva	tion:	501.2 ft amsl	Borin	na No :	: <u>IRZ-27-</u> P	ilot
Date C	Comple	eted: <u>03/21/</u>	2019		Northing	g (NAE	083):	2102236.8		19 110	1112 21 1	<u>110 t</u>
Drilling	Co.:	<u>Casca</u>	ide		Easting	(NAD	33):	7615803.1	Client:	PG&E		
Drilling	Meth	od: <u>Sonic</u>	Drilling		Total Do	epth:		159 ft bgs	Project:	Final G	W Remedy Pl	nase I
Drill Ri	д Туре	e: <u>Proso</u>	nic Truck Μοι	unt	Borehol	e Dian	neter:	4-12 inches	Location	: <u>PG&E</u> :	Topock, Need	les, California
Driller	Name	Steve	Vasquez		Depth to	o First	Water	: <u>47.15 ft bgs</u>	_			
Drilling	Asst:	<u>O. Flo</u>	res/L. Amaya		Samplin	ng Metl	hod:	4 inch x 10 ft Core Barrel	Project N	lumber:	RC000753.00	51
Loggei	r:	<u>Judd \</u>	Nanner		Samplin	ng Inte	rval:	Continuous	_			
Editor:		<u>Gantt</u>	Jeffers		Convert	ted to \	Well:	Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS		Soil Description			Drilling Notes	Drilling Fluid
 61	60	IRZ-27-SS- 57.0-62.0		Topock - Alluvium Deposits	SM							(17.0 - 127.0') No used
62	60	3/21/2019 13:50		Topock - Alluvium Deposits	GM		(7.5YF very fir	62.0') Topock - Alluvium Deposits; Silty of granules to very large pebbles, angular to to very coarse grained sand, angular to eak cementation; larger clasts consist of n	to subangula subround; s	ar; some		
 63				Topock - Alluvium Deposits	SM		(62.0 - brown to suba	63.5') Topock - Alluvium Deposits; Sitty s (7.5YR 4/4); very fine grained to very coangular, little granules to medium pebbles, gular; little clay; dry; blocky; weak cement; of metadiorite	sand with grav arse grained, a , angular to	angular		
64 65 66 67				Topock - Alluvium Deposits	SM		(62.75 (63.5 - yellowi very fir granule clasts	c); trace clay; moist to wet; increase in san 68.0") Topock - Alluvium Deposits; Silty sish red (5YR 4/6) to reddish brown / mode agrained to very coarse grained, angular es to large pebbles, subangular to subrous consist of metadiorite); some silt; trace cobbles, angular	sand with graverate brown(5) r to subangula	vel (SM); VR 4/4); ar; little		
 68 69		IRZ-27-SS-		Topock - Alluvium Deposits	SW-SM		and gravery fir	68.8') Topock - Alluvium Deposits; Well ovel (SW-SM); gray (5YR 5/1) to dark reduced in the grained to very coarse grained, angular bobles, angular to subangular; trace cobb	ddish gray (5Y r; and granule	'R 4/2); es to very		
70 71 72	180	67-72 67-72 4/3/2019 14:04		Topock - Alluvium Deposits	SM		(68.8 - yellowi very fir granule	lay; wet; larger clasts consist of metadiorit 74.0") Topock - Alluvium Deposits; Silty s sh red (5YR 4/6) to reddish brown / mode he grained to very coarse grained, angular so to very large pebbles, subround; little gular; trace clay; wet; moderate cementations	sand with graverate brown(5\) r to subangula ilt; trace cobb	YR 4/4); ar; little les,		
73 74 75		IRZ-27-SS- 72-77 4/3/2019 16:09	IRZ-27-VAS- 72-77 (<0.033 U ppb) 3/17/2019 13:15	Topock - Alluvium Deposits	SM		red (5) grained	75.5') Topock - Alluvium Deposits; Silty s 'R 4/6) to reddish brown / moderate brown I to very coarse grained, angular to subro rge pebbles, angular; little silt; trace clay;	n(5YR 4/4); v ound; little gran	ery fine		
 76 77							yellowi very fir granule	82.0') Topock - Alluvium Deposits; Silty s sh red (5YR 4/6) to reddish brown / mode he grained to very coarse grained, angular es to very large pebbles, angular to suban s, angular; trace mica; wet	erate brown(5\ r to subangula	YR 4/4); ar; some		
 78 79 	235.2	IRZ-27-SS- 77-82 4/3/2019 16:11		Topock - Alluvium Deposits	SM							

9/-	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	S	neet: 5 of	8
Date S	tarted	: <u>03/14/</u> 2	2019		Surface	Eleva	tion: 501.2 ft amsl	Boring No	.: <u>IRZ-27-</u> P	Pilot
Date C	omple	eted: 03/21/2	2019		Northing	g (NAD	083): <u>2102236.8</u>		<u>IIXZ-Z1-1</u>	<u>110t</u>
Drilling	Co.:	Casca	de		Easting	(NAD	83): <u>7615803.1</u>	Client: PG&E		
Drilling		od: Sonic I	Drilling		_	•	, 159 ft bgs	Project: Final (GW Remedy Pl	hase I
Drill Ri			nic Truck Mou			-	neter: 4-12 inches	· · · · · · · · · · · · · · · · · · ·	•	
Driller			Vasquez				Water: <u>47.15 ft bgs</u>			
Drilling			es/L. Amaya		Samplin		_	I Proiect Number	RC000753 00)51
Logge			Vanner		Samplin	-		r reject rturnber	1.0000100.00	
Editor:			Jeffers		Convert	-				
		<u>Junit (</u>			1	T				T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description	ı	Drilling Notes	Drilling Fluid
 81 82		IRZ-27-SS- 77-82 4/3/2019 16:11		Topock - Alluvium Deposits	SM					(17.0 - 127.0') No used
82 83				Topock - Alluvium Deposits	SM	• • • • • • •	(82.0 - 82.8') Topock - Alluvium Deposits; (7.5YR 4/4); very fine grained to very coar subangular; little granules to medium pebb	se grained, angular to		
				Topock - Alluvium Deposits Topock -	SW-SM		cobbles, angular; trace clay; wet (82.8 - 83.5') Topock - Alluvium Deposits; (SW-SM); brown (7.5YR 4/4); very fine gr grained, angular to subangular; little granu	ained to very coarse		
84		IRZ-27-SS- 82-87 4/3/2019		Alluvium Deposits	SW		angular to subangular; little silt; wet; includ conglomerate having angular aggregate to cementation	es a very large pebble of		
85 86 87		16:17		Topock - Alluvium Deposits	SM		(83.5 - 84.5') Topock - Alluvium Deposits; brown (7.5YR 4/4); very fine grained to very to subangular; trace granules to very large subangular; trace silt; wet (84.5 - 88.5') Topock - Alluvium Deposits; reddish brown (5YR 4/3) to reddish brown to very coarse grained, angular to subanguto very large pebbles, angular; trace clay; very large pebbles, angular; trace	ry coarse grained, angular pebbles, angular to Silty sand with gravel (SM); (5YR 5/3); very fine grained ular; some silt; little granules		
 88 89	235.2	IRZ-27-SS-		Topock - Alluvium	SM		(88.5 - 89.5') Topock - Alluvium Deposits; brown (5YR 4/3) to reddish brown (5YR 5/	3); very fine grained to very		
90 91		87-92 4/3/2019 16:22		Deposits			coarse grained, angular to subangular; littl large pebbles, angular; wet; trace sandy si (89.5 - 97.0') Topock - Alluvium Deposits; reddish brown (5YR 4/3) to reddish brown to very coarse grained, angular; some grai angular to subangular; little silt; little clay; t	It nodules Silty sand with gravel (SM); (5YR 5/3); very fine grained nules to very large pebbles,		
92 93 94 95		IRZ-27-SS- 92-97 4/3/2019 16:23		Topock - Alluvium Deposits	SM					
 96 							(95.3') reddish brown / moderate brown(5\ (5YR 4/6); little granules to very large pebl decrease in silt, no cobbles			
		ID7 07 55		Topock - Alluvium Deposits	SM		(97.0 - 98.0') Topock - Alluvium Deposits; (7.5YR 4/4); very fine grained to very coar subangular; little silt; trace granules to med	se grained, angular to dium pebbles, angular		
 99 	122.4	IRZ-27-SS- 97-102 4/3/2019 16:07		Topock - Alluvium Deposits	SM		(98.0 - 107.0') Topock - Alluvium Deposits (SM); brown (7.5YR 4/4); very fine grained angular; little granules to very large pebble clay; trace cobbles, angular, small cobbles	to very coarse grained, s, angular; little silt; little		

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 6 of	8
Date S	Started	l: <u>03/14</u>	/2019		Surface	Eleva	tion: <u>501.2 ft amsl</u>	Borin	a No :	IRZ-27-Pi	ilot
Date 0	Comple	eted: <u>03/21</u>	/2019		Northin	g (NAC	83): <u>2102236.8</u>		9 110	1112-21-1	<u>110 t</u>
Drilling	g Co.:	Casca	ade		Easting	(NAD	33): <u>7615803.1</u>	_ Client:	PG&E		
Drilling	g Meth	od: <u>Sonic</u>	Drilling		Total D	epth:	<u>159 ft bgs</u>	_ Project:	Final GV	N Remedy Ph	ase I
Drill R	ig Typ	e: <u>Proso</u>	nic Truck Mo	unt	Boreho	le Dian	neter: 4-12 inches	_ Location:	PG&E T	opock, Needl	es, California
Driller	Name	: <u>Steve</u>	Vasquez		Depth t	o First	Water: <u>47.15 ft bgs</u>	_			
Drilling	g Asst:	O. Flo	res/L. Amaya	1	Samplin	ng Metl	nod: 4 inch x 10 ft Core Barrel	_ Project No	umber: <u>F</u>	RC000753.005	51
Logge	r:	<u>Judd '</u>	Wanner		Samplin	ng Inter	val: <u>Continuous</u>	_			
Editor:		<u>Gantt</u>	Jeffers		Conver	ted to \	Vell: ⊠ Yes 🗌 No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
101 102 103 	122.4	IRZ-27-SS- 97-102 4/3/2019 16:07		Topock -	SM			9			(17.0 - 127.0') No used
104 105 106 107		IRZ-27-SS- 102-107 4/3/2019 16:19	IRZ-27-AS- 102-107 (<0.17 U ppb) 3/18/2019 16:10	Deposits							
	96	IRZ-27-SS- 107-112 4/3/2019 16:22					(107.0 - 118.0") Topock - Alluvium Deposits; Si (SM); brown (7.5YR 4/4) to dark yellowish brow grained to very coarse grained, angular to subrevery large pebbles, angular; little silt; little clay; t small cobbles; dry	vn (10YR 4/4); v ound; some gra	ery fine nules to	(111.0 - 114.0') Rough drilling	
				Topock - Alluvium	SM						
113				Deposits	J						
114											
		IRZ-27-SS								(114.0') Core barrel plugged	
115		4/3/2019 16:20								off, driller had to	
										go back into hole to recover	
116	33.6									114.0-117.0 ft.	
117											
117											
 											
118		IRZ-27-SS-			+	////	(118.0 - 122.0') Topock - Alluvium Deposits; Cl				
119	62.4	117-122 4/3/2019 16:12		Topock - Alluvium Deposits	sc		reddish brown / moderate brown(5YR 4/4) to ye very fine grained to very coarse grained, angula clay; trace granules to medium pebbles, angula clasts composed of metadiorite; moist	ellowish red (5Yf ar to subround;	R 4/6); some		
120				1 15 4	٠	<u> </u>		 			••

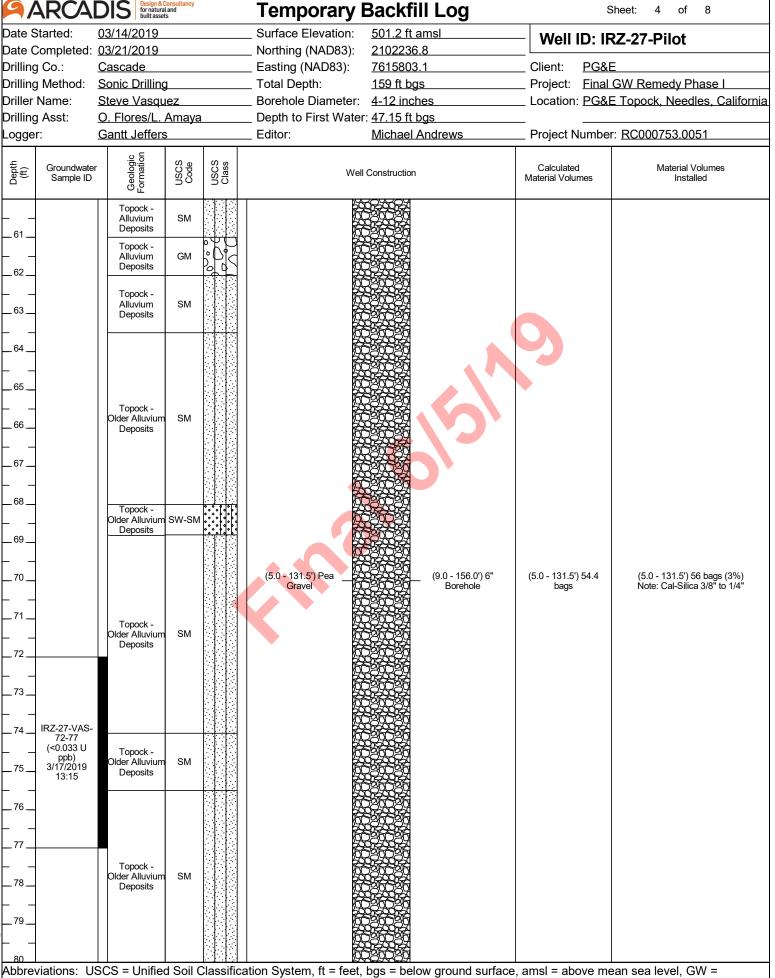
9/	ARC	CADIS	Design & Consultancy for natural and built assets		Bo	ring	Log		She	eet: 7 of	8
	Started			_		e Elevat	· · · · · · · · · · · · · · · · · · ·	Borine	g No.:	IRZ-27-P	ilot
	-	eted: <u>03/21/</u>				g (NAD	•				
_	g Co.:	<u>Casca</u>			_	(NAD8	,		PG&E		
_	Meth		•			•	•	-		W Remedy Ph	
	ig Typ		nic Truck Mo					_ocation:	PG&E	Topock, Needl	<u>es, Californi</u>
	Name		Vasquez		-		Water: 47.15 ft bgs			D0000750 000	- 4
_	g Asst:		ores/L. Amaya		-	-		Project Nu	ımber: ,	RC000753.008	01
ogge					-	ng Inter					
Editor:	:	Ganti	Jeffers		Conver	ted to V	Vell: ⊠ Yes □ No				<u></u>
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	OSCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
121	62.4	IRZ-27-SS- 117-122 4/3/2019 16:12		Topock - Alluvium Deposits	SC						(17.0 - 127.0') No used
122_					 		(122.0 - 124.5') Topock - Weathered Bedrock - co			(122.0') Core	
- _123_				Topock - Weathered Bedrock -			brown (2.5YR 4/4); dry; moderate cementation; frie bedrock, conglomerate bedrock with altenateing zc matrix and coarser grained matrix, potential high pot conglomerate or large piece that was moved	ones of fine g	erate rained	barrel plugged off, driller thinks there was a formation	
_124		IRZ-27-SS- 122-127		conglomerate	:					change going back into wet soil material (122.0 - 127.0')	
- _125	60	4/3/2019 16:08					(124.5 - 129.5') Topock - Weathered Bedrock - co sand (SM); reddish brown (2.5YR 4/4) to dark redd 3/4); very fine grained to very coarse grained, angi	dish brown (2	.5ÝR	Core barrel got stuck, driller advanced casing	
400							little silt; little clay; trace granules, subangular; dry		,	using water to retrieve the core	
126_										barrel, conglomerate	
407				Topock -						bedrock with	
_127				Weathered Bedrock -	SM					altenateing zones of fine	(127.0 - 156.0')
-				conglomerate	1					grained matrix and coarser	200 gal of wate used
128_										grained matrix, potential high	
100							O			point of the conglomerate or	
129_		IRZ-27-SS- 127-132			. .					large piece that was moved	
420		4/3/2019					(129.5 - 137.0') Topock - Weathered Bedrock - co	nglomerate;	reddish	was moved	
130		16:02					brown (2.5YR 4/4); dry; friable conglomerate bedro	ock			
404											
131_											
400											
132_	126									(132.0 - 137.0')	
- _133				Topock -						Sample collected during	
_100				Weathered Bedrock -						the installation of temporary	
- _134				conglomerate						backfill	
_1 0~		IRZ-27-SS- 132-137	132-137								
- _135		4/3/2019 16:04	(1300 ppb) 3/20/2019								
_100		10.04	15:30								
- 136_											
.00_											
- _137											
101							(137.0 - 156.0') Topock - Weathered Bedrock - co graded gravel with silt and sand (GW-GM); reddish				
- 138							to dark reddish brown (2.5YR 3/4); granules to larg	ge pebblès, a	ngular		
_, 00	00	IRZ-27-SS- 137-142		Topock - Weathered	0)4/ 07		to subangular; some very fine to very coarse grain subangular; little silt; little clay; dry	ea sana, ang	uiar to		
_ _139	60	4/3/2019 15:58		Bedrock - conglomerate	GW-GN	' 					
_100		10.00		Journale							
140											
	viation	s: LISCS -	Unified Soil	Classification	n Svet	om ft -	feet, bgs = below ground surface, an	nel – aho	ve mea	n soa lovol G	Λ/ –

9/	4R (CADIS	Design & Consultancy for natural and built assets		Bo	ring L	og		Sh	eet: 8 of	8
Date S			2019			Elevation		Bori	na No.	: <u>IRZ-27-P</u>	ilot
	-	eted: <u>03/21/2</u>				g (NAD83)		_		-	
Drilling	-	<u>Cascac</u>				(NAD83):		_ Client:	PG&E		
Drilling	-		•		Total D	-	159 ft bgs	_ Project:		SW Remedy Pl	
Drill R			ic Truck Mo				er: <u>4-12 inches</u>	_ Locatior	n: <u>PG&E</u>	Topock, Need	<u>les, California</u>
Driller			Vasquez		-		ter: 47.15 ft bgs	 		D0000750.00	
Drilling	-		es/L. Amaya Vanner			ng Method		_ Project i	Number:	RC000753.00	151
Logge Editor		Gantt J				ng Interval ted to Wel		_			
Luitor		Ganti			T		1. M 163 M 100		1		1
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
 141 _142_	60	IRZ-27-SS- 137-142 4/3/2019 15:58									(127.0 - 156.0') 200 gal of water used
143											
144							1	7			
	69.6							•			
145											
440	•										
146											
	-										
148				Topock - Weathered	GW-GM						
				Bedrock - conglomerate	TOW-OW						
149											
150	31.2										
151											
152											
153			no sample (Interval did								
151			not produce.) 3/20/2019 10:15								
154	6		10:15								
155	34.8										
156				L	<u></u>						
						(15	6.0 - 159.0') (NR); No Recovery	_ _		(156.0 - 159.0') Core washed	
157						$ \setminus / $				out	
<u> </u>					NR	\					
158						/ \					
						/ \					
159_						<u>/</u> \	End of Boring at 159.0 'b	ns			
-							End of Boiling at 100.0 by	a			
160 Abbre	l viation	s: USCS = I	Unified Soil (Classificati	on Svet	em ft = fe	et, bgs = below ground surface,	amsl = ah	OVE MES	an sea level G	;W =
1.5510		<u></u>	1 '''		you		z., zgo zolow grodina odriado,	3or – at	3,3,1100	554 15 761, 0	

ARCA		Consultancy al and its		Temporary Backfill Log		neet: 1 of 8
Date Started:	03/14/2019			Surface Elevation: 501.2 ft amsl	Well ID: IR	Z-27-Pilot
ate Completed:				_ Northing (NAD83): 2102236.8		
Orilling Co.:	Cascade			_ Easting (NAD83): <u>7615803.1</u>	Client: PG&E	
Orilling Method:	Sonic Drilling	g		_ Total Depth: <u>159 ft bgs</u>	Project: <u>Final G</u>	SW Remedy Phase I
Oriller Name:	Steve Vasqu	ıez		_ Borehole Diameter: 4-12 inches	Location: <u>PG&E</u>	Topock, Needles, Californ
Orilling Asst:	O. Flores/L.	<u>Amaya</u>		_ Depth to First Water: <u>47.15 ft bgs</u>		
ogger:	Gantt Jeffers	S		Editor: <u>Michael Andrews</u>	Project Number:	RC000753.0051
Groundwate Sample ID	Geologic Formation	USCS	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
	Topock - Filuvial Deposits Topock - Fluvial Deposits	SM SW-SM SW-SM GP SC SW GW-GM GP SM GP SM		(0.0 - 0.5') Steal plate with BMPs (0.5 - 5.0') Plastering	(5.0 - 131.5') 54.4 bags	(0.5 - 5.0') 4 bags (-49%) Note: Wildcat Washed (5.0 - 131.5') 56 bags (3%) Note: Cal-Silica 3/8" to 1/4"
	Deposits					
20		GM				
Abbreviations: U	SCS = Unifie	d Soil (Classifica	ation System, ft = feet, bgs = below ground su	rface, amsl = above mea	an sea level. GW =
				letected above the laboratory reporting limit, .		
μουπαίαναι α ι, ρρί						
				ured during the first VAS interval Note: Granu		

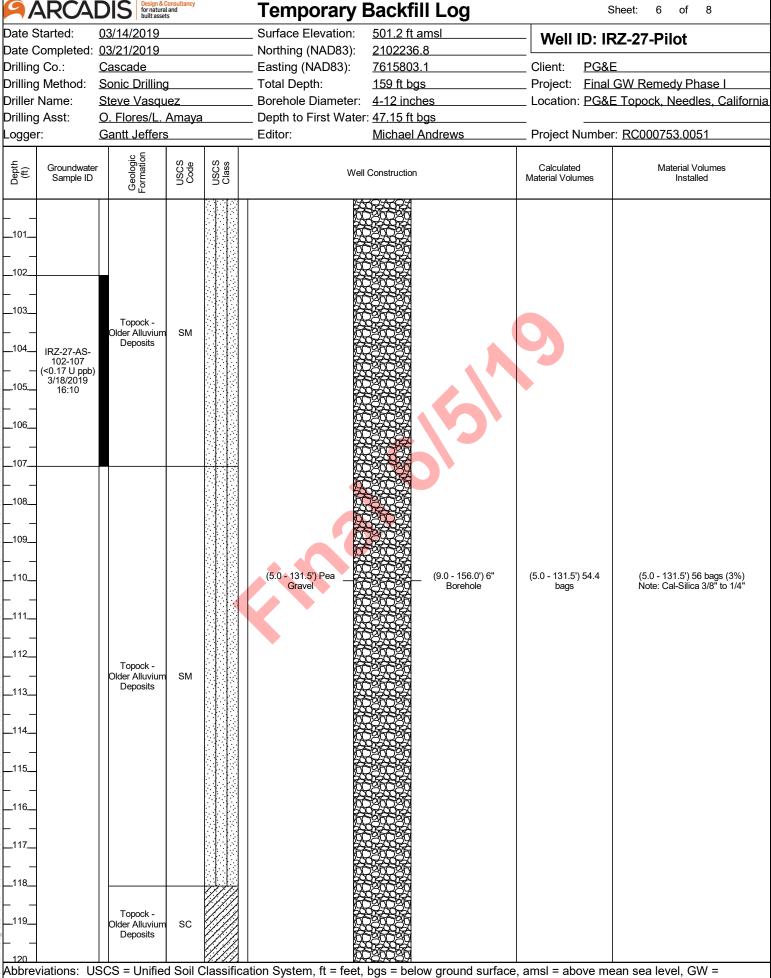
ARCA	DIS Design & for nature built asset	Consultancy al and ets		Temporary E	Backfill Log		Sheet: 2 of 8
Date Started:	03/14/2019			_ Surface Elevation:	501.2 ft amsl	Well ID:	: IRZ-27-Pilot
ate Completed:				_ Northing (NAD83):	2102236.8		
Orilling Co.:	Cascade			_ Easting (NAD83):	7615803.1		G&E
rilling Method:	Sonic Drillin	-		_ Total Depth:	159 ft bgs	•	nal GW Remedy Phase I
riller Name:	Steve Vasqu			_ Borehole Diameter:		Location: <u>P</u>	G&E Topock, Needles, Califorr
Orilling Asst:	O. Flores/L.	-		_ Depth to First Water	₹	<u> </u>	
ogger:	Gantt Jeffer	S		_ Editor:	Michael Andrews	Project Num	nber: RC000753.0051
Groundwate Sample ID	Geologic Formation	Code	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
	Topock - Fluvial Deposits	GM					
	Topock - Fluvial Deposits	GW-GM					
	Topock - Fluvial Deposits	SW-SM				9	
	Topock - Alluvium Deposits	SM		(5.0 - 131.5') Pea	(9.0 - 156.0') 6" Borehole	(5.0 - 131.5') 54. bags	4 (5.0 - 131.5') 56 bags (3%) Note: Cal-Silica 3/8" to 1/4"
_32	Tanaak						
	Topock - Alluvium	SM					
-33	Topock - Alluvium Deposits	SM		ation System ft - fact	has = helow ground surface	amel = abovo	mean sea level CW -
					bgs = below ground surfac		
							NR = no recovery, blue water
	esenis denth	ro wate	er measi	urea aurina the first VA	lo interval Note: Granule b	ackilli material w	ill be excavated from the pilot

Date Completed: 03 Drilling Co.: C Drilling Method: S Driller Name: S Drilling Asst: O	3/14/2019 3/21/2019 Cascade Conic Drilling Steve Vasqu D. Flores/L. Cantt Jeffers Deposits Topock - Alluvium Deposits	iez Amaya	Class	Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:		Client: PG& Project: Final Location: PG&	RZ-27-Pilot E GW Remedy Phase I E Topock, Needles, Californ r: RC000753.0051 Material Volumes Installed
Orilling Co.: Corilling Method: Signature Sign	Cascade Conic Drilling Steve Vasqu D. Flores/L. Cantt Jeffers Dibology Display	S S S S S S S S S S S S S S S S S S S		_ Easting (NAD83): _ Total Depth: _ Borehole Diameter: _ Depth to First Water: _ Editor:	7615803.1 159 ft bgs 4-12 inches 47.15 ft bgs Michael Andrews	Client: PG& Project: Final Location: PG& Project Numbe	E GW Remedy Phase I E Topock, Needles, Californ r: RC000753.0051 Material Volumes
Orilling Method: Since Prilling Method: Since Prilling Asst: Orilling Asst: Orill	Sonic Drilling Steve Vasqu D. Flores/L Santt Jeffers Significants S	S S S S S S S S S S S S S S S S S S S		_ Total Depth: _ Borehole Diameter: _ Depth to First Water: _ Editor:	159 ft bgs 4-12 inches 47.15 ft bgs Michael Andrews	Project: Final Location: PG& Project Numbe	GW Remedy Phase I E Topock, Needles, Californ r: RC000753.0051 Material Volumes
Oriller Name: Since Describing Asst: Orilling Asst:	D. Flores/L Gantt Jeffers Construction	S S S S S S S S S S S S S S S S S S S		_ Borehole Diameter: _ Depth to First Water: _ Editor:	4-12 inches 47.15 ft bgs Michael Andrews	Location: PG& Project Numbe	E Topock, Needles, Californ r: RC000753.0051 Material Volumes
Orilling Asst: Q ogger: G Groundwater Sample ID	D. Flores/L Santt Jeffers Display	Amaya S SOSO SOSO		_ Depth to First Water: _ Editor:	47.15 ft bgs Michael Andrews	Project Numbe	r: RC000753.0051 Material Volumes
	Santt Jeffers pibologo pibologo pibologo Topock - Alluvium	USCS Code		_ Editor:	Michael Andrews	Calculated	Material Volumes
Groundwater Sample ID 41 42 43 44	Geologic Formation Alluvium	USCS	USCS Class			Calculated	Material Volumes
	Topock - Alluvium		USCS	Well C	Construction		
-	Alluvium	SM					
_45						9	
46 47	Topock - Alluvium Deposits	SM					
	Topock - Alluvium Deposits	ML					
505152				(5.0 - 131.5') Pea	(9.0 - 156.0') 6" Borehole	(5.0 - 131.5') 54.4 bags	(5.0 - 131.5') 56 bags (3%) Note: Cal-Silica 3/8" to 1/4"
	Topock - Alluvium Deposits	GM					
	Topock - Alluvium Deposits	SM					
					ogs = below ground surface,		
					ratory reporting limit, J - esti S interval Note: Granule bac		



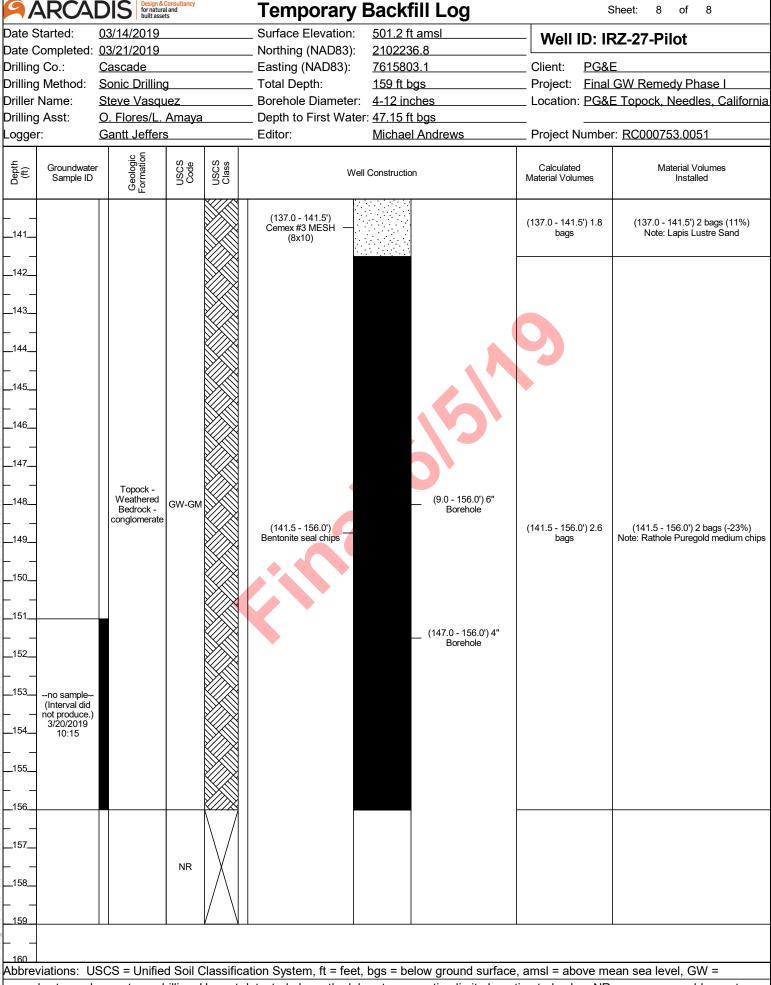
groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot

Date Completed: 03/21/2019 Northing (NAD83): 2102236.8 Curilling Co.: Cascade Easting (NAD83): 7615803.1 Clier Orbilling Method: Sonic Drilling Total Depth: 159 ft bgs Projude Northing (NAD83): 7615803.1 Clier Orbilling Asst: O. Flores/L. Amaya Depth to First Water: 47.15 ft bgs Depth to First W	vell ID: IRZ-27-Pilot ent: PG&E oject: Final GW Remedy Phase I cation: PG&E Topock, Needles, Califor oject Number: RC000753.0051 alculated ial Volumes Installed
Date Completed: 03/21/2019 Northing (NAD83): 2102236.8 Clier Drilling Oc.: Cascade Drilling Method: Sonic Drilling Total Depth: 159 ft bgs Projoch- Drilling Asst: O. Flores/L. Amaya O. Flores/L. Amaya Gantt Jeffers Groundwater Sample ID Topock- Older Alluvium SM Deposits Topock- Older Alluvium SW-She Deposits Topock- Older Alluvium SW-She Deposits Topock- Older Alluvium SW-She Deposits Topock- Older Alluvium SW-She Deposits Topock- Older Alluvium SW-She Deposits Topock- Older Alluvium SW-She Deposits Topock- Older Alluvium SW-She Deposits Topock- Older Alluvium SW-She Deposits Topock- Older Alluvium SW-She Deposits Topock- Older Alluvium SW-She Deposits Topock- Older Alluvium SW-She Deposits Topock- Older Alluvium SW-She Deposits Topock- Older Alluvium SW-She Deposits Topock- Older Alluvium SW-She Deposits Topock- Older Alluvium SW-She Deposits Topock- Older Alluvium SW-She Deposits Topock- Older Alluvium SW-She Deposits Topock- Older Alluvium SM- Deposits Topock- Older Alluvium	ent: PG&E pject: Final GW Remedy Phase I cation: PG&E Topock, Needles, Califor pject Number: RC000753.0051 alculated Material Volumes
Total Depth: 159 ft bgs Projuntiler Name: Steve Vasquez Borehole Diameter: 4-12 inches Local Depth to First Water: 47.15 ft bgs Depth to First Water: 47.15	oject: Final GW Remedy Phase I cation: PG&E Topock, Needles, Califo oject Number: RC000753.0051 Material Volumes
Driller Name: Steve Vasquez Borehole Diameter: 4-12 inches Local Continuing Asst: O. Flores/L. Amaya Depth to First Water: 47.15 ft bgs Opportunity of the F	oject Number: RC000753.0051 Material Volumes
Orlling Asst: O. Flores/L. Amaya Depth to First Water: 47.15 ft bgs ogger: Gantt Jeffers Editor: Michael Andrews Proj. Editor: Michael Andrews Proj. Editor: Michael Andrews Proj. Editor: Michael Andrews Proj. Editor: Michael Andrews Proj. Well Construction Cale Materia Topock Older Alluvium SM Deposits Topock Older Alluvium SW-SNA Deposits Topock Older Alluvium SW-SNA Deposits Topock Older Alluvium SW-SNA Deposits Topock Older Alluvium SW-SNA Deposits Topock Older Alluvium SW-SNA Deposits Topock Older Alluvium SW-SNA Deposits Topock Older Alluvium SW-SNA Deposits Topock Older Alluvium SW-SNA Deposits SW Deposits Topock Older Alluvium SW-SNA Deposits Topock Older	oject Number: RC000753.0051 alculated Material Volumes
Cantt Jeffers Editor: Michael Andrews Project Groundwater Sample ID Topock - Older Alluvium SM Deposits	alculated Material Volumes
Continuation	alculated Material Volumes
Topock - Older Alluvium Deposits SM Deposits Topock - Older Alluvium Deposits SW SW Deposits Topock - Older Alluvium Deposits SW SW Deposits SW SW Deposits SW SW Deposits SW SW Deposits SW Deposits SW Deposits SW SW Deposits SW Deposi	
Topock - Older Alluvium Deposits 82	
Topock - Older Alluvium Deposits SM Topock - Older Alluvium Deposits SM Topock - Older Alluvium Deposits Topock - Older Alluvium Deposits SM Topock - Older Alluvium Deposits	- 131.5') 54.4 bags (5.0 - 131.5') 56 bags (3%) Note: Cal-Silica 3/8" to 1/4"



groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot

ARCA	DIS Design & Control of For natura built asset	Consultancy Land s		Temporary I	Backfill Log	S	Sheet: 7 of 8		
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	03/14/2019 03/21/2019 Cascade Sonic Drilling Steve Vasqu O. Flores/L. Gantt Jeffers	ez Amaya	1	Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water Editor:		Well ID: IRZ-27-Pilot Client: PG&E Project: Final GW Remedy Phase I Location: PG&E Topock, Needles, California Project Number: RC000753.0051			
Groundwater Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed		
	Topock - Older Alluvium Deposits	SC							
	Topock - Competent Bedrock - conglomerate					9			
	Topock - Weathered Bedrock - conglomerate	SM		(5.0 - 131.5') Pea Gravel		(5.0 - 131.5') 54.4 bags	(5.0 - 131.5') 56 bags (3%) Note: Cal-Silica 3/8" to 1/4"		
5					(9.0 - 156.0') 6" Borehole				
132 133 133 134 132-137 132-137 (1300 ppb) 3/20/2019 15:30 15:30	Topock - Competent Bedrock - conglomerate	SM		(131.5 - 137.0') Cemex #3 MESH — (8x10)		(131.5 - 137.0') 2.2 bags	(131.5 - 137.0') 3.5 bags (59%) Note: Lapis Lustre Sand		
137 138 139 140 Abbreviations: U	Topock - Weathered Bedrock - conglomerate	GW-GM		(137.0 - 141.5') Cemex #3 MESH — (8x10)	bgs = below ground surface	(137.0 - 141.5') 1.8 bags	(137.0 - 141.5') 2 bags (11%) Note: Lapis Lustre Sand		



groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot

/ -	AKC		212	for natural and built assets		BO	rıng	J Log		She	et: 1 of	7
Date S	tarted:		12/11/2	2019		Surface	Elevati	tion: 501.6 ft amsl	Borin	ia No:	IRZ-29 Pi	lot
			<u>12/19/2</u>			Northing		•			<u></u>	
Drilling			Cascac	le		Easting	(NAD8	83): <u>7615788.9</u>	Client:	PG&E		
Drilling			Sonic D	•		Total De	•	<u>132 ft bgs</u>	Project:		V Remedy Ph	
Drill Ri				ongyear Trad					Location:	PG&E T	opock, Topoc	k, California
Driller I			Eddie F			-		Water: 47.75 ft bgs				
Drilling				ezguita/ L. An	•	Samplin	-		Project N	lumber: <u>F</u>	RC000753.00	51
Logge				<u> Grane / G. Wi</u>		Samplin	•					
Editor:			<u>Kendra</u>	Keon		Convert	ed to V	Well: ⊠ Yes □ No				
Depth (ft)	Recovery (in)		ieve nple ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
1	84				Topock - Fil	I SM		(0.0 - 7.0') Topock - Fill; Silty sand with gravel brown / moderate yellowish brown (10YR 5/4) coarse grained, angular to subround; little grain pebbles, subangular to round; little silt; dry; po	fine grained nules to largussible fill	d to very e	(0.0 - 7.0') Soft-Loose material fell out of initial run into the hopper, logged material from hopper.	(0.0 - 67.0') No water used
	120				Topock - Fil	i sm		(7.0 - 13.0") Topock - Fill; Silty sand (SM); yell- moderate yellowish brown (10YR 5/4); very fin grained, angular to subround; little granules to angular to subround; little silt; dry; possible fill	e grained to	coarse	(7.0 - 14.0') Normal drilling conditions.	
15 14 15 16 17					Topock - Alluvium Deposits	SM		(13.0 - 17.0') Topock - Alluvium Deposits; Silty (SM); pale brown (10YR 6/3) little brown (10Yi grained to very coarse grained, angular to sub to medium pebbles, angular to subangular; litt	R 4/3); very f round; little o	ine	(14.0 - 17.0') Soft drilling.	
17 18 19	120				Topock - Alluvium Deposits	SM		(17.0 - 27.0') Topock - Alluvium Deposits; Silty (SM); brown (10YR 4/3) trace reddish brown (grained to very coarse grained, angular to sub granules to very large pebbles, angular to sub trace small cobbles, angular; trace clay; dry; no cementation; some pieces of drill cuttings model.	5YR 5/4); ver round; some round; little s noderate	ry fine e silt;	(17.0 - 27.0') Rough drilling.	
20 Abbros	/iations	. 119	CS - 1	Inified Soil C	accification	Svetem	ft – fc	·l eet. bas = below around surface. ams	l – ahovo	mean soc	Novel GW =	groundwater

9/-	AKC	AD	15	for natural and built assets		Во	ring	Log		Shee	et: 2 of	7
Date S	tarted:	12	/11/2	2019		Surface	Elevation	on: <u>501.6 ft amsl</u>	Borin	ua No .	IRZ-29 Pi	ilot
Date C	omple	ted: <u>12</u>	/19/2	2019		Northing	y (NAD8	33): <u>2102085.0</u>		.g 110	11 XE-23 [7]	<u></u>
Drilling	Co.:	<u>Ca</u>	scac	de		Easting	(NAD83	3): <u>7615788.9</u>	_ Client:	PG&E		
Drilling	Metho	od: <u>Sc</u>	nic [<u> Drilling</u>		Total De	epth:	132 ft bgs	_ Project:	Final GV	V Remedy Ph	ase 1
Drill Ri	д Туре	: <u>Bc</u>	art L	ongyear Trac	k Mount	Borehol	e Diame	eter: <u>6-10 inches</u>	_ Location:	: PG&E T	opock, Topoc	ck, California
Driller I	Name:	<u>Ec</u>	ldie F	Ramos		Depth to	First W	Vater: 47.75 ft bgs	_			
Drilling	Asst:	<u>H.</u>	Ame	ezguita/ L. Am	naya	Samplin	g Metho	od: 4 inch x 10 ft. Core Barrel	_ Project N	lumber: <u>F</u>	RC000753.00	51
Loggei	r:	<u>S.</u>	McG	<u> Brane / G. Wil</u>	lford	Samplin	g Interva	al: <u>Continuous</u>	_			
Editor:		<u>Ke</u>	ndra	Keon		Convert	ed to W	′ell: ⊠ Yes 🗌 No				
Depth (ft)	Recovery (in)	Sieve Sample		Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
21 22 23 24 25	120				Topock - Alluvium Deposits	SM						
26 27 28 29 30					Topock - Alluvium Deposits Topock - Alluvium Deposits	NR ML		(27.0 - 27.5') No recovery (NR); fell out of cobagging. (27.5 - 29.0') Topock - Alluvium Deposits; Sa (ML); brown (10YR 4/3); no plasticity; some coarse grained sand, angular to subround; little clay; trac subround; dry; cobbles composed of conglor (29.0 - 31.0') Topock - Alluvium Deposits; CI (SC); brown (7.5YR 4/4); very fine grained to angular to subround; some granules to very subangular to round; little small cobbles, sub little silt; little clay; moist; cobbles composed	andy silt with govery fine to very fine to very fine to very fine to very enable ayey sand with very coarse goarge pebbles, cangular to su	gravel ry o small es, h gravel grained, , bround;	(27.0 - 31.0') Hard drilling.	
31 32	114				Topock - Alluvium Deposits	ML		(31.0 - 31.8') Topock - Alluvium Deposits; Sa (ML); brown (10YR 4/3); no plasticity; some v coarse grained sand, angular to subround; litpebbles, angular to subround; little clay; trac	very fine to ver ttle granules t e small cobble	ry o small	(31.0 - 33.0') Soft drilling.	
33 34 35 36 37					Topock - Alluvium Deposits	SC		subround; dry; cobbles composed of conglor (31.8 - 38.0') Topock - Alluvium Deposits; CI (SC); brown (7.5YR 5/4); very fine grained to angular to subround; some granules to very subangular to round; little silt; little clay; trace subangular to subround; coarser clasts commoist to dry; cobbles composed of conglome (33.25') dark grayish brown / dark yellowish trace silt; dry; increase in sand, decrease in angular to subangular (34.25') brown (7.5YR 5/2); coarser clasts cometadiorite; moist to dry; weak cementation; angular to subround (35.25') brown (7.5YR 4/4); moist	ayey sand wit very coarse g arge pebbles, e small cobble posed of meta erate prown (10YR a granules and	grained, es, adiorite; 4/2); pebbles,	(33.0 - 34.5') Hard drilling. (34.5 - 35.0') Soft drilling. (35.0 - 37.0') Hard drilling.	
38 39 40	120	IISO	2 - 1	Initial Sail Claim	Topock - Alluvium Deposits	ML		(38.0 - 40.5') Topock - Alluvium Deposits; Sa (ML); brown (7.5YR 4/4); no plasticity; some coarse grained sand, angular to subround; lit pebbles, angular to subangular; little clay; cocomposed of metadiorite; dry to moist; mode	very fine to ver ttle granules to earser clasts erate cementa	ery o large ition	(37.0 - 43.0') Normal drilling. (39.5 - 42.5')	groundwater

9/-	ARC	ADIS	for natural and built assets		Во	ring	Log	S	heet: 3 of	7
Date S					Surface		-	Boring No	.: <u>IRZ-29 Pi</u>	lot
	•	ted: <u>12/19/</u> 2			Northin	•	,		<u> </u>	
Drilling		<u>Cascac</u>			Easting	•	•	Client: PG&E		
Drilling			•		Total De		132 ft bgs	•	GW Remedy Pha	
Drill Ri			<u>ongyear Trac</u>					Location: PG&E	Topock, Topoc	k, California
Driller I			Ramos		•		Vater: 47.75 ft bgs		- D0000750 005	- 4
Drilling			ezguita/ L. Am	•	Samplin	•		Project Number	: RC000753.005) [
Logge Editor:		S. MCC Kendra	<u> Grane / G. Wil</u>		Samplin Convert	•				
Editor.		Nenura	T KEUII		T	teu io v	Vell. A les I NO			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
					ML				Core bag broke sample	
41				Topock - Alluvium	SM		(40.5 - 41.3') Topock - Alluvium Deposits; Silt (SM); dark yellowish brown (10YR 4/4); very fi		disturbed.	
				Deposits Topock -	 		coarse grained, angular to subround; some si very large pebbles, angular to subangular; littl			
42				Alluvium Deposits	ML		clasts composed of metadiorite; dry to moist		<u> </u>	
				Topock -	1		(41.3 - 42.0') Topock - Alluvium Deposits; Sar (ML); dark yellowish brown (10YR 4/4); no pla	sticity: some very		
43				Alluvium	sc		fine to very coarse grained sand, angular to sugarnules to very large pebbles, angular to sub	ubround; little angular: little clay:		
	120			Deposits			trace small cobbles, subangular; coarser clas metadiorite; dry to moist; sample disturbed	ts composed of	(43.0 - 43.5') Hard drilling.	
44	120			Topock - Alluvium	SM		(42.0 - 43.5') Topock - Alluvium Deposits; Cla	yey sand with gravel	(43.5 - 47.0')	
				Deposits			(SC); brown (7.5YR 5/4); very fine grained to a angular to subround; some granules to very la		Normal drilling.	
45							to subangular; little clay; trace small cobbles, coarser clasts composed of metadiorite; dry to	subround; trace silt;		
			1				composed of congl <mark>om</mark> erate			
46							(43.5 - 44.0') Topock - Alluvium Deposits; Silt (SM); brown (10YR 5/3); very fine grained to v	y sand with gravel erv coarse grained.		
40			1				angular to subround; some silt; little granules pebbles, angular to subangular; little clay; trac	to very large		
47			1				subangular; coarser clasts composed of meta			
47		IRZ-29-SS-					cobbles composed of conglomerate (44.0 - 51.5') Topock - Alluvium Deposits; Silt	v sand with gravel		
		45-50 12/20/2019		Topock - Alluvium	SM		(SM); brown (7.5YR 4/4); very fine grained to angular to subround; some granules to very la	very coarse grained,	Y	
48		11:00		Deposits			to subround; little silt; little clay; coarser clasts		(47.8') Approximate	
							metadiorite; dry to moist; weak cementation (45.25'); moist		depth to groundwater.	
49			IRZ-29-VAS- 47-52				(48') brown (7.5YR 4/3); some silt; trace clay; composed of metadiorite; wet; increase in sar		9	
-	62.4		(4400 ppb) 12/16/2019				granules and pebbles (48.75'); moist to wet	,		
50			14:46				(50'); some granules to large pebbles, angula	r to subangular; little		
-							silt; moist to wet; increase in sand, no clay	3		
51							(51'); some granules to very large pebbles, an	ngular to subangular		
							trace clay; decrease in sand		۱ I	
52		IRZ-29-SS-	ļ P	Topock -	014		(51.5 - 53.0') Topock - Alluvium Deposits; Silt (SM); reddish brown / moderate brown (5YR 4	1/4); very fine grained	(52.0 - 57.0')	
		50-55 12/20/2019	1	Alluvium Deposits	SM		to very coarse grained, angular to subround; s granules to medium pebbles, angular to subro	some silt; little ound: trace clav:	Hard drilling.	
53		11:05	1				moist to wet \((52'); and silt; decrease in sand	, ,	<i>,</i>	
							(53.0 - 59.5') Topock - Alluvium Deposits; Silt	y sand with gravel	1	
54			<u> </u>				(SM); brown (7.5YR 5/4); very fine grained to a angular to subround; some silt; little granules	medium grained, to very large		
<u> </u>	63.6						pebbles, angular to subangular; little coarse to grained sand, angular to subround; little clay;	o very coarse		
55			1				composed of metadiorite; moist to wet; moder	rate cementation;		
L _			1				weak HCL reaction			
56			1	Topock -						
L _			<u> </u>	Alluvium Deposits	SM					
57		ID7 00 00	<u> </u>	Dehosira						
		IRZ-29-SS- 55-60					(57') brown (7.5YR 4/4); little granules to large subangular; little silt; trace clay; increase sand		(57.0 - 67.0') Hard drilling,	
58		12/20/2019 11:10					pebbles	,,	fine grained sediments	
	100	****							stretched	
59	132								during bagging.	
			1							
60			1		ML		(59.5 - 64.5') Topock - Alluvium Deposits; Sar	ndy silt with gravel	 	
	viations	s: USCS = l	Jnified Soil CI	assification	System	n. ft = fe	eet. bas = below ground surface. ams	l = above mean s	sea level GW = c	ıroundwater

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	J Log	SI	neet: 4 of	7
Date S	Started	: <u>12/11/</u>	2019		Surface	Elevat	tion: 501.6 ft amsl	Boring No.	: <u>IRZ-29 P</u>	ilot
	•	ted: <u>12/19/</u>			Northin	- '	•		•	<u></u>
Drilling		<u>Casca</u>			Easting	•	•	_ Client: PG&E		
Drilling			Drilling T		Total D	•	132 ft bgs		GW Remedy Ph	
Drill Ri Driller			<u>Longyear Trad</u> Ramos	CK MOUNT			neter: <u>6-10 inches</u> Water: <u>47.75 ft bgs</u>	_ Location: <u>PG&E</u>	тороск, горос	ck, California
Drilling			ezguita/ L. An	nava	Samplin		<u> </u>	Project Number:	RC000753 00	51
Logge			<u>Grane / G. Wi</u>		Samplin	-		_ 1 10,000 110,11001.	1.0000100.00	<u> </u>
Editor:			a Keon		Conver	•				
	2			is c	T	T.,				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
61 62 63 64	132	IRZ-29-SS- 60-65 12/20/2019 11:15	IRZ-29-VAS- 62-67 (2400 ppb) 12/17/2019	Topock - Alluvium Deposits	ML		(ML); reddish brown (5YR 4/3); no plasticity coarse grained sand, angular to subround; pebbles, angular to subangular; little clay; composed of metadiorite; moist to wet; hard (64') brown (7.5YR 4/4); little granules to mangular to subround; dry; moderate HCL reached (64.5 - 67.0') Topock - Alluvium Deposits; S	ittle granules to large oarser clasts at; weak HCL reaction		
65 66 67		IRZ-29-SS- 65-67.5 12/20/2019 11:20	10:00	Topock - Alluvium Deposits	ML		(ML); brown (7.5/R 5/3); low plasticity; some large pebbles, angular to subangular; some coarse grained sand, angular to subround; locasts composed of metadiorite; moist to we cementation; moderate HCL reaction (65.5'); dry; weak HCL reaction (66.25'); moist to wet; moderate cementation	e granules to very very fine to very rrace clay; coarser et; hard; weak		
68				Topock - Alluvium Deposits	ML		(67.0 - 67.8') Topock - Alluvium Deposits; S brown (7.5YR 4/4) with dark reddish brown plasticity; little granules to large pebbles, ar little very fine to very coarse grained sand, a	(2.5YR 3/4); medium igular to subround; ingular to subround;	(67.0 - 87.0') Soft drilling.	(67.0 - 107.0') No water used
69 69 70		IRZ-29-SS- 67.5-70 12/20/2019 11:25		Topock - Alluvium Deposits	SM		trace clay; wet; very stiff; moderate HCL rea (67.8 - 70.5') Topock - Alluvium Deposite; S (SM); reddish brown / moderate brown (5YF) to very coarse grained, angular to subround large pebbles, angular to subangular; some moderate HCL reaction (69.75'); trace small cobbles, subangular (69.76'); some granules to very large pebble	ilty sand with gravel R 4/4); very fine grained ; some granules to silt; trace clay; wet; es, angular to		
71 72 73 74 75	240	IRZ-29-SS- 70-75 12/20/2019 11:30		Topock - Older Alluvium Deposits	SM		subangular; little clay; decrease in sand, inc (70.5 - 76.8') Topock - Older Alluvium Depo gravel (SM); reddish brown / moderate brow grained to very coarse grained, angular to s to large pebbles, angular to subangular; littl (73'); trace clay; decrease in sand (74'); little granules to very large pebbles, an (74.5'); some silt; little granules to large pet subangular; little clay; decrease in sand	sits; Silty sand with In (5YR 4/4); very fine ubround; little granules e silt; little clay; wet ngular to subangular		
_ 76_ 76		ID7 20 SS		Topock -			(76'); trace small cobbles, angular (76.8 - 77.8') Topock - Alluvium Deposits; S			
<u> </u>		IRZ-29-SS- 75-80 12/20/2019		Alluvium Deposits	ML		brown (7.5YR 4/4); medium plasticity; little gebbles, angular to subangular; little very fir	ne to very coarse		
78		11:35		Topock -			→ grained sand, angular to subround; little cla ⇒ angular; wet; soft	y; trace small cobbles,		
				Alluvium Deposits	SM		(77.8 - 79.0') Topock - Alluvium Deposits; S (SM); reddish brown (5YR 5/4); very fine gra			
79				Topock -			grained, angular to subround; some silt; little pebbles, angular to subangular; little clay; tr	e granules to large		
- -				Alluvium	ML		subangular; coarser clasts composed of me	etadiorite; wet		
80 Abbrox	viation	e: 11808 - 1	Initiad Soil Cl	Deposits	n Sveton	<u> </u>	: (79.0 - 81.5') Topock - Alluvium Deposits; S	, ,,	ealevel GW =	groundwater

9/-	ARC	ADIS	for natural and built assets		Boring Log					Sheet: 5 of 7				
Date S	tarted:	12/11/2	2019		Surface	Elevati	ion:	501.6 ft amsl		Borin	a No:	IRZ-29 Pi	ilot	
	•	ted: <u>12/19/</u>	2019		Northing	•	,	2102085.0			9			
Drilling		Casca	de		Easting	•	3):	7615788.9		Client:	PG&E			
Drilling			Drilling		Total De	•		132 ft bgs		Project:		V Remedy Ph		
Drill Ri			<u>_ongyear Trac</u>					6-10 inches	L	ocation:	PG&E T	opock, Topoc	k, California	
Driller I			Ramos		•			47.75 ft bgs				20000750 000		
Drilling			ezguita/ L. An	•	Samplin	•		4 inch x 10 ft. Core Barrel	<u> </u>	roject N	umber: <u>F</u>	RC000753.00	51	
Loggeı Editor:		S. MCC Kendra	<u> Grane / G. Wil</u>		Samplin Convert	•		Continuous						
Editor.		Kenura	a Neon		Convent	ea to v	veii.	No					ı	
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description	on			Drilling Notes	Drilling Fluid	
 81				Topock - Alluvium Deposits	ML		sand, a angular metadio	4/4); low plasticity; some very fin- gular to subround; little granules to subangular; little clay; coarsel rite; moist; very stiff trace clay; increase in silt, decr	es to med er clasts	dium pebblo composed	es,			
82		IRZ-29-SS- 80-85 12/20/2019		Topock - Alluvium Deposits	GW		(GW); v boulder metadio	31.8') Topock - Alluvium Deposits ery dark greenish gray (GLEY1 3 s, angular to subround; coarser or rite; dry; iron oxide staining; boul lverized	3/1); sma	all cobbles omposed o	to			
83 84 	240	11:40		Topock - Alluvium Deposits	ML		(ML); br coarse medium compos (83') red	85.0') Topock - Alluvium Deposits own (7.5YR 4/3); medium plastic grained sand, angular to subroun pebbles, angular to subround; li ed of metadiorite; moist to wet; v ddish brown / moderate brown (5	city; som nd; little little clay very stiff 5YR 4/4)	ne very fine granules to coarser o little gran	to very lasts			
85 86 				Topock - Alluvium Deposits	SM		granule (85.0 - 8 (SM); bi angular angular	bbles, angular to subround; decision and pebbles 7.0') Topock - Alluvium Deposits own (7.5YR 4/4); very fine graine to subround; some silt; little grar to subangular; little clay; coarsei rite; moist; sand increases, silt of	ts; Silty s led to ver inules to er clasts	sand with g ry coarse g large pebb composed	ravel rained, les, of			
88		IRZ-29-SS- 85-90 12/20/2019 11:45		Topock - Alluvium Deposits Topock - Alluvium	ML SM		(ML); br coarse pebbles	37.8') Topock - Alluvium Deposits own (7.5YR 4/3); medium plastic grained sand, angular to subrour, angular to subangular; little clay ed of metadiorite; moist; very stif	city; som nd; little ay; coars	ne very fine granules to	to very	(87.0 - 92.0') Normal drilling.		
 89 90	60		IRZ-29-VAS- 87-92 (<0.033 U ppb) 12/17/2019 14:41	Deposits Topock - Alluvium Deposits	ML		(87.8 - 8 (SM); re to very of pebbles compose (88.3 - 9	38.3') Topock - Alluvium Deposits ddish brown / moderate brown (soarse grained; some silt; little gr, angular to subangular; trace claed of metadiorite; wet 20.5') Topock - Alluvium Deposits ddish brown / moderate brown (f	ts; Silty s (5YR 4/4 granules f lay; coars ts; Sandy	e); very fine to very larg ser clasts y silt with g	grained e			
 91 92							plasticit subrour subang moist (90.5 - 9	y; some very fine to very coarse of the granules to very large pelular; little clay; coarser clasts cores. Topock - Alluvium Deposits	grained bbles, a mposed ts; Silty s	sand, anguingular to of metadic	rite;			
93 94 94		IRZ-29-SS- 90-95 12/20/2019 11:50		Topock - Alluvium Deposits	SM		to very of granule coarser (92'); lit	ddish brown / moderate brown (coarse grained, angular to subrou s to very large pebbles, angular t clasts composed of metadiorite; le silt; wet; increase in sand, inc , no clay	ound; son to suban e; wet	ne silt; little igular; little	clay;	(92.0 - 103.0') Normal drilling.		
95 96	180			Topock - Alluvium Deposits	ML		(ML); re plasticit subrour subang	06.5') Topock - Alluvium Deposits ddish brown / moderate brown (y; and very fine to very coarse grad; little granules to very large pel ular; wet	5YR 4/4 rained sa ebbles, a); medium and, angula ingular to	ır to			
97 98 99		IRZ-29-SS- 95-100 12/20/2019 11:55		Topock - Alluvium Deposits	ML		(ML); br coarse large pe	99.3') Topock - Alluvium Deposits own (7.5YR 4/4); low plasticity; s grained sand, angular to subrour ibbles, angular to subangular; litt ed of metadiorite; moist; hard	some ve nd; little	ry fine to ve granules to	ery very			
100		11000	1 10 10 10	Topock - Alluvium	ML		(ML); re	04.5') Topock - Alluvium Deposi	5YR 4/4); medium				

1	4K(ADIS	for natural and built assets		Bo	ring	Lo			She	et: 6 of	7
Date S					Surface			501.6 ft amsl	Borin	na No.:	IRZ-29 Pi	lot
	•	ted: <u>12/19/</u>			Northin			2102085.0		_		<u></u>
Drilling		Casca			Easting	•	33):	7615788.9	Client:	PG&E		
Drilling Method: Sonic Drilling Drill Rig Type: Boart Longyear Track Mount				Total D		-4	132 ft bgs	Project:		V Remedy Ph		
Drill Ri			Longyear Trad Ramos					6-10 inches 47.75 ft bgs	Location	PG&E I	opock, Topoc	k, California
Drilling			ezguita/ L. An		Samplin			4 inch x 10 ft. Core Barrel	Project N	Lumber: F	RC000753.00	 51
Logge			<u> Czguita/ E. Aii</u> Grane / G. Wi		Samplin			Continuous	i iojectiv	idilibei. <u>I</u>	10000733.00	<u> </u>
Editor:			a Keon	illora	Convert	-						
				0.5								
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	SOSO	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
101 102 103 104	180	IRZ-29-SS- 100-105 12/20/2019 12:00		Topock - Alluvium Deposits	ML		subang to subr moist;		ined sand, al	diorite;	(103.0 - 104.0') Hard drilling.	
105				Topock - Alluvium	GW		(GW);	- 105.0') Topock - Al <mark>luvium Deposits</mark> ; V very dark gre <mark>enish g</mark> ray (GLEY1 3/1); b				
106 107				Deposits			(105.0 (ML); replastici	jular; dry; pulverized boulder - 113.5') Topock - Alluvium Deposits; Second of the proving the proving the proving the second of the proving the prov	l/4); medium ed sand, ang , angular to	ular to		
 108 		IRZ-29-SS- 105-110 12/20/2019 12:05						eddish <mark>brown</mark> (5YR 5/4); little clay; dec	rease in silt		(107.0 - 112.0') Normal drilling.	(107.0 - 132.0') No water used
109 110				Topock - Alluvium Deposits	ML			eddish brown / moderate brown (5YR 4 increase in silt	4/4); trace cla	ау;		
111112	120	IRZ-29-SS- 110-113.5 12/20/2019 12:10									(112.0 - 117.0') Intermittent zones of hard and soft drilling,	
			1				(113');	little clay; dry; decrease in silt			potential	
114		IRZ-29-SS- 113.5-119 12/20/2019 12:15	IRZ-29-VAS- 112-117 (760 ppb) 12/18/2019 15:12	Topock - Alluvium Deposits	SM		(SM); r to very very lai	 - 117.0') Topock - Alluvium Deposits; Seddish brown / moderate brown (5YR 4 coarse grained, angular to subround; sge pebbles, angular to subangular; sor clasts composed of metadiorite; wet 	1/4); very fine some granule	grained es to	confining units.	
118 118 119	72	ID7 00 00	IRZ-29-VAS- 116-120.5 (23 ppb) 12/19/2019 10:26	Topock - Alluvium Deposits	SM		brown angula angula	- 119.0') Topock - Alluvium Deposits; S (10YR 4/3); very fine grained to very co r to round; some silt; little granules to v r to subround; coarser clasts compose	arse grained ery large pet d of metadion	bbles, rite; wet	(117.0 - 119.0') Normal drilling.	
120	.i4i	IRZ-29-SS- 119-121 12/20/2019	Initiad Call O	Topock - Weathered Bedrock -	IVIL		Sandy 4/4); m	 - 121.0') Topock - Weathered Bedrock silt with gravel (ML); reddish brown / m edium plasticity; some very fine to very = below ground surface, amp 	oderate brov coarse grair	vn (5YR ned	(119.0 - 123.0') Hard drilling.	

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log					She	eet: 7 of	7
Date S	Started:	12/11/2	019		Surface	Elevati	on: <u>50</u>	1.6 ft am	sl		Bori	na No	IRZ-29 Pi	lot
Date C	Comple	ted: <u>12/19/2</u>	019		Northing	g (NAD	83): <u>21</u>	02085.0		L	D 011	119 110	1142 2011	<u>10t</u>
Drilling		Cascad	е		Easting	(NAD8	3): <u>76</u>	15788.9		(Client:	PG&E		
Drilling			•		Total De	•		2 ft bgs			Project:		W Remedy Pha	
Drill Ri	• • •		ongyear Trad					10 inches		L	_ocatior	n: <u>PG&E</u>	Topock, Topoc	k, California
Driller		Eddie F			-		Water: <u>47</u>	_						
Drilling			zguita/ L. An	•	Samplin	-			ft. Core Barre	<u> </u>	Project	Number:	RC000753.005	<u> </u>
Logge			rane / G. Wil		Samplin	-		ntinuous Yes						
Editor:		Kendra	Keon		Convert	ea to v	veii: 🔼	Yes _	No					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class			Soil Descriptio				Drilling Notes	Drilling Fluid
		12:20		conglomerate	ML				und; little granule moist to wet	es to very	y large pe	bbles,	(120.5') During clean out run	
-				Topock - Competent	T		(121.0 - 123 (2.5YR4/3);		k - Competent Be pulverized	edrock -	conglome	rate;	material kept falling out of the core barrel.	
122	72			Bedrock - conglomerate	Э								Attempted push sampler down to 122 ft. bgs	
123					NR		(123.0 - 124	4.0') No rec	overy (NR); see d	drilling n	otes		tagged at 120.5 ft bgs. (123.0 - 124.0')	
124							(124.0 - 132 (2.5YR4/3);		k - Competent Be	edrock -	conglome	rate;	Core barrel locked up stopped cutting lost bottom foot	
125							(2.51K4/5), (124.75'); m	-	pulverized				lost bottom foot of core. (124.0 - 127.0')	
126							(4001)			h-l	d	:41 4	Drill rods chattering heavily.	
							column wha	at was reco	core barrel down h vered was highly	riole and saturate	a mixea w ed	itii water	(126.0 - 132.0') Lost core down hole.	
<u> </u>				Topock -									(127.0 - 129.0') Softer zone, drill rods	
128	24			Competent Bedrock - conglomerate	e								stopped chattering.	
_129													(129.0 - 130.0') Drill rods	
_130													chattering. (130.0 - 132.0') Smoother	
131				V									drilling, rods stopped chattering.	
 132								Fn	d of Boring at 132	2 0 'bas				
-									at 102	2go.				
133														
134														
135														
- - - - - - - - - - -														
[137 [
138														
_139														
140 Abbre	viations	: USCS = U	nified Soil Cl	assification	System	n. ft = fe	et has =	below ar	ound surface	amsl :	= ahove	mean se	ea level, GW = ç	nroundwater

ARCA	DIS Design & Control for natural built asset	Consultancy Land ts		Temporary I	Backfill Log	<u> </u>	Sheet: 1 of 7
Date Started: 12/19/2 Date Completed: 12/20/2 Drilling Co.: Cascad Drilling Method: Sonic D Driller Name: Eddie R		S		Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter:	501.6 ft amsl 2102085.0 7615788.9 132 ft bgs 6-10 inches	Client: <u>PG&I</u> Project: <u>Final</u>	RZ-29 Pilot GW Remedy Phase 1 Topock, Topock, California
Drilling Asst: Logger:	H. Amezguita		-	Depth to First Water: Editor:	: 47.75 ft bgs Kendra Keon	 Project Number	r: RC000753.0051
Groundwate Sample ID	logic ation	USCS	USCS Class		Construction	Calculated Material Volumes	Material Volumes Installed
				(0.0 - 0.5') Steel Plate	- >%%%%%		Note: Steel plates with BMPs in place
1 2 3 4 5	Topock - Fill	SM		(0.5 - 5.0') Transition Sand (#00)	(0.0 - 7.0') 10.0" Borehole	(0. 5 - 5.0') 5.5 bags	(0.5 - 5.0') 5 bags (-9%) Note: Lapís Lustre Sand
_ 9 _ 10 _ 11 _ 12	Topock - Fill	SM					(5.0. 118.0') 57 bags (26%)
13	Topock - Alluvium Deposits	SM		(5.0 - 118.0') Cemex #3 MESH (8x10)	(7.0 - 116.0') 6.0" Borehole	(5.0 - 118.0') 45.3 bags	(5.0 - 118.0') 57 bags (26%) Note: Lapis Lustre Sand, used >20 of calculated volume due to potenti voids forming
	Topock - Alluvium Deposits	SM	Jacobi Control	tion System # = foot ha	s = below ground curfoce	amel = above mach	sea level, GW = groundwate

ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of

Date Completed:12/20/2019Northing (NAD83):2102085.0Drilling Co.:CascadeEasting (NAD83):7615788.9Client:Drilling Method:Sonic DrillingTotal Depth:132 ft bgsProject:FiDriller Name:Eddie RamosBorehole Diameter:6-10 inchesLocation:Project:FiDrilling Asst:H. Amezguita/ L. AmayaDepth to First Water:47.75 ft bgs	Sheet: 2 of 7		
	PG&E Final GW Remedy Phase 1 PG&E Topock, Topock, California The RC000753.0051		
	Material Volumes es Installed		
36	(5.0 - 118.0') 57 bags (26%) Note: Lapis Lustre Sand, used >20% of calculated volume due to potentia voids forming		

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of

ARC	DIS Design of for natural built ass	& Consultancy Iral and sets		Temporary Backfill Log	Sheet: 3 of 7
Date Started: Date Completed Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	Orate Completed: 12/20/2019 Orilling Co.: Cascade Orilling Method: Sonic Drilling Oriller Name: Eddie Ramos Orilling Asst: H. Amezguita/ L. Amaya			Surface Elevation: 501.6 ft amsl Northing (NAD83): 2102085.0 Easting (NAD83): 7615788.9 Total Depth: 132 ft bgs Borehole Diameter: 6-10 inches Depth to First Water: 47.75 ft bgs Editor: Kendra Keon	Well ID: IRZ-29 Pilot Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Topock, California Project Number: RC000753.0051
Had (t) Groundwa Sample II		USCS	USCS Class	Well Construction	Calculated Material Volumes Material Volumes Installed
		ML SM ML SC SM SM			(5.0 - 118.0') 45.3 bags (5.0 - 118.0') 45.3 bags (5.0 - 118.0') 45.3 bags (5.0 - 118.0') 57 bags (26%) Note: Lapis Lustre Sand, used >20% of calculated volume due to potential voids forming

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of

ARCA	DIS Design & for natur built asset	Consultancy al and ets		Temporary Backfill Log	Sheet: 4 of 7
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	Date Started: 12/19/2019 Date Completed: 12/20/2019 Drilling Co.: Cascade Drilling Method: Sonic Drilling Driller Name: Eddie Ramos Drilling Asst: H. Amezguita/ L. Amaya		-	Surface Elevation: 501.6 ft amsl Northing (NAD83): 2102085.0 Easting (NAD83): 7615788.9 Total Depth: 132 ft bgs Borehole Diameter: 6-10 inches Depth to First Water: 47.75 ft bgs Editor: Kendra Keon	Well ID: IRZ-29 Pilot Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Topock, California Project Number: RC000753.0051
Groundwate Sample ID		USCS	USCS Class	Well Construction	Calculated Material Volumes Material Volumes Installed
61		ML			
65	Topock - Alluvium Deposits	ML			
67	Topock - Alluvium Deposits	ML			
68 69 70	Topock - Alluvium Deposits	SM		(5.0 - 118.0') Cemex (7.0 - 116.0') 6.0 #3 MESH (8x10) Borehole	0" (5.0 - 118.0') 57 bags (26%) Note: Lapis Lustre Sand, used >20% of calculated volume due to potential voids forming
 73 	Topock - Older	SM			
74 75	Alluvium Deposits				
77	Topock - Alluvium Deposits	ML			
78	Topock - Alluvium Deposits	SM			
2	Topock - Alluvium Deposits	ML			re, amsl = above mean sea level, GW = groundwater,

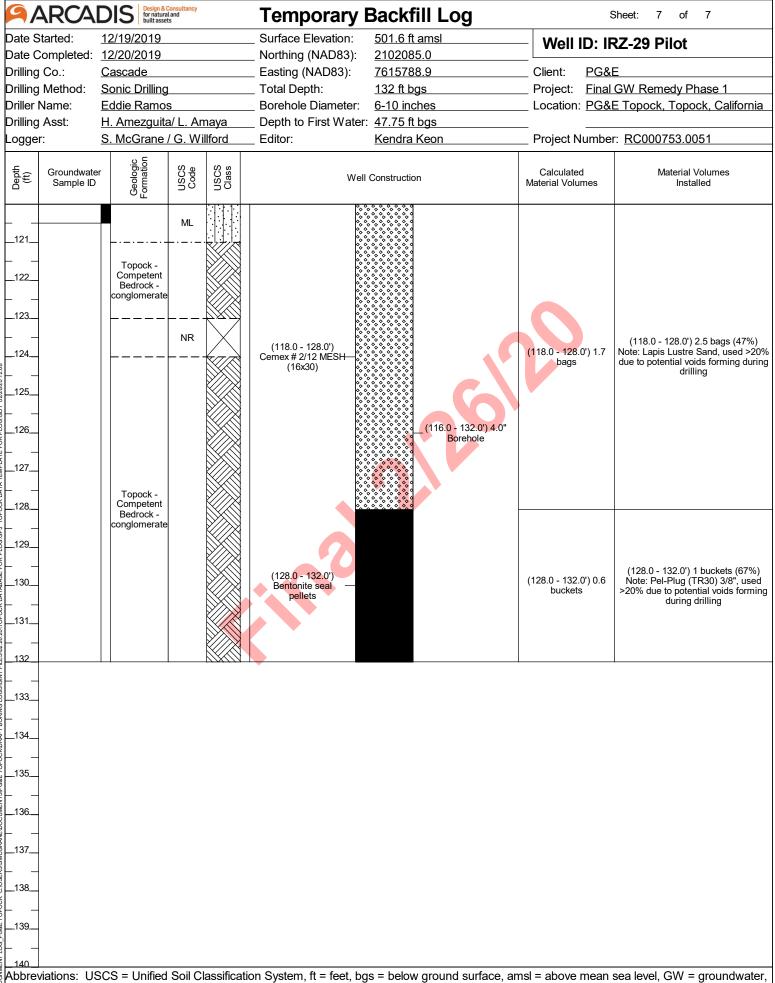
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of

ARCA	DIS Design & for natura built asse	Consultancy al and ts		Temporary Backfill	Log	Sheet: 5 of 7		
	12/19/2019			_ Surface Elevation: 501.6 ft am	VVEILID.	Well ID: IRZ-29 Pilot		
•	12/20/2019 Cascade			_ Northing (NAD83): <u>2102085.0</u> _ Easting (NAD83): <u>7615788.9</u>		Client: PG&E		
J	Sonic Drilling	1		Easting (NAD65).		al GW Remedy Phase 1		
-	Eddie Ramo			_ Borehole Diameter: 6-10 inches		RE Topock, Topock, California		
	H. Amezguita		naya	Depth to First Water: 47.75 ft bg		<u> </u>		
-	S. McGrane		-	Editor: Kendra Ke		er: RC000753.0051		
Groundwate Sample ID	Geologic Formation	USCS	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed		
 _81 _ 	Topock - Alluvium Deposits	ML						
82 83 84 85	Topock - Alluvium Deposits Topock - Alluvium Deposits	ML						
 _ 86 _ _ 87 _	Topock - Alluvium Deposits	SM						
	Topock - Alluvium	ML						
88	Deposits Topock -	SM						
	Alluvium Deposits	Sivi						
89	Topock - Alluvium Deposits	ML		(5.0 - 118.0') Cemex #3 MESH (8x10)	(7.0 - 116.0') 6.0" (5.0 - 118.0') 45.3 Borehole bags	(5.0 - 118.0') 57 bags (26%) Note: Lapis Lustre Sand, used >20° of calculated volume due to potentia voids forming		
91 92 93 94 95	Topock - Alluvium Deposits	SM						
96 96	Topock - Alluvium Deposits	ML						
97 98 99	Topock - Alluvium Deposits	ML						
	Topock - Alluvium	ML						
	Deposits	I -	1.1-1.1.1	1 医乳色细胞				

ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

ARCA	DIS Design & for natura built asset	Consultancy al and ets		Temporary Back	fill Log	Sheet: 6 of 7		
Date Started: 12/19/2019 Date Completed: 12/20/2019 Drilling Co.: Cascade Drilling Method: Sonic Drillin Driller Name: Eddie Ramo Drilling Asst: H. Amezgui Logger: S. McGrane		s a/ L. An	-	Surface Elevation: 501.6 ft amsl Northing (NAD83): 2102085.0 Easting (NAD83): 7615788.9 Total Depth: 132 ft bgs Borehole Diameter: 6-10 inches Depth to First Water: 47.75 ft bgs Editor: Kendra Keon		Well ID: IRZ-29 Pilot Client: PG&E Project: Final GW Remedy Phase 1 Location: PG&E Topock, Topock, California Project Number: RC000753.0051		
Groundwat Sample ID		USCS Code	USCS Class	Well Construc	ition	Calculated Material Volumes	Material Volumes Installed	
	Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits	GW ML		(5.0 - 118.0') Cemex #3 MESH (8x10)	(7.0 - 116.0') 6.0" Borehole	(5.0 - 118.0') 45.3 bags	(5.0 - 118.0') 57 bags (26%) Note: Lapis Lustre Sand, used >20% of calculated volume due to potential voids forming	
113		SM						
IRZ-29-VAS 116-120.5 (23 ppb) 12/19/2019 10:26 -119 	Topock - Alluvium Deposits Topock - Weathered Bedrock - conglomerate			(118.0 - 128.0') Cemex # 2/12 MESH—(16x30)	(116.0 - 132.0') 4.0" Borehole	(118.0 - 128.0') 1.7 bags	(118.0 - 128.0') 2.5 bags (47%) Note: Lapis Lustre Sand, used >20% due to potential voids forming during drilling sea level, GW = groundwater,	

ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of



ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of

ARCA	DIS Des form built	ign & Consultani natural and t assets	су	Drilling Log				Sheet:	1 of 7
Date Started:	02/10/202			urface Elevation:	<u>501.6 f</u>		Borin	g No.: IRZ	Z -29
Date Completed:		20		orthing (NAD83):	210208		_		
Drilling Co.:	<u>Cascade</u>			asting (NAD83):	<u>761578</u>		_ Client:	PG&E	
Drilling Method:	Dual Rota	•		otal Depth:	128.5 f	-	Project:	Final GW Rer	•
Drill Rig Type:	Foremost			onductor Casing Diameter:			_ Location:	PG&E Topoc	k, Topock, California
Driller Name:	Jon Martin			rill Casing Diameter:	16 inch		- 		0750 0054
Drilling Asst:	A. & H. Ar	-		rill Bit:		17.5 Tricone	_ Project N	umber: RC000	0753.0051
Tool-Pusher:	Arnold La			epth to First Water:	47.75 f		=		
Rig Geologist:	D. Cornell	/ E. Re	anerC	onverted to Well:	× Yes	No			I
Depth Drilling Ru	n USCS	USCS	Casing	Description		B 300	. N		D.1111 - Electric
(ft) and Averag	e Codo	Class	Diameter	(See Pilot boring log for full geologic descriptions)		Drilling	g Notes		Drilling Fluid
1	SM		(0.0 - 21.0') 18.0" Steel Casing	(0.0 - 7.0') Topock - Fill; Silty samwith gravel (SM); yellowish brown moderate yellowish brown (10YR 5/4) (7.0 - 13.0') Topock - Fill; Silty sand (SM); yellowish brown / moderate yellowish brown / moderate yellowish brown (10YR 5/4) (17.0 - 27.0') Topock - Alluvium (SM); pale brown (10YR 6/3) little brown (10YR 4/3) (17.0 - 27.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (10YR 4/3) trace reddish brown (5YR 5/4)	(5.0 m) (5.0 m) (10.1 m) (10.1 m)	- 0.3') Observed tempor Mesh sand, at the surface 10.0') Observed tempor 10.0') Observed te	orary backfill r	material Cemex#	(0.0 - 21.0') 231 gallons of water used; 150 gallons of water recovered; 81 gallons of water lost
Abbreviations: US	SCS = Unif	ied Soil	Classificat	ion System, ft = feet, bgs = l	elow g	round surface, ams	sl = above	mean sea level	, GW = groundwater

Remarks: NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval of pilot borehole

Drilling Method: Dual Rotary Total Depth: 128.5 ft bgs Project: Final GW Remedy Phase 1 Drill Rig Type: Foremost DR-24HD Conductor Casing Diameter: 18 inches Location: PG&E Topock, Topock, Califor Driller Name: Jon Martinez Drill Casing Diameter: 16 inches Drilling Asst: A. & H. Amezguita Drill Bit: 15.5 & 17.5 Tricone Project Number: RC000753.0051 Tool-Pusher: Arnold Lamon Depth to First Water: 47.75 ft bgs Rig Geologist: D. Cornell / E. Redner Converted to Well: X Yes No Depth Orilling Run and Average Penetration Rate Code Class Diameter Casing Diameter (10.0 - 21.0) 18.0" Steel Casing Casi	ARCAI	DIS for buil	i <mark>ign & Consultan</mark> natural and It assets	су	Drilling Log		Sheet: 2 of 7		
Date Completed Control Contr	Date Started:	02/10/202	20	S	urface Elevation:	501.6 ft amsl	Boring No : IR	7-29	
Delling Nethod: Dual Rolary	Date Completed:	02/12/202	20	N	orthing (NAD83):	2102085.0	_ Borning itto iit	<u> </u>	
Differ Name Conductor Casing Diameter: 18 inches Location: PG&E Topcock. Topcock. Califor Differ Name Dif	Drilling Co.:	Cascade		E	asting (NAD83):	7615788.9	Client: <u>PG&E</u>		
Driller Asst. A. & H. Amezgutta Drill Casing Diameter: 15.5 & 17.5 Tricone Project Number: RC0000753.0051	Drilling Method:	Dual Rota	ıry	T	otal Depth:	128.5 ft bgs	_ Project: Final GW Re	emedy Phase 1	
Deliting Assist A. & H. Amerguilla							_ Location: PG&E Topod	ck, Topock, California	
Tool-Pusher: Amold Lamon Depth to First Water: 47.75 ft bgs No					_				
Degen (1) Politing Rura (1) USCS DIGUS DIG	_		_				_ Project Number: RC00	00753.0051	
Description Description					•		_		
Depth Percentation Rule Code Class C	Rig Geologist:	D. Cornel	I / E. Re	dner C	onverted to Well:	⊻ Yes		T	
21 1.98 mins/ft Cabing	and Average	e 0303			(See Pilot boring log for	Drillin	g Notes	Drilling Fluid	
22	1.69 mins/ft			18.0" Steel		(20.1 - 30.0') Observed temp # 3 in drill cuttings (see Pho	porary backfill material Cemex to Log).	(21.0 - 42.0') 347 gallons of water used: 250 gallons	
Deposits; Sándy silt with gravel (ML); brown (7.5YR 4/4)	23	ML SC		(21.0 - 42.0') 18.0" Steel Casing	(27.5 - 29.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML); brown (10YR 4/3) (29.0 - 31.0') Topock - Alluvium Deposits; Clayey sand with grave (SC); brown (7.5YR 4/4) (31.0 - 31.8') Topock - Alluvium Deposits; Sandy silt with gravel (ML); brown (10YR 4/3) (31.8 - 38.0') Topock - Alluvium Deposits; Clayey sand with grave (SC); brown (7.5YR 5/4)	(30.1 - 40.0') Observed temp # 3 in drill cuttings (see Pho		of water used; 250 gallons of water recovered; 97	
		ML			Deposits; Sandy silt with gravel				

9/-	ARCA	DI	S Pes for in built	i <mark>ign & Consultan</mark> natural and It assets	су	Drilling Log	g				Sheet: 3 of 7			
Date S	started:	02/	/10/202	20	Sı	urface Elevation:	50	1.6 ft a	amsl		Bori	in	g No.: <u>IRZ</u>	7-29
Date C	completed:	<u>02/</u>	/12/202	20	N	orthing (NAD83):	<u>21</u>	02085	5.0				9 110 <u>114</u>	
Drilling	Co.:	<u>Ca</u>	<u>scade</u>		E	asting (NAD83):	<u>76</u>	15788	3.9		_ Client:		PG&E	
	Method:		al Rota	-		otal Depth:		8.5 ft I	-		_ Project:		Final GW Rei	•
	g Type:			DR-241		onductor Casing Diameter:					_ Locatio	n:	PG&E Topoc	k, Topock, California
Driller I			n Martir			rill Casing Diameter:		inche			_			
Drilling				<u>mezguit</u>		rill Bit:				Tricone	_ Project	Ν	umber: RC00	0753.0051
Tool-P			nold La			epth to First Water:		.75 ft I			_			
Rig Ge	eologist:	<u>D.</u>	Cornell	I / E. Re	dner Co	onverted to Well:	×	Yes		No				
Depth	Drilling Rui		USCS	USCS	Casing	Description								
(ft)	and Averag Penetration R		Code	Class	Diameter	(See Pilot boring log for full geologic descriptions)				Drillir	ng Notes			Drilling Fluid
			MI			run geologic descriptions)		(40.4	E0 0') Observed tem	maran, baak	£ili	material Comey	
			ML		(21 0 42 0')	(40.5 - 41.3') Topock - Alluvium		# 3 in c	drill cu) Observed terr uttings (see Ph	iporary back oto Log).	JIII	material Cemex	
41	(21.0 - 42.0) 1.81 mins/ft		SM		18.0" Steel	Deposits; Silty sand with gravel								
			ML		Casing	(SM); dark yellowish brown (10YF 4/4)								
42			IVIL	77777		(41.3 - 42.0') Topock - Alluvium Deposits; Sandy silt with gravel		(42.0	04.01) Smooth drillin	a passibly d		to now hit	(42.0 - 58.8') 230 gallons
						(ML); dark yellowish brown (10YF	2	(42.0 -	01.0) Smooth drillin	ig possibly a	ue	to new bit.	of water used; 300 gallons
43			SC			(42.0 - 43.5') Topock - Alluvium	-							of water recovered; 70 gallons of water gained
						Deposits; Clayey sand with grave (SC); brown (7.5YR 5/4)								
44			SM			(43.5 - 44.0') Topock - Alluvium	-1							
						Deposits; Silty sand with gravel (SM); brown (10YR 5/3)	1							
45						(44.0 - 51.5') Topock - Alluvium Deposits; Silty sand with gravel	_							
						(SM); brown (7.5YR 4/4)								
40														
₄₇														
47														
			SM				Ţ							
48						(48') brown (7.5YR 4/3)								
49														
						44								
50	(42.0 50.0)				(42.0 - 58 <mark>.8')</mark>			/FO 1	60.01	\ Observed tom	maran i baali	£III	material Cemex	
	(42.0 - 58.8) 1.96 mins/ft				`16.0" Steel Casing) Observed terr uttings (see Ph		JIII	material Cemex	
51					Cuomig									
						(51.5 - 53.0') Topock - Alluvium								
52						Deposits; Silty sand with gravel								
-			SM			(SM); reddish brown / moderate brown (5YR 4/4)								
53						(52')								
						(53.0 - 59.5') Topock - Alluvium Deposits; Silty sand with gravel								
54						(SM); brown (7.5YR 5/4)								
55														
56														
			SM		}									
 - -					}									
57						(57') brown (7.5YR 4/4)								
-														
58														
┝╶┤					}									
59	(500 704)				(58.8 - 79.1')									(58.8 - 79.1') 230 gallons of water used; 300 gallons
-	(58.8 - 79.1) 1.33 mins/ft		R AI		16.0" Steel Casing	(59.5 - 64.5') Topock - Alluvium	\dashv							of water recovered; 70
60	iotiona, III	200	ML	: : : : ad Cc		on System ft - feet has -	hola	 	الم صاد	ourfoce co	nol = ob e: "	•	maan aaa la	gallons of water gained

AR	CAE) S	Design & Consultar for natural and built assets	ncy	Drilling Log							Sheet:	4 of 7
Date Started	d: <u>C</u>)2/10/2	020	S	urface Elevation:	50	01.6 ft a	<u>ım</u>	sl	Bor	inc	No.: IRZ	7-29
Date Comple	eted: <u>C</u>)2/12/2	020	N	orthing (NAD83):	2	102085.	.0				- '	
Drilling Co.:		<u>Cascad</u>			asting (NAD83):		<u>615788.</u>			Client:		PG&E	
Drilling Meth		Dual Ro	-		otal Depth:		28.5 ft b	_	3	Project			medy Phase 1
Drill Rig Typ			st DR-24		onductor Casing Diameter:					Locatio	n: <u>F</u>	PG&E Topoc	k, Topock, California
Driller Name	_	<u>lon Ma</u>			rill Casing Diameter:		6 inches		_				0750 0054
Drilling Asst:			Amezguit		rill Bit:				Tricone	Project	Nu	mber: RC000	0753.0051
Tool-Pusher		Arnold I			epth to First Water:	_	7.75 ft b	<u>gs</u>	_	-			
Rig Geologis	SI. <u>L</u>	J. Com	ell / E. Re	raner C	onverted to Well:	Ľ	Yes	=	No				T
	ling Run	USC	s USCS	Casing	Description								
/fi\ and	Average ration Ra	Cod		Diameter	(See Pilot boring log for full geologic descriptions)				Drilling	Notes			Drilling Fluid
					Deposits; Sandy silt with gravel (ML); reddish brown (5YR 4/3)				0') Observed temp		dill m	naterial Cemex	
61					(ML), reddisir brown (311X 4/3)		# 3 in dr	rill	cuttings (see Phote	o Log).			
				÷									
 62													
02		ML											
63									$\sim 10^{-1}$				
				:									
64					(64') brown (7.5YR 4/4)								
				:	(64.5 - 67.0') Topock - Alluvium								
65					Deposits; Sandy silt with gravel (ML); brown (7.5YR 5/3)								
		ML		:									
66								J					
67				<u>'!</u>	(67.0 - 67.8') Topock - Alluvium								
		ML			Deposits; Silt with sand (ML); brown (7.5YR 4/4) with dark								
68					reddish brown (2.5YR 3/4)	_/							
					(67.8 - 70.5') Topock - Alluvium Deposits; Silty sand with gravel								
69		SM		(50.0. 70.41)	(SM); reddish brown / moderate brown (5YR 4/4)								
	- 79.1) mins/ft			(58.8 - 79.1') 16.0" Steel									
_70				Casing			(70.4. (0') Observed temp		.e		
		_			(70.5 - 76.8') Topock - Older				cuttings (see Phote		KIIII II	iateriai Cerriex	
71					Alluvium Deposits; Silty sand wit gravel (SM); reddish brown /	h							
					moderate brown (5YR 4/4)								
72					·								
73				.}									
		SM		}									
74				:									
75				:									
				:									
76				;									
<u> </u>													
77				1	(76.8 - 77.8') Topock - Alluvium								
		ML			Deposits; Silt with sand (ML); brown (7.5YR 4/4)								
78				.}	(77.8 - 79.0') Topock - Alluvium	\dashv							
		SM		1	Deposits; Silty sand with gravel (SM); reddish brown (5YR 5/4)								
				:]									
(79.1	- 99.1)	ML		(79.1 - 99.1')	(79.0 - 81.5') Topock - Alluvium Deposits; Sandy silt (ML); brown]							(79.1 - 99.0') 200 gallons of water used; 275 gallons
	mins/ft	IVIL		16.0" Steel Casing	(7.5YR 4/4)								of water recovered; 75
Ahhreviation	s. 11S0	28 = 11	nified Soi	l Classificati	ion System ft = feet has =	he	low arou	ın	d surface ams	d = ahov	Δ m	اعربوا دوء مدو	GW = groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = ground surface, amsl = above mean sea level, GW = grounds surface, amsl = above

9/	ARCA	DIS	Design for nati built as	a & Consultan tural and ssets	псу	Drilling Log		Sheet:	5 of 7
Date S	Started:	02/10)/2020)	S	urface Elevation:	501.6 ft amsl	Boring No.: IRZ	7-29
Date 0	Completed:	02/12	2/2020)	N	orthing (NAD83):	2102085.0	Borning Ito.: Itt	
Drilling	Co.:	Casc	ade		E	asting (NAD83):	7615788.9	Client: PG&E	
Drilling	Method:	<u>Dual</u>	Rotary	<u>y</u>	To	otal Depth:	128.5 ft bgs	Project: Final GW Rei	medy Phase 1
Drill Ri	ig Type:	<u>Forer</u>	nost D	DR-241	HDC	onductor Casing Diameter:	18 inches	Location: PG&E Topoc	k, Topock, California
Driller	Name:	Jon N	/lartine	ez	D	rill Casing Diameter:	16 inches		
Drilling	Asst:	A. &	H. Am	ezguit	aD	rill Bit:	15.5 & 17.5 Tricone	Project Number: RC00	0753.0051
Tool-F	usher:	<u>Arnol</u>	d Lam	non	D	epth to First Water:	47.75 ft bgs		
Rig G	eologist:	D. Co	ornell /	E. Re	edner C	onverted to Well:	× Yes No		
Depth	Drilling Ru		scs	USCS	Casing	Description			
(ft)	and Average Penetration F	ge c		Class	Diameter	(See Pilot boring log for full geologic descriptions)	Drilling	Notes	Drilling Fluid
					•	run georegie decempaone)	(80.1 - 90.0') Observed tempo	orary backfill material Cemex	gallons of water gained
-			ML :				# 3 in drill cuttings (see Photo	o Log).	
81			 :		<u> </u> -	(80.75')			
-			GW •			(81.5 - 81.8') Topock - Alluvium			
82						Deposits: Well graded gravel			
					•	(GW); very dark greenish gray (GLEY1 3/1)			
83						(81.8 - 85.0') Topock - Alluvium Deposits; Sandy silt with gravel			
_			ML :		•	(ML); brown (7.5YR 4/3)			
84			::			(83') reddish brown / moderate brown (5YR 4/4)			
			[:						
85 86			:-		1				
03					1	(85.0 - 87.0') Topock - Alluvium			
					}	Deposits; Silty sand with gravel (SM); brown (7.5YR 4/4)			
86			SM 🗒]				
-			:		1				
87						(87.0 - 87.8') Topock - Alluvium			
			мь 🗄			Deposits; Sandy silt with gravel			
88			SM :			(ML); brown (7.5YR 4/3) (87.8 - 88.3') Topock - Alluvium	-11		
					1	Deposits; Silty sand with gravel			
89					i	(SM); reddish brown / moderate brown (5YR 4/4)			
	(79.1 - 99.1)		ML 🗒		(79.1 - 99.1')	(88.3 - 90.5') Topock - Alluvium Deposits; Sandy silt with gravel			
90_	1.56 mins/fi				16.0" Steel Casing	(ML); reddish brown / moderate			
	1		<u> </u> ;			brown (5YR 4/4)		porary backfill material Cemex	-
	1					(90.5 - 95.0') Topock - Alluvium	# 3 in drill cuttings (see Photo	o Log).	
91	1		[:			Deposits; Silty sand with gravel (SM); reddish brown / moderate			
-	-				1	brown (5YR 4/4)			
91_	-		<u> </u> ;		1				
-	-		. [:	+ + +	1				
93			SM :		<u> </u>				
ļ -					}				
94					1				
			[:	1:1:	1				
95					[
]	(95.0 - 96.5') Topock - Alluvium Deposits; Sandy silt with gravel			
00	1		ML :			(ML); reddish brown / moderate			
96	1		:			brown (5YR 4/4)			
-	-		; ;		:	(96.5 - 99.3') Topock - Alluvium	-		
97	-			 	j	Deposits; Sandy silt with gravel (ML); brown (7.5YR 4/4)			
<u> </u>	-					(IVIL), DIOWII (1.311X 4/4)			
98			ML :						
L -			:	: : :					
99			1:	: : :					
	(99.1 - 119.4	I)			(99.1 - 119.4') (99.3 - 104.5') Topock - Alluvium	-		(99.1 - 119.4') 165 gallons
100	1.42 mins/ft		ML :		16.0" Steel Casing	Deposits; Sandy silt with gravel			of water used; 300 gallons of water recovered; 135
,	viations: U	SCS =	Unifie	ed Soil	Classificati	ion System, ft = feet, bas =	below ground surface ams	l = above mean sea leve	I. GW = groundwater

9/	ARCA	DI	S Des	<mark>ign & Consultar</mark> natural and t assets	су	Drilling Log		Sheet:	6 of 7
Date S	Started:	02/	10/202	20	S	urface Elevation:	501.6 ft amsl	Boring No.: IRZ	7-29
Date C	Completed:	02/	12/202	20	N	orthing (NAD83):	2102085.0		<u> </u>
Drilling		<u>Cas</u>	cade		E	asting (NAD83):	7615788.9	Client: PG&E	
Drilling	Method:	<u>Dua</u>	al Rota	ry		otal Depth:	128.5 ft bgs	Project: Final GW Rei	•
	ig Type:			DR-241		onductor Casing Diameter:		Location: PG&E Topoc	k, Topock, California
	Name:		Martir			rill Casing Diameter:	16 inches		
Drilling				<u>nezguit</u>		rill Bit:	15.5 & 17.5 Tricone	Project Number: RC00	0753.0051
	Pusher:		old La			epth to First Water:	47.75 ft bgs		
Rig Ge	eologist:	<u>D. (</u>	Cornell	/ E. Re	edner C	onverted to Well:	× Yes No		T
Depth	Drilling Ru		USCS	USCS	Casing	Description	5		5.00
(ft)	and Average Penetration F	ge Rate	Code	Class	Diameter	(See Pilot boring log for full geologic descriptions)	Drilling	Notes	Drilling Fluid
		-				(ML); reddish brown / moderate	(100.1 110.0) Observed ton	anaran baakil matarial	gallons of water gained
-					:	brown (5YR 4/4)	(100.1 - 110.0') Observed ten Cemex # 3 in drill cuttings (se	nporary backtill material ee Photo Log).	ganono or water gamea
101									
-									
102									
-			ML]				
_103									
L _									
104									
L									
105			GW			(104.5 - 105.0') Topock - Alluvium Deposits; Well graded gravel			
						(GW); very dark greenish gray			
106						(GLÉY1 3/1) (105.0 - 113.5') Topock - Alluvium			
100_						Deposits; Sandy silt with gravel (ML); reddish brown / moderate			
107						brown (5YR 4/4)			
107	-					(107') reddish brown (5YR 5/4)			
					•				
108									
109	-		ML			(109') reddish brown / moderate			
	(99.1 - 119.4				(99.1 - 119.4' 16.0" Steel) brown (5YR 4/4)			
110	1.42 mins/ft				Casing		(110.1 - 120.0') Observed ten	nnorary hackfill material	-
	-						Cemex # 3 in drill cuttings (se		
111	-								
<u> </u>									
112									
-	-				†				
113									
-						(112 F 117 Ol) Tangele Allert			
114					<u> </u>	(113.5 - 117.0') Topock - Alluvium Deposits; Silty sand with gravel	'		
L _					}	(SM); reddish brown / moderate brown (5YR 4/4)			
115					1	(/			
			SM		1				
116					1				
					<u> </u>				
117	1				}				
' ' ' '	1				1	(117.0 - 119.0') Topock - Alluvium	1		
440	1				1	Deposits; Silty sand (SM); brown (10YR 4/3)			
118			SM		}				
-	1				}				
119	1			tih ti		(119.0 - 121.0') Topock -	(119.0 - 128.1') Rods bouncir	ng likely due to bedrock.	-
- -	(119.4 - 128.		ML			Weathered Bedrock - conglomerate; Sandy silt with		•	(119.4 - 128.5') 230
120 Abbres	2.91 mins/ft viations: 11		= I Inif	ied Soil	Classificati	ion System. ft = feet. bas =	helow around surface ame	l = ahove mean sea leve	gallons of water used; 500

9/	ARCA	DIS	Design & Consul for natural and built assets	Itancy	Drilling Log			Sheet:	7 of 7
	Started:	02/10/2			urface Elevation:	501.6 ft amsl	Во	ring No.: <u>IF</u>	RZ-29
	Completed:				orthing (NAD83):	2102085.0			
Drilling		Casca			asting (NAD83):	7615788.9	Client		
_	Method:	<u>Dual R</u>	-		otal Depth:	128.5 ft bgs	Projec		emedy Phase 1
	g Type: Name:	Jon Ma	ost DR-2		onductor Casing Diameter: rill Casing Diameter:	18 inches	Locat	ion: PG&E Topo	ock, Topock, California
Drilling			. Amezgu		rill Bit:	15.5 & 17.5 Tricone	Project	ct Number: RC0	00753 0051
_ ~	Pusher:		<u>Lamon</u>		epth to First Water:	47.75 ft bgs	1 10,00	ot ivalilibor. <u>Itoo</u>	1007 00.0001
	eologist:		nell / E. F		onverted to Well:	× Yes No			
	5				Description				
Depth (ft)	Drilling Ru and Averag Penetration F	je 030			(See Pilot boring log for full geologic descriptions)		Drilling Notes		Drilling Fluid
		М			gravel (ML); reddish brown / moderate brown (5YR 4/4)	(120.1 - 128.5') Obser Cemex # 3 in drill cutt	rved temporary	backfill material	gallons of water recovered; 270 gallons of
121							ango (oco i noto	, 209).	water gained
					(121.0 - 123.0') Topock - Competent Bedrock -				
122				$\langle \rangle$	conglomerate; (2.5YR4/3)				
				\geqslant					
123		II	_ 💥	\	(123.0 - 124.0') No recovery (NR)	_			
-		NF	₹ 📉		(120.0 - 124.0) NO 1000VCI y (NIX)				
124	(119.4 - 128.5	5)	- 1	(119.4 - 128.5') 15.5"	(124.0 - 128.5') Topock -				
-	2.91 mins/ft			Open Hole	Competent Bedrock - conglomerate; (2.5YR4/3)				
125					Sorigiomorato, (2.011(1/0)				
l									
126									
407									
127					•				
400									
128				$\langle \! \rangle$					
129					End of Boring at 128.5 'bgs.				
130									
131									
132									
-									
133									
134									
-									
135									
136									
-									
137									
-									
138									
400									
139									
140									
	viations: U	SCS = L	Jnified So	oil Classificat	ion System, ft = feet, bgs =	below ground surface	e, amsl = abo	ve mean sea lev	el, GW = groundwater

9/-	ARCA	for natural built asset	l and		Well Const	ruction Log		Sheet: 1 of 7
Date S		02/18/2020			_Surface Elevation:	501.6 ft amsl	Well ID: IR	Z-29
l l	-	02/22/2020			_Shallow Well Elevation:	N/A		
Drilling		Cascade			_ Deep Well Elevation:	N/A	Client: PG&E	
Drilling Driller I		Dual Rotary Jon Martinez			_Northing (NAD83): _Easting (NAD83):	2102085.0	•	GW Remedy Phase 1 Topock, Topock, California
Drilling		A. & H. Amez	nuita		Easting (INADos). Borehole Diameter:	7615788.9 15.5-18 inches	Location. <u>PG&E</u>	тороск, гороск, Сашогна
Logge		D. Cornell / E.		er		47.75 ft bgs	Project Numbe	r: RC000753.0051
Editor:		Sean McGran		<u> </u>	_ Development End Date:		1 10,000 110.11.00	11.110000100.0001
Total D		128.5 ft bgs			 _Well Completion:			
_		is c		1,0				
Depth (ft)	Groundwat Sample II		epoo Sosn	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
_ 1		Topock - Fill Topock - Fill Topock - Alluvium Deposits	SM		(0.0 - 48.2') 10" Suregrip 17 Casing (0.0 - 4.3') Cemex #30 Mesh (30x70) (4.3 - 37.0') Portland Cement 3% Bentonite	(0.0 - 21,0') 18.0" Borehole	(4.3 - 37.0') 289.7 gallons	(0.0 - 4.3') 9 bags (-14%) Note: Lapis Lustre Sand (4.3 - 37.0') 310 gallons (7%) Note: Type I, II and V and Benseal
19		Deposits	O.VI					
	·	000 11 15 1					·	

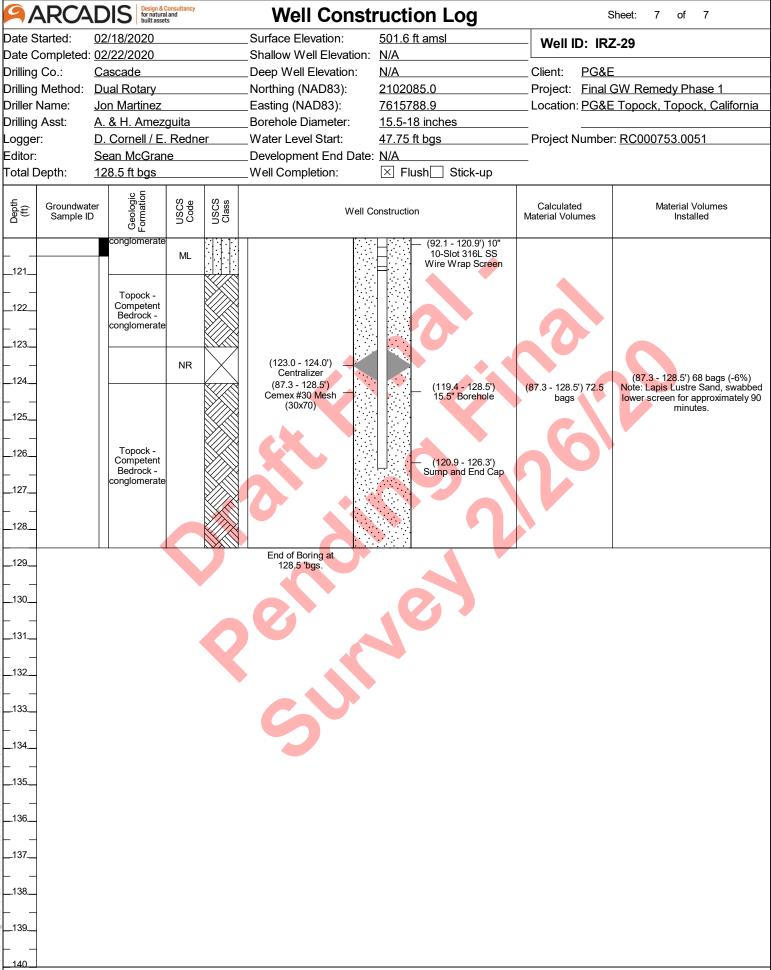
	DIS Design & for natura built asse	l and ts		Well Const	ruction Log	Š	Sheet: 2 of 7
Date Started:	02/18/2020			_Surface Elevation:	501.6 ft amsl	Well ID: IRZ	<u>.</u> 2-29
Date Completed:	02/22/2020			_Shallow Well Elevation:	N/A		
Orilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
Orilling Method:	Dual Rotary			_Northing (NAD83):	2102085.0	Project: Final 0	GW Remedy Phase 1
Oriller Name:	Jon Martinez			_Easting (NAD83):	7615788.9	Location: PG&E	Topock, Topock, Californ
Orilling Asst:	A. & H. Amez	guita		Borehole Diameter:	15.5-18 inches		
ogger:	D. Cornell / E.	-	er	Water Level Start:	47.75 ft bgs	Project Number	: RC000753.0051
Editor:	Sean McGran			 _Development End Date:		<i>-</i>	
Γotal Depth:	128.5 ft bgs			Well Completion:			
Groundwar Sample II		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
	Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits	SM NR ML SC SC		(4.3 - 37.0') Portland Cement 3% Bentonite (34.5 - 35.5') Centralizer	(0.0 - 21.0') 18.0" Borehole	(4.3 - 37.0') 289.7 gallons	(4.3 - 37.0') 310 gallons (7% Note: Type I, II and V and Bens
_ 37 _ 38 _ 39	Topock - Alluvium Deposits	ML		(37.0 - 40.4') Cemex_#60 Mesh (40x70)		(37.0 - 40.4') 8.3 bags	(37.0 - 40.4') 8 bags (-4%) Note: Lapis Lustre Sand

ARCA	DIS for natura built asse	Consultancy al and ts		Well Const	ruction Log	S	Sheet: 3 of 7
Date Started:	02/18/2020			_Surface Elevation:	501.6 ft amsl	Well ID: IRZ	7-29
Date Completed:	02/22/2020			_Shallow Well Elevation:	N/A		
Drilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
Drilling Method:	Dual Rotary			_Northing (NAD83):	2102085.0	Project: Final (GW Remedy Phase 1
Driller Name:	Jon Martinez			_Easting (NAD83):	7615788.9	Location: <u>PG&E</u>	Topock, Topock, California
Drilling Asst:	A. & H. Amez	-		_Borehole Diameter:	15.5-18 inches		
Logger:	D. Cornell / E.	. Redne	er	_Water Level Start:	47.75 ft bgs	Project Number	r: RC000753.0051
Editor:	Sean McGran	ne		_Development End Date:			
Total Depth:	128.5 ft bgs			_Well Completion:			
Groundwat Sample II	Geologic Formation	USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
		ML		(0.0 - 48.2') 10" — 💸 💸 Suregrip 17 Casing)		
41	Topock - Alluvium	SM		Suregrip 17 Casing	(21.0 - 42.0') 18.0"		
	Deposits Topock - Alluvium	ML			Borehole		
42	Deposits Topock -						
43	Alluvium Deposits	SC					
44 —	Topock - Alluvium Deposits /	SM					
45	Deposits /						
46							
5 47 —							
	Topock - Alluvium	SM					
48_	Deposits			(49.2 77.0!) 40"			
<u> </u>				(48.2 - 77.0') 10" — 10-Slot Screen			
H-49 - IRZ-29-VAS 47-52	i-						
(4400 ppb)							(40.4 - 79.0') 92 bags (38%) Note: Lapis Lustre Sand, used >20%
14:46				(40.4 - 79.0') Cemex:::	(42.0 - 58.8') 16.0"	(40.4 - 79.0') 66.8	of the calculated volume due to
				#30 Mesh (30x70)	Borehole	bags	potential voids forming during drilling. Swabbed lower screen for
_51		•					approximately 105 minutes.
<u> </u>							
52	Topock -	SM					
	Alluvium Deposits	SIVI			□ ∴□		
_53							
					H		
54_							
_55							
56	Topock -				$\exists :: \exists$		
	Alluvium Deposits	SM					
57	Deposits						
					H. J		
58_					Li∷i		
59_					出		
					(58.8 - 79.1') 16.0" Borehole		
60		ML			Dolenole		

9/	ARCA	DIS for natura	al and ets		Well Const	ruction Log		Sheet: 4 of 7
	Started:	02/18/2020			_Surface Elevation:	501.6 ft amsl	Well ID: IR	Z-29
	-	02/22/2020			_Shallow Well Elevation:	N/A	0: 1 500	
Drilling	-	Cascade Dual Batan			_ Deep Well Elevation:	N/A	Client: PG&	
_	g Method: Name:	Dual Rotary Jon Martinez			_Northing (NAD83): _Easting (NAD83):	2102085.0 7615788.9	-	GW Remedy Phase 1 E Topock, Topock, California
Drilling		A. & H. Amez			Borehole Diameter:	15.5-18 inches	Location. <u>F Gx</u>	E TOPOCK, TOPOCK, California
Logge		D. Cornell / E		er	Water Level Start:	47.75 ft bgs	Project Numbe	er: RC000753.0051
Editor:		Sean McGrar			_Development End Date			
Total D	otal Depth: <u>128.5 ft bgs</u>				Well Completion:	⊠ Flush Stick-up)	
Depth (ft)	Groundwat Sample II		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
616263646566676667687071727172737575	- IRZ-29-VAS 62-67 (2400 ppb) 12/17/2019 10:00		ML ML SM		(40.4 - 79.0') Cemex #30 Mesh (30x70)	(58.8 - 79.1') 16 Borehole	5.0" (40.4 - 79.0') 66.8 bags	(40.4 - 79.0') 92 bags (38%) Note: Lapis Lustre Sand, used >20% of the calculated volume due to potential voids forming during drilling. Swabbed lower screen for approximately 105 minutes.
76 76 77 78		Topock - Alluvium Deposits Topock - Alluvium Deposits	ML SM			— (77.0 - 92.1') 1 Suregrip 17 Cas	0" ing	
79	-	Topock -			(70.000.41) 0	 	5.0" (79.0 - 80.4') 2.3	(79.0 - 80.4') 2 bags (-13%)
80		Alluvium Deposits	ML		(79.0 - 80.4') Cemex #60 Mesh (40x70)	(79.1 - 99.1) 10	bags	Note: Lapis Lustre Sand

9/-	ARCA	DIS for build	ign & Consultancy natural and t assets		Well Const	ruction Log	:	Sheet: 5 of 7
Date S		02/18/2020			_Surface Elevation:	501.6 ft amsl	Well ID: IR	Z-29
	-	02/22/2020)		_Shallow Well Elevation:			_
Drilling		Cascade			_ Deep Well Elevation:	N/A	Client: PG&I	
_		Dual Rotar	•		Northing (NAD83):	2102085.0	•	GW Remedy Phase 1
Driller I		Jon Martin			_Easting (NAD83): Borehole Diameter:	7615788.9 15.5-18 inches	Location: <u>PG&I</u>	E Topock, Topock, California
Drilling		A. & H. Am D. Cornell	_	or.	Borenole Diameter. Water Level Start:	47.75 ft bgs	— Project Number	r: RC000753.0051
Logger Editor:		Sean McG		<u> </u>	vvaler Level Start. Development End Date:	_	Froject Numbe	1. <u>NC000733.0031</u>
Total D		128.5 ft bg			Well Completion:			
								<u> </u>
Depth (ft)	Groundwat Sample II		USCS	USCS		construction	Calculated Material Volumes	Material Volumes Installed
		Topock Alluviur Deposit	n ML		<u> </u>	(77.0 - 92.1') 10" Suregrip 17 Casing		
		Topock	- GW					(80.4 - 85.9') 11 buckets (47%) Note: Pel-Plug 3/8" TR30, used
82		Alluviur Deposit			(80.4 - 85.9') Bentonite seal —			>20% of the calculated volume due
					pellets (82.5 - 83.5')			to potential voids forming during drilling.
03		Topock Alluviur	- n ML		Centralizer		(80.4 - 85.9') 7.5 buckets	
84		Deposit	s					
85								
86		Topock Alluviur			000	0 0000		(85.9 - 87.3') 4 bags (67%)
		Deposit			(85.9 - 87.3') Cemex		(85.9 - 87.3') 2.4	Note: Lapis Lustre Sand, used >20%
_87					#60 Mesh (40x70)		bags	of the calculated volume due to potential voids forming during
		Topock Alluviur						drilling.
88		Deposit Topock						
		Alluviur Deposit	n .					
89	IRZ-29-VAS 87-92							
<u> </u>	(<0.033 U	Alluviur	n ML			(79.1 - 99.1') 16.0"		
90	ppb) 12/17/2019	Deposit	S			Borehole		
<u> </u>	14:41							
91								
92		_				(00.4.400.01) 40"		
⊩ ⊣		Topock				(92.1 - 120.9') 10" 10-Slot 316L SS		
93		Alluviur Deposit				Wire Wrap Screen		(87.3 - 128.5') 68 bags (-6%)
<u> </u>					(87.3 - 128.5') Cemex #30 Mesh — ∵ ∵		(87.3 - 128.5') 72.5	Note: Lapis Lustre Sand, swabbed
94					(30x70)		bags	lower screen for approximately 90 minutes.
-								
95								
 		Topock Alluviur				$\exists : \exists$		
96		Deposit						
97						用 為		
<u> </u>		Topock						
98		Alluviur Deposit				· 日		
H -								
99								
 		Topock Alluviur				(99.1 - 119.4') 16.0" Borehole		
100		000 11 1		<u> 1.11-1.11-1</u>		<u> Ч.:-:Н</u>	<u> </u>	1 1 0 0 1 1

Date Starter Corporation Completed 9/-	ARCA	DIS Design & for nature built asso	Consultancy al and ets		Well Const	ruction Log	5	Sheet: 6 of 7	
Date Completed: 12/22/20/20 Shatlow Well Elevation: NA								Well ID: IR	Z-29
Dalling Mathod: Dual Rolaring Northing (NADB3): 2102085.0		-							
Daller Name	_								
Dolling Asts: A. 8. H. Amezguita Boreholo Diameter: 15.5.15 inches Project Number: RC000753.0051	_		•			- , ,		-	
Document Document Document Exercises Document Document Exercises Document D						,		Location: <u>PG&E</u>	<u> Topock, Topock, California</u>
Editor Saan McGrane Development End Date NA	_								D0000750 0054
Total Depth 128.5 ft bgs					er		•	Project Numbe	r: <u>RC000753.0051</u>
### Construction #### Construction ####################################				<u>1e</u>					
Capocide Capocide	Total L	осрит.				_ vvcii compiction.	∴ i idaii	1	
101	Depth (ft)			USCS	USCS	Well C			
	102103104105106107108109110		Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium	GW		Cemex #30 Mesh	10-Slot 316L SS Wire Wrap Screen		Note: Lapis Lustre Sand, swabbed lower screen for approximately 90
Bedrock - Wi	113 114 115 116 117 118	112-117 (760 ppb) 12/18/2019 15:12 IRZ-29-VAS 116-120.5 (23 ppb) 12/19/2019	Topock - Alluvium Deposits Topock - Alluvium Deposits Topock -	SM					
	120			IVIL					



9 ARC4	DIS	for natural and built assets		Bo	ring L	og		Sh	eet: 1 of	7
Date Started:	01/07/2				Elevation:		Borin	g No.:	IRZ-31 Pi	lot
Date Completed					g (NAD83)					
Orilling Co.:	Cascac			_	(NAD83):	7615789.1	_ Client:	PG&E		
Orilling Method:	Sonic [_		Total D	•	127 ft bgs	_ Project:		W Remedy Ph	
Orill Rig Type:		nic Truck Mou			le Diamete		_ Location:	PG&E	Topock, Topoc	k, Californ
Oriller Name:	Eddie F	delaria / F. Sa		-		er: 47.25 ft bgs 4 inch x 10 ft Core Barrel	- - Project N	umbor:	RC000753.00	<u> </u>
Orilling Asst:	Joe La				ng Interval:		_ Projectiv	umber.	KC000733.003) I
Logger: Editor:	Grant \			-	ted to Well		_			
	<u>Oranic v</u>	/ Villiora			T T					
Depth (ft) (Recovery (in)	Sieve ample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Flu
- 1				NR	(0.0	0 - 8.0') No recovery (NR); see drilling not	es		(0.0 - 8.0') Core not collected drilled with 10-inch conductor casing to 8 ft. bgs.	(0.0 - 127 No water u
- 7					(8.0) - 17.0') Topock - Alluvium Deposits; We	ll graded grav	el with	(8.0 - 22.0')	
-9 -10					fine	nd (GW); yellowish brown / moderate yello); granules to very large pebbles, angular to very coarse grained sand, angular to see clay; little coarser clasts composed of dist	subround; trac	e silt;	Normal drilling.	
_11										
_12 			Topock - Alluvium Deposits	GW						
_14										
.15										
.16										
_17										
			Topock - Alluvium Deposits	SM	(SM ver sor	.0 - 27.0') Topock - Alluvium Deposits; Si /l); yellowish brown / moderate yellowish by yfine grained to very coarse grained, ang ne granules to large pebbles, angular to so ce clay; some coarser clasts composed of ist; iron oxide staining	orown (10YR 5 ular to subrou subround; little	5/4); nd; silt;		
20						bgs = below ground surface, am			1	
										aroundura

/	4K(ADIS	for natural and built assets		B0	ring L	og		She	et: 2 of	7
Date S						Elevation:		Borin	ng No.:	IRZ-31 Pi	ilot
	•	ted: <u>01/11/2</u>			-	g (NAD83)					
Drilling		Cascac			_	(NAD83):		_ Client:	PG&E		
Drilling			•		Total De	•	127 ft bgs	_ Project:		N Remedy Ph	
Drill Ri			ic Truck Mou	<u>int</u>		e Diamete		_ Location	: <u>PG&E I</u>	opock, Topoc	ck, California
Driller Drilling		Eddie F	delaria / F. Sa	ndoval	-		ter: 47.25 ft bgs 4 inch x 10 ft Core Barrel	- Droiget N	Jumbor: I	RC000753.00	 5.1
Drilling		J. Cand Joe Lai		indovai	-	ıg Method: ıg Interval:		_ Project i	vumber. <u>r</u>	RC000753.00	<u> </u>
Logge Editor:		Grant V			-	ed to Well		_			
Luitoi.		<u>Orant v</u>	V IIII OI G		1	1 1					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
21	120			Topock - Alluvium Deposits	SM					(22.0 - 25.0') Soft drilling. (25.0 - 112.0') Rough drilling.	
27				Topock - Alluvium Deposits	SW-SM	silt ine	.0 - 31.0') Topock - Alluvium Deposits; W and gravel (SW-SM); dark yellowish brow e grained to very coarse grained, angular to nules to large pebbles, angular to subang y; some coarser clasts composed of meta	vn (10YR 4/4) o subangular ular; little silt idiorite); very ;; and ;; trace		
32 33 34 35 36 37 38	120			Topock - Alluvium Deposits	GW	sar 5/4 coa	.0 - 39.5') Topock - Alluvium Deposits; W. d (GW); yellowish brown / moderate yellc); granules to large pebbles, angular; and arse grained sand, angular to subround; tr d coarser clasts composed of metadiorite;	owish brown (very fine to v ace silt; trace	(10YR ery e clay;		
<u> </u>							E 44.00 Tong-le Allende D	all are de l	evelti		
40					GW-GM	1	1.5 - 44.0') Topock - Alluvium Deposits; W				<u> </u>
Abbre	viations	s: USCS = L	Inified Soil Cl	assificatioı	n Systen	n, ft = feet,	bgs = below ground surface, am:	sl = above	mean sea	a level, GW =	groundwater,

/-	4RC4	WID	for natural and built assets		DU	mıy	Log		One	eet: 3 of	7
	Started:	01/07/			Surface	Elevat	ion: <u>502.1 ft amsl</u>	Borin	a No:	IRZ-31 Pi	ilot
	Completed				Northing		•	_			<u></u>
Orilling		<u>Casca</u>			Easting	•	•	_ Client:	PG&E		
_	Method:		Drilling		Total De	•	<u>127 ft bgs</u>	_ Project:		W Remedy Ph	
	g Type:		nic Truck Mou		Borehol			_ Location:	PG&E	<u> Fopock, Topoc</u>	k, Califor
	Name:		Ramos				Water: 47.25 ft bgs				
•	Asst:		<u>delaria / F. Sa</u>		Samplin	•		_ Project N	lumber:	RC000753.00	51
ogge			antham		Samplin	•		_			
Editor:		Grant	Willford		Convert	ea to v	Vell: ⊠ Yes ☐ No				ı
Depth (ft)	Recovery (in)	Sieve ample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling F
_41				Topock -			silt and sand (GW-GM); brown (10YR 5/3); pebbles, angular to subangular; some very f grained sand, angular to subangular; little si mica; little coarser clasts composed of meta iron oxide staining	ne to very coa lt; trace clay; t	rse		
_42 _ _43	120			Alluvium Deposits	GW-GM		(43'); iron oxide staining; 2-inch lense of ligh decrease in granules and pebbles, increase	t gray materia in sand	,		
_44 _ _45				Topock -	SM		(44.0 - 46.0') Topock - Alluvium Deposits; Si (SM); brown (7.5YR 5/4); fine grained to ver subangular to subround; some grained to to angular; little silt; some coarser clasts comp	/ coarse graine	ed,		
_ _46				Deposits			dry to moist (46.0 - 55.0') Topock - Alluvium Deposits; Si	It with gravel (ML):		
_47	IRZ	<u>′</u> -31-SS-					brown (7.5YR 5/4); no plasticity; some grant pebbles, angular to subangular; little very fin grained sand, angular to subangular; little cl	lles to very large e to very coars ay; little coars	ge e	(47.0 - 52.0')	
_ _48	1/	45-50 12/2020 08:28					composed of metadiorite; dry to moist; iron o	oxide staining		Attempted to collect groundwater	
_49										sample interval did not produce.	
_50	60		IRZ-31-VAS- 48-53	Topock -							
_51			(2000 ppb) 1/8/2020 15:45	Alluvium Deposits	ML						
_52	1/2	Z-31-SS- 50-55 12/2020 08:36					(52'); little granules to very large pebbles, ar trace clay; moist	gular to subar	ngular;		
_54											
_55	60						(55.0 - 57.0') Topock - Alluvium Deposits; Si (GM); brown (7.5YR 5/4); granules to large;	Ity gravel with	sand		
_56 _57				Topock - Alluvium Deposits	GM		some silt; little very fine to very coarse grain subangular; trace clay; some coarser clasts metadiorite; dry to moist; iron oxide staining	ed sand, angu	ar to		
_58	1/	Z-31-SS- 55-60 12/2020 08:45		Topock - Alluvium Deposits	SP-SM		(57.0 - 58.5') Topock - Alluvium Deposits; Posit and gravel (SP-SM); brown (7.5YR 5/4); fine grained, subangular to subround; some pebbles, angular; little silt; some coarser clametadiorite; moist; iron oxide staining	very fine grain granules to la	ed to rge		
_59	120			Topock - Alluvium Deposits	GM		(58.5 - 60.5') Topock - Alluvium Deposits; Si (GM); brown (7.5YR 5/4); granules to very la some very fine to very coarse grained sand, subangular; some silt; some coarser clasts metadiorite; dry to moist; iron oxide staining	rge pebbles, a angular to	sand ingular;		
	viations: L	JSCS = I	Jnified Soil Cl	assification	System	n, ft = fe	eet, bgs = below ground surface, am	sl = above	mean se	a level. GW =	groundwa

1 /-	4K(AD	115	for natural and built assets		Bo	rıng	Log		Sh	eet: 4 of	7
	tarted:		1/07/2			Surface	Eleva	ion: <u>502.1 ft amsl</u>	Borin	a No	: IRZ-31 P	ilot
		ted: <u>0</u>	1/11/2	2020		Northing	- '	•			. <u> </u>	<u></u>
Drilling			ascac			Easting	•	•	Client:	PG&E		
•	Metho			Drilling		Total De		127 ft bgs	•		W Remedy Ph	
-	д Туре			<u>ic Truck Μοι</u> -		Borehol			Location:	PG&E	Topock, Topod	ck, Califor
	Name:			Ramos				Nater: 47.25 ft bgs				
Drilling				<u>delaria / F. Sa</u>		•	•		Project N	umber:	RC000753.00	51
_ogger				ntham Nillford		Samplir Convert	•		-			
Editor:		<u> </u>	iani v	Villford		Conven	ed to t	Vell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Siev Sampl		Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling F
					Topock -	GM		(60.5 61.0") Topodk Allunium Doposits: W.	ll graded con	d with		
61					Alluvium	SW-SM		(60.5 - 61.0') Topock - Alluvium Deposits; We silt (SW-SM); brown (7.5YR 5/4); very fine gra	ained to coars	se		
					Deposits	/		grained, angular to subround; little granules t angular to subangular; little silt; trace coarser	o medium pel clasts comp	obles, osed of		
_62		IRZ-31-	00				100	metadiorite; moist to wet (61.0 - 67.0') Topock - Alluvium Deposits; Sili				
		60-6	5					(GM); brown (7.5YR 5/4); granules to very lar	ge pebbles, a	ngular		
_63		1/12/20 09:01					Pole	to subangular; some very fine to very coarse subangular to subround; some silt; some coarse	grained sand, rser clasts			
	120						675	composed of metadiorite; moist to wet				
_64					Topock - Alluvium	GM						
					Deposits		12 F					
_65												
							12 P					
_66							SHK					
. 4							P					
_67		IRZ-31-	00				<u> </u>					
		65-70	0		Topock - Alluvium	SM		(67.0 - 68.0') Topock - Alluvium Deposits; Sili (SM); brown (7.5YR 5/4); very fine grained to	verv coarse o	rained		
_68		1/12/20 09:13			Deposits			angular to subround; some granules to very la to subangular; some silt; some coarser clasts	arge pebbles, s composed c	angular f		
							60	metadiorite; moist; iron oxide staining (68.0 - 74.5') Topock - Alluvium Deposits; Sili		/		
_69							6	(GM); brown (7.5YR 5/4); granules to very lar	ge pebbles, a	ngular		
. 4							6	to subangular; some very fine to very coarse angular to subround; some silt; some coarse				
_70							6	metadiorite; trace mica; wet				
- 4												
_71					Topock -	1 Y	Pole					
. 4					Alluvium Deposits	GM	12 C					
_72	120	IRZ-31-	SS-									
. 4		70-7	5				12 F	. (72.5'); dry to moist				
_73		09:20						(72.5), dry to moist				
- 4							12 P	(73.5') greenish gray (GLEY1 5/5GY); dry				
_74				IRZ-31-VAS-			1113	, (1.0.0) groundingray (GLETT 0/001), ury				
- 4				72-77 (480 ppb) 1/9/2020		-	183	(74.5 - 78.5') Topock - Alluvium Deposits; Sili	v gravel with	sand		
_75				1/9/2020 13:10			601	(GM); brown (7.5YR 5/4); granules to very lar	ge pebbles, a	ngular		
- 4							[3]	to subangular; some very fine to very coarse subangular to subround; little silt; some coars				
_76					Topost			of metadiorite; wet; iron oxide staining				
- 4					Topock - Alluvium	GM	[9,9]					
_77		IRZ-31-			Deposits		[. [.					
- 4		75-80 1/12/20	0				19/9					
_78		09:35										
- 4	120							(78.5 - 80.0') Topock - Alluvium Deposits; We	ell graded san	id with		
_79					Topock -	C/4/ C1:		silt and gravel (SW-SM); brown (7.5YR 5/4);	ine grained to	very		
					Alluvium Deposits	SW-SM		coarse grained, angular to subround; some g pebbles, angular; little silt; some coarser clas				
80	2-1			I:E 1 O " C:	: c ··	0 1	<u> </u>	metadiorite; wet	1 !		- 11 - 0144	
								eet, bgs = below ground surface, ams				groundwa
)pb = l	parts p	er billio	n, NF	R = no recove	ery, blue wa	ter table	symb	ol represents depth to water measure	d during th	e first V	AS interval	

	477	ADIS	for natural and built assets		DU	mig	Log		311	eet: 5 of	7
	Started			•	Surface		<u> </u>	Borin	g No.	: IRZ-31 P	ilot
	Comple				Northin		•	_			
Orilling		Casca			Easting	•		_ Client:	PG&E		
_	Metho		<u>Drilling</u>		Total D	•	127 ft bgs	Project:		W Remedy Ph	
	g Type		nic Truck Mou		Boreho Donth t			_ Location:	PG&E	Topock, Topod	ск, Califo
	Name: ı Asst:		Ramos ndelaria / F. Sa		Depın ı Samplir		Vater: 47.25 ft bgs od: 4 inch x 10 ft Core Barrel	- Droiget N		RC000753.00	5 1
.ogge			antham		Samplir Samplir	•		_ Project iv	umber.	KC000755.00	31
Editor:			Willford		Conver	•		-			
zanor.		<u> </u>	- Trimoru	_	1	1					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling I
 _81 _82							(80.0 - 86.5') Topock - Alluvium Deposits; Sil (GM); brown (7.5YR 5/4); granules to very lar some fine to very coarse grained sand, angul silt; some coarser clasts composed of metad staining	ge pebbles, a ar to subroun	ngular; d; some		
_ 83 _	120	IRZ-31-SS- 80-85 1/12/2020 09:39		Topock - Alluvium Deposits	GM			Ö			
_84 _ _85							(84'); dry to moist				
_65 _ _86							12				
87				Topock -			(86.5 - 88.0') Topock - Alluvium Deposits; Sil (SM); brown (7.5YR 5/4); very fine grained to	ty sand with g	ravel rained.		
88		IRZ-31-SS- 85-90 1/12/2020 09:48		Alluvium Deposits	SM		angular to subround; some granules to large subround; little silt; some coarser clasts com wet	pebbles, angi posed of meta	ular to adiorite;		
89 90				Topock - Alluvium Deposits	SM		(88.0 - 91.0') Topock - Alluvium Deposits; Sil (SM); brown (7.5YR 5/4); very fine grained to subangular to subround; some small to very langular to round; little silt; trace small cobble staining	very coarse g arge pebbles	rained,		
91							(91.0 - 97.0') Topock - Alluvium Deposits; Sil	ty gravel with	sand		
-92_ -93_ -	120	IRZ-31-SS- 90-95 1/12/2020 09:51		Topock -			(GM); yellowish brown / moderate yellowish to granules to very large pebbles, angular to sulfine to very coarse grained sand, angular to some coarser clasts composed of metadiorit	oround; some ubround; som	very ne silt;		
_94 _ _95				Alluvium Deposits	GM						
_96 - _97		IRZ-31-SS-					(97.0 - 98.5') Topock - Alluvium Deposits; Sil	ty sand with a	ravel		
_ _98	120	95-100 1/12/2020 09:53		Topock - Alluvium Deposits	SM		(SM); brown (7.5YR 5/4); very fine grained to subangular to subround; some silt; little gran angular to subround; little coarser clasts com moist to wet; iron oxide staining	very coarse gules to large pure posed of met	rained, ebbles, adiorite;		
_99 _ 				Topock - Alluvium Deposits	GM		(98.5 - 100.5') Topock - Alluvium Deposits; S (GM); brown (7.5YR 5/4); granules to very lar to subangular; and very fine to very coarse grabangular to subround; little silt; some coars of metadiorite; trace mica; moist; iron oxide s	ge pebbles, a ained sand, ser clasts con	ngular		
	diation	: USCS =	I Inified Soil C	assification	Systen	$\frac{1 \cdot 1 \cdot \Phi}{1 \cdot 1}$	eet, bgs = below ground surface, am:		mean se	ea level GW =	aroundw

9/-	AKC	ADIS	for natural and built assets		Во	ring	Log		She	et: 6 of	7
Date S	Started:	01/07/2	2020		Surface	Elevat	on: <u>502.1 ft amsl</u>	Borin	a No .	IRZ-31 Pi	lot
Date C	Comple	ted: <u>01/11/2</u>	2020		Northing	g (NAD	83): <u>2101940.2</u>		g 110	II COLLI	<u>10t</u>
Drilling	Co.:	Cascac	de		Easting	(NAD8	3): <u>7615789.1</u>	Client:	PG&E		
Drilling	Metho	od: <u>Sonic D</u>	<u> Drilling</u>		Total De	epth:	127 ft bgs	Project:		V Remedy Ph	
Drill Ri	• • •		<u>ic Truck Mou</u>		Borehol			Location:	PG&E T	opock, Topoc	k, California
Driller I					-		Vater: 47.25 ft bgs	-			
Drilling			<u>delaria / F. Sa</u>		Samplin	•		Project N	umber: <u>F</u>	RC000753.005	51
Logge		<u>Joe Lai</u>			Samplin	•		-			
Editor:		Grant V	Villford		Convert	ed to V	/ell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
					GM	PY P					
	120	IRZ-31-SS- 100-105 1/12/2020 09:58	IRZ-31-VAS- 102-107 (2300 ppb) 1/10/2020 10:35	Topock - Alluvium Deposits	GW		(100.5 - 107.0') Topock - Alluvium Deposits; with sand (GW); yellowish brown / moderate (10YR 5/4); granules to very large pebbles, ar and very fine to very coarse grained sand, sub subround; trace silt; some coarser clasts commetadiorite; trace mica; dry to moist; iron oxid (102') brown (7.5YR 5/4); moist	yellowish bro ngular to suba pangular to nposed of	wn l		
106 107		IRZ-31-SS- 105-110					(105.5'); dry to moist (107.0 - 114.0') Topock - Alluvium Deposits;	Silty gravel wi	th sand		
108 109 110		1/12/2020 10:10		_			(GM); granules to very large pebbles, angular very fine to very coarse grained sand, angular silt; some coarser clasts composed of metad moist to wet; iron oxide staining (108.5'); dry to moist	to subround;	little		
	120	IRZ-31-SS- 110-115		Topock - Alluvium Deposits	GM		(111.5') grayish brown (10YR 5/2); dry (112') brown (7.5YR 5/4); dry to moist			(112.0 - 114.0') Drill rods	
113		1/12/2020 10:13								chattering.	
114				L	<u> </u>						
							(114.0 - 120.3') Topock - Weathered Bedrock Silty sand with gravel (SM); reddish brown (2. grained to very coarse grained, subangular to	5YR 4/4); ver subround; so	y fine ome	(114.0 - 120.0') Soft drilling.	
115 _116_							granules to very large pebbles, angular to sub some coarser clasts composed of metadiorite staining (115'); wet	oangular; little e; moist; iron	silt; oxide		
117 118		IRZ-31-SS- 115-120 1/12/2020 10:15	IRZ-31-VAS- 115-120 (2500 ppb) 1/11/2020 11:33	Topock - Weathered Bedrock - conglomerat	SIVI		(117.5'); moist				
119	120						eet. bas = below around surface. ams				

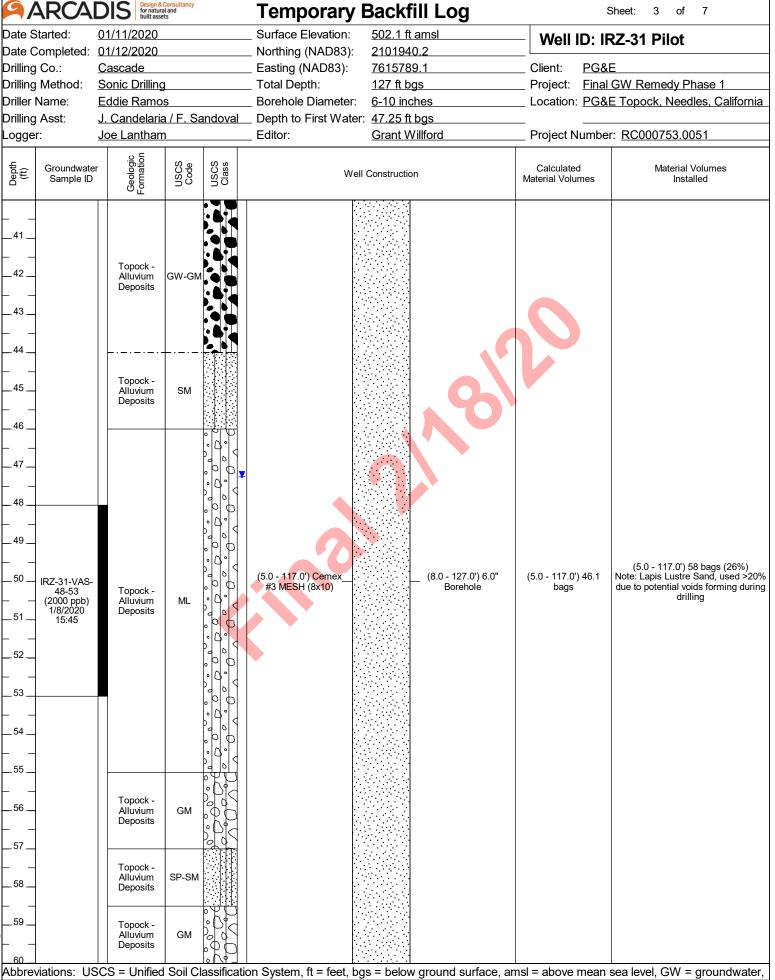
ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval

9/	ARC	ADIS	for natural and built assets		Во	ring	Log	9		She	et: 7 of	7
Date S	started:	01/07/2	2020		Surface	Elevat	ion:	502.1 ft amsl	Borin	a No .	IRZ-31 Pi	lot
	-	ed: <u>01/11/2</u>			Northin			2101940.2	_			<u></u>
Drilling		Casca			Easting	•	33):	7615789.1	Client:	PG&E		
_	Metho		-		Total De	-		127 ft bgs	Project:		V Remedy Pha	
	g Type Name:	Eddie I	<u>nic Truck Μοι</u> Ramos		Borehol			6-10 inches 47.25 ft bgs	_ Location:	PG&E I	opock, Topoc	k, Calliornia
Drilling			delaria / F. Sa		Samplir			4 inch x 10 ft Core Barrel	- Proiect N	umber: F	RC000753.005	 51
Logge		Joe La			Samplir	_		Continuous				•
Editor:		Grant \	Willford		Convert	-						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
							(120.3 brown	- 127.0') Topock - Competent Bedrock (7.5YR 5/4); dry, friable, pulverized	c - conglomer	ate;	(120.0 - 122.0') Drill rods chattering.	
122												
123									0		(122.0 - 127.0') Rough drilling.	
	120			Topock - Competent								
124				Bedrock - conglomerat								
20 13:04									•			
125								63				
OF							•	End of Boring at 127.0 'bg	IS.			
E									,			
- 129_							>	•				
				X		•						
132					7							
133												
134												
135_ - -												
136												
137												
138												
5 _ 139 _												
140												
<u> </u>								s = below ground surface, ams esents depth to water measure				groundwater,

Date Started: 0.1/11/2020 Surface Elevation: 502. 1f amal Well ID: IR2-31 Pilot Delling Date Completed: 0.1/12/2020 Northing (NAD83): 2.0 10/19/40.2 Client: PROJECT Final GW Remety Phase 1. Drilling Method: Cascade Easting (NAD83): 7.515789.1 Client: PGAE Topics. Final GW Remety Phase 1. Drilling Method: Scale Remos 1.27 ft bgs. Project. Final GW Remety Phase 1. Location: PGAE Topics. Needles, California 1. Logger: Lip Lambram Bedilor: Bedilor: Bedilor: Project. Final GW Remety Phase 1. Location: PGAE Topics. Needles, California 1. Lip Lambram Bedilor: Bedilor: Bedilor: Project. Final GW Remety Phase 1. Location: PGAE Topics. Needles, California 1. Lip Lambram Bedilor: Bedilor: Bedilor: Project. Final GW Remety Phase 1. Location: PGAE Topics. Needles, California 1. Lip Lambram Bedilor: Bedilor: Bedilor: Project. Final GW Remety Phase 1. Location: PGAE Topics. Needles, California 1. Lip Lambram Bedilor: Bedilor: Bedilor: Bedilor: Bedilor: Bedilor:	9/	ARCA	DIS for no built	n & Consultancy atural and assets		Temporary	Backfill Log		Sheet: 1 of 7
Delling Co.: Cascade								Well ID: I	RZ-31 Pilot
Dilling Method: Dilling Asst. Dogser: Drilling Asst. Drilling Asst		-		0				Client PG8	,F
Diller American	1	-		na					
Delling Asst: J. Candelaria / F. Sandoval Depth to First Water: 47.25 ft bgs Logger: Joe Lantham Editor: Grant Willford Project Number: RC000753.0051				•		-			
Commitment Com	Drilling	g Asst:			andoval	Depth to First Water			•
1	Logge	er:	Joe Lantha	am		Editor:	Grant Willford	Project Numbe	er: RC000753.0051
Plate Plate Note: Since plates with BMPs in plates (0.5 - 5.0') Cernex (0.5 - 5.0') Cerne	Depth (ft)		Geologic Formation	USCS	USCS Class		l Construction		
1						(0.0 - 0.5') Steel Plate	~		
- 7	_ 3 _ _ 3 _ _ 4 _			NR		(0.5 - 5.0') Cemex	(0.0 - 8.0') 10.0" Borehole	(0.5 - 5.0') 4.9 bags	(0.5 - 5.0') 5 bags (2%)
	_ 6 7 8 9 10 11 12 13 14 15 16 17 18 18 18		Alluvium Deposits Topock Alluvium	GW S SM		(5.0 - 117.0') Cemex_#3 MESH (8x10)	(8.0 - 127.0') 6.0" Borehole	bags	Note: Lapis Lustre Sand, used >20% due to potential voids forming during
il 20		viations: 119	SCS - Unifi	ed Soil C	laccificat	tion System ft - feet ho	as = below ground surface	amel – ahove mean	sea level GW = groundwater

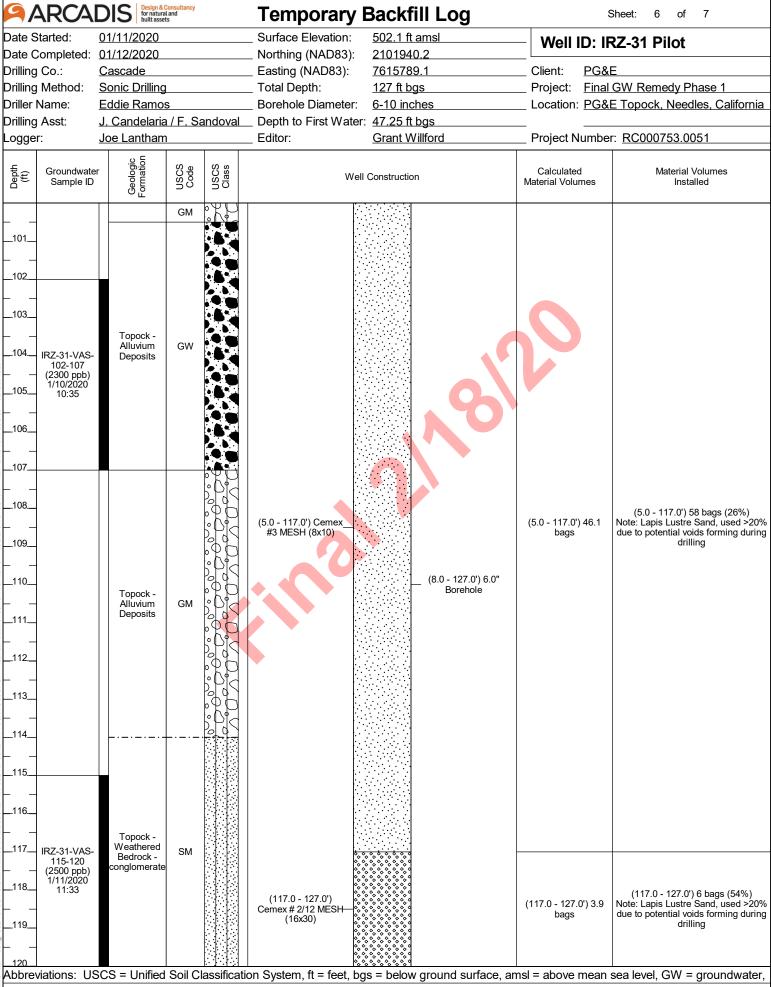
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

ARCADIS Granatural and built assets **Temporary Backfill Log** Sheet: Surface Elevation: 01/11/2020 502.1 ft amsl Date Started: Well ID: IRZ-31 Pilot Date Completed: 01/12/2020 Northing (NAD83): 2101940.2 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615789.1 Client: PG&E Drilling Method: Sonic Drilling Total Depth: 127 ft bgs Project: Final GW Remedy Phase 1 Driller Name: **Eddie Ramos** Borehole Diameter: 6-10 inches Location: PG&E Topock, Needles, California Drilling Asst: J. Candelaria / F. Sandoval Depth to First Water: 47.25 ft bgs Joe Lantham Editor: **Grant Willford** Project Number: RC000753.0051 Logger: Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed 21 22 23 Topock -Alluvium SM Deposits 25 26 28 Topock -Alluvium Deposits 29 SW-SM (5.0 - 117.0') 58 bags (26%) (5.0 - 117.0') Cemex (8.0 - 127.0') 6.0" (5.0 - 117.0') 46.1 Note: Lapis Lustre Sand, used >20% 30 #3 MESH (8x10) Borehole due to potential voids forming during drilling 31 32 33 35 Topock -Alluvium Deposits 36 37 38 39 GW-GM Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,



ARCADIS Design & Consumor for natural and built assets **Temporary Backfill Log** Sheet: 01/11/2020 Surface Elevation: 502.1 ft amsl Date Started: Well ID: IRZ-31 Pilot Date Completed: 01/12/2020 Northing (NAD83): 2101940.2 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615789.1 Client: PG&E Drilling Method: Sonic Drilling Total Depth: 127 ft bgs Project: Final GW Remedy Phase 1 Driller Name: **Eddie Ramos** Borehole Diameter: 6-10 inches Location: PG&E Topock, Needles, California Drilling Asst: J. Candelaria / F. Sandoval Depth to First Water: 47.25 ft bgs Joe Lantham Editor: **Grant Willford** Project Number: RC000753.0051 Logger: Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed GM Topock -Alluvium SW-SM 61 Deposits 62 63 Topock -Alluvium 64 Deposits 65 66 Topock -Alluvium Deposits 68 69 (5.0 - 117.0') 58 bags (26%) (5.0 - 117.0') Cemex (8.0 - 127.0') 6.0" (5.0 - 117.0') 46.1 Note: Lapis Lustre Sand, used >20% #3 MESH (8x10) Borehole due to potential voids forming during drilling Topock -Alluvium GM Deposits IRZ-31-VAS-72-77 (480 ppb) 1/9/2020 13:10 76 Topock -Alluvium Deposits 78 Topock -SW-SM Alluvium Deposits Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

	DIS Design & For natura built asse	ts		Temporary E	Jaokiiii Log		Sheet: 5 of 7
ate Started:	01/11/2020			_ Surface Elevation:	502.1 ft amsl	Well ID: I	RZ-31 Pilot
Date Completed:	01/12/2020			_ Northing (NAD83):	2101940.2		
Orilling Co.:	Cascade			_ Easting (NAD83):	7615789.1	Client: PG8	
Orilling Method:	Sonic Drilling			_ Total Depth:	127 ft bgs	•	al GW Remedy Phase 1
Oriller Name:	Eddie Ramo			_ Borehole Diameter:	6-10 inches	Location: <u>PG</u>	<u> RE Topock, Needles, Califorr</u>
Orilling Asst:	J. Candelaria		andoval	•			D0000=== :
ogger:	Joe Lantham	<u> </u>		_ Editor:	Grant Willford	Project Numb	er: RC000753.0051
Groundwate Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
	Topock - Alluvium Deposits	GM					
-87	Topock - Alluvium Deposits	SM					
	Topock - Alluvium Deposits	SM		(5.0 - 117.0') Cemex #3 MESH (8x10)	(8.0 - 127.0') 6.0' Borehole	' (5.0 - 117.0') 46.1 bags	(5.0 - 117.0') 58 bags (26% Note: Lapis Lustre Sand, used > due to potential voids forming di drilling
92	Topock - Alluvium Deposits	GM					
.98	Topock - Alluvium Deposits	SM			A-50-0 		
99	Topock - Alluvium Deposits	GM					



9/	ARCA	DIS Design & Control for natural built asset	Consultancy Land S		Temporary I	Backfill Log	:	Sheet: 7 of 7
Drilling	ompleted: Co.: Method: Name: Asst:	01/11/2020 01/12/2020 Cascade Sonic Drilling Eddie Ramos J. Candelaria Joe Lantham	s / F. Sa	ndoval	Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	502.1 ft amsl 2101940.2 7615789.1 127 ft bgs 6-10 inches 47.25 ft bgs Grant Willford	Client: PG& Project: Final Location: PG&	RZ-31 Pilot E GW Remedy Phase 1 E Topock, Needles, California r: RC000753.0051
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
		Topock - Competent Bedrock - conglomerate			(117.0 - 127.0') Cemex # 2/12 MESH— (16x30)	(8.0 - 127.0') 6.0" Borehole	(117.0 - 127.0') 3.9 bags	(117.0 - 127.0') 6 bags (54%) Note: Lapis Lustre Sand, used >20% due to potential voids forming during drilling
129								
132								
133 134								sea level, GW = groundwater,
 135 								
136 137								
138								
140	iations: 11	SCS = Unified	Soil Cl	assificatio	on System ft = feet ha	s = helow around surface ar	nsl = ahove mean	sea level GW = groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

ARCA	DI2	for natural and built assets		DU	11119	Log		• • • • • • • • • • • • • • • • • • • •	eet: 1 of	6
Date Started:	01/23/2				Elevati		Borin	a No:	IRZ-33-P	ilot
Date Completed:					g (NAD	•	_		<u> 50 1</u>	<u></u>
Orilling Co.:	Cascac			-	(NAD8	•	_ Client:	PG&E		
Orilling Method:	Sonic E	•		Γotal D	•	116 ft bgs	_ Project:		W Remedy Ph	
Orill Rig Type:		ongyear Tra					_ Location:	PG&E	Topock, Topoc	<u>ck, Califorr</u>
Oriller Name: Orilling Asst:	Eddie F	delaria / F. Sa		-	ng Meth	Vater: 49.56 ft bgs od: 4 inch x 10ft Core Barrel	– Project N	umher.	RC000753.00	 51
ogger:	Joe Lar			•	ng Inter		_ 1 10,000114	umber.	110000700.00	<i>J</i> 1
Editor:	Grant V			-	ted to V		_			
tth (ery	Sieve	Groundwater	ogic	S a	S s					
	mple ID	Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fl
- 1				NR		(0.0 - 8.0') No recovery (NR); see drilling not	es		(0.0 - 8.0') Cored with 10 inch conductor casing down to 8 ft bgs.	(0.0 - 116 No water u
					$ / \setminus $					
7						0),				
- ' -										
_ 8						(8.0 - 10.5') Topock - Fill; Well graded sand dark yellowish brown (10YR 4/4); very fine qu			(8.0 - 27.0') Soft drilling.	
_ 9 _			Topock - Fill	SW		grained, angular to round; little granules to w subangular to round; trace silt; little coarser metadiorite: moist	ery large pebb	les,	drilling.	
10			Topook Tim			metadionte, moist				
			Topock - Fill	GW		(10.5 - 11.2') Topock - Fill; Well graded grav brown (10YR 5/3); granules to very large pet	el with sand (0 bles, angular	GW);		
				•		subround; and very fine to very coarse graine subround; trace silt; and coarser clasts com dry	ed sand, angul	ar to		
108						(11.2 - 18.5') Topock - Fill; Poorly graded sa yellowish brown / moderate yellowish brown grained to very coarse grained, angular to ro to very large pebbles, angular to round; trace	(10YR 5/4); ve und; some gra silt; some co	ery fine inules		
						clasts composed of metadiorite; dry to moist				
_15			Topock - Fill	SW		(14.5'); moist; increase in granules and pebb	les, decrease	in sand		
						(16.5'); dry to moist				
						(17'); increase in sand, decrease in granules	and pebbles			
_18										
- 120						(18.5 - 21.7') Topock - Fill; Well graded grav	el with sand (0	GW);		
_19			Topock - Fill	GW		yellowish brown / moderate yellowish brown grayish green (GLEY1 5/5G); granules to ver angular to subround; and very fine to very co	v large pebble	es,		
20						angular to subround; trace silt; and coarser of	clasts compos	ed of		groundwa

9/-	۱RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 2 of	6
Date S		01/23/2	2020	§	Surface	Elevation	on: <u>502.7 ft amsl</u>	Borin	u N∪ .	IRZ-33-Pi	lot
Date C	omple	ted: <u>01/23/2</u>		١	Northing	g (NAD8			y 110	1114-00-171	<u>10t</u>
Drilling	Co.:	Cascad	le	E	Easting	(NAD8	3): <u>7615827.9</u>	Client:	PG&E		
Drilling	Metho	d: <u>Sonic E</u>	Drilling	7	Γotal De	epth:	116 ft bgs	Project:	Final G\	V Remedy Ph	ase 1
Drill Ri	д Туре	: <u>Boart L</u>	ongyear Trac	ck Mount E	Borehol	e Diame	eter: 6-10 inches	Location:	PG&E T	opock, Topoc	k, California
Driller I	Name:	Eddie F	Ramos		Depth to	First V	Vater: 49.56 ft bgs	_			
Drilling	Asst:	J. Cano	<u>delaria / F. Sa</u>	andoval S	Samplin	g Meth	od: 4 inch x 10ft Core Barrel	Project N	umber: <u>[</u>	RC000753.005	51
Logger	r:	<u>Joe Lar</u>	ntham	8	Samplin	ig Interv		-			
Editor:		Grant V	Villford	(Convert	ed to W	′ell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
							metadiorite; trace mica; moist				
				Topock - Fill	GW						
21				Тороск-Тіп	Ovv						
							(21.5'); lens of pulverized grey rock and silt				
22						0,000	(21.7 - 33.0') Topock - Alluvium Deposits; We gravel (SW); yellowish brown / moderate yello	ell graded san	d with		
							5/4); very fine grained to very coarse grained,	angular to su	bround;		
23							and granules to very large pebbles, angular to and coarser clasts composed of metadiorite;	o subround; tra trace sandsto	ace silt; ne; dry		
	120						to moist				
24											
_								•			
25											
26											
							(26'); some granules to very large pebbles, ar trace quartzite; moist; increase in sand, decre				
27							pebbles	5455 II. g. 4. 14.	oo ama		
				Topock - Alluvium	SW					(27.0 - 37.0') Rough drilling.	
				Deposits		إذبيها				rtough drining.	
20											
29							(29'); dry to moist				
					. 4						
30							(30'); moist				
							(66),				
31					•						
_											
32	120			•							
_											
33											
				Topock -			(33.0 - 34.5') Topock - Alluvium Deposits; We silt and gravel (SW-SM); grayish brown (10YF	ell graded san R 5/2): verv fin	d with e		
34				Alluvium	SW-SM		grained to very coarse grained, angular to subto large pebbles, angular to subround; little si	bround; and gi	anules		
				Deposits			composed of metadiorite; dry	•			
35						<u> </u>	(34.5 - 39.0') Topock - Alluvium Deposits; We gravel (SW); yellowish brown / moderate yellow	ell graded san	d with		
33							5/4); very fine grained to coarse grained, angu	ular to subrou	nd; little		
							granules to very large pebbles, angular to sub- little coarser clasts composed of metadiorite;	oangular; trace dry to moist	e silt;		
36								a., too.o.			
├ ┤				Topock - Alluvium	SW						
37				Deposits	300					(37.0 - 57.0')	
										Normal drilling.	
38											
L]	120										
39											
L J				Topock - Alluvium	SM		(39.0 - 39.2') Topock - Alluvium Deposits; Silt (SM); olive gray / light olive gray (5Y 5/2); very	v fine grained	to		
40				Deposits	SM		medium grained, subangular to subround; littl	le granules to	very		
Abbrev	/iations	: USCS = U	Inified Soil Cl	assification	System	n. ft = fe	et, bgs = below ground surface, ams	sl = above r	nean sea	a level. GW = c	roundwater.

pb = parts per billion, blue water table symbol represents depth to water measured during the first VAS interval

AR	CADIS	for natural and built assets		Во	ring	Log		She	eet: 3 of	6
Date Starte			;	Surface	Eleva	ion: <u>502.7 ft amsl</u>	Borina	No.:	IRZ-33-P	ilot
•	leted: 01/23/			Northing		083): <u>2101792.0</u>				
Drilling Co.:				Easting	•	•		G&E		
Drilling Met		Drilling		Total De	•	<u> </u>	-		N Remedy Ph	
Drill Rig Typ		<u>Longyear Trac</u>					cation: <u>P</u>	'G&E 1	Fopock, Topoc	ck, California
Driller Nam		Ramos		Depth to			-		500075000	
Drilling Asst		<u>idelaria / F. Sa</u>		Samplin	•		oject Nur	nber: <u>I</u>	RC000753.00	51
Logger:		antham Willford		Samplin Convert	_					
Editor:		VVIIIIOIG		Conven	eu io	veli. A res No				1
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
41 42 43 43 44 45 46	IRZ-33-SS- 45-47		Topock - Alluvium Deposits	SM		large pebbles, angular to subangular; little silt; little composed of metadiorite; dry (39.2 - 46.0') Topock - Alluvium Deposits; Silty san (SM); yellowish brown / moderate yellowish brown very fine grained to very coarse grained, angular to granules to large pebbles, angular to subangular; li coarser clasts composed of metadiorite; moist (40.3') dark yellowish brown (10YR 4/4); dry; increadecrease in granules and pebbles	nd with grav (10YR 5/4) subround; ittle silt; an	vel); and d		
47	1/24/2020 08:30		Topock - Alluvium Deposits	ML		(46.0 - 46.5') Topock - Alluvium Deposits; Sandy si grayish brown (2.5Y 4/2); low plasticity; some very grained sand, subangular to subround; trace granu pebbles, subangular; trace coarser clasts compose metadiorite; dry	fine to fine les to med			
	IRZ-33-SS- 47-51 1/24/2020 08:34		Topock - Alluvium Deposits	SM		(46.5 - 51.0') Topock - Alluvium Deposits; Silty san (SM); yellowish brown / moderate yellowish brown very fine grained to very coarse grained, angular to some silt; little granules to very large pebbles, angucoarser clasts composed of metadiorite; moist to w staining	(10YR 5/4) subround; ular; little);	<u>.</u>	
52 ₁₂₀ 53 54 55	IRZ-33-SS- 51-56 1/24/2020 08:38	IRZ-33-VAS- 49-54 (2100 ppb) 1/21/2020 13:05	Topock - Alluvium Deposits	SW-SM		(51.0 - 56.0') Topock - Alluvium Deposits; Well grasilt and gravel (SW-SM); yellowish brown / modera brown (10YR 5/4); very fine grained to very coarse angular to subangular; some granules to very large angular to subangular; little silt; some coarser class metadiorite; dry to moist; iron oxide staining (54'); moist	ite yellowis grained, e pebbles,	h		
56 57 58 59 60	IRZ-33-SS- 56-60 1/24/2020 08:42		Topock - Alluvium Deposits	SM		(56.0 - 67.0") Topock - Alluvium Deposits; Silty san (SM); light olive brown (2.5Y 5/3); very fine grained grained, subangular to subround; some silt; little gr large pebbles, angular to subangular; little coarser composed of metadiorite; dry (57') brown (7.5YR 5/4); some granules to very larg angular to subangular; moist; iron oxide staining; in decrease in silt	to very coa ranules to v clasts ge pebbles	arse very	(57.0 - 77.0') Rough drilling.	
	ns: USCS =	Unified Soil Cl	assification	System	ı, ft =	eet, bgs = below ground surface, amsl = a	above me	ean sea	a level, GW =	groundwate
						n to water measured during the first VAS ir				
			·							

g Co.: g Method ig Type: Name: g Asst: er: :	ted: 01/23/3 Cascar d: Sonic : Boart L Eddie J. Can Joe La	2020 de	Ck Mount E andoval S		g (NADa (NADa epth: le Dian o First ng Meti ng Inter	D83): 2101792.0 D83): 7615827.9 116 ft bgs meter: 6-10 inches t Water: 49.56 ft bgs thod: 4 inch x 10ft Core Barrel erval: Continuous Well: Yes No Soil Description Drilling Notes Drilling Notes Drilling FI (61'); moist to wet (62.5'); dry (63'); moist to wet (65.5') yellowish brown / moderate yellowish brown (10YR 5/4); little silt; moist to wet; iron oxide staining; increase in sand, increase in granules and pebbles
g Co.: g Method ig Type: Name: g Asst: er: :	Cascar od: Sonic : Boart I Eddie J. Can Joe La Grant V Sieve Sample ID IRZ-33-SS- 60-65 1/24/2020 08:45	de Drilling Longyear Trac Ramos delaria / F. Sa antham Willford Groundwater	ck Mount E E E E E E E E E E E E E E E E E E E	Easting Fotal Do Boreho Depth to Samplir Samplir Convert	(NADa epth: le Dian to First ng Meting Inter ted to	D83 : 2101792.0 Client: PG&E 116 ft bgs Project: Final GW Remedy Phase 1 Location: PG&E Topock, Topock, Californ to Water: 49.56 ft bgs Project Number: RC000753.0051 Project Nu
g Methodig Type: Name: g Asst: er: :	is die Sonic Sonic Boart I Eddie J. Can Joe La Grant V Sieve Sample ID	Drilling _ongyear Trac Ramos delaria / F. Sa antham Willford Groundwater	ck Mount E I I I I I I I I I I I I I I I I I I	Total Do	epth: le Dian o First ng Met ng Inte	meter: 6-10 inches t Water: 49.56 ft bgs thod: 4 inch x 10ft Core Barrel crval: Continuous Well: Yes No Soil Description Cotining Notes Drilling Notes Drilling Fi (61'); moist (62.5'); dry (63'); moist to wet (65.5') yellowish brown / moderate yellowish brown (10YR 5/4); little silt; moist to wet; iron oxide staining; increase in granules and pebbles
ig Type: Name: g Asst: er: :	Boart L Eddie J. Can Joe La Grant V Sieve Sample ID IRZ-33-SS- 60-65 1/24/2020 08:45	Longyear Trade Ramos delaria / F. Sa antham Willford Groundwater	ck Mount E andoval S S S S S S S S S S S S S S S S S S S	Soreho Depth to Samplir Samplir Convert	le Dian o First ng Met ng Inter ted to V	meter: 6-10 inches t Water: 49.56 ft bgs thod: 4 inch x 10ft Core Barrel erval: Continuous Well: Yes No Soil Description Drilling Notes Drilling FI (61'); moist (62.5'); dry (63'); moist to wet (64'); dry to moist; iron oxide staining (65.5') yellowish brown / moderate yellowish brown (10YR 5/4); little silt; moist to wet; iron oxide staining; increase in sand, increase in granules and pebbles
Name: g Asst: er: : Lagran (ui)	Eddie J. Can Joe La Grant V Sieve Sample ID IRZ-33-SS- 60-65 1/24/2020 08:45	Ramos delaria / F. Sa antham Willford Groundwater	andoval Separation Constitution	Depth to Samplir Samplir Convert	o Firsting Mething Intellection	t Water: 49.56 ft bgs thod: 4 inch x 10ft Core Barrel erval: Continuous Well: Yes No Soil Description Drilling Notes Drilling FI (61'); moist (62.5'); dry (63'); moist to wet (64'); dry to moist; iron oxide staining (65.5') yellowish brown / moderate yellowish brown (10YR 5/4); little silt; moist to wet; iron oxide staining; increase in sand, increase in granules and pebbles
g Asst: er: : (i) 120	J. Can Joe La Grant V Sieve Sample ID IRZ-33-SS- 60-65 1/24/2020 08:45	delaria / F. Sa antham Willford Groundwater	andoval S S Geologic C C C Topock - Alluvium	Samplir Samplir Convert	ng Met ng Inte ted to \	thod: 4 inch x 10ft Core Barrel Continuous Well: Yes No Soil Description Drilling Notes Drilling FI (61'); moist (62.5'); dry (63'); moist to wet (64'); dry to moist; iron oxide staining (65.5') yellowish brown / moderate yellowish brown (10YR 5/4); little silt; moist to wet; iron oxide staining; increase in sand, increase in granules and pebbles
Recovery (in)	Joe La Grant V Sieve Sample ID IRZ-33-SS- 60-65 1/24/2020 08:45	willford Groundwater	Geologico Omation Popock - Alluvium	Samplir Convert SOSO	ng Interted to \	erval: Continuous Well: Yes No Soil Description Drilling Notes Drilling FI (61'); moist (62.5'); dry (63'); moist to wet (64'); dry to moist; iron oxide staining (65.5') yellowish brown / moderate yellowish brown (10YR 5/4); little silt; moist to wet; iron oxide staining; increase in sand, increase in granules and pebbles
Recovery (in)	Sieve Sample ID IRZ-33-SS-60-65 1/24/2020 08:45 IRZ-33-SS-65-70 1/24/2020	Willford Groundwater	Ogeological Control of	SON SON SON SON SON SON SON SON SON SON	ted to	Soil Description Drilling Notes Drilling FI (61'); moist (62.5'); dry (63'); moist to wet (64'); dry to moist; iron oxide staining (65.5') yellowish brown / moderate yellowish brown (10YR 5/4); little silt; moist to wet; iron oxide staining; increase in sand, increase in granules and pebbles
Recovery (in)	Sieve Sample ID IRZ-33-SS- 60-65 1/24/2020 08:45	Groundwater	Geologic Seologic Topock - Alluvium	USCS	Т	Soil Description Drilling Notes Drilling FI (61'); moist (62.5'); dry (63'); moist to wet (64'); dry to moist; iron oxide staining (65.5') yellowish brown / moderate yellowish brown (10YR 5/4); little silt; moist to wet; iron oxide staining; increase in sand, increase in granules and pebbles
120	Sample ID IRZ-33-SS-60-65 1/24/2020 08:45 IRZ-33-SS-65-70 1/24/2020		Topock - Alluvium		USCS	(61'); moist (62.5'); dry (63'); moist to wet (64'); dry to moist; iron oxide staining (65.5') yellowish brown / moderate yellowish brown (10YR 5/4); little silt; moist to wet; iron oxide staining; increase in sand, increase in granules and pebbles
120	60-65 1/24/2020 08:45		Alluvium	SM		(62.5'); dry (63'); moist to wet (64'); dry to moist; iron oxide staining (65.5') yellowish brown / moderate yellowish brown (10YR 5/4); little silt; moist to wet; iron oxide staining; increase in sand, increase in granules and pebbles
	65-70 1/24/2020					little silt; moist to wet; iron oxide staining; increase in sand, increase in granules and pebbles
	1/24/2020 08:50				1:1:10	(67.0 - 77.0') Topock - Alluvium Deposits; Silty sand (SM); brown
						(7.5YR 5/4); very fine grained to very coarse grained, angular to subround; some silt; little granules to very large pebbles, angular to subangular; little coarser clasts composed of metadiorite; wet (69') yellowish brown / moderate yellowish brown (10YR 5/4); dry to moist
	IRZ-33-SS- 70-75 1/24/2020 09:00		Topock - Alluvium Deposits	SM		
	05.50	IRZ-33-VAS- 72-77 (1600 ppb) 1/22/2020 09:40				(74') brown (7.5YR 5/4); moist to wet
	IRZ-33-SS- 75-77 1/24/2020 09:04					
120	IRZ-33-SS- 77-80 1/24/2020 09:09		Topock - Alluvium Deposits	SM		(77.0 - 80.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/4); very fine grained to very coarse grained, angular to subround; some silt; little granules to very large pebbles, angular to subangular; wet; iron oxide staining
viations:				Systen	n, ft = f	feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwa
parts pe	: USCS = I	■ Jnified Soil Cl	assification	Cysicii	, •	

Started: Complet g Co.: g Metho ig Type: Name: g Asst: er:	ted: 01/23/2 Cascad d: Sonic I Boart L Eddie I J. Cand Joe La Grant V	2020 de Drilling .ongyear Trac Ramos delaria / F. Sa ntham	k Mount		g (NAD (NAD8 epth:	83): <u>2101792.0</u>	Client:	PG&E	IRZ-33-P	
g Co.: g Metholig Type: Name: g Asst: er:	Cascaded: Sonic I Boart L Eddie I J. Cand Joe La Grant \	de Drilling Longyear Trac Ramos delaria / F. Sa ntham	k Mount	Easting Total De Borehol	(NAD8 epth:	3): <u>7615827.9</u>	Client:	PG&E		
g Metholig Type: Name: g Asst: er:	d: Sonic I Boart L Eddie I J. Cand Joe La Grant V	Orilling Longyear Trac Ramos delaria / F. Sa ntham	ck Mount	Total De Borehol	epth:	•			N Remody Dh	
ig Type: Name: g Asst: er:	Boart L Eddie I J. Cand Joe La Grant V	ongyear Trac Ramos delaria / F. Sa ntham	k Mount	Borehol	•	<u>110 IL DQS</u>				
Name: g Asst: er:	Eddie I J. Cano Joe La Grant \	Ramos delaria / F. Sa ntham			e Diam	•	•	Project: <u>Final GW Remedy Phase</u> Location: <u>PG&E Topock, Topock, Control of the PG Project Control of the PG Pro</u>		
er: :	<u>Joe La</u> <u>Grant \</u>	ntham		Depth to		Vater: 49.56 ft bgs	20000011.		ороск, торос	ort, Gamorria
:	Grant \		uvul	Samplin			 Project N	umber: F	RC000753.00	51
				Samplin	g Inter	val: <u>Continuous</u>				
Recovery (in)	0:	<u> Willford</u>		Convert	ed to V	/ell: ⊠ Yes ☐ No				
	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
120	IRZ-33-SS- 80-84 1/24/2020 09:13		Topock - Alluvium Deposits	SW-SM		(80.0 - 87.0') Topock - Alluvium Deposits; silt and gravel (SW-SM); brown (7.5YR 5/very coarse grained, angular to subround; large pebbles, angular to subangular; little coarser clasts composed of metadiorite; very coarse grained, and the subround; (82.5'); green staining	4); very fine grair some granules t silt; trace clay;	ned to o very some		
- - - -	IRZ-33-SS- 84-87 1/24/2020 09:17									
-	IRZ-33-SS- 87-90 1/24/2020 09:22					(87.0 - 102.0') Topock - Alluvium Deposits (SM); yellowish brown / moderate yellowis very fine grained to very coarse grained, a some granules to very large pebbles, anguist; trace clay; some coarser clasts compmoist; iron oxide staining (88'); dry to moist (89'); moist	sh brown (10YR s ingular to subrou ular to subangula	5/4); nd; ır: some	(87.0 - 107.0') Normal drilling.	
120	IRZ-33-SS- 90-95 1/24/2020 09:27		Topock - Alluvium Deposits	SM		(91') brown (7.5YR 5/4); and granules to vangular to subangular; little silt; wet; decre		5,		
- - -	IRZ-33-SS-					(95.5') yellowish brown / moderate yellowi some granules to very large pebbles, angi increase in silt and sand, green staining	sh brown (10YR ular to subangula	5/4); ır; dry;		
	95-99 1/24/2020 09:32					(97'); some silt; little granules to very large subangular; trace clay; moist; decrease in (98'); and cilt; moist; increase in sand do	sand			
120						(98'); and silt; moist; increase in sand, deepebbles	orcase iii granule	ailu		
	IRZ-33-SS- 99-102					(99'); dry to moist				
	1/24/2020			1	.				1	
	1/24/2020	Inified Soil Cla	assification	Svetor	ft - f	eet, bgs = below ground surface, a	imel = above	mean soc	alevel GW -	groundwata

9/	AK(ADIS	for natural and built assets		Во	ring	Log		She	et: 6 of	6
Date S	Started				Surface	Elevat		Borin	a No.:	IRZ-33-Pi	ilot
	Comple				Northing		•				<u></u>
Drilling	-	Cascad			Easting	•		Client:	PG&E		
_	Metho		•		Total De	•	116 ft bgs	Project:		V Remedy Ph	
	ig Type Name:		<u>ongyear Trad</u> Ramos				neter: 6-10 inches Water: 49.56 ft bgs	Location:	PG&E I	opock, Topoc	<u>sk, California</u>
	y Asst:		delaria / F. Sa		Samplin		_	Proiect N	umber: F	RC000753.00	 51
Logge		Joe La			Samplin						
Editor		Grant \	Willford		Convert	-					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
101_		09:37 IRZ-33-SS- 99-102 1/24/2020		Topock - Alluvium Deposits	SM		(100') brown (7.5YR 5/4); iron oxide staining; mottling present	red and white	9		
		09:37		Ворозна							
102	1						(102.0 - 107.0') Topock - Alluvium Deposits; \$	Silty sand (SN	<i>(</i> 1);		
103							brown (7.5YR 5/4); very fine grained to very co angular to subround; some silt; little granules	to very large	ľ		
	120						pebbles, angular to subangular; little coarser metadiorite; wet; iron oxide staining	clasts compo	sed of		
104	120	177.00.00									
64:01		IRZ-33-SS- 102-107		Topock - Alluvium	SM						
105		1/24/2020 09:42		Deposits							
106							(106'); dry to moist; red and white mottling pre	esent			
	-										
107			IRZ-33-VAS- 105-110				(107.0 - 109.0 <mark>') Topo</mark> ck - Alluvium Deposits; \			(107.0 - 112.0')	
	-	IRZ-33-SS- 107-109 1/24/2020 09:48	(1300 ppb) 1/23/2020 10:10	Topock - Alluvium Deposits	sw		(SW); dark yellowish brown (10YR 4/4); very to coarse grained; angular to subround; trace sn pebbles, angular to subangular; trace silt; trace composed of metadiorite; wet	nall to very la	rge	Very rough drilling, drill rods chattering, bedrock contact	
		00.40								at 110.5 ft bgs.	
	60	IRZ-33-SS- 109-111		Topock - Weathered Bedrock -	I ML		(109.0 - 110.5') Topock - Weathered Bedrock Sandy silt (ML); brown (7.5YR 4/4); no plastic very coarse grained sand, angular to subroun large pebbles, angular to subangular; little co	ity; and very t d; little granu	ine to		
A ABA		1/24/2020 09:53		conglomerat	te		composed of metadiorite; moist to wet				
111_							(110.5 - 116.0') Topock - Competent Bedrock friable, pulverized bedrock	- conglomer	ate; dry,		
Ř – –											
112				Ì						(112.0 - 116.0')	
= -	-									Very rough drilling, drill	
[]113	-			Topock - Competent	t					rods chattering, 6 inches of	
	1			Bedrock - conglomerat	te					slough from 112 to 112.5 ft	
<u>114_</u>	48									bgs.	
} 5115]										
116											
G	-						End of Boring at 116.0 'bg	S.			
117	-										
2 -	-										
118	-										
	1										
5119	1										
- 120	†										
	viation	s: USCS = L	Jnified Soil Cl	assification	n Systen	n, ft = fe	eet, bgs = below ground surface, ams	sl = above	mean sea	a level, GW = g	groundwater,
2							to water measured during the first V			•	<u> </u>

, , , , , , , ,	DIS	for natural and built assets		DU	riig	Log		On	eet: 1 of	6
Date Started:	01/23/2				Elevati		Borin	a No:	IRZ-33-P	ilot
Date Completed:					g (NAD	•	_		<u> 50 1</u>	<u></u>
Orilling Co.:	Casca			_	(NAD8	•	_ Client:	PG&E		
Orilling Method:	Sonic I	•		Total D	•	116 ft bgs	_ Project:		W Remedy Ph	
Orill Rig Type:		<u>ongyear Tra</u>					_ Location:	PG&E	Topock, Topoc	ck, Califorr
Oriller Name: Orilling Asst:	Eddie I	delaria / F. Sa		-	ng Meth	Vater: 49.56 ft bgs od: 4 inch x 10ft Core Barrel	– Project N	umher.	RC000753.00	 51
ogger:	Joe La			•	ng Inter		_ 1 10,00011	umber.	110000700.00	01
Editor:		Willford		-	ted to V		_			
, ery	Sieve	Groundwater	ogic	S a	S s					
Depth (ft) Recovery (in)	ample ID	Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fl
- 1				NR		(0.0 - 8.0') No recovery (NR); see drilling not	es		(0.0 - 8.0') Cored with 10 inch conductor casing down to 8 ft bgs.	(0.0 - 116 No water u
_ 6					$ / \setminus $					
7						07,				
8										
						(8.0 - 10.5') Topock - Fill; Well graded sand dark yellowish brown (10YR 4/4); very fine quark			(8.0 - 27.0') Soft drilling.	
9 _			Topock - Fill	SW		grained, angular to round; little granules to v subangular to round; trace silt; little coarser metadiorite: moist	ery large peḃb	les,	J	
_10						,				
11			Topock - Fill	GW		(10.5 - 11.2') Topock - Fill; Well graded grav brown (10YR 5/3); granules to very large pel	obles, angular	to		
						subround; and very fine to very coarse graine subround; trace silt; and coarser clasts com dry				
- 108 - 13_						(11.2 - 18.5') Topock - Fill; Poorly graded sa yellowish brown / moderate yellowish brown grained to very coarse grained, angular to ro to very large pebbles, angular to round; trace	(10YR 5/4); ve und; some gra silt; some co	ery fine inules		
_14						clasts composed of metadiorite; dry to moist	ı			
			Topock - Fill	SW		(14.5'); moist; increase in granules and pebb	oles, decrease	in sand		
_16										
						(16.5'); dry to moist				
-						(17'); increase in sand, decrease in granules	and pebbles			
_18										
19			Topock - Fill	GW		(18.5 - 21.7') Topock - Fill; Well graded grav yellowish brown / moderate yellowish brown grayish green (GLEY1 5/5G); granules to ve	(10YR 5/4) tra ry large pebble	es,		
1 1						angular to subround; and very fine to very co angular to subround; trace silt; and coarser of	arse grained s	and,		

9/-	۱RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 2 of	6
Date S	tarted:	01/23/2	2020		Surface	Elevation	on: <u>502.7 ft amsl</u>	Borin	a No .	IRZ-33-Pi	lot
Date C	omple	ted: <u>01/23/2</u>	2020		Northin	g (NAD	33): <u>2101792.0</u>		y 110	<u> </u>	<u>10t</u>
Drilling	Co.:	Cascac	de	E	Easting	(NAD8	3): <u>7615827.9</u>	Client:	PG&E		
Drilling	Metho	d: <u>Sonic E</u>	Drilling	7	Γotal De	epth:	116 ft bgs	Project:	Final G\	N Remedy Ph	ase 1
Drill Ri			ongyear Trac					Location:	PG&E T	opock, Topoc	k, California
Driller I		Eddie F					Vater: 49.56 ft bgs	-			
Drilling	Asst:		<u>delaria / F. Sa</u>		-	g Meth		Project N	umber: <u>I</u>	RC000753.005	51
Logge			ntham		-	ig Interv		-			
Editor:		Grant V	Villford	(Convert	ed to W	∕ell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
						You	metadiorite; trace mica; moist				
21				Topock - Fill	GW						
				'							
 22							(21.5'); lens of pulverized grey rock and silt				
							(21.7 - 33.0') Topock - Alluvium Deposits; We gravel (SW); yellowish brown / moderate yello	owish brown (10YR		
							5/4); very fine grained to very coarse grained, and granules to very large pebbles, angular to	angular to su	bround;		
23							and coarser clasts composed of metadiorite; t	trace sandsto	ne; dry		
	120						to moist				
24											
25											
26							(26'); some granules to very large pebbles, an	aular ta aubr	aund:		
_							trace quartzite; moist; increase in sand, decre				
27				Topock -			pebbles			(07.0.07.0)	
				Alluvium	SW					(27.0 - 37.0') Rough drilling.	
28				Deposits							
29											
							(29'); dry to moist				
					A 4						
30							(30'); moist				
- ,											
31											
- +											
32	120										
33							(33.0 - 34.5') Topock - Alluvium Deposits; We	ell graded san	d with		
				Topock -	011 011		silt and gravel (SW-SM); grayish brown (10YF	R 5/2); very fin	e		
34				Alluvium Deposits	SW-SM		grained to very coarse grained, angular to sub to large pebbles, angular to subround; little sil	lt; and coarse	r clasts		
_							composed of metadiorite; dry		-1		
35						0,000	(34.5 - 39.0') Topock - Alluvium Deposits; We gravel (SW); yellowish brown / moderate yello	owish brown (10YR		
							5/4); very fine grained to coarse grained, angu- granules to very large pebbles, angular to sub				
36							little coarser clasts composed of metadiorite;	dry to moist	2,		
				Topock -							
37				Alluvium	SW						
				Deposits						(37.0 - 57.0') Normal drilling.	
 38										rvomai uillilig.	
30											
	120										
39				Topock -	SM		(39.0 - 39.2') Topock - Alluvium Deposits; Silt	y sand with g	avel		
				Alluvium / Deposits	SM		(SM); olive gray / light olive gray (5Ý 5/2); very medium grained, subangular to subround; littl	fine grained	to		
40 Abbrev	<i>i</i> iations	: USCS = U	Inified Soil CI		System	<u>1:1:1:1:1</u> 1 ft = f≏	et, bgs = below ground surface, ams			level GW = 0	rroundwater
				SOUTHOUSE	~ v U L U I I	10	o., pao i poiett around bullace, allis	, apovil		~	

pb = parts per billion, blue water table symbol represents depth to water measured during the first VAS interval

ARCAI		ign & Consultancy natural and It assets			8	Log		She	eet: 3 of	6
	01/23/202		§	Surface	Eleva	on: <u>502.7 ft amsl</u>	Borin	a No.:	IRZ-33-P	ilot
ate Completed:		20		Northing	•	•				
· ·	<u>Cascade</u>			Easting	•	•	Client:	PG&E		
· ·	Sonic Drill	_		Γotal De		116 ft bgs	-		W Remedy Ph	
0 7.		gyear Trac					Location:	PG&E	Topock, Topoc	k, California
	Eddie Rar			Depth to					5000075000	
•		aria / F. Sa		Samplin	_		Project N	umber:	RC000753.00	51
• •	Joe Lanth			Samplin	_		•			
	Grant Will	lioru		Converte	eu io i	/ell: ⊠ Yes □ No				ı
		Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
_46 45-	3-SS-		Topock - Alluvium Deposits	SM		large pebbles, angular to subangular; little silt composed of metadiorite; dry (39.2 - 46.0') Topock - Alluvium Deposits; Silt (SM); yellowish brown / moderate yellowish brown / moderate yellowish brown for grained to very coarse grained, angugranules to large pebbles, angular to subangucoarser clasts composed of metadiorite; mois (40.3') dark yellowish brown (10YR 4/4); dry; idecrease in granules and pebbles	y sand with grown (10YR 5 lar to subrour ular; little silt;	ravel /4); nd; and and		
1/24/	/2020 :30		Topock - Alluvium Deposits /	ML		(46.0 - 46.5') Topock - Alluvium Deposits; Sar grayish brown (2.5Y 4/2); low plasticity; some grained sand, subangular to subround; trace of pebbles, subangular; trace coarser clasts cor	very fine to fingranules to m	ne		
_49 47- 1/24/	:34	7.00.VAQ	Topock - Alluvium Deposits	SM		metadiorite; dry (46.5 - 51.0') Topock - Alluvium Deposits; Silt (SM); yellowish brown / moderate yellowish brown / moderate yellowish brown fine grained to very coarse grained, angusome silt; little granules to very large pebbles coarser clasts composed of metadiorite; mois staining	rown (10YR 5 lar to subrour , angular; little	/4); nd;	<u>.</u>	
	(2 1 3-SS-	Z-33-VAS- 49-54 2100 ppb) /21/2020 13:05	Topock - Alluvium Deposits	SW-SM		(51.0 - 56.0') Topock - Alluvium Deposits; We silt and gravel (SW-SM); yellowish brown / m brown (10YR 5/4); very fine grained to very co angular to subangular; some granules to very angular to subangular; little silt; some coarse metadiorite; dry to moist; iron oxide staining (54'); moist	oderate yellow arse grained, large pebbles	vish s,		
	:42		Topock - Alluvium Deposits	SM	v P P	(56.0 - 67.0') Topock - Alluvium Deposits; Silt (SM); light olive brown (2.5Y 5/3); very fine gragrained, subangular to subround; some silt; li large pebbles, angular to subangular; little co-composed of metadiorite; dry (57') brown (7.5YR 5/4); some granules to verangular to subangular; moist; iron oxide stainidecrease in silt (59'); moist to wet	ained to very of ttle granules t arser clasts y large pebbl ng; increase i	coarse o very es, in sand,	(57.0 - 77.0') Rough drilling.	
bbreviations: US	CS = Unif	ied Soil Cla	ssification	System	, ft = f	et, bgs = below ground surface, ams	sl = above r	nean se	a level, GW =	groundwate
pb = parts per bill	lion, blue v	water table	symbol rep	resents	depth	to water measured during the first VA	AS interval			

Boart Eddie J. Can Joe La	2020	Ek Mount E andoval S		g (NAD (NAD8 epth: e Diam o First \ ig Meth ig Inter	83): 2101792.0 3): 7615827.9 116 ft bgs eter: 6-10 inches Vater: 49.56 ft bgs od: 4 inch x 10ft Core Barrel val: Continuous	_ Location: <u>PG&E</u>]	W Remedy Ph	ase 1 k, California
Casca d: Sonic Boart Eddie J. Can Joe La Grant Sieve Sample ID	de Drilling Longyear Trac Ramos Idelaria / F. Sa Antham Willford Groundwater	Ek Mount E andoval S	Easting Fotal De Borehol Depth to Samplin Samplin Convert	(NAD8 epth: e Diam o First \ ig Meth ig Inter ed to V	3): 7615827.9 116 ft bgs eter: 6-10 inches Vater: 49.56 ft bgs od: 4 inch x 10ft Core Barrel val: Continuous Vell: X Yes No	Client: PG&E Project: Final GV Location: PG&E	W Remedy Pha Topock, Topoc RC000753.00	ase 1 k, California
d: Sonic Boart Eddie J. Can Joe La Grant Sieve Sample ID	Drilling Longyear Trac Ramos delaria / F. Sa antham Willford Groundwater	ck Mount E Indoval S	Total De Borehol Depth to Samplin Samplin Convert	epth: le Diam lo First \ log Meth log Inter led to V	teter: 6-10 inches Water: 49.56 ft bgs od: 4 inch x 10ft Core Barrel val: Continuous Vell: X Yes No	Project: Final G\ Location: PG&E \(\)	Topock, Topoc	k, California
Boart Eddie J. Can Joe La Grant Sieve Sample ID	Longyear Trac Ramos Idelaria / F. Sa Intham Willford Groundwater	ck Mount E	Borehol Depth to Samplin Samplin Convert	e Diam o First \ ng Meth ng Inter ed to \(V \)	eter: 6-10 inches Vater: 49.56 ft bgs od: 4 inch x 10ft Core Barrel val: Continuous Vell: X Yes No	Location: <u>PG&E </u>	Topock, Topoc	k, California
Eddie J. Can Joe La Grant Sieve Sample ID IRZ-33-SS- 60-65 1/24/2020	Ramos Idelaria / F. Sa Intham Willford Groundwater	andoval S	Depth to Samplin Samplin Convert	o First Ving Method Interest I	Vater: 49.56 ft bgs od: 4 inch x 10ft Core Barrel val: Continuous Vell: ⊠ Yes □ No		RC000753.005	51
J. Can Joe La Grant Sieve Sample ID IRZ-33-SS- 60-65 1/24/2020	ndelaria / F. Sa antham Willford Groundwater	andoval S	Samplin Samplin Convert	ng Mething Inter Ted to V	val:	Project Number:		
Joe La Grant Sieve Sample ID IRZ-33-SS- 60-65 1/24/2020	antham Willford Groundwater	(Samplin Convert	ig Inter ed to V	val: <u>Continuous</u> Vell: ⊠ Yes ☐ No	-		
Sieve Sample ID IRZ-33-SS- 60-65 1/24/2020	Willford Groundwater	(Convert	ed to V	Vell: ⊠ Yes □ No	-	Drilling Notes	Drilling Flui
Sieve Sample ID IRZ-33-SS- 60-65 1/24/2020	Groundwater						Drilling Notes	Drilling Flui
Sample ID IRZ-33-SS- 60-65 1/24/2020		Geologic	USCS	USCS	Soil Description		Drilling Notes	Drilling Flui
60-65 1/24/2020								
		Topock - Alluvium Deposits	SM		(61'); moist (62.5'); dry (63'); moist to wet (64'); dry to moist; iron oxide staining			
IRZ-33-SS-					(65.5') yellowish brown / moderate yellowish little silt; moist to wet; iron oxide staining; incincrease in granules and pebbles (67.0 - 77.0') Topock - Alluvium Deposits; Sil	ty sand (SM); brown		
65-70 1/24/2020 08:50					(7.5YR 5/4); very fine grained to very coarse subround; some silt; little granules to very lar to subangular; little coarser clasts composed (69') yellowish brown / moderate yellowish brown to moist	ge pebbles, angular of metadiorite; wet		
IRZ-33-SS- 70-75 1/24/2020 09:00		Topock - Alluvium Deposits	SM					
	IRZ-33-VAS- 72-77 (1600 ppb) 1/22/2020 09:40				(74') brown (7.5YR 5/4); moist to wet			
IRZ-33-SS- 75-77 1/24/2020 09:04								
IRZ-33-SS- 77-80 1/24/2020 09:09		Topock - Alluvium Deposits	SM		(SM); brown (7.5YR 5/4); very fine grained to angular to subround; some silt; little granules	very coarse grained, to very large	(77.0 - 87.0') Soft drilling.	
	Initiad Call C	assification	System	n, ft = fe	eet, bgs = below ground surface. am	sl = above mean se	a level, GW = d	groundwate
	oninea Soli Cla						.,	,
IF	75-77 1/24/2020 09:04 8Z-33-SS- 77-80 1/24/2020 09:09	RZ-33-SS- 77-70 1/22/2020 09:40 RZ-33-SS- 75-77 1/24/2020 09:04 RZ-33-SS- 77-80 1/24/2020 09:09 USCS = Unified Soil CI	72-77 (1600 ppb) 1/22/2020 09:40 RZ-33-SS- 75-77 1/24/2020 09:04 Topock - Alluvium Deposits USCS = Unified Soil Classification	72-77 (1600 ppb) 1/22/2020 09:40 RZ-33-SS-75-77 1/24/2020 09:04 RZ-33-SS-77-80 1/24/2020 09:09 USCS = Unified Soil Classification System	72-77 (1600 ppb) (1/22/2020 09:40 09:40 09:40	72-77 (1600 ppb) 1/22/2020 09:40 RZ-33-SS-75-77 1/24/2020 09:04 Topock - Alluvium Deposits; Sil (SM); brown (7.5YR 5/4); very fine grained to angular to subround; some silt; little granules pebbles, angular to subangular; wet; iron oxid 1/24/2020 09:09 Topock - Alluvium Deposits SM Deposits	72-77 (1600 ppb) 1/22/2020 09:40 RZ-33-SS-75-77 1/24/2020 09:04 Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/4); very fine grained to very coarse grained, angular to subround; some silt; little granules to very large pebbles, angular to subangular; wet; iron oxide staining USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean se	72-77 (1600 ppb) 1/22/2020 09:40 RZ-33-SS- 75-77 1/24/2020 09:04 (77.0 - 80.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/4); very fine grained to very coarse grained, angular to subround; some silt; little granules to very large pebbles, angular to subangular; wet, iron oxide staining (77.0 - 87.0') Soft drilling.

Started: Complet g Co.: g Metho ig Type: Name: g Asst: er:	ted: 01/23/2 Cascad d: Sonic I Boart L Eddie I J. Cand Joe La Grant V	2020 de Drilling .ongyear Trac Ramos delaria / F. Sa ntham	k Mount		g (NAD (NAD8 epth:	83): <u>2101792.0</u>	Client:	PG&E	IRZ-33-P	
g Co.: g Metholig Type: Name: g Asst: er:	Cascaded: Sonic I Boart L Eddie I J. Cand Joe La Grant \	de Drilling Longyear Trac Ramos delaria / F. Sa ntham	k Mount	Easting Total De Borehol	(NAD8 epth:	3): <u>7615827.9</u>	Client:	PG&E		
g Metholig Type: Name: g Asst: er:	d: Sonic I Boart L Eddie I J. Cand Joe La Grant V	Orilling Longyear Trac Ramos delaria / F. Sa ntham	ck Mount	Total De Borehol	epth:	•			V Remedy Dh	ase 1
ig Type: Name: g Asst: er:	Boart L Eddie I J. Cand Joe La Grant V	ongyear Trac Ramos delaria / F. Sa ntham	k Mount	Borehol	•	1 10 11 bys	FILHELI			
Name: g Asst: er:	Eddie I J. Cano Joe La Grant \	Ramos delaria / F. Sa ntham			e Diam	eter: <u>6-10 inches</u>	•		opock, Topoc	
er: :	<u>Joe La</u> <u>Grant \</u>	ntham		Depth to		Nater: 49.56 ft bgs			ороск, торос	ort, Gamorria
:	Grant \			Samplin			 Project N	umber: <u>F</u>	RC000753.00	51
				Samplin	•					
Recovery (in)		<u> Willford</u>		Convert	ed to V	Vell: ⊠ Yes □ No				
-	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Descriptio	n		Drilling Notes	Drilling Fluid
120	IRZ-33-SS- 80-84 1/24/2020 09:13		Topock - Alluvium Deposits	SW-SM		(80.0 - 87.0') Topock - Alluvium Deposit silt and gravel (SW-SM); brown (7.5YR very coarse grained, angular to subroun large pebbles, angular to subangular; lit coarser clasts composed of metadiorite (82.5'); green staining	5/4); very fine grair d; some granules t tle silt; trace clay; s	ed to o very some		
- - - -	IRZ-33-SS- 84-87 1/24/2020 09:17									
-	IRZ-33-SS- 87-90 1/24/2020 09:22	87-90 1/24/2020				(87.0 - 102.0") Topock - Alluvium Depos (SM); yellowish brown / moderate yellow very fine grained to very coarse grained, some granules to very large pebbles, ar silt; trace clay; some coarser clasts com- moist; iron oxide staining (88"); dry to moist (89"); moist	vish brown (10YR 5 , angular to subrou ngular to subangula	5/4); nd; ir: some	(87.0 - 107.0') Normal drilling.	
120	IRZ-33-SS- 90-95 1/24/2020 09:27		Topock - Alluvium Deposits	SM		(91') brown (7.5YR 5/4); and granules to angular to subangular; little silt; wet; ded		3,		
- - -	IRZ-33-SS-					(95.5') yellowish brown / moderate yello some granules to very large pebbles, ar increase in silt and sand, green staining	igular to subangula	5/4); ır; dry;		
	95-99 1/24/2020 09:32					(97'); some silt; little granules to very lar subangular; trace clay; moist; decrease	in sand			
120						(98'); and silt; moist; increase in sand, of pebbles	icorcase in granule	anu		
↓	IRZ-33-SS-					(99'); dry to moist				
-	99-102 1/24/2020				1.4:1:					
	1/24/2020	Inified Soil Cla	assification	Systom	f - f	eet, bgs = below ground surface,	amel = ahove	mean soo		groundwata

9/	AK(ADIS	for natural and built assets		Во	ring	Log		She	et: 6 of	6
Date S	Started				Surface	Elevat		Borin	a No.:	IRZ-33-Pi	ilot
	Comple				Northing		•				
Drilling	-	Casca			Easting	•		Client:	PG&E		
`	Metho		•		Total De	•	116 ft bgs	Project:		N Remedy Ph	
	ig Type Name:		<u>ongyear Tra</u> Ramos				neter: 6-10 inches Water: 49.56 ft bgs	Location:	PG&E I	opock, Topoc	<u>k, California</u>
	y Asst:		delaria / F. Sa		Samplin		_	Proiect N	lumber: I	RC000753.00	 51
Logge		Joe La			Samplin						
Editor		Grant \	Willford		Convert	-					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
101		09:37 IRZ-33-SS- 99-102 1/24/2020 09:37		Topock - Alluvium Deposits	SM		(100') brown (7.5YR 5/4); iron oxide staining; mottling present	red and white	e		
102		00.0.									
103	120						(102.0 - 107.0') Topock - Alluvium Deposits; S brown (7.5YR 5/4); very fine grained to very or angular to subround; some silt; little granules pebbles, angular to subangular; little coarser metadiorite; wet; iron oxide staining	oarse grained to very large	d,		
16:49		IRZ-33-SS- 102-107		Topock - Alluvium	SM						
105		1/24/2020 09:42		Deposits	J						
106							(106'); dry to moist; red and white mottling pre	esent			
							(100), 2, 0				
107			IRZ-33-VAS- 105-110				(107.0 - 109.0') Topock - Alluvium Deposits; \			(107.0 - 112.0')	
	-	IRZ-33-SS- 107-109 1/24/2020 09:48	(1300 ppb) 1/23/2020 10:10	Topock - Alluvium Deposits	SW		(SW); dark yellowish brown (10YR 4/4); very to coarse grained, angular to subround; trace sn pebbles, angular to subangular; trace silt; trace composed of metadiorite; wet	nall to very la	rge	Very rough drilling, drill rods chattering, bedrock contact at 110.5 ft bgs.	
25109 26110	60	IRZ-33-SS- 109-111		Topock - Weathered Bedrock -	d ML		(109.0 - 110.5') Topock - Weathered Bedrock Sandy silt (ML); brown (7.5YR 4/4); no plastic very coarse grained sand, angular to subroun large pebbles, angular to subangular; little co	ity; and very t d; little granu	fine to		
AIABA		1/24/2020 09:53		conglomerat	te		composed of metadiorite; moist to wet				
ž 111							(110.5 - 116.0') Topock - Competent Bedrock friable, pulverized bedrock	- conglomer	ate; dry,		
<u> </u>											
112				ì						(112.0 - 116.0')	
				Topock - Competent Bedrock -						Very rough drilling, drill rods chattering, 6 inches of	
	48			conglomerat						slough from 112 to 112.5 ft	
¥	46									bgs.	
5 115											
<u> </u>	1										
116_							End of Boring at 116.0 'bg	S.			
	1						g · · 3.0 2g				
<u>117_</u>	1										
93WS	†										
118	1										
ਫ਼ਿੱ –	1										
- · · · · ·											
120											
<u> </u>					-		eet, bgs = below ground surface, ams			a level, GW = (groundwater,
gppb =	parts p	er billion, blu	ıe water table	symbol re	epresent	s aepth	to water measured during the first V	4S interval			

		for natural and built assets		DU	ring	Log		Onc	eet: 1 of	6
ate Started:	01/12/2				Elevation		Borin	g No.:	IRZ-35 Pi	lot
ate Completed					g (NAD8	•			<u> </u>	
Orilling Co.:	Casca			_	(NAD83	•	_ Client:	PG&E		
Orilling Method: Orill Rig Type:	Sonic I	<u> Drilling</u> _ongyear Tra		Total D	-	102 ft bgs ter: 6-10 inches	-		N Remedy Ph Fopock, Topoc	
oriller Name:		<u>-ongyear rra</u> Ramos	CK IVIOUITE			ater: 51.47 ft bgs	_ LUCAUUII.	FGAL	гороск, горос	k, CalliOIII
rilling Asst:		delaria / F. Sa	andoval	-	ng Metho	_	- _ Project N	umber:	RC000753.00	51
.ogger:	Joe La	ntham		-	ng Interva		_			
Editor:	Grant \	Willford		Conver	ted to W	ell: 🗵 Yes 🗌 No				
Depth (ft) (ft) (in) (in)	Sieve ample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Flu
- 1 2 3 4 5 6 7 10 11 12 120 108 13 14 15 16 17			Topock - Fi	NR		8.0 - 9.0') Topock - Fill; Well graded sand w SW-SM); yellowish brown / moderate yellow 5/4); yery fine grained to very coarse grained and granules to very large pebbles, angular to sitt; and coarser clasts composed of metadic staining 9.0 - 24.5') Topock - Alluvium Deposits; Silt; Stopic brown (7.5YR 5/4); very fine grained to angular to subround; some granules to very lo subround; little silt; trace small cobbles; some of metadiorite; dry to moist; iron composed of metadiorite; dry to moist; iron composed of metadiorite; dry to moist; iron composed of metadiorite; dry to subangular; little silt; trace small cobbles; dry to moist; increase in silt, decrease in silt, de	d; some grandle silt; trace s	YR or round; little on oxide avel rained, angular lasts	(0.0 - 8.0') Core not collected drilled with 10-inch conductor casing to 8 ft. bgs. (7.0 - 17.0') Soft drilling. (8.0 - 17.0') Soft drilling.	(0.0 - 102 No water u

	4KC	ADI5	for natural and built assets		Bo	rıng	l ro	3			She	et: 2 of	6
Date S	Started:	01/12/	/2020		Surface	Eleva	tion:	505.0 ft ams		Borin	a No ·	IRZ-35 Pi	lot
Date 0	Comple	ted: <u>01/14/</u>	/2020		Northin	g (NAE	083):	2101643.1		Born	ig 110	1112 0011	<u>10t</u>
Drilling		<u>Casca</u>			Easting	•	33):	7615918.0		Client:	PG&E		
_	Metho		Drilling		Total D	•		<u>102 ft bgs</u>		Project:		V Remedy Ph	
	д Туре		Longyear Trad					6-10 inches		Location:	PG&E T	opock, Topoc	<u>k, California</u>
	Name:		Ramos ndelaria / F. Sa		-			51.47 ft bgs	Core Barrel	Droiget N		RC000753.00	<u> </u>
Logge	Asst:		antham		Samplir Samplir	-		<u>Continuous</u>	Cole Dallel	Projectiv	ullibel. <u>r</u>	<u> </u>	J I
Editor:			Willford		Conver	-			No				
					1								
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	Class			Soil Description			Drilling Notes	Drilling Fluid
	120			Topock - Alluvium Deposits	SM		(21'); d	y y to moist		0			
					+				Iluvium Deposits; We				
_25							grained	, angular to <mark>su</mark> ba	YR 4/4); very <mark>fin</mark> e grai n <mark>gu</mark> lar; li <mark>ttle</mark> granules	to very large			
_26								s, angula <mark>r to su</mark> ba sed of me <mark>tad</mark> iorite	a <mark>ngu</mark> lar; trace silt; little e; dry to moist	e coarser cla	sts		
_20				Topock - Alluvium	SW		}						
27				Deposits									
							• •						
28													
									Iluvium Deposits; Silt ; very fine grained to				
29							angula	to subangular; ś	ome granules to very ttle silt; some coarser	large pebble	s,		
								orite; dry to moist					
_30							(201). 4						
							(30'); d	у					
31													
_32	120												
_33													
				Topock -									
34				Alluvium Deposits	SM								
 35													
33												(35.0 - 37.0') Rough drilling.	
36												rtough unling.	
									nules to very large pe ; increase in sand	bbles, angul	ar to		
37									, 5455 111 54114				
							(37'); m	oist				(37.0 - 42.0') Normal drilling.	
38													
	120						(20.51)		a venulessa at 111				
39							subang	some granules to ular; little silt; trac	o very large pebbles, a ce small cobbles; dry	angular to to moist; ded	crease		
							in sand						
40 Abbro	viations	· 11808 -	Unified Sail C	accification	Syston	0 ft - f	eet ha	- holow gray	und surface, ams	l = above	mean acc	level CM - :	groundwater
									o water measure				grouriuwai c i,
	_{ναι} το ρ	-, -,		_J , 2140 W		Jy.11D	5. 15pi	Gopuil					

Topocition Top	the Completed: 01/14/2020 Morthing (NADB3): 2101643.1 Decided to the property of the property	AR	CADIS	for natural and built assets		Во	ring	Log			She	eet: 3 of	6
Saccade Easting (NADS): 2101643.1 Illing Method: Sonic Drilling Track Mount. In Rig Type: Illing Ass: 26th Ramos. Joe Landman Eddin Ramos. Joe La	Nothing (NAD83): 2101643-1 Illing Ob.: Cascade									Borin	a No.:	IRZ-35 Pi	ilot
Topoda- Topo	Total Depth: 102 https: 1	•						,		_			
Rig Type: Boart Longyear Track Mount Borehole Diameter: 6-10 inches. Location: PG&E Topock, Topock, Californ (Ern Name: Edde Rames Location: PG&E Topock, Topo	III Rig Type: Boart Longyear Track Mount. Borehole Diameter: 6-10 inches. Location: PG&E Topock. Topock. Califor Iller Name: Joe Landam Joe	rilling Co.:				_	•	ያ3) :					
Section Sect	Blef Name: Eddic Ramos Depth to First Water: \$1.47 ft bgs Second	-		•			•		_	-		•	
Sampling Sampling Sampling Interval Sampling Interval Conditionus Sampling Interval Conditionus Sampling Interval Conditionus Sampling Interval Conditionus Sampling Interval Sampling	Sample D Countries F. Sandoval Sampling Method: A Inch x 10ft Core Barrel Project Number: RC000753.0051									_ Location:	PG&E	<u> Fopock, Topoc</u>	ck, Californi
Sample December	Some Some Some Connected to Well: Solid Description Descript												
Service Control Contro	Simple D Contribution	•				-	-			_ Project N	umber:	RC000753.00	<u>51 </u>
Simple D Groundwalaw Sample D	Simple ID Grandwater Sample ID	ogger:				•	•			=			
Topock-Allutum Deposits SM (41.5); moist (42.5); some granutes to large pebbles, arigular day. 120	Topock—Allutum Deposits 12	ditor:	<u>Grant</u>	Willford		Conver	ted to V	Vell:	⊻ Yes ☐ No				
Topock-Allautum Deposits SM 242 - 48.5); some granules to large pebbles, angular not with a stand (SW-CM); brown (7.5YR 54); granules to very large pebbles, angular not with a stand (SW-CM); brown (7.5YR 54); granules to very large pebbles, angular not consist class composed of metadionite, girl with and and (SW-CM); brown (7.5YR 54); granules to very large pebbles, angular not consist class composed of metadionite, girl with an and consiste class composed of metadionite, girl with an and consistence of the stand of the standard of the	Allowing Deposits Allowing Deposits Allowing A	Depth (ft) Recovery (in)			Geologic Formation	USCS	USCS		Soil Description			Drilling Notes	Drilling Flu
44 4 120 45	43.0 - 45.5 Topock - Alluvium Deposits: Well graded gravel with sand stand sand (CATO - 57.0") 182.35-SS-45-50 110.2020 114.450 182.35-SS-50-55 115.2020 114.50 182.35-SS-15-55 114.50 183.35-35-35 115.2020 114.50 184.55-35-35-35-35-35-35-35-35-35-35-35-35-3				Alluvium	SM				ılar; dry		(42.0 - 47.0') Rough drilling.	
Alluvium Deposits RZ-35-SS-45-50 Topock - Alluvium Deposits; Well graded sand with gravel (55 - 57 of Topock - Alluvium Deposits; Well graded sand with gravel (57.0 - 71.5) Topock - Alluvium Deposits; Well graded sand with gravel (57.0 - 71.5) Topock - Alluvium Deposits; Well graded sand with gravel (57.0 - 71.5) Topock - Alluvium Deposits; Well graded sand with gravel (57.0 - 71.5) Topock - Alluvium Deposits; Well graded sand with gravel (57.0 - 71.5) Topock - Alluvium Deposits; Well graded sand with gravel (57.0 - 71.5) Topock - Alluvium Deposits; Well graded sand with gravel (57.0 - 71.5) Topock - Alluvium Deposits; Well graded sand with gravel (57.0 - 71.5) Topock - Alluvium Deposits; Well graded sand with gravel (57.0 - 71.5) Topock - Alluvium Deposits; Well graded sand with gravel (57.0 - 71.5) Topock - Alluvium Deposits; Well graded sand with gravel (57.0 - 71.5) Topock - Alluvium Deposits; Well graded sand with gravel (57.0 - 71.5) Topock - Alluvium Deposits; Well graded sand with gravel (57.0 - 71.5) Topock - Alluvium Deposits; Well graded sand with gravel (57.0 - 71.5) Topock - Alluvium Deposits; Well graded sand with gravel (57.0 - 71.5) Topock and granules to very long pebbles, angular to subround; and granules to very long grained, angular to subround; and granules to very long grained, angular to subround; and granules to very long grained, angular to subround; and granules to very long grained, angular to subround; and granules to very long grained, angular to subround; and granules to very long grained, angular to subround; and granules to very long grained, angular to subround; and granules to very long grained, angular to subround; and granules to very long grained, angular to subround; and granules to very long grained, angular to subround; and granules to very long grained, angular to subround; and granules to very long grained, angular to subround; and granules to very long grained, angular to subround; and granules to very long grained, angular to subround; and granules to very long g	Alluvium Deposits IRZ-35-SS-45-3020 14-459 IRZ-35-SS-45-3020 14-459 IRZ-35-SS-16-3020 14-459 IRZ-35-SS-17/15/2020 14-459 IRZ-35							silt and pebbles	sand (GW-GM); brown (7.5YR 5/4); g s, angular; little silt; and coarser clasts	granules to ve	ry large		
49 _	192 193 194 195	.47	45-50 1/15/2020		Alluvium	GW-GN		(47'); tr	ace small cobbles, subangular to rour	nd; moist			
Solution in the state of the st	Southoround; some very fine to very coarse grained sand, angular to subangular; ittle silt some coarser clasts composed of metadiorite; moist to wet; iron oxide staining IRZ-35-SS-50-55 11/13/2020 11/13/2020 10.45 IRZ-35-SS-50-56 11/13/2020 10.45 IRZ-35-SS-50-50 11/13/202	_49	14:45					(49.5 -	55.0') Topock - Alluvium Deposits; Sili	ty gravel with	sand		
So. 55 1/15/2020 14:50 IRZ-35-VAS- 50-55 1/15/2020 14:50 IRZ-35-VAS- 52-57 (810 ppb) 1/13/2020 10:45 IRZ-35-SS- 55-60 1/15/2020 14:53 IRZ-35-SS- 55-60 1/15/2020 14:53 IRZ-35-SS- 55-60 1/15/2020 14:53 IRZ-35-SS- 55-80 1/15/2020 1/15/2020 14:53 IRZ-35-SS- 55-80 1/15/2020 1	Alluvium Deposits RZ-35-SS-50-55	.51			Tonock -		Polo	to subre	ound; some very fine to very coarse gr ingular; little silt; some coarser clasts	ained sand, a	ingular		
(810 ppb) 1/13/2020 10:45 Topock-Alluvium Deposits; Well graded sand with gravel (SW); very fine grained to very coarse grained, angular to subround; and granules to very large pebbles, angular; trace silt; and coarser clasts composed of metadiorite; wet; iron oxide staining IRZ-35-SS-55-60 1/15/2020 14:53 Topock-Alluvium Deposits SW Topock-Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/4); very fine grained to very coarse grained, angular to subangular; some granules to very large pebbles, angular to subangular; some granules to very large pebbles, angular to subangular; ititle silt; some coarser clasts composed of metadiorite; moist; iron oxide staining (58'); trace small cobbles, subround; dry to moist	(810 ppb) 1/13/2020 10:45 Topock - Alluvium Deposits; Well graded sand with gravel (SW); very fine grained to very coarse grained, angular to subround; and granules to very large pebbles, angular; trace silt; and coarser clasts composed of metadiorite; wet; iron oxide staining 1RZ-35-SS-55-60 1/15/2020 14:53 Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/4); very fine grained to very coarse grained, angular to subround; and granules to very large pebbles, angular; trace silt; and coarser clasts composed of metadiorite; wet; iron oxide staining (57.0 - 67.0') Rough drilling. Rough drilling. SM (58'); trace small cobbles, subround; dry to moist Deposits USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundward.	.53	50-55 1/15/2020	IRZ-35-VAS-	Alluvium	GM							
10:45 Topock - Alluvium Deposits Silty sand with gravel (SM); brown (7.5YR 5/4); very fine grained to very coarse grained, angular to subangular; some granules to very large pebbles, angular to subangular; some granules to very large pebbles, angular to subangular; some granules to very large pebbles, angular to subangular; some granules to very large pebbles, angular to subangular; some granules to very large pebbles, angular to subangular; some granules to very large pebbles, angular to subangular; some granules to very large pebbles, angular to subangular; some granules to very large pebbles, angular to subangular; little silt; some coarser clasts composed of metadiorite; moist; iron oxide staining (58'); trace small cobbles, subround; dry to moist	10:45 Topock - Alluvium Deposits; Well graded sand with gravel (SW); very fine grained to very coarse grained, angular to subround; and granules to very large pebbles, angular; trace silt; and coarser clasts composed of metadiorite; wet; iron oxide staining IRZ-35-SS-55-60 175/2020 14:53 Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/4); very fine grained to very coarse grained, angular to subangular; some granules to very large pebbles, angular to subangular; ittle silt; some coarser clasts composed of metadiorite; moist; iron oxide staining (S8'); trace small cobbles, subround; dry to moist SM (S8'); trace small cobbles, subround; dry to moist USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundward and the proposition of the propositio			52-57 (810 pph)			11 K	(54'); d	ry to moist				
Topock - Alluvium Deposits, well graded sand with gravel (SW); very fine grained to very coarse grained, angular to subround; and granules to very large pebbles, angular; trace silt; and coarser clasts composed of metadiorite; wet; iron oxide staining IRZ-35-SS-5-60 1/15/2020 14:53 Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/4); very fine grained to very coarse grained, angular to subangular; some granules to very large pebbles, angular to subangular; little silt; some coarser clasts composed of metadiorite; moist; iron oxide staining (58"); trace small cobbles, subround; dry to moist	Topock - Alluvium Deposits SW SW Sward Standard Standard Sward Standard Sward Standard Sward Standard Sward Standard Sward Sward Standard Sward Sw	55		1/13/2020 10:45		<u> </u>	P T	<u></u>		_,	_,		
[RZ-35-S5-560] Topock - Alluvium Deposits; Silty sand with gravel (57.0 - 67.0') (SM); brown (7.5YR 5/4); very fine grained to very coarse grained, angular to subangular; some granules to very large pebbles, angular to subangular; little silt; some coarser clasts composed of metadiorite; moist; iron oxide staining (58"); trace small cobbles, subround; dry to moist	[57.0 - 71.5') Topock - Alluvium Deposits; Silty sand with gravel (57.0 - 67.0') (SM); brown (7.5YR 5/4); very fine grained to very coarse grained, angular to subangular; little silt; some coarser clasts composed of metadiorite; moist; iron oxide staining (58'); trace small cobbles, subround; dry to moist Deposits USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundward.	56 57		10.70	Alluvium	sw		gravel (subrou and coa staining	(SW), very fine grained to very coarse nd; and granules to very large pebbles arser clasts composed of metadiorite;	grained, angu , angular; trac wet; iron oxid	ular to ce silt; le		
	breviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwa	58	55-60 1/15/2020		Alluvium	SM		(SM); b angular angular metadio	rown (7.5YR 5/4); very fine grained to r to subangular; some granules to very r to subangular; little silt; some coarse orite; moist; iron oxide staining	very coarse g large pebble r clasts comp	rained, s,		
obreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwa		60											
			s: USCS =	Unified Soil CI	assification	Systen	n, ft = f	eet, ba	s = below ground surface, ams	sl = above	mean se	a level, GW =	groundwat

-	AKC	ADIS	for natural and built assets		Bo	ring	Log		She	et: 4 of	6
Date S						Elevation		Borin	a No.:	IRZ-35 Pi	ilot
		ted: <u>01/14/</u>				g (NAD8	•				
_	Co.:	<u>Casca</u>			_	(NAD8	,		PG&E		
•	Metho		<u>Drilling</u>		Total D	•		-		V Remedy Ph	
	g Type Name:		Longyear Trad Ramos					.ocation:	PG&E I	opock, Topod	k, California
	Name. Asst:		idelaria / F. Sa			ng Metho	/ater: <u>51.47 ft bgs</u> od: <u>4 inch x 10ft Core Barrel</u> F	Project Nu	ımher: F	RC000753.00	 51
ogge			antham		-	ng Interv		TOJCCI IV	umber. <u>1</u>	10000133.00	01
ditor:			Willford		-	ted to W					
(ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
61_											
4											
.62		IRZ-35-SS-									
-		60-65 1/15/2020									
63		15:00									
-	120										
64							(64'); moist				
٠											
65											
- 66				Topock - Alluvium	SM						
				Deposits							
67_											
		IRZ-35-SS- 65-70								(67.0 - 68.0') Soft drilling.	
88		1/15/2020 15:05									
							(68'); dry to moist			(68.0 - 72.0') Rough drilling.	
69_			IRZ-35-VAS-								
4	60		67-72 (920 ppb)				(<mark>69'</mark>); moist				
70_			1/13/2020 15:40								
4											
71_											
\dashv							(71.5 - 73.5') Topock - Alluvium Deposits; Well ç	graded san	d with		
72_		IRZ-35-SS-		Topock -		000000	gravel (SW); brown (7.5YR 5/4); very fine graine grained, angular to subangular; little granules to	d to very co	parse	(72.0 - 77.0')	
		70-75 1/15/2020		Alluvium Deposits	SW	>:-:::	pebbles, angular to subangular; trace silt; little composed of metadiorite; moist	oarser clas	its	Normal drilling.	
73		15:10		Doposito			(72.5'); wet				
71							(73.5 - 77.0') Topock - Alluvium Deposits; Silty s				
74	000						(SM); brown (7.5YR 5/4); very fine grained to ver angular to subangular, little granules to very larg	e pebbles,	´		
75_	600			Topock -			angular to subangular; little silt; little coarser cla metadiorite; moist to wet; iron oxide staining	sts compos	sea of		
				Alluvium	SM		(74'); dry to moist (74.5'); moist to wet				
76_				Deposits							
77_		ID7 25 00								(77.0 27.0)	
		IRZ-35-SS- 75-80 1/15/2020					(77.0 - 85.0') Topock - Alluvium Deposits; Silty g (GM); brown (7.5YR 5/4); granules to very large	pebbles, ar		(77.0 - 97.0') Soft drilling.	
78_		1/15/2020					to subangular; some very fine to very coarse gra angular to subangular; little silt; and coarser clas		ed of		
4	120			Topock - Alluvium	GM		metadiorite; moist to wet	•			
79_				Deposits		自到					
4											
80	intion	· 11808 - 1	Unified Sail Cl	ossification	Systan	<u> </u>	et, bgs = below ground surface, amsl =	- above =	2002 252	lovol CM =	aroundwat-
							et, bgs = below ground surface, amsi =				grouriuwate

9/	ARC	CADIS	for natural and built assets		Во	ring Lo	g		She	eet: 5 of	6
Date S						Elevation:	505.0 ft amsl	Borin	a No.:	IRZ-35 P	ilot
		eted: 01/14/				g (NAD83):	2101643.1				
Drilling		<u>Casca</u>			_	(NAD83):	7615918.0	_ Client:	PG&E		
Drilling			Drilling		Total D	•	102 ft bgs	-		W Remedy Ph	
Drill Ri			Longyear Tra				6-10 inches	_ Location:	PG&E	Topock, Topod	ck, California
Driller			Ramos		-		51.47 ft bgs	— Droiget N		DC0007E3 00	E 1
Drilling			ndelaria / F. Sa antham		-	ng Method: ng Interval:	4 inch x 10ft Core Barrel Continuous	_ Project iv	umber.	RC000753.00	31
Logge Editor:			Willford		•	ted to Well:	× Yes □ No	_			
Laitoi.		<u> </u>	VIIIIOIG		T						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
 81											
 82						(81'); \	vet				
02		IRZ-35-SS- 80-85 1/15/2020		Topock - Alluvium	GM						
83		1/15/2020 15:25		Deposits	OW						
	120										
84			IRZ-35-VAS- 82-87			PI					
-			(2500 ppb) 1/14/2020								
85			12:15				87.0') Topock - Alluvium Deposits; Si				
				Topock -		(SM); to very	eddish brown / mo <mark>de</mark> rate brown (5YR coarse grained, angular to subangula	(4/4); very fine ar; some granu	grained les to		
86		IRZ-35-SS- 85-88		Alluvium Deposits	SM	∷ ∷ ∷ very la	rge pebbles, angul <mark>ar to s</mark> ubangular; s composed of metadiorite; wet; iron ox	ome silt; little o	coarser		
 87		1/15/2020 15:30		·				J			
0/		10.50		Topock - Weathered	†·-·-	(87.0 -	88.0') Topock - Weathered Bedrock - SM); reddish brown / moderate brown	conglomerate	; Silty		
 88				Bedrock - conglomerate	SM	graine	d to coarse grained, subangular; little s, angular to subangular; little silt; littl	granules to lar	ge		
				Qongionicia:		compo	sed of metadiorite; moist; iron oxide s	staining	/		
89						(88.0 -	102.0') Topock - Competent Bedrock	- conglomerat	е		
90											
91					1						
92	120										
93											
				Topock -							
94				Competent Bedrock -							
				conglomerate	e 						
95											
 96											
55											
 97											
										(97.0 - 102.0') Rough drilling	
98										likely due to broken metal	
	60									drilling piece getting caught,	
99										found piece in	
										soil core.	
100_	<u> </u>	11000	11.15.16.15	<u> </u>		<u> </u>		, ,			
					-		s = below ground surface, am				groundwater
ppp =	parts p	per pillion, N	k = no recove	ery, plue wa	iter table	e symbol repr	esents depth to water measur	ea auring th	ie tirst V	45 interval	

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Bo	ring Lo	g			She	eet: 6 of	6
	Started:					Elevation:	505.0 ft an		Borir	ng No.:	IRZ-35 P	ilot
Date C Drilling	-	ted: <u>01/14/2</u> <u>Cascac</u>				g (NAD83): (NAD83):	2101643.1 7615918.0		_	PG&E		
Drilling					Total De		102 ft bgs		_ Client. _ Project:		W Remedy Ph	ase 1
Drill Ri			ongyear Trac			-	6-10 inche	S	-		Topock, Topod	
Driller							: <u>51.47 ft bg</u>		_			,
Drilling			<u>delaria / F. Sa</u>			g Method:		ft Core Barrel	_ Project N	lumber:	RC000753.00	51
Logge		Joe La				g Interval: ed to Well:	Continuous		_			
Editor		Grant V	VIIIIOIG		Convert	ed to vveii:	× Yes	No				I
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS		Soil Description			Drilling Notes	Drilling Fluid
101	60			Topock - Competent Bedrock - conglomerate								
102				1		<i>Y7X/7</i>	Er	nd of Boring at 102.0 'bo	gs.			
103												
104								0				
105								7.9				
106												
_107												
108												
109						10						
110					1							
111												
112												
113												
114												
115												
116												
117												
118												
119												
120												
Abbre	viations	: USCS = L	Inified Soil Cl	assification	System	n, ft = feet, b	gs = below gi	ound surface, am	sl = above	mean se	a level, GW =	groundwater,

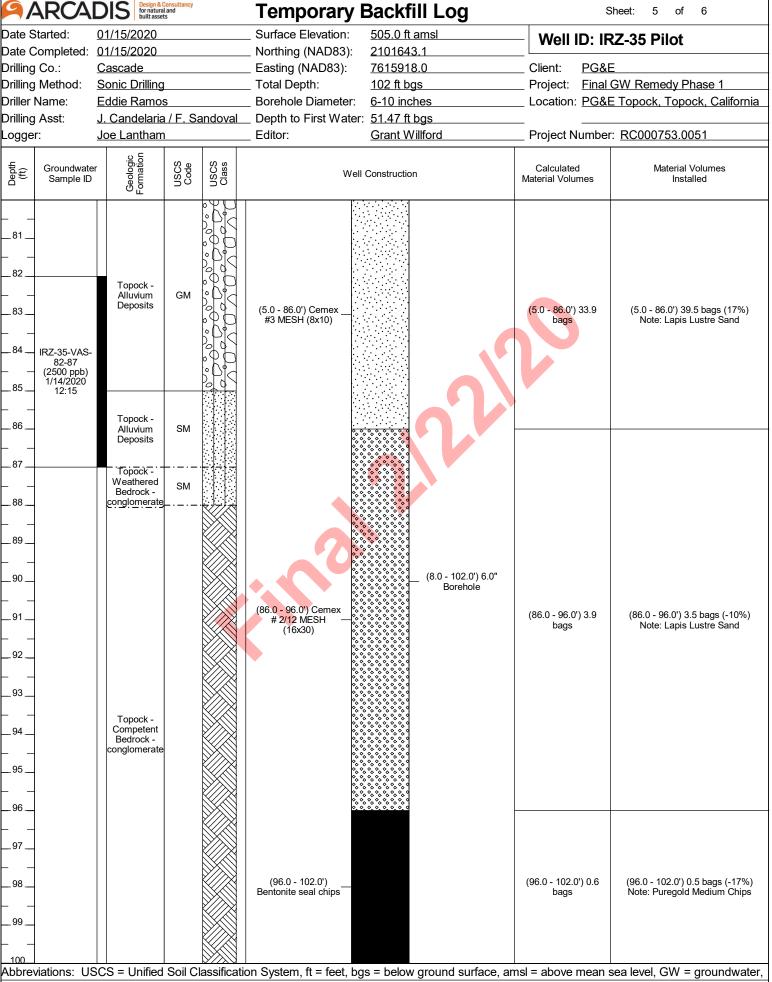
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater ppb = parts per billion, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval

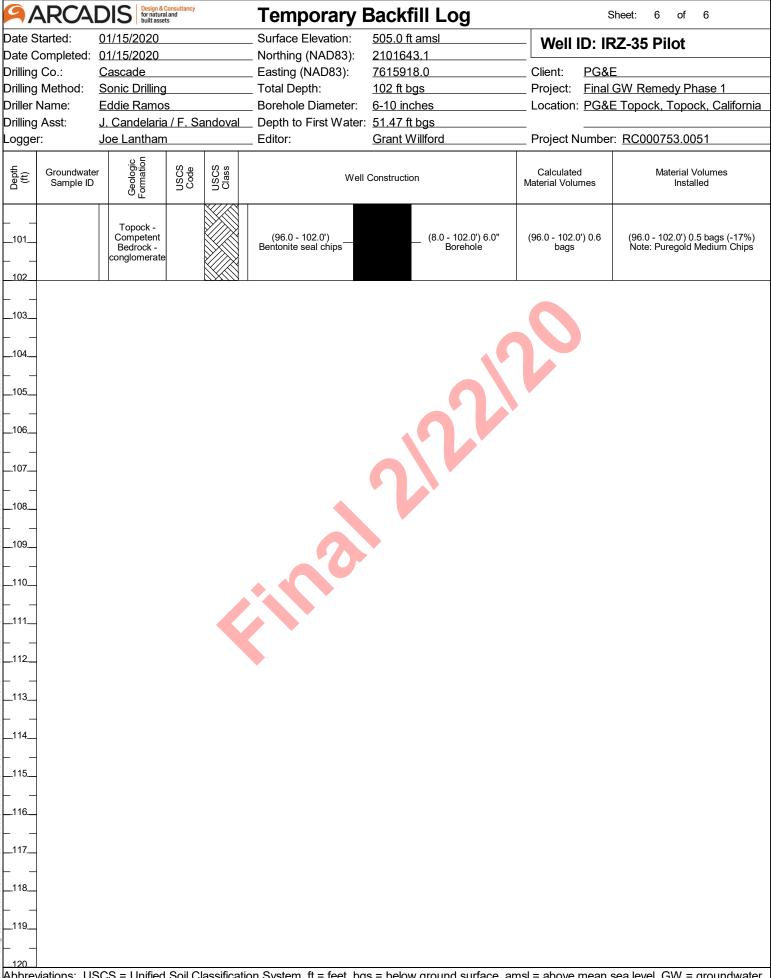
ARCADIS Design & Consumor for natural and built assets **Temporary Backfill Log** Sheet: Surface Elevation: 505.0 ft amsl 01/15/2020 Well ID: IRZ-35 Pilot Date Completed: 01/15/2020 Northing (NAD83): 2101643.1 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615918.0 Client: PG&E Drilling Method: Sonic Drilling Total Depth: 102 ft bgs Project: Final GW Remedy Phase 1 Driller Name: **Eddie Ramos** Borehole Diameter: 6-10 inches Location: PG&E Topock, Topock, California Drilling Asst: J. Candelaria / F. Sandoval Depth to First Water: 51.47 ft bgs Joe Lantham Editor: **Grant Willford** Project Number: RC000753.0051 Logger: Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed (0.0 - 0.5') Steel Plate Note: Steel plates with BMPs in place (0.5 - 5.0') Cemex (0.5 - 5.0') 6 bags (9%) (0.5 - 5.0') 5.5 bags Note: Lapis Lustre Sand #60 (0.0 - 8.0') 10.0" NR Borehole 5 Topock - Fill SW-SM (5.0 - 86.0') Cemex (5.0 - 86.0') 33.9 (5.0 - 86.0') 39.5 bags (17%) #3 MESH (8x10) Note: Lapis Lustre Sand (8.0 - 102.0') 6.0" Borehole Topock -Alluvium Deposits 18 Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

ARCADIS Design & Consult for natural and built assets **Temporary Backfill Log** Sheet: Surface Elevation: 01/15/2020 505.0 ft amsl Well ID: IRZ-35 Pilot Date Completed: 01/15/2020 Northing (NAD83): 2101643.1 Cascade Drilling Co.: Easting (NAD83): 7615918.0 Client: PG&E Drilling Method: Sonic Drilling Total Depth: 102 ft bgs Project: Final GW Remedy Phase 1 Driller Name: **Eddie Ramos** Borehole Diameter: 6-10 inches Location: PG&E Topock, Topock, California Drilling Asst: J. Candelaria / F. Sandoval Depth to First Water: 51.47 ft bgs Logger: Joe Lantham Editor: **Grant Willford** Project Number: RC000753.0051 Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed 21 22 Topock -Alluvium Deposits 23 24 25 26 Topock -SW Alluvium Deposits 28 29 (5.0 - 86.0') Cemex (8.0 - 102.0') 6.0" (5.0 - 86.0') 33.9 (5.0 - 86.0') 39.5 bags (17%) 30 #3 MESH (8x10) Borehole Note: Lapis Lustre Sand 31 32 33 Topock -SM Alluvium Deposits 35 36 37 38 39 Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will

ARCADIS Granatural and built assets **Temporary Backfill Log** Sheet: Surface Elevation: 01/15/2020 505.0 ft amsl Date Started: Well ID: IRZ-35 Pilot Date Completed: 01/15/2020 Northing (NAD83): 2101643.1 Cascade Drilling Co.: Easting (NAD83): 7615918.0 Client: PG&E Drilling Method: Sonic Drilling Total Depth: 102 ft bgs Project: Final GW Remedy Phase 1 Location: PG&E Topock, Topock, California Driller Name: **Eddie Ramos** Borehole Diameter: 6-10 inches Drilling Asst: J. Candelaria / F. Sandoval Depth to First Water: 51.47 ft bgs Logger: Joe Lantham Editor: **Grant Willford** Project Number: RC000753.0051 Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed Topock -SM Alluvium Deposits 42 43 45 Topock -Alluvium Deposits (5.0 - 86.0') Cemex (8.0 - 102.0') 6.0" (5.0 - 86.0') 33.9 (5.0 - 86.0') 39.5 bags (17%) 50 #3 MESH (8x10) Borehole Note: Lapis Lustre Sand 51 52 Topock -GM Alluvium Deposits 53 IRZ-35-VAS-52-57 (810 ppb) 1/13/2020 .55 10:45 Topock -56 SW Alluvium Deposits 57 58 Topock -Alluvium Deposits SM Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will

ARCADIS Design & Consult for natural and built assets **Temporary Backfill Log** Sheet: Surface Elevation: 01/15/2020 505.0 ft amsl Well ID: IRZ-35 Pilot Date Completed: 01/15/2020 Northing (NAD83): 2101643.1 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615918.0 Client: PG&E Drilling Method: Sonic Drilling Total Depth: 102 ft bgs Project: Final GW Remedy Phase 1 Location: PG&E Topock, Topock, California Driller Name: **Eddie Ramos** Borehole Diameter: 6-10 inches Drilling Asst: J. Candelaria / F. Sandoval Depth to First Water: 51.47 ft bgs Joe Lantham Editor: **Grant Willford** Project Number: RC000753.0051 Logger: Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed 61 62 63 64 65 Topock -Alluvium SM 66 Deposits 68 69 IRZ-35-VAS-67-72 (920 ppb) 1/13/2020 (5.0 - 86.0') Cemex (8.0 - 102.0') 6.0" (5.0 - 86.0') 33.9 (5.0 - 86.0') 39.5 bags (17%) 15:40 #3 MESH (8x10) Borehole Note: Lapis Lustre Sand Topock -Alluvium Deposits Topock -Alluvium SM Deposits 76 78 Topock -Alluvium Deposits Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will





Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

9/	RC	ADIS	Design & Consultancy for natural and built assets		Во	ring l	_og		She	et: 1 of	5
Date S		10/05/2				Elevation		Borina	No.:	IRZ-37 Pi	lot
		d: <u>10/07/</u>			-	g (NAD83	•	_			
Drilling		Casca			_	(NAD83)			G&E		
_	Method		•		Total De	•	87 ft bgs	•		V Remedy Ph	
Drill Rig			<u>_ongyear Tra</u>			le Diamet		_ Location: <u>F</u>	G&E I	opock, Topoc	k, California
Driller N Drilling			Ramos doval/J. Cand		-	o First wa ng Method	ater: 48.25 ft bgs d: 4 inch x 10 ft. Core Barrel	— Project Nur	mbor: E	RC000753.00	<u> </u>
Logger			Willford		-	ig ivietriot ig Interva		_ Project Nui	IID e I. <u>r</u>	<u> </u>	J I
Editor:	•		McGrane		-	ted to We		_			
		<u> </u>	VICOTATIO		1	1 1					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
- 1 - 2 - 3 - 4 - 1 - 3 - 4 - 1 - 3 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	60 120 84			Topock - Fil Topock - Alluvium Deposits	I SM	(2 o p) (1) (1) (1) (1) (1) (1) (1) (2.0 15.0') Topock - Fill; Silty sand with gra 2.5Y 8/2) with very pale brown (10YR 7/3); parse grained, angular to subround; little gebbles, angular to round; little silt; dry 2'); moist 2'); moist 2'); moist 2'); moist	inty sand (SM); very fine grained ranules to mediur fine grained to granules to mediur fine grained to granules to mediur fine grained to granules to mediur fine granules to	to m	(0.0 - 5.0') Hand augered for utility clearance. (5.0 - 17.0') Soft drilling. (5.0 - 17.0') Soft drilling. Fine materials filled up/compacted in core bags leading to 7/10 ft recovery.	(0.0 - 87.0') No water used
<u> </u>					1					Driller also	
20					<u> </u>					noted core	
2							t, bgs = below ground surface, am		ean sea	a level, GW = g	groundwater,
_§ ppb = p	parts pe	billion, blu	ue water table	symbol re	present	s depth to	water measured during the first \	/AS interval			

	" '	ADIS	for natural and built assets		DU	rıng I	_og		She	et: 2 of	5
Data C	Started:	10/05/				Elevatio		Borin	a No.:	IRZ-37 Pi	lot
	•	ed: <u>10/07/</u>				g (NAD8		_			
	Co.:	<u>Casca</u>			_	(NAD83		_ Client:	PG&E		
_	Method		Drilling		Total De	•	87 ft bgs	-		V Remedy Ph	
	g Type:		Longyear Trad			e Diame		_ Location:	PG&E T	opock, Topoc	k, California
	Name:		Ramos		=		ater: 48.25 ft bgs	- D!4 N		2000250 000	- 4
_	Asst:		idoval/J. Cand		-	g Metho		_ Project N	umber: <u>F</u>	RC000753.005	01
ogge ditor:			Willford McGrane		-	ig Interval ed to We		-			
JILOI .		<u>Sean i</u>	VICGIANE		Conven		II. A les NO				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
-21_ -22_ -23_ -24_ -25_ -26_	84			Topock - Alluvium Deposits	SM					prior to drill cutting collection.	
							(7.0 - 35.0') Topock - Alluvium Deposits; Sil SM); brown (7.5YR 4/4); very fine grained to ngular to subround; little granules to mediur	medium grain n pebbles, and	ied,	(27.0 - 37.0') Soft drilling 27-35 ft bgs	
28	84			Topock - Alluvium Deposits	SM	. . s	Jbangular; little silt; trace small cobbles, su pmogeneous; weak cementation	bround; dry;		Hard drilling 35-37 ft bgs. Fine materials filled up/compacted in core bags leading to 7/10 ft recovery. Driller also noted core barrel was full prior to drill cutting collection.	
-JJ						S S	5.0 - 44.0') Topock - Alluvium Deposits; Sil rown (7.5YR 4/4); low plasticity; and very fir and, angular to subround; little granules to s ngular to subangular; dry; very soft to soft; h asticity when wetted	e to medium omall pebbles,	grained		
36 _37 _38 _39	120			Topock - Alluvium Deposits	ML					(37.0 - 47.0') Rough drilling.	
_ _37 _38 _ _39 _ _40		11808 - 1	Initiad Soil Cl	Alluvium Deposits		ft = feo	, bgs = below ground surface, am	sl = above r	mean soo	Rough drilling.	groundwato

Surface Elevation 505.2 ft amal 506/2019 Surface Elevation 505.2 ft amal 506/2019 Surface Elevation 505.2 ft amal 506/2019 Surface Elevation 505.2 ft amal 506/2019 Surface Elevation 505.2 ft amal 506/2019 Surface Elevation 506/2019 Surface Eleva	- /-	4K(ADIS	for natural and built assets		Bo	ring L	.og		She	et: 3 of	5
Morning Co. Cascade Fasting (NADS3) Filling Method: Sonic Drilling Filling Asst. Sonic Drill									Borin	g No.:	IRZ-37 Pi	lot
reling Method: Sonic Drilling 18 Type 18 Sonic Drilling 28 Sonic Drilling 28 Edde Ramos 19 Sonic Drilling 28 Edde Ramos 19 Sonic Drilling 28 Edde Ramos 29 Sonic Drilling 29 Sonic Drilling 29 Sonic Drilling 20 S		•					- '	•	_			
Sorehole Diameter: 4-65 inches Location: PG&E Topock. Topock. Californi infinite Name: milling Asst: 5. SandovalU. Candelaria. Sampling Method: 4. Inch x 10. ft. Core Barrel Project Number: RC000753.0051 control officer: Sampling Interval: Canth Willford Sorehold: Canth Willford S	_					_						
Project Number: RC000753.0051 Sean McGrant Wilford Sean McGrant Sean	-			•			•	<u> </u>	_ ,		•	
organisms Assts: F. Sandowald. Candelaria: Sampling Method: Sampling Internal: Continuous Sampling Internal: Sampling Internal									_ Location:	PG&E T	opock, Topoc	k, California
Seam McGrane Converted to Well: X Yes No Seam McGrane Converted to Well: X Yes No Drilling Notes Drilli						•		•	-			
Converted to Well:	-					-	-		_ Project N	lumber: <u>F</u>	RC000753.00	51
Siege Sample ID Grundwater Siege Sample ID Grundwater Siege						-	-		_			
Topock Alluxium Deposits Siny and with graved (36); were fine grained to very coarse grained, angular to subangular; the subangular state of the posits of the subangular state of the posits of the p	:allor:		Sean	ivicGrane	_	Conven	ea to vvei	: X Yes No				T
Topocis Alluvium Deposits Silly sand with gravel (SM), very fine grained to very coarse grained and an applier to subtangular; title sill, trace day, styl-moderate, comentation (47.0 - 50.07) (Snt drilling). Topocis SM Deposits (SM), very fine grained to very coarse grained and applier to subtangular; title sill, trace day, styl-moderate, comentation (47.0 - 50.07) (Snt drilling). Topocis SM Deposits (SM), very fine grained to very coarse grained and an applier to subtrouring file granules to subtrouring file graines to very coarse grained and an applier to subtrouring file graines to very file graines (50.0 - 52.07) (Snt drilling). Topocis SM Deposits (SM), redeath brown (SPR 24), low plasticity, and very fine to very coarse grained and an applier to subtrouring file graines to very file graines (SM), redeath brown (SPR 24), very fine grained to very coarse grained, angular to subtrouring come grained coarse (SS, 4.7) (Spock - Alluvium Deposits, Poorly graded gravel (GP), light greening may (GLEY2 7IY), small cobbies, dry (SS, 4.7) (SS,	Depth (ft)	Recovery (in)			Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
Allowum Deposits ML Deposits ML Deposits SM SM Deposits SM Deposits SM SM Deposits SM SM Deposits SM SM Deposits SM SM Deposits SM SM Deposits SM SM Deposits SM SM Deposits SM SM Deposits SM SM Deposits SM SM Deposits SM SM Deposits SM SM Deposits SM SM SM SM Deposits SM SM SM Deposits SM SM Deposits SM SM SM Deposits SM SM SM SM SM SM SM SM SM SM SM SM SM	- _41_											
Deposits Deposits Deposits Deposits Deposits Deposits Deposits Deposits Deposits Deposits Deposits	_ _42					ML						
44	43											
46 - 46.0 Topock - Allowum Deposits Silys and with gravel Silys and grained to very coarse grained, angular to subangular: Silvs and grained Silvs and grain	_	120										
Hitle slit, trace clay, dry moderate cementation RZ-37-SS-45-50	.44						∷ ∷ ∷ (s	M); very fine grained to very coarse grained	d, angular to ັ			
Topock- AS-50 108 215 RZ-37-SS- 108 2019 08:15 RZ-37-SS- 108 2019 08:15 RZ-37-SS- 108 2019 08:25 RZ-37-SS- 108 2019 108 25 RZ-37-SS- 108 2019 108 2019 108 25 RZ-37-SS- 108 2019	_45						litt	le silt; trace clay; dry; moderate cementation	on	iguiai,		
Topock Alluvium Deposits Sandy slift with gravel (ML): reddish brown (SYR 54); boy plasticity; and very fine to very coarse granular to subround; tittle granular	-											
RZ-37-SS 45-50 100/2019 108-15 120 RZ-37-SS 100/2019 108-25 120 RZ-37-VAS 100/2019 108-25 108-2019 108-25 108-2019 108-25 108-2019 108-25 108-2019 108-25 108-2019 108-25 108-2019 108-25 108-2019 108-25 108-2019 108-25 108-2019 108-25 108-2019 108-2019 108-25 108-2019 108-25 108-2019 108	_46				Topock -							
RZ-37-SS 45-50 109/2019 08:15	47					SM						
109/2019 08:15 49 49 50 108:15 109/2019 08:15 109/2019 08:25 109/2019 08:25 109/2019 08:25 109/2019 108:25 109/2019	_4/											
49	40		10/9/2019								Soft drilling.	
Age	-40		06.15							T		
Age	40											
50 Topock Alluvium Deposits So. 55 .49				<u> </u>	†·-·7							
Topock-Alluvium Deposits S2	50						. co	arse grained sand, angular to subround; li	ttle granules to	o		
Topock-Alluvium Deposits Solid	_00						1. 1. 1		ce clay; moist;	Stiff;		
Deposits Deposits Deposits Deposits Deposits Deposits Deposits Deposits Deposits Deposits Deposits	51					1.7					rtough unling.	
Solution Solution	.01					ML						
Section Sect	52	100										
10/9/2019 08:25 10/9/2019 08:25 10/9/2019 10		120	50-55									
Topock - Alluvium Deposits; Poorty graded gravel (GP); light greenish gray (GLEY2 7/1); small cobbles; dry; pulverized metadiorite boulder (GN); light greenish gray (GLEY2 7/1); small cobbles; dry; pulverized metadiorite boulder (SM); reddish brown (578 5/4); very fine grained to very coarse grained, angular to subround; some granules to large pebbles, angular trace clay; moist to dry; mottled; strong cementation; iron oxide staining; some red staining on gravel clasts (55'); dry IRZ-37-SS-55-60	_53_											
IRZ-37-VAS-52-57 (1000 ppb) 10/6/2019 14:30 Topock Alluvium Deposits SM					GP	(5: 1: 1: 1: (G	3.0 - 53.4') Topock - Alluvium Deposits; Po P); light greenish gray (GLEY2 7/1): small	oorly graded grootbles: drv:	ravel			
52-57 (1000 ppb) 1006/2019 14:30 IRZ-37-SS-560 10/9/2019 08:30 IRZ-37-VAS-57-62 (1100 ppb) 10/9/2019 08:30 IRZ-37-VAS-57-62 (1100 ppb) 10/9/2019 10/35 SM Deposits S	_54			IRZ-37-VAS-	\ Deposits	/	∵ ∷ ∵ pu	lverized metadiorite boulder		uravel		
angular to subangular; little silt; trace small cobbles, subangular; trace clay; moist to dry; mottled; strong cementation; iron oxide staining on gravel clasts SM				52-57			: : : (s	M); reddish brown (5YR 5/4); very fine grai	ined to very co	arse		
Alluvium Deposits SM Deposits SM Deposits IRZ-37-SS-560 10/9/2019 08:30 IRZ-37-VAS-57-62 (1100 ppb) 10/7/2019 10:35 Deposits IRZ-37-VAS-57-62 (1100 ppb) 10/7/2019 10:35 Deposits IRZ-37-VAS-57-62 (1100 ppb) 10/7/2019 10:35 Deposits IRZ-37-VAS-57-62 (1100 ppb) 10/7/2019 10:35 SM Deposits IRZ-37-VAS-57-62 (1100 ppb) Alluvium Deposits; Silty sand (SM); reddish to subround; little granules to small pebbles, angular to subround; little granules to small pebbles, angular to subround; little silt; trace clay; wet to moist; iron oxide staining conditions. SM Deposits IRZ-37-VAS-57-62 (1100 ppb) 10/7/2019 10:35 SM Deposits SM Deposits IRZ-37-VAS-57-62 (1100 ppb) 10/7/2019 10:35 I	.55			10/6/2019			: : :: an	gular to subangular; little silt; trace small o	cobbles, subar	ngular;	(FE 0 == :::	
18Z-37-SS-55-60 10/9/2019 08:30 BRZ-37-VAS-57-62 (1100 ppb) 10/7/2019 10:35 By breviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater for the substance of t	_			11.00		SM	sta	nining; some red staining on gravel clasts	entation; iron o	oxide		
IRZ-37-SS-55-60 10/9/2019 08:30 IRZ-37-VAS-57-62 (1100 ppb) 10/7/2019 10:35 Deposits Silty sand (SM); reddish brown (5YR 5/4); very fine grained to very coarse grained, angular to subround; little granules to small pebbles, angular to subangular; little silt; trace clay; wet to moist; iron oxide staining conditions. (57.0 - 64.0') Normal drilling to subround; little silt; trace clay; wet to moist; iron oxide staining (57.0 - 64.0') Normal drilling conditions. (57.0 - 64.0') Normal drilling to subangular; little silt; trace clay; wet to moist; iron oxide staining (57.0 - 64.0') Normal drilling conditions. (57.0 - 64.0') Normal drilling to subangular; little silt; trace clay; wet to moist; iron oxide staining (57.0 - 64.0') Normal drilling conditions. (57.0 - 64.0') Normal drilling to subangular; little silt; trace clay; wet to moist; iron oxide staining (57.0 - 64.0') Normal drilling conditions. (57.0 - 64.0') Normal drilling to subangular; little silt; trace clay; wet to moist; iron oxide staining (57.0 - 64.0') Normal drilling to subangular; little silt; trace clay; wet to moist; iron oxide staining (57.0 - 64.0') Normal drilling to subangular; little silt; trace clay; wet to moist; iron oxide staining (57.0 - 64.0') Normal drilling to subangular; little silt; trace clay; wet to moist; iron oxide staining (57.0 - 64.0') Normal drilling to subangular; little silt; trace clay; wet to moist; iron oxide staining (57.0 - 64.0') Normal drilling to subangular; little silt; trace clay; wet to moist; iron oxide staining (57.0 - 64.0') Normal drilling to subangular; little silt; trace clay; wet to moist; iron oxide staining (57.0 - 64.0') Normal drilling to subangular; little silt; trace clay; wet to moist; iron oxide staining (57.0 - 64.0') Normal drilling to subangular; little silt; trace clay; wet to moist; iron oxide staining (57.0 - 64.0') Normal drilling to subangular; little silt; trace clay; wet to moist; iron oxide stainin	_56						(5)	5'); dry				
182-37-VAS-55-60 10/9/2019 08:30 IRZ-37-VAS-57-62 (1100 ppb) 10/7/2019 10:35 IRZ-37-VAS-57-62 (1100 ppb) 10/7/	_											
55-60 10/9/2019 08:30 IRZ-37-VAS- 57-62 (1100 ppb) 10/7/2019 10:35 IRZ-37-VAS- 57-62 (1100 ppb) 10/7/2019 10:35 Normal drilling to subround; little granules to small pebbles, angular to subangular; little silt; trace clay; wet to moist; iron oxide staining bbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater	.57		IR7.37 SS					7.0. C0.0l) T L. Alle S. D	L 1/010		(F7.0 04.01)	
120 08:30 IRZ-37-VAS- 57-62 (1100 ppb) 10/7/2019 10:35 Topock - Alluvium Deposits Subangular; little silt; trace clay; wet to moist; iron oxide staining Deposits Subangular; little silt; trace clay; wet to moist; iron oxide staining SM Deposits Subangular; little silt; trace clay; wet to moist; iron oxide staining SM Deposits Subangular; little silt; trace clay; wet to moist; iron oxide staining SM Deposits Subangular; little silt; trace clay; wet to moist; iron oxide staining SM Deposits Subangular; little silt; trace clay; wet to moist; iron oxide staining SM Deposits Subangular; little silt; trace clay; wet to moist; iron oxide staining SM Deposits Subangular; little silt; trace clay; wet to moist; iron oxide staining SM Deposits Subangular; little silt; trace clay; wet to moist; iron oxide staining SM Deposits Subangular; little silt; trace clay; wet to moist; iron oxide staining SM Deposits Subangular; little silt; trace clay; wet to moist; iron oxide staining SM Deposits Subangular; little silt; trace clay; wet to moist; iron oxide staining SM Deposits Subangular; little silt; trace clay; wet to moist; iron oxide staining SM Deposits	_		55-60				bro	own (5YR 5/4); very fine grained to very co	arse grained,		Normal drilling	
120 (1100 ppb) 1077/2019 Deposits SM Deposits SM Deposits SM Deposits Depos	.58				. .					aining	conditions.	
bbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater	_	120		(1100 ppb)	Alluvium	SM		•				
bbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater	_59			10/7/2019	Deposits							
<u> </u>	_											
	60	·		11-16-10-10	l'C "	<u> </u>	<u> </u>	hara — halan — — — — — — — — — — — — — — — — — — —	-1 - '			
								<u> </u>			i ievel, GW =	groundwater

/-	AKC		built assets			ອ	Log			
	started:	10/05			Surface		•	Boring No.	: <u>IRZ-37 Pi</u>	lot
		d: <u>10/07</u>			Northin		*	_	·-	
Orilling	Co.: Method	Casca	ade Drilling		Easting Total De		3): <u>7616004.6</u> 87 ft bgs	_ Client: <u>PG&E</u> _ Project: <u>Final C</u>	SW Remedy Ph	ase 1
_	тиетной g Type:		Longyear Tra		Boreho		G	_ Project. <u>Final C</u> _ Location: <u>PG&E</u>	•	
	Name:		Ramos				Vater: 48.25 ft bgs		<u> </u>	nt, Gamon
Drilling	Asst:	F. Sar	ndoval/J. Cand	delaria	Samplir	ng Meth	od: 4 inch x 10 ft. Core Barrel	_ Project Number:	RC000753.005	51
ogge			Willford		Samplin	-		_		
Editor:		<u>Sean</u>	<u>McGrane</u>		Conver	ted to V	/ell: X Yes No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fl
 _61			IRZ-37-VAS- 57-62 (1100 ppb) 10/7/2019 10:35	Topock - Alluvium Deposits	SM		(60.0 - 62.0") Topock - Alluvium Deposits; S (SM); reddish brown (5YR 5/4); very fine gra grained, angular to subround; some granule pebbles, angular to subround; little silt; trace angular; trace clay; moist; moderate cement staining	ined to very coarse s to very large s small cobbles,		
62 _63		RZ-37-SS- 60-65 10/9/2019 08:40					(62.0 - 67.0') Topock - Alluvium Deposits; S (SM); reddish brown (5YR 5/4) little light gre 7/1); very fine grained to very coarse grained little granules to large pebbles, angular to scoarser clasts composed of metadiorite; dry cementation; iron oxide staining; some red semantic composed of the compo	en <mark>ish</mark> gray (GLEY2 I, angular to subround; ubangular; little silt; ; mottled; weak		
_64 - _65				Topock - Alluvium Deposits	SM		clasts		(64.0 - 66.5') Rough drilling.	
66										
_67	II	RZ-37-SS- 65-70					(67.0 - 74.5') Topock - Alluvium Deposits; S		(66.5 - 67.0') Soft drilling. (67.0 - 75.0')	
-68_ -68_ 69_		10/9/2019 08:39					(SM); reddish brown (5YR 5/4) with light brofine grained to very coarse grained, angular silt; little granules to medium pebbles, angular trace clay; moist; mottled; moderate cement staining; 20,50,25,5. Color change from 72-some 2.5YR 5/6.	to subround; some lar to subangular; ation; iron oxide	Normal drilling conditions.	
_70 _ - _71 _				Topock - Alluvium Deposits	SM					
_72 _ _73		RZ-37-SS- 70-75 10/9/2019 08:20					(72') reddish brown (5YR 5/4) with red (2.5Y	'R 5/6)		
_ _74										
_75					† ····		(74.5 - 87.0') Topock - Competent Bedrock - (2.5YR 5/6); dry; moderate cementation; iron pulverized/highly fractured rock, friable	conglomerate; red n oxide staining;	(75.0 - 77.0') Rough drilling.	
_76 _ _77				Topock -						
	120			Competent Bedrock - conglomerat					(77.0 - 87.0') Rough drilling. Core barrel locked up; had some difficulties getting it out. Lost core downhole after freeing up core barrel	

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sh	neet: 5 of	5
	started:	10/05/2	2019			Elevation:	505.2 ft amsl	Borin	g No.	: <u>IRZ-37 Pi</u>	lot
	Complet					g (NAD83):	2101555.8	_			_
Orilling		Casca			_	(NAD83):	7616004.6	_ Client:	PG&E	NA/ D D -	1
_	Methog Type		<u> ⊃rilling</u> <u> ongyear Tra</u>		Total De	eptn: le Diameter:	87 ft bgs 4-6 inches	_ Project:		SW Remedy Pha Topock, Topoc	
	у туре Name:	<u>Eddie l</u>					48.25 ft bgs	_ Location.	IGAL	тороск, торос	K, Calliottila
	Asst:		doval/J. Cand		-	ng Method:	4 inch x 10 ft. Core Barrel	_ _ Project N	umber:	RC000753.005	51
.ogge			Willford		-	ng Interval:	Continuous	_ ,			
ditor:		Sean N	<u>//cGrane</u>	(Convert	ted to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
	120		no sample- - (Interval did not produce) 10/8/2019 07:35	Topock - Competent Bedrock - conglomerate						Recovered core with flapper drill bit.	
88 89 90						0	End of Boring at 87.0 'bg	js.			
92											
.93											
94 											
_95											
_96 _											
_97											
.98											
_ _99											
100	•	110.05			•						
							s = below ground surface, am			ea level, GW = g	groundwater,
= aq	parts p	er billion, blu	ue water table	symbol rep	present	s depth to wa	ter measured during the first V	AS Interval			

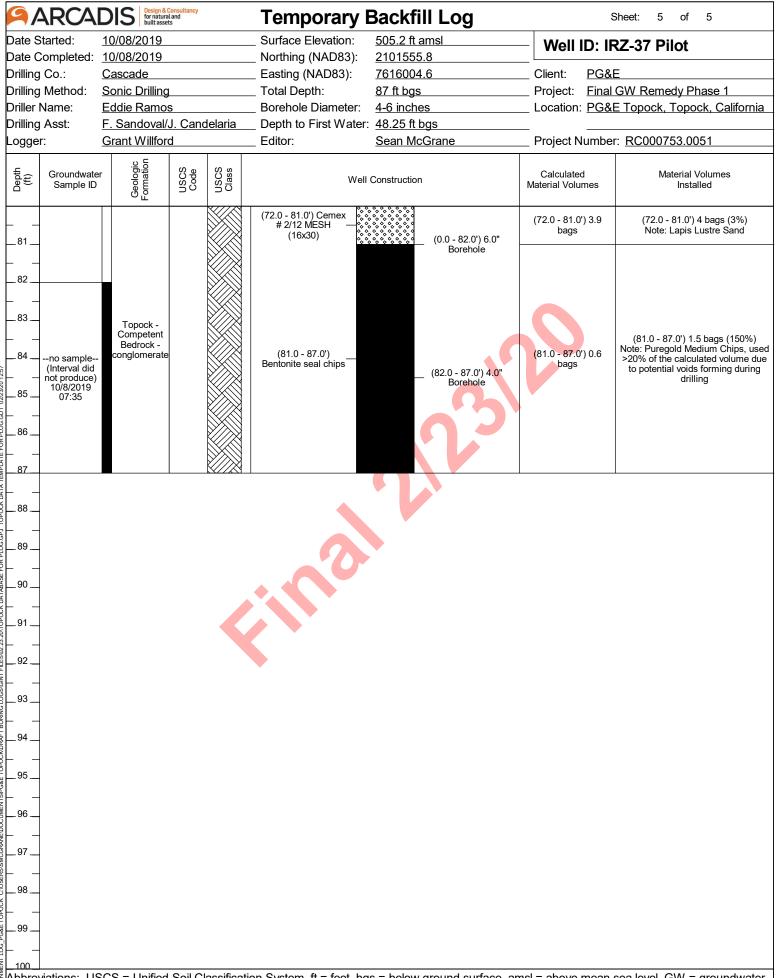
9/	ARCA	DIS Design & for natura built asset	Consultancy al and ets		Temporary I	Backfill Log		Sheet: 1 of 5
	Started:	10/08/2019			Surface Elevation:	505.2 ft amsl	- Well ID	: IRZ-37 Pilot
	-	10/08/2019			Northing (NAD83):	2101555.8		
Drilling	Co.:	Cascade			Easting (NAD83):	7616004.6		G&E
_	Method:	Sonic Drilling	-		Total Depth:	87 ft bgs	•	inal GW Remedy Phase 1
Driller I		Eddie Ramo			_ Borehole Diameter:	4-6 inches	Location: <u>P</u>	G&E Topock, Topock, California
Drilling		F. Sandoval/		delaria	_ Depth to First Water:	_		
Logge	r:	Grant Willfor	d		Editor:	Sean McGrane	Project Nun	nber: RC000753.0051
Depth (ft)	Groundwate Sample ID		USCS	USCS		Construction	Calculated Material Volume:	Material Volumes s Installed
					(0.0 - 0.5') Steel Plate	~ >>>>>		Note: Steel plates with BMPs in place
1 3					(0.5 - 5.0') Choker Sand Seal		(0.5 - 5.0') 2 bag	(0.5
67891011121314151617		Topock - Fill Topock - Alluvium	SM		(5.0 - 72.0') Cemex #3 MESH (8x10)	(0.0 - 82.0') 6.0" Borehole	(5.0 - 72.0') 33. bags	(5.0 - 72.0') 26.3 bags (-21%) Note: Lapis Lustre Sand, used >20% of the calculated volume due to potential voids forming during drilling
18 19 		Deposits						
Abbros	viations: 119	SCS - Unified	l Sail C	occificat	ion System ft - feet ha	s = bolow ground surface ar	nel = abovo me	ean sea level GW = groundwater

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

ARCADIS Design & Consult for natural and built assets **Temporary Backfill Log** Sheet: Surface Elevation: Date Started: 10/08/2019 505.2 ft amsl Well ID: IRZ-37 Pilot Northing (NAD83): 2101555.8 Date Completed: 10/08/2019 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7616004.6 Client: PG&E Drilling Method: Total Depth: Project: Final GW Remedy Phase 1 Sonic Drilling 87 ft bgs Driller Name: **Eddie Ramos** Borehole Diameter: 4-6 inches Location: PG&E Topock, Topock, California F. Sandoval/J. Candelaria Depth to First Water: 48.25 ft bgs Drilling Asst: **Grant Willford** Editor: Sean McGrane Project Number: RC000753.0051 Logger: Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed 21. 22 23 Topock -Alluvium SM Deposits 24 25 26 28 29 (5.0 - 72.0') 26.3 bags (-21%) (5.0 - 72.0') 33.5 (5.0 - 72.0') Cemex (0.0 - 82.0') 6.0" Note: Lapis Lustre Sand, used >20% 30 #3 MESH (8x10) Borehole of the calculated volume due to potential voids forming during drilling Topock -31 Alluvium Deposits 32 33 35 36 37 Topock -ML Alluvium Deposits 38 .39 Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

ARCADIS Design & Consultry for natural and for natural and unit assets **Temporary Backfill Log** Sheet: Surface Elevation: 10/08/2019 505.2 ft amsl Date Started: Well ID: IRZ-37 Pilot 2101555.8 Date Completed: 10/08/2019 Northing (NAD83): Drilling Co.: <u>Cascade</u> Easting (NAD83): 7616004.6 Client: PG&E Drilling Method: Total Depth: Sonic Drilling 87 ft bgs Project: Final GW Remedy Phase 1 Driller Name: **Eddie Ramos** Borehole Diameter: 4-6 inches Location: PG&E Topock, Topock, California Depth to First Water: 48.25 ft bgs F. Sandoval/J. Candelaria Drilling Asst: **Grant Willford** Editor: Sean McGrane Project Number: RC000753.0051 Logger: Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed Topock -42 ML Alluvium Deposits 43 45 46 Topock -Alluvium Deposits SM (5.0 - 72.0') 26.3 bags (-21%) (5.0 - 72.0') Cemex (0.0 - 82.0') 6.0" (5.0 - 72.0') 33.5 Note: Lapis Lustre Sand, used >20% 50 #3 MESH (8x10) Borehole bags of the calculated volume due to potential voids forming during drilling Topock -51 Alluvium ML Deposits 52 53 Topock -GP Alluvium Deposits IRZ-37-VAS-52-57 (1000 ppb) 10/6/2019 .55 Topock -14:30 SM Alluvium Deposits 56 57 IRZ-37-VAS-57-62 Topock -(1100 ppb) 10/7/2019 SM Alluvium Deposits .59 10:35 Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

/-	AROA	for natural built asset	l and ts		i emporary i	Backfill Log		Sheet: 4 of 5
	Started:	10/08/2019			_ Surface Elevation:	505.2 ft amsl	Well ID: I	RZ-37 Pilot
	-	10/08/2019			_ Northing (NAD83):	2101555.8		
Drilling	Co.:	Cascade			_ Easting (NAD83):	7616004.6	Client: PG8	<u> </u>
Drilling	Method:	Sonic Drilling			_ Total Depth:	87 ft bgs	Project: <u>Fina</u>	l GW Remedy Phase 1
Driller I	Name:	Eddie Ramos	S		_ Borehole Diameter:	4-6 inches	Location: <u>PG</u> 8	&E Topock, Topock, California
Drilling	Asst:	F. Sandoval/	J. Can	delaria	_ Depth to First Water:	48.25 ft bgs		
Logge	r:	Grant Willford	<u>d</u>		_ Editor:	Sean McGrane	Project Number	er: RC000753.0051
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed
61 62 63 64 65 666	IRZ-37-VAS- 57-62 (1100 ppb) 10/7/2019 10:35	Topock - Alluvium Deposits Topock - Alluvium Deposits	SM		(5.0 - 72.0') Cemex		(5.0 - 72.0') 33.5	(5.0 - 72.0') 26.3 bags (-21%) Note: Lapis Lustre Sand, used >20%
68 — 68 — 69 — 70 — 71 — 72 —		Topock - Alluvium Deposits	SM		#3 MESH (8x10)	(0.0 - 82.0') 6.0" Borehole	bags	of the calculated volume due to potential voids forming during drilling
73		Topock - Competent Bedrock - conglomerate			(72.0 - 81.0') Cemex # 2/12 MESH — (16x30)		(72.0 - 81.0') 3.9 bags	(72.0 - 81.0') 4 bags (3%) Note: Lapis Lustre Sand
Abbre	viations: U	SCS = Unified	Soil C	lassificati	on System, ft = feet, ba	s = below ground surface, a	msl = above mear	n sea level, GW = groundwater,
								e: Granule backfill material will



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

9/	ARCA	DIS	Design & Consultan for natural and built assets	су	Drilling Log		Sheet:	1 of 5
Date S	Started:	01/25/2	020	S	urface Elevation:	505.2 ft amsl	Boring No.: IR	7- 37
Date 0	Completed:	01/26/2	020	N	orthing (NAD83):	2101555.8		<u> </u>
Drilling	-	Cascad	Э	E	asting (NAD83):	7616004.6	Client: <u>PG&E</u>	
_	g Method:	Sonic D	•			82 ft bgs	-	medy Phase 1
	ig Type:		ongyear T		onductor Casing Diameter:		Location: PG&E Topod	ck, Topock, California
	Name:	Eddie R			rill Casing Diameter:	12 inches	Duningt Number BOOK	00750 0054
_	g Asst: Pusher:	J. Cand NA	eiaria/F. S	<u>Sandoval</u> D		N/A 48.25 ft bgs	Project Number: RC00	JU / 53.005 I
	eologist:	Joe Lan	tham		onverted to Well:	× Yes No	-	
1 119 0								
Depth (ft)	Drilling Ru and Averag Penetration F	je OSC		Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling	g Notes	Drilling Fluid
роск сливевазмовами посками проскорами проско размовать поска проск сливевазмовами проско проско проско проск сливевазмовами проско пр	(0.0 - 82.0) 0.08 mins/ft	SM		(0.0 - 82.0') 12.0" Steel Casing	(0.0 - 15.0') Topock - Fill; Silty sand with gravel (SM); pale yellow (2.5Y 8/2) with very pale brown (10YR 7/3)	(5.0 - 8.0') Soft drilling, obserplastering sand and Mesh #3 Photo Log). (8.0 - 17.0') Normal drilling, material Mesh #3 Sand in dri	rved temporary backfill materias and in drill cuttings (see	ùsed
ال 20								
					ion System, ft = feet, bgs = t			
∄Rema	rks: blue w	ater table	symbol r	epresents	depth to water measured du	ring the first VAS interval d	luring drilling of the pilot	borehole

9/	ARCA	DIS	5 Des for i	ign & Consultan natural and t assets	су	Drilling Log			She	et: 2	of 5
	Started:		5/202			urface Elevation:	505.2 ft amsl	Borin	g No.:	IRZ-	37
	Completed:			20		orthing (NAD83):	2101555.8				<u></u>
Drilling	-	Caso		lina		asting (NAD83):	7616004.6	Client:	PG&E	V Dom	ady Dhaga 1
1	g Method: ig Type:		c Drill	_{iing} gyear T		otal Depth: onductor Casing Diameter:	82 ft bgs N/A	-			edy Phase 1 Topock, California
	Name:		e Rar			rill Casing Diameter:	12 inches	Location.	I OUL I	ороск,	тороск, сашотна
	g Asst:				Sandoval D		N/A	 Project N	umber: <u>F</u>	RC0007	753.0051
Tool-F	Pusher:	NA				epth to First Water:	48.25 ft bgs	_			
Rig G	eologist:	<u>Joe</u>	Lanth	am	C	onverted to Well:	× Yes No				
Depth	Drilling Ru	n	JSCS	USCS	Casing	Description					
(ft)	and Average Penetration F	ge I	Code	Class	Diameter	(See Pilot boring log for full geologic descriptions)	Drilli	ing Notes			Drilling Fluid
 21	_										
		ш									
22	_	ш									
23			014								
24	- -	ı	SM								
 25	_	ш									
		ш									
26	_	ш									
-	-	ш									
27		⊪				(27.0 - 35.0') Topock - Alluvium Deposits; Silty sand with gravel	(27.0 - 32.0') Rough drilling sands kept falling out of co	g, had to go bad	k down bed	cause	
28]	ш				(SM); brown (7.5YR 4/4)	carno repriaming out or ou	oro barron.			
29	_	ш									
		ш									
30	(0.0 - 82.0) 0.08 mins/fi				(0.0 - 82.0') 12.0" Steel Casing						
_ 31_		ш	SM								
ļ -	-	ш	OW								
32	1						(32.0 - 37.0') Rough drilling	g, had to go bad	k down bed	cause	
33	1						sands kept falling out of co backfill material Mesh #3 \$	ore barrel. Obse Sand in drill cutt	rved tempo ings (see P	rary hoto	
]						Log).				
34	-										
25	1										
35	1					(35.0 - 44.0') Topock - Alluvium Deposits; Silt with sand (ML);					
36	1					brown (7.5YR 4/4)					
	1										
37	1		• •				(37.0 - 47.0') Rough drilling	g, observed tem	porary back	kfill	
38]		ML				material Mesh #3 Sand in	umi cutungs (se	E F11010 L0	9).	
	_										
39	-										
L	1										
<u>40 </u>	ıviations: U	SCS =	= Unif	ied Soil	Classificat	ion System, ft = feet, bgs =	below ground surface, an	nsl = above ı	mean sea	a level, (GW = groundwater
						depth to water measured di					

emedy Phase 1 ock, Topock, California
emedy Phase 1 ock, Topock, California
ock, Topock, California
ock, Topock, California
•
000753.0051
00733.0031
Drilling Fluid
(57.0 - 82.0') No water used

Abbreviations: USCS = Unified Soil Classification System, π = feet, bgs = below ground surface, amsi = above mean sea level, Gw = groundwage | Remarks: blue water table symbol represents depth to water measured during the first VAS interval during drilling of the pilot borehole

9 Α	RCA	DIS	Design for nati built as	& Consultani ural and ssets	cy	Drilling Log						Sheet:	4	of 5
Date Sta	arted:	01/25/2	2020		Sı	urface Elevation:	50)5.2 ft a	amsl		Borin	ng No.: <u>I</u>	R7_'	37
Date Co	mpleted:	01/26/2	2020		N	orthing (NAD83):	<u>2</u> ′	101555	5.8		Воги	ig ito <u>i</u>	112-	<u> </u>
Drilling C	Co.:	Casca	de		E	asting (NAD83):	76	316004	.6		Client:	PG&E		
Drilling N	Иethod:	Sonic I	Drillin	ıg	То	otal Depth:	82	2 ft bgs			Project:	Final GW	Reme	edy Phase 1
Drill Rig	Type:	Boart L	ong	year T	rackC	onductor Casing Diameter:	N	/A			Location	: PG&E Top	ock,	Topock, California
Driller Na		Eddie I	Ram	os	Dı	rill Casing Diameter:	<u>12</u>	2 inche	s					
Drilling A	Asst:	J. Can	<u>delar</u>	ia/F. S	<u>Sandoval</u> Dı	rill Bit:	N,	/A			Project N	Number: RC	0007	53.0051
Tool-Pu:		NA				epth to First Water:	<u>48</u>	3.25 ft I	ogs					
Rig Geo	logist:	Joe La	ntha	m	C	onverted to Well:	×	Yes	No					
5 "	Drilling Rur)	00			Description								
Depth (ft)	and Average Penetration R	e 03		USCS Class	Casing Diameter	(See Pilot boring log for				Drilling	Notes			Drilling Fluid
	- Circulation 1			ক কাজৰ		full geologic descriptions)								
						(60.0 - 62.0') Topock - Alluvium Deposits; Silty sand with gravel								
61		SI	и Ε			(SM); reddish brown (5YR 5/4)								
_														
62						(00.007.01) T								
_						(62.0 - 67.0') Topock - Alluvium Deposits; Silty sand with gravel								
63						(SM); reddish brown (5YR 5/4) little light greenish gray (GLEY2								
						7/1)								
64														
		l si	и :											
65														
66														
67									•					
						(67.0 - 74.5') Topock - Alluvium Deposits; Silty sand with gravel		(67.0 -	77.0') Norma al Mesh #3 Sa	l drilling, and in dri	observed te	mporary backfi ee Photo Log).	III	
68						(SM); reddish brown (5YR 5/4) w light brown (7.5YR 6/3)	ith				0 (0,		
						ingrit brown (7.5110)								
69														
70	(0.0 - 82.0)				(0.0 - 82.0') 12.0" Steel									
	0.08 mins/ft				Casing									
71		SI	и 🔡											
72			i.											
			i.			(72') reddish brown (5YR 5/4) wit red (2.5YR 5/6)	h							
73						(2.0)								
			:											
74														
75		-·-	. – .			(74.5 - 82.0') Topock - Competer Bedrock - conglomerate; red	it							
			8			(2.5YR 5/6)								
76														
			K											
77														
77								(77.0 -	80.0') Rough	drilling,	core barrel p	olugged up.		
₇₀			R											
78														
₇₀			K											
79														
80 Abbrevia	ations: US	SCS = L	⊬ Jnifie	∠∠∠>∠ :d Soil	Classificati	on System, ft = feet, bgs =	bel	ow gro	und surfac	e, ams	sl = above	mean sea le	evel, G	GW = groundwater

Remarks: blue water table symbol represents depth to water measured during the first VAS interval during drilling of the pilot borehole

9/	ARCA	DIS	Design & Consultan for natural and built assets	су	Drilling Log			Sheet:	5 of 5
Date 9	Started:	01/25/	2020	Sı	urface Elevation:	505.2 ft amsl	Borin	g No.: <u>IRZ</u>	7-37
Date (Completed:	01/26/	2020	N	orthing (NAD83):	2101555.8	Вотп	9 110 <u>1112</u>	<u>01</u>
Drilling	g Co.:	Casca	de	E	asting (NAD83):	7616004.6	Client:	PG&E	
	g Method:	Sonic	_		otal Depth:	82 ft bgs	Project:	Final GW Rer	•
	ig Type:		<u>_ongyear T</u>		onductor Casing Diameter:		Location:	PG&E Topoc	k, Topock, California
	Name:		Ramos		rill Casing Diameter:	12 inches			
	g Asst:		<u>delaria/F. S</u>	Sandoval D		<u>N/A</u>	Project N	umber: RC00	0753.0051
	Pusher:	NA .			epth to First Water:	48.25 ft bgs			
Rig G	eologist:	Joe La	ntham	C	onverted to Well:	× Yes No			T
Depth	Drilling Ru	า แร	cs uscs	Casing	Description				
(ft)	and Averag Penetration F	e I Ca		Diameter	(See Pilot boring log for	Drilling	Notes		Drilling Fluid
		_	X///XX/		full geologic descriptions)	(80.0 - 82.0') Rough drilling, I	had to go ba	ok down throo	(80.0 - 82.0') 600 gallons
-						times because sands kept fal	lling out of co	re barrel.	of water used; 600 gallons
81_	(0.0 - 82.0) 0.08 mins/ft			(0.0 - 82.0') 12.0" Steel		Conducted borehole flush to well installation.	remove fines	in preparation for	of water recovered; 0 gallons of water lost
ļ	0.06 mins/it			Casing					
82									
ļ					End of Boring at 82.0 'bgs.				
83									
L .									
84									
19:71									
85									
86									
Ž									
87									
5									
89									
90									
// 									
91_ - 91_									
92									
- - - - - - - - -	1								
55 _ 53 _	1								
94	1								
<u>- 34 -</u>	1								
4 0F	1								
95_	1								
ğ									
96	1								
500 -	1								
<u></u> 97_	1								
	1								
98	1								
	1								
<u>99</u>	-								
- J	-								
100 Abbro	viotions: 119	202 - 1	Inified Sail	Classificati	ion System ft - feet has -	holow ground ourface area	l = abays	moon oog level	CW = aroundwater
						below ground surface, ams uring the first VAS interval d			
rema	ii ka. Diue W	alei iab	ic symbol r	epresents (uepin to water measured d	uning the inst vas interval d	uring afilli	ig or the pliot b	IOI EI IOIE

	DIS for natura built asse	l and ts		Well Const	ruction Log	3	Sheet: 1 of 5
Date Started:	01/28/2020			_Surface Elevation:	505.2 ft amsl	Well ID: IRZ	Z-37
Date Completed	02/04/2020			_Shallow Well Elevation:			
rilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
Orilling Method:	Sonic Drilling			_Northing (NAD83):	2101555.8		GW Remedy Phase 1
riller Name:	Eddie Ramos			_Easting (NAD83):	7616004.6	Location: <u>PG&E</u>	Topock, Topock, Californi
rilling Asst:	J. Candelaria/	F. San	doval	_Borehole Diameter:	12 inches		
ogger:	Joe Lantham			_Water Level Start:	51.67 ft bgs	Project Number	r: RC000753.0051
ditor:	Sean McGran	ie		_Development End Date:			
otal Depth:	82 ft bgs			_Well Completion:			
Groundwar Sample II		Code	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed
				(0.0 - 0.5') Steel Plate (0.5 - 49.0') 8" —		,	Note: Steel plates with BMPs ir place
- '				Suregrip 17 Casing (1.0 - 4.0') Temporary Backfill Sand		(1.0 - 4.0') 2.6 bags	(1.0 - 4.0') 3 bags (15%) Note: Wildcat Plastering Sanc
	Topock - Fill	SM		(8.5 - 9.5') Centralizer (4.0 - 36.0') Portland Cement 3% Bentonite	(0.0 - 82.0') 12.0" Borehole	(4.0 - 36.0') 104.4 gallons	(4.0 - 36.0') 140 gallons (34% Note: Type I, II, and V with Hydroused >20% of the calculated vollue to potential voids forming dudrilling and grout migration
	Topock - Alluvium Deposits	SM					sea level, GW = groundwa

Date Completed: 02/04/2020 Shallow Well Elevation: N/A	ARCADIS fornatural and built assets					Well Construction Log		Sheet: 2 of 5		
Deling Mathods Deli	Date Completed: <u>02/04/2020</u>						Well ID: IRZ-37			
Dilling Method: Sonic Dilling										
Diller Name										
Dalling Assist: Dalling A	_		-			- '		•	-	
Open					doval	- '		Location. <u>PGo</u>	ке тороск, тороск, Сашоппа	
Sean McGrare	_				uovai			Project Numb	er: RC000753 0051	
Total Depth R2 ft bgs								r reject rumb	on. <u>140000100.0001</u>	
Content of the cont										
Content of the cont	Depth (ft)		er Sologic rmation	JSCS	JSCS Class	Well C	onstruction			
21						(0.5 - 49.0') 8"				
Coment 3% Bentonite Coment 3% Coment 3% Bentonite Bentoni	22		Alluvium	SM		Suregrip 17 Casing				
			Alluvium	SM		Cement 3%	(0.0 - 82.0') 12.0" Borehole		used >20% of the calculated volume due to potential voids forming during	
<u>L_40 LL</u>	37 38 		Alluvium	ML		(36.0 - 41.2') Cemex				
	Abbrev	viations: U	SCS = Unified	Soil C	lassifica	tion System. ft = feet. bas	= below ground surface	amsl = above mear	sea level, GW = groundwater	

ppb = parts per billion, groundwater samples were collected during drilling of the pilot borehole

ARC ⁴	DIS for natura	ts		Well Constr	uction Log		Sheet: 3 of 5	
ate Started:	01/28/2020 : 02/04/2020 Cascade			Surface Elevation: 505.2 ft amsl		Well ID: IRZ-37		
ate Completed:				_Shallow Well Elevation:	N/A			
rilling Co.:				_Deep Well Elevation:	N/A	Client: PG&E	Client: PG&E Project: Final GW Remedy Phase 1	
Orilling Method:				• ,	2101555.8	•		
riller Name:				• ,	7616004.6	Location: PG&E	Topock, Topock, Californ	
Orilling Asst:	J. Candelaria	F. San	doval		12 inches			
.ogger:	Joe Lantham			Water Level Start: 51.67 ft bgs		Project Number: RC000753.0051		
ditor:	Sean McGrar	ne		_Development End Date:				
otal Depth:	82 ft bgs			_Well Completion:				
Groundwar Sample II		USCS	USCS Class	Well Co	nstruction	Calculated Material Volumes	Material Volumes Installed	
 _41 _42 	Topock - Alluvium Deposits	ML		(0.5 - 49.0') 8"		(36.0 - 41.2') 4.5 bags	(36.0 - 41.2') 4.5 bags (0% Note: Lapis Lustre Sand	
-44	Topock - Alluvium Deposits	SM		(45.5 - 46.5')				
49	Topock - Alluvium Deposits	ML		(49.0 - 74.0') 8" 0.010-Slot 316 SS Wire Wrap Screen (41.2 - 82.0') Cemex— #0/30 Mesh (30x50)	(0.0 - 82.0') 12.0 Borehole	" (41.2 - 82.0') 37.3 bags	(41.2 - 82.0') 38 bags (2% Note: Lapis Lustre Sand, swa well screen to settle filter pac approximately 30 minutes	
_53	Topock -	CD.			- [8,8]			
4	Alluvium	GP						
-54 IRZ-37-VAS	\ Deposits /				4 00			
55 — 182-37-448 52-57 (1000 ppb) 10/6/2019 14:30 —	Topock - Alluvium Deposits	SM						
.57	Topock -	SM					sea level, GW = groundw	

,, II ()	DIS Design & for natura built asse	al and ets		Well Constru	action Log	;	Sheet: 4 of 5	
ate Started:	01/28/2020			_Surface Elevation: 5	505.2 ft amsl	Well ID: IR:	Well ID: IRZ-37	
ate Completed				_Shallow Well Elevation: <u>N</u>				
rilling Co.:	Cascade			•	N/A	Client: PG&E		
rilling Method:	Sonic Drilling			_	2101555.8		GW Remedy Phase 1	
riller Name:	Eddie Ramos			_	7616004.6	Location: <u>PG&</u>	E Topock, Topock, Californ	
rilling Asst:	J. Candelaria		doval		12 inches			
ogger:	Joe Lantham				51.67 ft bgs	Project Number: RC000753.00	r: RC000753.0051	
ditor:	Sean McGrar	ne		_Development End Date: 2				
otal Depth:	82 ft bgs			_Well Completion:				
Groundwa Sample II		USCS Code	USCS Class	Well Con	struction	Calculated Material Volumes	Material Volumes Installed	
IRZ-37-VAS 57-62 (1100 ppb) 10/7/2019 10:35	Topock -	SM		(49.0 - 74.0') 8" 0.010-Slot 316 SS Wire Wrap Screen				
	Topock - Alluvium Deposits	SM						
	Topock - Alluvium Deposits	SM		(41.2 - 82.0') Cemex #0/30 Mesh (30x50)	(0.0 - 82.0') 12.0" Borehole	(41.2 - 82.0') 37.3 bags	(41.2 - 82.0') 38 bags (2%) Note: Lapis Lustre Sand, swab well screen to settle filter pack approximately 30 minutes	
_ 75 _ 76 _ 77 _ 78 _ 79	Topock - Competent Bedrock - conglomerate			(76.0 - 77.0') Centralizer				
-				(74.0 - 79.8') Sump — : : :				

	built asset	Consultancy Il and ts		Well Consti			Sheet: 5 of 5
Date Started:	01/28/2020			_Surface Elevation:	505.2 ft amsl	Well ID: IR	Z-37
Date Completed				_Shallow Well Elevation:	N/A		
rilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
Orilling Method:	Sonic Drilling			_Northing (NAD83):	2101555.8		GW Remedy Phase 1
riller Name:	Eddie Ramos			_Easting (NAD83):	7616004.6	Location: <u>PG&</u>	E Topock, Topock, Californ
rilling Asst:	J. Candelaria/	<u>F. San</u>	<u>doval</u>	_Borehole Diameter:	12 inches		
ogger:	Joe Lantham			_Water Level Start:	51.67 ft bgs	Project Numbe	r: RC000753.0051
ditor:	Sean McGran	ie		_Development End Date:			
otal Depth:	82 ft bgs			_Well Completion:			
Groundwar Sample II		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed
- – _81 - – _82	Topock - Competent Bedrock - conglomerate			(41.2 - 82.0') Cemex_ #0/30 Mesh (30x50)	(0.0 - 82.0') 12.0" Borehole	(41.2 - 82.0') 37.3 bags	(41.2 - 82.0') 38 bags (2%) Note: Lapis Lustre Sand, swab well screen to settle filter pack approximately 30 minutes
_83 _84 _85 							
-86 <u>-</u> -					0	03	
.87					0		
_ 88							
.89							
_90							
4							
_91							
_92							
_			•				
_93							
.94							
.94							
_							
_							
95							
.94 .95 .96							
95 96							
95							
95							
	QCQ = nifica	Soil C	Jacoifice d	ion Svetom ft - fact has	= below ground surface	amel = above mocs	sea level CW = groundw
				ion System, ft = feet, bgs /ere collected during drillir		amsl = above mean	sea level, GW = groundw

			for natural and built assets			_	Log			
Date St		03/29/2			Surface			Borina N	o.: <u>IRZ-39 P</u>	ilot
	•		2019		Northin		•	_		
Orilling		Casca			Easting	•		_ Client: PG8		d Dl
•	Method:		Orilling onic track mo		Total D Boreho	•	54 ft bgs eter: 4-12 inches	_ Project: <u>Fina</u> _ Location: <u>1</u>	al Groundwater Re	emedy Pha
Oriller N	Jame [.]	Dan O'		uni			Vater: 26.61 ft bgs		&E Topock, Needl	es Californ
Drilling .			llmantel / J. P	acheco	-		_		•	
_ogger			Willford		Samplir	•		,		
Editor:		Sean N	/IcGrane		Conver	-				
Depth (ft)		Sieve mple ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Flu
	12			Topsoil	SM		(0.0 - 0.5') Topsoil; Silty sand with gravel (SN very coarse grained, angular to subangular;	ittle granules to	to	(0.0 - 54.0') water use
_ 1 _				Topock -			medium pebbles, angular to subround; little shomogeneous; some organics, small pieces (0.5 - 0.6') Topock - Fill; Asphalt	of grass		
_ 2 _	30			Alluvium Deposits	SM		(0.6 - 2.5') Topock - Alluvium Deposits; Silty (SM); brown (7.5YR 4/4); very fine grained to angular to subangular; some granules to me	very coarse grained dium pebbles,	l,	
3 _				Topock - Alluvium	GP	N.	angular to subround; little silt; little clay; dry; (2.5 - 3.0') Topock - Alluvium Deposits; Poor		(2.5 - 6.0') Soft drilling	1
				Deposits	_		(10YR 2.5/1); boulders, angular; dry; boulder metadiorite		dilling	
_ 4 _				Topock -			(3.0 - 5.5') Topock - Alluvium Deposits; Clay (GC); reddish brown / moderate brown(5YR	ey gravel with sand	R	
-	42			Alluvium Deposits	GC		5/6); granules to large pebbles, angular to suffine to very coarse grained sand, angular to suffine to very coarse grained sand, angular to suffine to very coarse grained sand, angular to sufficient	bangular; some very	y	
_ 5							little clay, dry; iron oxide staining; gravel com- lithology; mostly metadiorite, few organics of of grass	posed of mixed	s	
6							(5.5 - 16.0') Topock - Alluvium Deposits; Cla	yey sand with gravel		
							(SC); reddish brown (5YR 5/4) some reddish very fine grained to very coarse grained, ang	ular to subangular;	drilling	
_ 7							some granules to large pebbles, angular to soxide staining; gravel composed of mixed lith			
4							metadiorite			
_ 8										
4										
_ 9										
4										
_10										
44				Topock - Alluvium	sc					
_11	114			Deposits						
_12										
_13										
_14										
- 4										
_15										
40										
_16							(16.0 - 20.0') Topock - Alluvium Deposits; Cl	ayey sand with grave	el (16.0 - 26.0')	1
17							(SC); brown (7.5YR 4/4) with reddish brown brown(5YR 4/4); very fine grained to very coa	arse grained, angulai	Soft drilling	
-''-							to subround; some granules to large pebbles subangular; some clay; little silt; dry; weak co		le	
_18	120			Topock -	60		staining			
	120			Alluvium Deposits	SC					
19										
-										
20		SCS = L		L						

/-	4KC	ADIS	Design & Consultancy for natural and built assets		DU	ring	Log		Onc	et: 2 of	3
	Started:		9/2019		Surface	Elevat	ion: <u>482.8 ft amsl</u>	- Borina N	O.:	IRZ-39 Pi	ilot
	•	ed: <u>03/3</u>			Northin		·			<u></u>	<u></u>
Orilling		Caso	ade		Easting	(NAD8	•	_ Client: PG8			
_	Metho				Total D	•	54 ft bgs	•	l Gr	oundwater Re	medy Pha
	g Type:		asonic track me		Boreho			_ Location: <u>1</u>			
	Name:		O'Mara		-		Water: 26.61 ft bgs			opock, Needl	
•	Asst:		uellmantel / J. l		•	•		_ Project Numb	er: <u>I</u>	RC000753.00	51
Logge Editor:			t Willford McGrane		Samplir Conver	•		_			
_uiloi.		<u> </u>	I WICGIANE		T		Veli. A 163 MO				<u> </u>
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Flu
21							(20.0 - 25.0') Topock - Alluvium Deposits; CI (SC); reddish brown / moderate brown(5YR 5/6); very fine grained to very coarse grained subangular; some clay; little granules to med to subangular; little silt; dry; weak cementation	4/4) little red (2.5YR , angular to lium pebbles, angula	ır	(16.0 - 26.0') Soft drilling	(0.0 - 54.0') water use
_22 _23	120			Topock - Alluvium Deposits	SC			0)			
24											
 _25				Topock - Alluvium	SC		(25.0 - 26.0') Topock - Alluvium Deposits; Cl (SC); reddish brown (5YR 5/4) some reddish	brown (2.5YR 4/4);	el l		
_26				Deposits			very fine grained to very coarse grained, ang some granules to large pebbles, angular to s little clay; dry to moist; weak cementation; gr mixed litholgy; mostly metadiorite, moist at 2	ular to subangular; subangular; little silt; avel composed of 5.6'	Ţ	(26.0 - 36.0') Rough drilling	
_27 		IRZ-39-SS-		Topock - Alluvium Deposits	sc		(26.0 - 29.0') Topock - Alluvium Deposits; CI (SC); dark reddish gray (5YR 4/2) with red (2 grained to very coarse grained, angular to to medium pebbles, angular to subangular; I moist; moderate cementation; iron oxide stai	2.5YR 4/6); very fine abround; little granule ittle silt; little clay;		(27.8')	
29		26-31 3/31/2019 10:27	IRZ-39-VAS- 27-32	Topock -			composed of mixed litholgy; mostly metadion (29.0 - 30.0') Topock - Alluvium Deposits; Cl	ayey sand with grave	el el	Approximate depth to water table	
_30			(29 ppb) 3/30/2019 09:16	Alluvium Deposits	SC		(SC); red (2.5YR 4/6) some red / moderate r 4/6); very fine grained to very coarse grained some granules to very large pebbles, angula cobbles, subangular; little silt; little clay; moi	, angular to sùbroun r to subangular; little st to dry; moderate			
_31	120						cementation; iron oxide staining; gravel com litholgy, mostly metadiorite, moist from 29-30 (30.0 - 39.0) Topock - Weathered Bedrock - Clayey sand with gravel (SC); red (2.5YR 4/6 moderate reddish brown(10R 4/6); very fine	O', dry from 30-36' conglomerate; s) some red /			
_32 _33							grained, angular to subround; some granules pebbles, angular to subangular; little cobbles silt; little clay; moist to dry; moderate cemen staining; gravel composed of mixed litholgy,	s to very large s, subangular; little tation; iron oxide	6		
34		IRZ-39-SS- 31-36 3/31/2019 10:31		Topock -							
_35				Weathered Bedrock - conglomerate	SC						
_36										(36.0 - 46.0') Rough drilling	
_37										1 toagn anning	
_38	36	IRZ-39-SS- 36-41 3/31/2019 10:34									
39 _	84			Topock - Competent			(39.0 - 44.0') Topock - Competent Bedrock - (2.5YR 5/6); dry, iron oxide staining; firable c	onglomerate, highly			
40	<u> </u>	11000	11.16.15	Bedrock -		<u>K//X</u>	fractured and pulverized, when moist pulvering eet, bgs = below ground surface, am				<u> </u>

9/	ARC	CADIS	for natural and built assets		Bo	ring	Log	S	Sheet: 3 of	3
Date S	Started	03/29/2	2019		Surface	Elevati	ion: <u>482.8 ft amsl</u>	- Boring No	.: <u>IRZ-39 Pi</u>	lot
l l	-	eted: <u>03/31/2</u>	2019		Northing			_	<u> </u>	<u>101</u>
Drilling		<u>Cascac</u>			Easting			_ Client: <u>PG&l</u>		
Drilling			-		Total De	•	54 ft bgs	-	Groundwater Re	medy Phase
Drill Ri			onic track mo		Borehol			_ Location: 1		0 1:0 .
Driller					=		Water: 26.61 ft bgs		E Topock, Needle	
Drilling Logge			<u>llmantel / J. F</u> Willford		Samplin	-		_ Project Number	:: RC000753.00	01
Editor:			// ///////////////////////////////////		Convert	•		_		
		<u> </u>			1				I	
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
-				conglomerat	te		plasticity, moderate to strong cementation		(36.0 - 46.0') Rough drilling	(0.0 - 54.0') No water used
41										
-				Topock -						
42				Competent Bedrock -	t					
-				conglomerat	te					
43	84	IRZ-39-SS-	no sample							
		41-46 3/31/2019	(Interval did not produce)							
44		10:40	not produce)				(44.0 - 54.0') Topock - Competent Bedrock -	conglomerate; red	1	
							(2.5YR 5/6); dry; moderate cementation; iror conglomerate, core not as pulverized as fror	n oxide staining; friable n 39-44 feet bgs		
45_								_		
- - -46_										
40									(46.0 - 54.0')	
47									Rough drilling, lost core down	
_4/ _									the borehole, had to go back	
- 48									in to retrieve 49 to 54 ft bgs	
49				Topock - Competent	:					
				Bedrock - conglomerat						
50	96			g						
	90									
51										
52										
53										
54						<i>1)X(1)</i>	End of Boring at 54.0 'bo	15		
<u> </u>							End of boiling at 34.0 b(,∵ .		
55										
56										
57										
-										
58										
59										
Abbre	viations	s: USCS = L	Jnified Soil CI	assification	n System	n, ft = fe	eet, bgs = below ground surface, am	sl = above mean :	sea level, GW =	groundwater.
<u> </u>							to water measured during the first \		, -	- ,

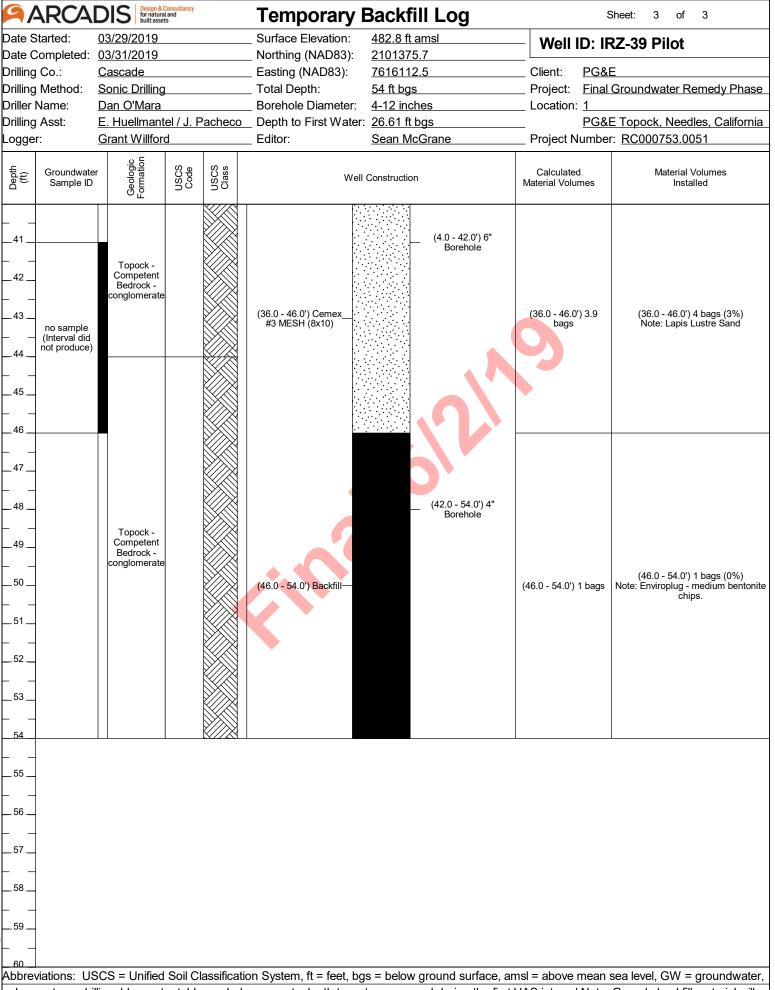
ppb = parts per billion, blue water table symbol represents depth to water measured during the first VAS interval

ARCADIS Design & Consult for natural and built assets **Temporary Backfill Log** Sheet: 03/29/2019 Surface Elevation: 482.8 ft amsl Date Started: Well ID: IRZ-39 Pilot 2101375.7 Date Completed: <u>03/31/2019</u> Northing (NAD83): Drilling Co.: <u>Cascade</u> Easting (NAD83): 7616112.5 Client: PG&E Drilling Method: Total Depth: Sonic Drilling 54 ft bgs Project: Final Groundwater Remedy Phase Driller Name: Dan O'Mara Borehole Diameter: 4-12 inches Location: 1 E. Huellmantel / J. Pacheco Depth to First Water: 26.61 ft bgs PG&E Topock, Needles, California Drilling Asst: **Grant Willford** Editor: Project Number: RC000753.0051 Logger: Sean McGrane Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed SM Topsoil Temporary Steel Plate with BMP Topock - Fill, Topock -SM Alluvium Deposits (0.0 - 4.0') 12"Borehole (0.5 - 5.0') Plaster (0.5 - 5.0') 6 bags (-5%) Topock -GP (0.5 - 5.0') 6.3 bags Alluvium Sand Note: Wildcat Cleanwash Deposits Topock -Alluvium Deposits 5 Topock -SC Alluvium Deposits (4.0 - 42.0') 6" Borehole (5.0 - 36.0') Pea (5.0 - 36.0') 13.7 (5.0 - 36.0') 12 bags (-12%) Note: Cal-silica 3/8 x 1/4" 16 Topock -18 SC Alluvium Deposits 19 Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

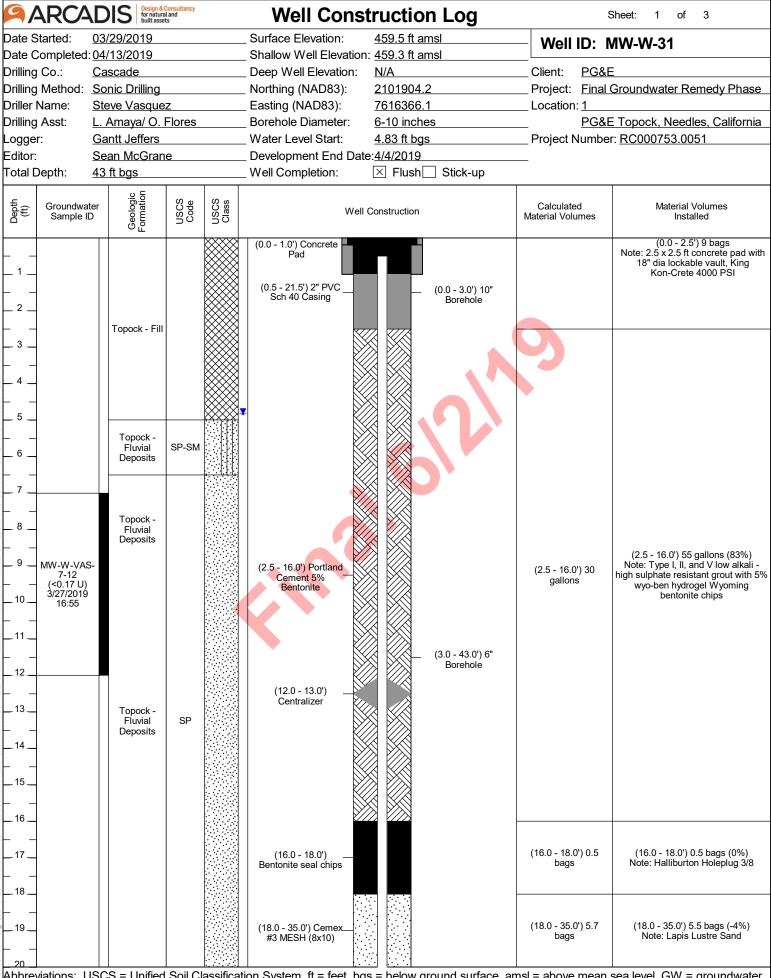
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwate ppb = parts per billion, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

ARCADIS Design & Consultry for natural and for natural and unit assets **Temporary Backfill Log** Sheet: 03/29/2019 Surface Elevation: 482.8 ft amsl Date Started: Well ID: IRZ-39 Pilot 2101375.7 Date Completed: <u>03/31/2019</u> Northing (NAD83): Drilling Co.: <u>Cascade</u> Easting (NAD83): 7616112.5 Client: PG&E Drilling Method: Total Depth: Sonic Drilling 54 ft bgs Project: Final Groundwater Remedy Phase Driller Name: Dan O'Mara Borehole Diameter: 4-12 inches Location: 1 E. Huellmantel / J. Pacheco Depth to First Water: 26.61 ft bgs PG&E Topock, Needles, California Drilling Asst: **Grant Willford** Editor: Project Number: RC000753.0051 Logger: Sean McGrane Geologic Formation USCS Class Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed 21 22 Topock -Alluvium Deposits 23 24 25 Topock -SC Alluvium Deposits 26 Topock -Alluvium SC Deposits (5.0 - 36.0') Pea (5.0 - 36.0') 13.7(5.0 - 36.0') 12 bags (-12%) 28 Note: Cal-silica 3/8 x 1/4" Graveĺ bags IRZ-39-VAS-Topock -27-32 (29 ppb) 3/30/2019 Alluvium SC Deposits (4.0 - 42.0') 6" 30 09:16 Borehole 31 32 33 Topock -Weathered Bedrock onglomerate: 35 36 37 (36.0 - 46.0') Cemex #3 MESH (8x10) (36.0 - 46.0') 3.9 (36.0 - 46.0') 4 bags (3%) 38 Note: Lapis Lustre Sand .39 Topock -Competent Bedrock -Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwate ppb = parts per billion, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.



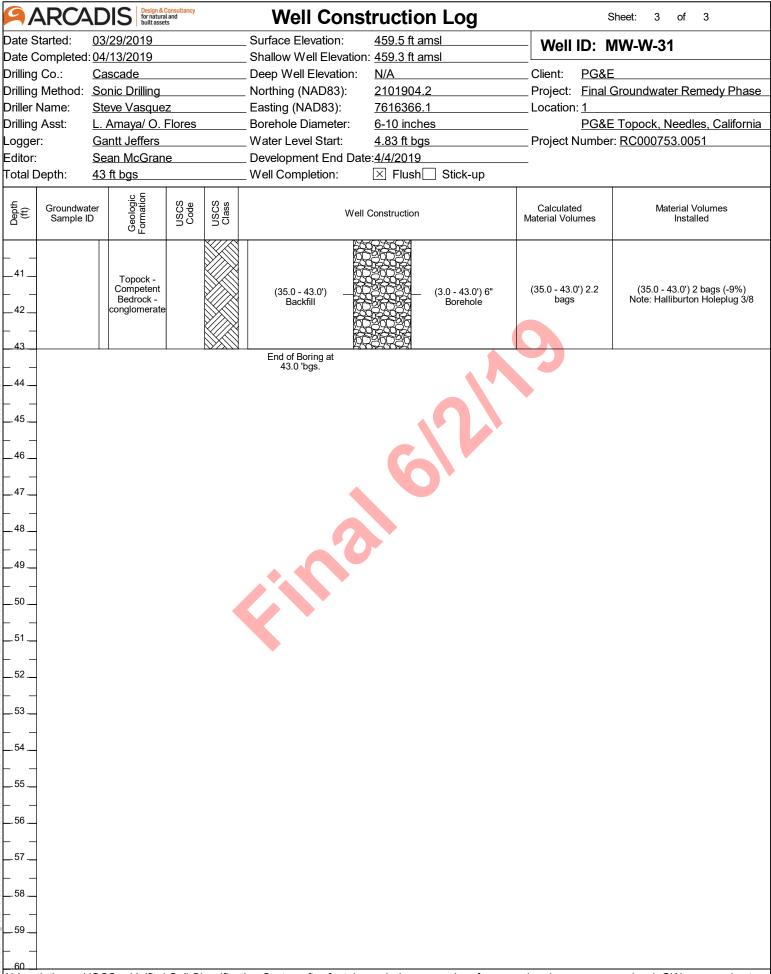
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwate ppb = parts per billion, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, blue water table symbol represents depth to water measured during the first VAS interval

9/-	ARCA	DIS Design & C for natural built asset	Consultancy Land es		Well Const	truction Log	S	Sheet: 2 of 3
Date S		03/29/2019			_ Surface Elevation:	459.5 ft amsl	Well ID: N	/IW-W-31
	=	04/13/2019			_ Shallow Well Elevation:			
Drilling		Cascade			_ Deep Well Elevation:	N/A	Client: PG&E	
Drilling Driller I		Sonic Drilling			Northing (NAD83):	2101904.2		Groundwater Remedy Phase
Drilling		Steve Vasque: L. Amaya/ O. I			_ Easting (NAD83): _ Borehole Diameter:	7616366.1 6-10 inches	Location: 1	Topock, Needles, California
Logge		Gantt Jeffers	10163		_ Water Level Start:	4.83 ft bgs		: RC000753.0051
Editor:		Sean McGran	<u> </u>		_ Development End Date	_	1 10,000 110,1100.	. 110000100.0001
Total D		43 ft bgs			_ Well Completion:			
		is c						
Depth (ft)	Groundwate Sample ID		epoo Sosn	USCS Class		Construction	Calculated Material Volumes	Material Volumes Installed
21	MW-W-VAS 22-27 (0.266 J ppb 3/28/2019 13:00	Deposits	SM		(0.5 - 21.5') 2" PVC — Sch 40 Casing (21.5 - 31.5') 2" Sch — 40 PVC (20-slot)	(3.0 - 43.0') 6" Borehole	(18.0 - 35.0') 5.7 bags	(18.0 - 35.0') 5.5 bags (-4%) Note: Lapis Lustre Sand
35 36 37 38 39		Topock - Competent Bedrock - conglomerate			(35.0 - 43.0') Backfill		(35.0 - 43.0') 2.2 bags	(35.0 - 43.0') 2 bags (-9%) Note: Halliburton Holeplug 3/8
40 Abbrox	iotions: II		Soil C	loccificat	ion System ft = feet bas	s = below ground surface	amel = above moon	sea level. GW = groundwater.

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, blue water table symbol represents depth to water measured during the first VAS interval



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J - estimated value, blue water table symbol represents depth to water measured during the first VAS interval

9 _A	RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 1 of	3
Date St	tarted:	03/29/2	2019		Surface			Borin	a No.:	IRZ-39 Pi	lot
	-		2019				•				<u></u>
Drilling		<u>Casca</u>					•	Client:	PG&E		
Drilling			Drilling			-	-	-		N Remedy Ph	
Drill Rig								Location:	PG&E 1	opock, Needle	es, California
Driller N			<u>'Mara</u>		-		Water: 26.61 ft bgs	5		20000750 005	- 4
Drilling			ellmantel / J.		-	-		Project N	umber: <u>I</u>	RC000753.005	01
Logger	:				Samplii	-					
Editor:		<u>Sean I</u>	<u> McGrane</u>		Conver	ted to v	Vell: ☐ Yes ☒ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
	10			Topsoil	SM		(0.0 - 0.5') Topsoil; Silty sand with gravel (SM); v very coarse grained, angular to subangular; little				
_ 1	30			Topock - Fill Topock - Alluvium Deposits	SM		pebbles, angular to subround; little silt; little clay; some organics, small pieces of grass (0.5 - 0.6') Topock - Fill; Asphalt (0.6 - 2.5') Topock - Alluvium Deposits; Silty sand brown (7.5YR 4/4); very fine grained to very coar to subangular; some granules to medium pebbles; subround; little silt; little clay; dry; homogeneous	dry; homoger d with gravel (se grained, a	neous;		
_ 3 _				Topock - Alluvium	GP		(2.5 - 3.0') Topock - Alluvium Deposits; Poorly gr	aded gravel (GP);	(2.5 - 6.0') Soft drilling	
4 5 5	42			Deposits Topock - Alluvium Deposits	GC		(10YR 2.5/1); boulders, angular; dry; boulder con (3.0 - 5.5') Topock - Alluvium Deposits; Clayey greddish brown / moderate brown(5YR 4/4) some granules to large pebbles, angular to subangular; very coarse grained sand, angular to subround; li iron oxide staining; gravel composed of mixed lith metadiorite, few organics observed, small pieces (5.5 - 16.0') Topock - Alluvium Deposits; Clayey	ravel with sar red (2.5YR 5/ some very fi ttle silt; little cology; mostly of grass	nd (GC); (6); ne to slay; dry;	Gilling	
6							(SC): reddish brown (5YR 5/4) some reddish brown	wn (2.5YR 4/	4): verv	(6.0 - 16.0') Soft	
							fine grained to very coarse grained, angular to su granules to large pebbles, angular to subangular;	dry; iron oxid	le	drilling	
7							staining; gravel composed of mixed litholgy; most	ly metadiorite			
9_											
10				Topock -							
11	114			Alluvium Deposits	SC						
13											
14											
15_											
17							(16.0 - 20.0') Topock - Alluvium Deposits; Clayey (SC); brown (7.5YR 4/4) with reddish brown / mo 4/4); very fine grained to very coarse grained, any some granules to large pebbles, angular to subar little silt; dry; weak cementation; iron oxide staining	derate brown gular to subro gular; some	(5YR ound;	(16.0 - 26.0') Soft drilling	
18	120			Topock - Alluvium Deposits	sc						
20											
Abbrev	iations	: USCS =	Unified Soil (Classification	on Syst	em, ft =	feet, bgs = below ground surface, a	msl = abo	ve mear	n sea level, G\	N =
ground	water										
Remark	ks:										

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 2 of	3
Date S						e Eleva	•	Borina	No.:	IRZ-39 Pi	ilot
	•		2019			g (NAD	*				
Drilling	-	<u>Casca</u>			_	(NAD	•		G&E		
Drilling	-				Total D	•	54 ft bgs	-		W Remedy Ph	
Drill R							neter: 6-12 inches	Location: P	'G&E 1	<u> Fopock, Needl</u>	es, California
Driller							Water: 26.61 ft bgs	-			
Drilling			ellmantel / J.		-	-		Project Nur	nber: <u>I</u>	RC000753.00	51
Logge			Willford		-	ng Inter					
Editor		<u>Sean i</u>	<u>McGrane</u>		Conver	ted to \	Vell: ☐ Yes ☒ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
 21 22				Topock - Alluvium	SC		(20.0 - 25.0') Topock - Alluvium Deposits; Claye (SC); reddish brown / moderate brown(5YR 4/4) very fine grained to very coarse grained, angular clay; little granules to medium pebbles, angular try; weak cementation; iron oxide staining	little red (2.5YR to subangular; s	5/6); some	(16.0 - 26.0') Soft drilling	
23 24 25	120			Deposits			(25.0 - 26.0') Topock - Alluvium Deposits; Claye	y sand with grave	el		
-				Topock - Alluvium	sc		(SC); reddish brown (5YR 5/4) some reddish bro	wn (2.5YR 4/4);	very		
26				Deposits			fine grained to very coarse grained, angular to su granules to large pebbles, angular to subangular	; little silt; little cla	ay;	(26.0 - 36.0')	
 27 28 29		IRZ-39-SS- 26-31 3/31/2019 10:27:47 AM	IRZ-39-VAS-	Topock - Alluvium Deposits	sc		dry to moist; weak cementation; gravel composed mostly metadiorite, moist at 25.6' (26.0 - 29.0') Topock - Alluvium Deposits; Claye (SC); dark reddish gray (5YR 4/2) with red (2.5Y grained to very coarse grained, angular to subroundium pebbles, angular to subangular; little silt moderate cementation; iron oxide staining; grave litholgy; mostly metadiorite (29.0 - 30.0') Topock - Alluvium Deposits; Claye	y sand with grave R 4/6); very fine und; little granule ; little clay; moist; el composed of m	el sto	, Rough drilling	
 30 31	120		27-32 (29 ppb) 3/30/2019 9:16:17 AM	Topock - Alluvium Deposits	SC		(SC); red (2.5YR 4/6) some red / moderate reddivery fine grained to very coarse grained, angular granules to very large pebbles, angular to suban subangular; little silt, little clay; moist to dry; modiron oxide staining; gravel composed of mixed little metadiorite, moist from 29-30', dry from 30-36' (30.0 - 39.0') Topock - Weathered Bedrock - cor	ish brown(10R 4, to subround; so gular; little cobble erate cementation holgy, mostly	/6); me es, n; J		
32 33 34 35 36		IRZ-39-SS- 31-36 3/31/2019 10:31:04 AM		Topock - Weathered Bedrock - conglomerate	SC		sand with gravel (SC); red (2.5YR 4/6) some red brown(10R 4/6); very fine grained to very coarse subround; some granules to very large pebbles, subangular; little cobbles, subangular; little silt; lit moderate cementation; iron oxide staining; grave litholgy, mostly metadiorite	e grained, angula angular to ttle clay; moist to	r to dry;	(36.0 - 46.0')	
37 38 39	36	IRZ-39-SS- 36-41 3/31/2019 10:34:04 AM		Topock -			(39.0 - 44.0') Topock - Competent Bedrock - cor	udlomerato, rad		(36.0 - 46.0) Rough drilling	
	84			Competent Bedrock -			(2.5YR 5/6); dry; iron oxide staining; firable cong fractured and pulverized, when moist pulverized	lomerate, highly			
40 • • • • • •	.:	- H000			<u> </u>	<u>K//X</u>	· · · · · ·				<u> </u>
Abbre			Unified Soil (Jassiticatio	on Syst	em, ft =	feet, bgs = below ground surface, a	amsi = above	e mear	n sea level, G	vv =
ground		-									
Rema	rks:										

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Boring	g Lo	g		She	eet: 3 of	3
	Started				Surface Eleva		N/A	Borin	na No.:	IRZ-39 Pi	ilot
	-	eted: <u>03/31/</u>			Northing (NA		N/A	_			<u></u>
Drilling		<u>Casca</u>			Easting (NAD	083):	N/A	_ Client:	PG&E		
-	g Meth		-		Total Depth:		54 ft bgs			W Remedy Ph	
	ig Typ						6-12 inches	_ Location	: <u>PG&E</u>	<u> Fopock, Needl</u>	es, California
	Name						r: <u>26.61 ft bgs</u>	_			
•	g Asst:				Sampling Me		4 inch x 10 ft Core Barrel	_ Project N	Number:]	RC000753.00	51
Logge			Willford		Sampling Inte		Continuous	_			
Editor	:	<u>Sean I</u>	<u> McGrane</u>		Converted to	Well:	☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code USCS Class		Soil Description			Drilling Notes	Drilling Fluid
				conglomerate		plastic	city, moderate to strong cementation			(36.0 - 46.0')	
										Rough drilling	
41											
				Topock -	🖔	8					
42				Competent Bedrock -	📉	3					
				conglomerate		∛					
43	84	IRZ-39-SS-				3					
		41-46	no sample (Interval did		l 📉	3					
_44		3/31/2019 10:40:04 AM	not produce)								
					l 💥		- 54.0') Topock - Competent Bedrock - co R 5/6); dry; moderate cementation; iron ox				
45						congle	omerate, core not as pulverized as from 3	9-44 feet bgs			
46						\					
0										(46.0 - 54.0')	
							V , S) Y			Rough drilling, lost core down	
_47					💮					the borehole, had to go back	
										in to retrieve 49	
48						\langle				to 54 ft bgs	
				Topock -							
_49				Competent		X					
				Bedrock - conglomerate							
50	96					3					
_						8					
51						3					
_0						Š					
. – E2											
_52						3					
						\geqslant					
53											
						\aleph					
_54						7	End of Boring at 54.0 'bgs	S.			
							End of Borning at 04.0 by				
55											
56											
_57											
- _58											
00											
59											
60 Abbre	viation	s: 118C8 -	Unified Sail (Classification	n System ft	= foot	, bgs = below ground surface,	amel = ah	ove mea	n sea level CI	<u>Λ/ =</u>
	dwater		OTHINGU SUIT	Jiassiiitall	on Oysielli, Il	- 1001,	, bys - below ground sunace,	amoi – ab	ove mea	ı sca icvei, G	v v —
Rema											
ıvenid	ıΛə.										

ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	eet: 1 of	18
Date Started	: <u>01/05/</u>	2019	(Surface	e Elevation:	N/A	Borin	a No.:	MW-Bd	
Date Comple					g (NAD83):	N/A	_		<u> </u>	
Drilling Co.:	<u>Casca</u>		[Easting	j (NAD83):	N/A	_ Client:	PG&E		
Drilling Meth		•		Total D	-	357 ft bgs	-		W Remedy Ph	
Drill Rig Type		<u>e Track Mou</u>			le Diameter:		_ Location:	PG&E]	<u> Fopock, Needl</u>	<u>les, California</u>
Driller Name					o First Water	_	_			
Orilling Asst:	-	ner/ J. Cando		-	ng Method:	10 ft Core Barrel	_ Project N	umber: <u>I</u>	RC000753.00	51
_ogger:		lford / C. Bor		-	ng Interval:	Continuous	_			
Editor:	<u>Sean I</u>	<u> McGrane</u>	(Conver	ted to Well:	Yes □ No				
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
			Topock - Fill	SM	brown	12.0') Topock - Fill; Poorly graded sand v (10YR 8/3); very fine grained to fine graind; little silt; dry; trace organics			(0.0 - 7.0') Soft drilling	(0.0 - 297.0') No water used
12 ₁₂₀ 13			Topock - Fill	GM	mediui to very	- 13.5') Topock - Fill; Silty gravel with san m pebbles to very large pebbles, angular v coarse grained sand, angular; dry; 1.5`	; some silt; little Meta-Diorite Bo	medium oulder		
14 15 16 17			Topock - Fluvial Deposits	GM	dark of round; subrou	17.0') Topock - Fluvial Deposits; Silty gilive brown (2.5Y 3/3); granules to very la some very fine to very coarse grained sund; some silt; trace cobbles, angular to sissed of mixed lithology	rge pebbles, an and, angular to	gular to		
 18 108 _19_ 			Topock - Fluvial Deposits	GM	dark g	· 21.5') Topock - Fluvial Deposits; Silty grayish brown / dark yellowish brown(10Y) ebbles, angular to subround; some very d sand, angular to subround; some silt; li	R 4/2); granule: fine to very coa ttle clay; dry	s to very arse		
Abbreviation	s: USCS =	Unified Soil (Classificatio	n Syst	em, ft = feet,	bgs = below ground surface,	amsl = abo	ve mear	n sea level, G	W =
groundwater										
Remarks: U	= not detec	ted above th	e laborator	/ repor	tina limit. ppb	o = parts per billion				

9/	4RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 2 of	18
	Started				Surface			Borir	na No.:	MW-Bd	
	-	eted: <u>02/28/2</u>			Northin	• •	•				
Drilling		Casca			Easting	•		Client:	PG&E	W/D D	
	g Meth tig Type		⊇rilling e Track Mour		Total D	•	357 ft bgs neter: 6 inches			W Remedy Ph	
	Name						Water: <u>21 ft bgs</u>	Location	. FGaL	гороск, меец	ies, California
	g Asst:		ner/ J. Cande		Samplin		_	Proiect N	lumber:	RC000753.00	 51
Logge	_	•	ford / C. Bon		Samplin	-					· .
Editor		<u>Sean N</u>	//cGrane		Conver	-					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Descript	on		Drilling Notes	Drilling Fluid
21	-			Topock - Fluvial Deposits	GM				_	(21.0')	(0.0 - 297.0') No water used
22				Topock - Fluvial Deposits	sc		(21.5 - 22.5') Topock - Fluvial Deposits; reddish yellow (7.5YR 6/6); very fine gra angular to subround; some granules to v	ined to very coarse g ery large pebbles, su	rained, bangular	Approximate depth to water table	
23	-			Topock - Alluvium	СН		to subround; little silt; little clay; moist; gr lithology (22.5 - 24.0') Topock - Alluvium Deposit	s; Fat clay with grave	I (CH);		
24	108			Deposits			reddish yellow (5YR 6/8); high plasticity; subround; trace very fine grained sand, silt; moist (24.0 - 27.0) Topock - Alluyium Deposit	subangular to subrou	nd; trace		
25				Topock -			brown (7.5YR 5/3); fine grained to very of subround; some silt; little granules to me subround; little clay; moist	oarse grained, angul	ar to		
26				Alluvium Deposits	SM						
27							(27.0 - 32.0') Topock - Alluvium Deposit	s: Siltv sand with grav	/el (SM):		
	-						brown (7.5YR 5/3); very fine grained to voto round; some granules to large pebbles silt; little clay; moist	ery coarse grained, a	angular		
	-		MW-B-VAS- 27-32	Topock -							
30	- 60		(7.7 J ppb) 1/6/2019 12:50:17 PM	Alluvium Deposits	SM						
	-				V						
32	_			Tanaak	Ť		(32.0 - 33.0') Topock - Alluvium Deposit	s: Clavey sand with d	ravel		
33				Topock - Alluvium Deposits	sc		(SC); light brown (7.5YR 6/4); fine graine angular to round; some clay; little granule angular to subround; little silt; wet; grave	ed to very coarse graines to medium pebbles composed of mixed	ned, s, litholgy		
34	-						(33.0 - 44.5') Topock - Alluvium Deposits brown (7.5YR 5/3); very fine grained to v to round; little granules to medium pebble silt; little clay; trace cobbles, subangular;	ery coarse grained, a es, angular to subrou	ngular		
35							siit, iitte ciay, trace cobbies, subangular,	wet			
36	120										
37				Topock - Alluvium Deposits	SM						
38											
5 											
40											
Abbre	viation	s: USCS = I	Unified Soil C	Classificati	on Syste	em, ft :	feet, bgs = below ground surf	ace, amsl = ab	ove mea	n sea level, G	W =
ń <u>– – – – – – – – – – – – – – – – – – –</u>	dwater										
Rema	rks: U	= not detect	ted above the	e laborato	ry report	ing lim	it, ppb = parts per billion				

9/	AR(CADIS	Design & Consultancy for natural and built assets		Во	ring Lo	 g			She	eet: 3 of	18
Date S	Started	: <u>01/05/</u> 2	2019		Surface	Elevation:	N/A		Borin	a No.:	MW-Bd	
	-	eted: <u>02/28/</u>				g (NAD83):	N/A				INIV Bu	
Drilling	-	<u>Casca</u>			_	(NAD83):	N/A		Client:	PG&E		
Drilling	-		-		Total D	•	357 ft bgs		-		W Remedy Pl	
Drill R			e Track Mour			le Diameter:			Location:	PG&E 1	<u> Fopock, Need</u>	<u>les, California</u>
Driller					-	o First Wate			D!4 N		20000750.00	
Drilling	-	•	ner/ J. Cande ford / C. Bon		-	ng Method:	10 ft Core Barrel		Project N	umber: <u>I</u>	RC000753.00	51
Logge Editor:			лога / С. воп ИсGrane		-	ng Interval: ted to Well:	Continuous					
Luitor		<u>Scarri</u>	I I		T	T T	□ Tes □ NO					<u> </u>
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	OSCS	USCS	Soil Descri	iption			Drilling Notes	Drilling Fluid
												(0.0 - 297.0') No water used
41	120											
42				Topock -	0.4							
-				Alluvium Deposits	SM							
43							,					
44												
86:70												
45						brown	52.0') Topock - Alluvium Depos (7.5YR 5/3) little grayish brown	(10YR 5/2)	; very fine gr	ained to		
						very c	parse grained, angular to round; s, angular to subround; little cob	; little granu bbles, subai	les to very la ngular to sub	rge round;		
46						little si	t; little clay; wet					
47	120											
<u> </u>												
48				Topock -								
<u>-</u>				Alluvium Deposits	SM							
49			MW-B-VAS- 47-52									
			(<0.17 U ppb)									
# <u></u> 50			1/9/2019 10:15:46 AM									
551				· ·								
(61.80) 												
52						(52.0	62.0') Topock - Alluvium Depos	sits; Silty sa	and with grav	el (SM);		
						round:	(7.5YR 4/4); very fine grained to some silt; little granules to very	large pebbl	es, angular t			
<u></u>						little cl	ay; trace cobbles, subangular to	subround;	moist to wet			
54												
\$												
5555												
<u> </u>												
5 55	120			Topock - Alluvium	SM							
	120			Deposits								
57												
58												
::0:E												
59												
<u> </u>												
60	<u> </u>	11000		N = = . '6' ''			h h . !		!			<u> </u>
ÿ 			Unitied Soil (Jassiticati	on Syst	em, rt = feet,	bgs = below ground su	итасе, а	msı = abo	ove mear	n sea level, G	vv =
<u> </u>	dwater		ted above the	- lahorato	v renor	ting limit not	= parts per billion					

9/	4R (ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 4 of	f 18
	Started					Elevation		Borin	ıg No.:	MW-Bd	
Date (Drilling	•	eted: <u>02/28/</u>				g (NAD8	•	Client:	PG&E		1
1	g Co g Meth	Casca od: Sonic			Total D	(NAD83	357 ft bgs	Project:		W Remedy	Phase 1
	ig Typ		•			•	_	-		-	edles, California
	Name						/ater: 21 ft bgs			, , , , , , , , , , , , , , , , , , ,	•
Drilling	g Asst:	-	<u>ner/ J. Cande</u>		-	ng Metho		Project N	lumber:]	RC000753.0	0051
Logge			lford / C. Bon		-	ng Interv		•			
Editor	:	<u>Sean I</u>	<u>McGrane</u>		Conver	ted to W	ell: X Yes No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
 61 	120			Topock - Alluvium Deposits	SM						(0.0 - 297.0') No water used
63 63 64				Topock - Alluvium Deposits	ML		(62.0 - 64.5') Topock - Alluvium Deposits; Sandy orown (7.5YR 4/3); medium plasticity; some very grained sand, angular to round; little granules to angular to subround; little clay; moist	fine to mediu	ım		
65	-			Topock - Fluvial Deposits	GM	13 Pid !	64.5 - 65.5') Topock - Fluvial Deposits; Silty gra brown (7.5YR 4/4); granules to very large pebble subround; some very fine to very coarse grained	es, angular to I sand, angula	ar to		
66	-			<u> </u>			round; some silt; little cobbles, subangular to submoist (65.5 - 72.0") Topock - Alluvium Deposits; Silty s	sand with grav	rel (SM)		
67	120					1-1-1-1	orown (7.5YR 4/4); very fine grained to very coa ittle granules to very large pebbles, angular to su subangular to subround; trace clay; moist to wet	ubround; little	cobbles,		
68				Topock -							
69	-		MW-B-VAS- 67-72 (<0.17 U	Alluvium Deposits	SM						
70			ppb) 1/9/2019 2:55:27 PM								
71	_										
72							72.0 - 77.0') Topock - Alluvium Deposits; Silty g	gravel with sar	nd (GM);		
73	-					ピピイ	ight brown (7.5YR 6/4); granules to very large pround; some very fine to very coarse grained sar some silt; trace clay; moist to wet	ebbles, angul nd, angular to	ar to round;		
74											
 75				Topock - Alluvium Deposits	GM						
76	400										
	120										
77 78 79				Topock - Alluvium Deposits	SM		(77.0 - 88.0') Topock - Alluvium Deposits; Silty s strong brown (7.5YR 5/6); very fine grained to ve angular to round; little small to medium pebbles, ittle silt; trace clay; wet; majority of pebbles are e composed of mixed lithology.	ery coarse gra angular to sul	ained, bround;		
80	victi	0: USCS =	Unified Call (loosificati	on Svint		foot has - holour around ands	amal = =!-	21/0 ====	n oog level	
-	viation dwater		onillea 2011 (Jassificati	on Syst	em, π = 1	feet, bgs = below ground surface, a	arrisi = abo	ove mea	ıı sea ievel,	GVV =
			ted above the	- lahorator	v renori	ina limit	nnb = parts per billion				

9/	4R (ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	eet: 5 of	18
	Started					Elevation:	N/A	Borin	g No.:	MW-Bd	
	•	eted: <u>02/28/2</u>				g (NAD83):	N/A N/A	_	PG&E		
Drilling	g Co g Meth	Cascad od: Sonic [Total D	(NAD83):	357 ft bgs	_ Client. _ Project:		W Remedy F	Phase 1
	ig Typ		e Track Mou			epա. le Diameter:	<u> </u>	-		-	dles, California
	Name					o First Wate					
Drilling	g Asst:	T. Alym	ner/ J. Cande	elaria	Samplin	ng Method:	10 ft Core Barrel	Project N	lumber:]	RC000753.0	051
Logge			ford / C. Bon		•	ng Interval:	Continuous	_			
Editor	:	Sean N	/lcGrane		Conver	ted to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	SOOO	USCS	Soil Description			Drilling Notes	Drilling Fluid
											(0.0 - 297.0') No water used
81	120										
	1										
82											
83	1										
03	1										
84				Topock - Alluvium	SM						
3				Deposits	Olvi						
85											
- -	_										
86	4										
	-										
87	120										
	1										
88	1						91.0') Topock - Alluvium Deposits; Silty				
- - - - - - - - -	1					Some some	(7.5YR 4/3); granules to small cobbles, a very fine to very coarse grained sand, and	gular to round;			
09				Topock -		PXP	ace clay; moist; gravel composed mostly of	f meta-diorite			
90				Alluvium Deposits	GM						
						99					
91											
						strong	- 97.0') Topock - Alluvium Deposits; Silty s brown (7.5YR 4/6); very fine grained to v	ery coarse gra	ined,		
92						subro	ar to round; some granules to very large pound; some silt; trace cobbles, angular to su	ebbles, angula ubangular; tra	er to ce clay;		
	-					wet; g	ravel composed of mixed lithology				
93	1										
	1			Topock -							
94	1			Alluvium Deposits	SM						
	60			Ворозна							
95	1										
- 96	1										
30											
						(97.0 (ML):	- 102.0') Topock - Alluvium Deposits; San strong brown (7.5YR 5/6) trace red (10R {	ndy silt with gra 5/8); medium i	ovel plasticity:		
98	1					some	very fine to very coarse grained sand, subles to medium pebbles, subangular to sub	oangular to roi	ınd; little		
	120			Topock - Alluvium	ML		iron oxide staining		,,		
99	1 -			Deposits							
<u>-</u>	-										
100 Abbro	victi	0. 11000 - 1	Initiod Cail (lossificati	on Sirat		hao = holou arous d auria	omel = al-	21/0 22 5	n oog level 1	
	viation dwater		3011 C	Jiassilicati	un Syst	em, n = teet	bgs = below ground surface,	amsi = abo	ve meal	n sea ievei, (JVV -
<u> </u>			ed above the	e laborator	ry report	ing limit pp	n = parts per billion				

9/	4RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	, Lo	9		She	eet: 6 of	18
	Started				Surface			N/A	Borin	a No.:	MW-Bd	
	-	eted: <u>02/28/</u> 2			Northing			N/A				
Drilling	_	<u>Casca</u>			Easting	•	83):	N/A	Client:	PG&E	M Damadı D	haaa 1
	g Meth tig Type		⊇rilling e Track Mour		Total D	•	notori	357 ft bgs 6 inches	-		W Remedy Pl	
	iig ⊤ype Name							21 ft bgs	Location:	PG&E I	гороск, мееа	ies, Caillornia
	g Asst:		ner/ J. Cande		Samplin			10 ft Core Barrel	Proiect N	umber: I	RC000753 00	 151
Logge			ford / C. Bon		Samplir	-		Continuous		u	10000700.00	
Editor			/lcGrane		Convert	-			•			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
 101				Topock - Alluvium Deposits	ML							(0.0 - 297.0') No water used
102	-						(102.0	- 107.0') Topock - Alluvium Deposits; Silt	y sand (SM);	strong		
100	1						subang	7.5YR 5/6); very fine grained to very coa ular to subround; some silt; little gran <mark>ule</mark> s	rse grained, s to medium pe	ebbles,		
103							subang	ular to subround; trace clay; wet				
 104	120		MW-B-VAS-									
			102-107 (<0.17 U	Topock - Alluvium	SM		:					
105			ppb) 1/10/2019	Deposits	Sivi							
			1:15:17 PM				:]					
106	-											
107							(107.0	- 122.0') Topock - Alluvium Deposits; Silt	v sand with gr	avel		
108							(SM); s grained angular	trong brown (7.5YR 5/6); very fine graine , angular to subround; some granules to to subround; some silt; trace cobbles, su	ed to very coar very large peb	se bles,		
	-						moist to	owet				
109												
110												
111							:					
112	120											
	-						:]					
113	1			Topock -								
-	-			Alluvium	SM							
114				Deposits								
	1											
115	1											
 116	1											
110	1											
117							1					
118]											
	120											
119												
-							:]					
120 Abbro	viation	e: 11808 - 1	Initiad Sail C	lassificati	on Strot		foot	bgs = below ground surface, a	amel = oba	We mad		:\^/ -
	dwater		Uninied 3011 C	viassiiiCalli	on Syste	=111, IL =	– 1 00 1,	bys – below ground sunace, a	2011 – 9DC	ve mear	ı sca icvei, G	, v v —
			ted above the	e laborator	v report	ina lim	nit, ppb	= parts per billion				

9/	۱RC	ADIS	Design & Consultancy for natural and built assets		Bo	ring	Log		Sh	neet: 7 of	18
ate S	started:	01/05	/2019		Surface	e Eleva	on: <u>N/A</u>	Borin	a No.	: <u>MW-Bd</u>	
		ted: <u>02/28</u>	/2019		Northin		•	_			
Prilling		<u>Casca</u>	ade		Easting) (NAD	3): <u>N/A</u>	_ Client:	PG&E		
Prilling	Metho	od: <u>Sonic</u>	Drilling		Total D	epth:	357 ft bgs	_ Project:	Final C	<u> SW Remedy Pl</u>	hase 1
rill Ri	g Type	: <u>Fullsiz</u>	<u>ze Track Mou</u>					_ Location:	PG&E	Topock, Need	les, Californ
riller	Name:	Nick F	Petrone		Depth t	to First	Vater: <u>21 ft bgs</u>	_			
rilling	Asst:	<u>T. Aly</u>	<u>mer/ J. Cand</u>	<u>elaria</u>	Sampli	ng Met	od: <u>10 ft Core Barrel</u>	_ Project N	lumber:	RC000753.00	51
ogge	r:	<u>G. Wi</u>	<u> Ilford / C. Bor</u>	nessi	Sampli	ng Inte		_			
ditor:		<u>Sean</u>	<u>McGrane</u>		Conver	ted to \	'ell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
- 121_ -				Topock - Alluvium Deposits	SM						(0.0 - 297.0') i water used
122 - 123 - 124 - 125	120			Topock - Alluvium Deposits	GM		(122.0 - 126.0') Topock - Alluvium Deposits; S (GM); strong brown (7.5YR 5/6) trace very dar granules to very large pebbles, angular to subr very coarse grained sand, angular to subround cobbles, subangular to subround; trace clay; m	k gray (7.5YR 3 ound; some ver d; some silt; little	3/1); ry fine to		
126_						<u> </u>	(400 0 400 0)) Towards Allegians Deposits O	::	1		
4							(126.0 - 129. <mark>0') Topock - Allu</mark> vium Deposits; S (SM); strong brown (7. <mark>5YR 5</mark> /6); very fine grain	ned to very coa	rse		
127							grained, angula <mark>r to subro</mark> und; some granules to ang <mark>ular to subround; so</mark> me silt; trace cobbles, s				
- 128_ -				Topock - Alluvium Deposits	SM		noist to wet				
129_ - 130_ -					5		129.0 - 134.0') Topock - Alluvium Deposits; S (GM); strong brown (7.5YR 5/6) some very dar granules to very large pebbles, angular to sub- to very coarse grained sand, angular to subrou cobbles, angular; trace clay; moist; moderate c	rk gray (10YR 3 angular; some v ınd; some silt; tı	3/1); ery fine		
131_				Topock -							
- 132_ -	120			Alluvium Deposits	GM						
133_											
_						12 F					
134_						<u>\$</u> P\$	(A) A A A A A A A A A A A A A A A A A A	OL			
							(134.0 - 144.0') Topock - Alluvium Deposits; S (SM); strong brown (7.5YR 5/6); very fine grain	ned to very coa	rse		
35_							grained, angular to round; some silt; little granu subangular to subround; trace cobbles, subang	ıles to medium gular; trace clav	pebbles, r; moist		
							, , , , , , , , , , , , , , , , , , , ,	,			
36_											
137				Topock - Alluvium	SM						
				Deposits							
138_											
	120										
139_	120										
140											
	/iations	: USCS =	Unified Soil	Classificati	on Syst	em, ft	feet, bgs = below ground surface,	amsl = abo	ove mea	an sea level, G	iW =
ounc	dwater										
emar	ks: U	= not detec	cted above th	e laborator	y repor	ting lim	, ppb = parts per billion				
							· · · · · · · · · · · · · · · · · · ·				

AR	CADIS	Design & Consultancy for natural and built assets		Boring Log		Sh	eet: 8 of	18
Date Started				Surface Elevation:	N/A	Boring No.	: MW-Bd	
Date Compl				Northing (NAD83):	N/A	-		
Drilling Co.:	Casca			Easting (NAD83):	N/A	Client: PG&E		
Drilling Meth				Total Depth:	357 ft bgs		W Remedy Ph	
Drill Rig Typ Driller Name		e rrack Mour Petrone		Borehole Diameter: Depth to First Water	6 inches	Location: PG&E	тороск, мееа	ies, Caillorni
Drilling Asst		mer/ J. Cande		Sampling Method:	10 ft Core Barrel	Project Number:	RC000753 00	51
Logger:	-	llford / C. Bon		Sampling Interval:	Continuous	r roject ramber.	10000700.00	01
Editor:		McGrane		Converted to Well:		=		
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code USCS Class	Soil Description		Drilling Notes	Drilling Fluid
		MW-B-VAS- 142-147 (<0.17 U ppb) 1/15/2019 2:25:50 PM	Topock - Alluvium Deposits Topock - Alluvium Deposits	SM (7.5YR subrou round;	- 147.0') Topock - Alluvium Deposits; Silt 5/4); very fine grained to very coarse grand; some silt; little granules to medium petrace clay; moist to wet	ty sand with graveled to very coarse		(0.0 - 297.0') No water used
			Topock - Alluvium Deposits	grained pebbles	, angular to subround; some silt; little gra s, subangular to round; trace clay; moist t	nules to large to wet		
_153 _154			Topock - Alluvium Deposits	GM (GM); I very fin trace of	 - 154.0') Topock - Alluvium Deposits; Silt ght brown (7.5YR 6/4); granules to very le to very coarse grained sand, angular to ay; moist 	large pebbles; some o subround; some silt;		
 155 _156_ 			Topock - Alluvium Deposits	(7.5YR	 - 157.0') Topock - Alluvium Deposits; Silt 5/4); very fine grained to very coarse grand; some silt; little granules to medium petrace clay; wet 	ained, angular to		
			Topock - Alluvium Deposits	GM (GM); (GM); (granule very comoist	- 160.0') Topock - Alluvium Deposits; Silt lark brown (10YR 3/3) little reddish browr is to small cobbles, subangular to subrou arse grained sand, angular to subround;	n (2.5YR 4/4); nd; some very fine to little silt; little clay;		
		Unified Soil C	Classification	on System, ft = feet,	bgs = below ground surface, a	amsl = above mea	an sea level, G	W =
groundwate								
Remarks: L	J = not detec	cted above the	e laborator	y reporting limit, ppb	= parts per billion			

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 9 of	18
	Started				Surface			Borir	ng No.:	MW-Bd	
l l	•	eted: <u>02/28/2</u>			Northin	• •	•	_	PG&E		
Drilling	g Co.: g Meth	Cascad od: Sonic [Easting Total D	,	83): <u>N/A</u> <u>357 ft bgs</u>	_ Client: _ Project:		W Remedy F	Phase 1
	ig Typ		e Track Mour			•	neter: <u>6 inches</u>	-		-	dles, California
	Name						Water: 21 ft bgs	_			,
Drilling	g Asst:	•	<u>ner/ J. Cande</u>		Samplir	-		_ Project N	lumber:]	RC000753.0	051
Logge			ford / C. Bon		Samplir	-		_			
Editor		Sean N	<u>/////////////////////////////////////</u>	,	Conver	ted to \	Well: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
161	-						(160.0 - 167.0') Topock - Alluvium Deposits; Si (7.5YR 5/4); very fine grained to very coarse gr subround; some silt; little granules to medium p round; trace clay; wet	ained, angular	to		(0.0 - 297.0') No water used
162											
 163	1										
	120			Topock - Alluvium	SM						
164				Deposits							
165	-										
166											
167				Topode			(16 <mark>7.0 - 1</mark> 68.0') Topock - Alluvium Deposits; Po	oorly graded gr	avel		
168				Topock - Alluvium Deposits	GP		(GP); (GLEY2 6/1); small cobbles to large cobb fine to medium grained sand, angular to suband pulverized metadiorite boulder	oles, angular; tr gular; trace silt	ace very ; dry;		
-						.0.	(168.0 - 173.0') Topock - Alluvium Deposits; Sa (ML); reddish brown / moderate brown(5YR 4/4); medium plas	sticity;		
169						o d	some very fine to coarse grained sand; little gra subangular to subround; little clay; moist to wet	inules to small	pebbles,		
						pa o					
				Topock - Alluvium	ML						
171				Deposits							
470	-										
172_	120										
173											
							(173.0 - 183.0') Topock - Alluvium Deposits; Si (SM); reddish brown / moderate brown(5YR 4/4	i); very fine gra	ained to		
174							very coarse grained, angular to subround; some pebbles, angular to subround; some silt; trace of		arge		
	-										
175_											
176											
				Topock - Alluvium	SM						
177				Deposits							
	-										
178	1										
- 179	120										
1/3_]										
180	<u> </u>			<u> </u>							
;⊢—	viation dwater		Jnified Soil (Classificati	on Syste	em, ft =	= feet, bgs = below ground surface,	amsl = abo	ove mea	n sea level,	GW =
<u> </u>			ed above the	e laborator	v report	ina lim	nit_ppb = parts per billion				

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	9		She	eet: 10 of	18
	Started				Surface			N/A	Borin	a No.:	MW-Bd	
	•	eted: <u>02/28/2</u>			Northing	• •	,	N/A	_		<u> 24</u>	
Drilling		Casca			Easting	•	83):	N/A	Client:	PG&E		4
1	g Meth				Total De	•		357 ft bgs	-		W Remedy Pl	
	ig Type Name		e Track Mour		Borehol			6 inches 21 ft bgs	Location:	PG&E	Fopock, Need	ies, California
	g Asst:		ner/ J. Cande		Samplin			10 ft Core Barrel	- Project N	umher: I	RC000753 00	51
Logge	-	•	ford / C. Bon		Samplin	•		Continuous	_ 1 10,00011	umber. <u>I</u>	10000700.00	01
Editor			/lcGrane		Convert	•			-			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
							:					(0.0 - 297.0') No water used
181												water used
				Topock -	CM							
182				Alluvium Deposits	SM		:					
183												
	120		MW-B-VAS-				(SM); g	- 187.0') Topock - Alluvium Dep <mark>os</mark> its; Sil grayish brown (10YR 5/2) trace <mark>red (2</mark> .5Y I to very coarse grained, a <mark>ngular to sub</mark> ro	R 4/6); very fir ound; some gra	ne anules to		
184	-		182-187 (<0.17 U				large pe	ebbles, angular to subround; some silt; tr	ace clay; mois	t to wet		
			ppb) 2/13/2019	Topock - Alluvium	SM							
3			10:30:35 AM	Deposits	Join							
186							:					
							:					
187												
<u> </u>							(187.0 (SM); y	 192.0') Topock - Alluvium Deposits; Silvellowish red / light brown(5YR 5/6); very 	ty sand with gr fine grained to	avel very		
188								grained, angular to subround; some grar s, subangular to subround; little silt; trace				
								ular; trace clay; wet				
<u> </u>				Topock - Alluvium	SM							
190				Deposits								
							:					
191												
							:					
192	114						(102.0	- 195.0') Topock - Alluvium Deposits; Sil	ty oand with ar	on tol		
							(SM); b	prown (7.5YR 5/3); very fine grained to ve	ery coarse grai	ned,		
193							angular to subro	to subround; some granules to very largound; little silt; trace cobbles, angular to s	je pebbles, sub subangular; tra	oangular ce clay;		
<u> </u>				Topock - Alluvium	SM		wet					
194				Deposits								
							:					
195				<u> </u>			(195.0	- 197.0') Topock - Alluvium Deposits; Sil	ty sand (SM)	light —		
				Topock -			reddish	brown (5YR 6/3); very fine grained to verto subround; some silt; little granules to	erv coarse grain	ned.		
196				Alluvium	SM		subang	jular to round; trace clay; moist	medium pebbi	es,		
				Deposits								
197					+		· (197 በ	- 202.0') Topock - Alluvium Deposits; Sil	ty sand with or	avel		
							(SM); li	ght reddish brown / light brown(5YR 6/4) grained, angular to subround; little granu	; fine grained t	o very		
198				Topock -			subang	jular to subround; little silt; trace cobbles,				
	60			Alluvium	SM		. clay; m	UISI				
199	-			Deposits								
							:					
200 Abbre	viation	s: USCS = I	Inified Soil (L Classificati	on Syste	em ft =	· = feet	bgs = below ground surface, a	amsl = abo	ve mear	n sea level G	iW =
	dwater		JJu Joli (J.GOOMOUL	5 Gy 510	, 11.	.550,	-g- zolow ground bundoc, (111001	. 554 15761, 0	
			ed above the	e laborato	ry report	ing lim	it, ppb	= parts per billion				

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	eet: 11 of	18
I	Started					Elevation:	N/A	Borin	ıq No.:	MW-Bd	
		eted: <u>02/28/</u> 2				g (NAD83):	N/A	_			
Drilling	-	Casca			_	(NAD83):	N/A	Client:	PG&E	M Dl Dl-	1
1	g Meth		-		Total D	•	357 ft bgs	-		W Remedy Ph	
I	ig Type Name		e Track Mour			ie Diameter: o First Wate	6 inches	Location	PG&E	Topock, Needl	es, California
Drilling			ner/ J. Cande		-	o คารเ พลเษ ng Method:	1. 21 It bys 10 ft Core Barrel	- Project N	lumber:	RC000753 004	 51
Logge			ford / C. Bon		-	ng Interval:	Continuous	_ i iojectiv	iumber.	1.0000733.000	<i>)</i>
Editor			McGrane		-	ted to Well:		_			
					1						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
201	- 60			Topock - Alluvium Deposits	SM						(0.0 - 297.0') No water used
202						(202.0	0 - 207.0') (NR)			(202.0 - 207.0')	
203	-									No Core Recovery. Driller noted core barrel was full during core extraction.	
204						$ \setminus / $				COIC GALI ACILOTI.	
					NR	\					
205						$ \wedge $					
						/ \					
206						/ \					
						/ \					
207	60					V V (207 (2045 Ol) Tonack Allunium Denesites Cil	troopd (CM)	limbt		
	-					reddis angula	0 - 215.0') Topock - Alluvium Deposits; Sil h brown (5YR 6/3); very fine grained to ve ar to subround; some silt; little granules to gular to round; trace clay; wet	ery coarse grai	ined,		
-											
209			MW-B-VAS- 207-212								
			(<0.17 U ppb)								
210			2/14/2019 10:55:55 AM								
	1			Topock -							
211				Alluvium Deposits	SM						
	-			Берозіка							
212											
	-										
213	1										
214											
214	1										
 215	- 60										
	1					(215.0) - 220.0') Topock - Alluvium Deposits; Sil	ty sand with g	ravel		
 216	1					coarse	yellowish red / light brown(5YR 5/6); very e grained, angular to subround; some silt;	little granules	to		
	1					mediu suban	m pebbles, angular to subangular; trace c gular; trace clay; moist; gravel composed	obbles, angula of mixed lithol	ar to ogy		
 217	1						•				
				Topock -							
210	1			Alluvium Deposits	SM						
218	1			,							
	114										
219											
220 Abbre	viation	s: USCS =	Unified Soil (Classification	on Svst	em, ft = feet	bgs = below ground surface,	amsl = abo	ove mea	n sea level. G\	W =
	dwater				- ,	,530,	<u> </u>			, 0	
			ted above the	e laborator	v report	tina limit pol	n = parts per billion				

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	g		She	eet: 12 of	18
Date S	Started	: <u>01/05/2</u>	2019		Surface	Eleva	tion:	N/A	Borin	a No .	MW-Bd	
Date (Comple	eted: <u>02/28/2</u>	2019		Northin	g (NAD	83):	N/A			initi Ba	
Drilling	-	Cascac			Easting	(NAD	33):	<u>N/A</u>	Client:	PG&E		
•	g Meth		•		Total D	-		357 ft bgs	-		W Remedy Ph	
	ig Type		e Track Mour						Location	PG&E	<u>Topock, Needl</u>	es, California
	Name				-			: <u>21 ft bgs</u>				
7	g Asst:	-	ner/ J. Cande		Samplin	-		10 ft Core Barrel	Project N	lumber: .	RC000753.00	51
Logge			ford / C. Bon		Samplin	-		Continuous				
Editor	:	Sean N	<u>//cGrane</u>		Conver	ted to V	/VeII:	X Yes		T		T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	SOOGE	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
	- 114			Topock - Alluvium Deposits	SM		(SM); y angular	- 227.0") Topock - Alluvium Deposits; Silty vellowish red (5YR 4/6); fine grained to ver r to subround; some granules to large peb nd; some cobbles, angular to subangular; o wet	ry coarse grai bles, angular	ined, to		(0.0 - 297.0') No water used
					NR		(227.0	- 229.0') (NR)			(227.0 - 229.0') No core recovery. Driller noted core barrel was full during core extraction.	
229 - 230 - 231					5		(SM); y angular	- 237.0') Topock - Alluvium Deposits; Silty rellowish red (5YR 4/6); fine grained to veir r to subround; some silt; little granules to langular; trace cobbles, angular to subangu	ry coarse grai arge pebbles,	ined, angular		
	96			Topock - Alluvium Deposits	SM							
234_	-											
235_												
]											
J J J J J J J J J J J J J J J J J J J												
237_]											
	60			Topock - Alluvium Deposits	ML		(ML); re mediun	- 242.0') Topock - Alluvium Deposits; Sar eddish brown (2.5YR 4/4); low plasticity; s n grained sand, angular to subround; little s, angular to subround; little clay; moist to tation	ome very fine granules to n	e to nedium	(237.0 - 242.0') Rough drilling. End cap found in core	
	viation	e: 11909 - 1	Inified Soil (lassification	on Svet		feet	bgs = below ground surface, a	mel – ah	Ne moo	n sea level C	\/\/ =
-	viation dwater	s. ∪3U3 = l	Jillieu 3011 (Jiassilicatii	un Syst	⊏III, IL =	- ieel,	bys - below ground surface, a	111151 – abo	ove mea	ıı sea level, G	v v —
<u> </u>		= not detect	ted above the	e laborator	v report	ina lim	it. pph	= parts per billion				

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sh	eet: 13 of	18
Date S	Started	: <u>01/05/</u>	2019		Surface	Eleva	ition: <u>N/A</u>	Borin	a No	: <u>MW-Bd</u>	
Date 0	Comple	eted: <u>02/28/</u>	2019		Northin		•	_		. <u>IIII Ba</u>	
Drilling	-	<u>Casca</u>	de		Easting	(NAD	83): <u>N/A</u>	_ Client:	PG&E		
Drilling	-		Drilling		Total D	-	357 ft bgs	_ Project:		W Remedy Ph	
Drill R			<u>e Track Mou</u>				neter: <u>6 inches</u>	_ Location:	PG&E	Topock, Needl	es, California
Driller					-		Water: 21 ft bgs	_			
	g Asst:	-	ner/ J. Cande		Samplin	-		_ Project N	lumber:	RC000753.005	51
Logge			lford / C. Bon		Samplin	-		_			
Editor	:	<u>Sean I</u>	<u>McGrane</u>		Conver	ted to	Well: ⊠ Yes ☐ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	SOSO	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
 241	60			Topock - Alluvium Deposits	ML					(237.0 - 242.0') Rough drilling. End cap found in core	(0.0 - 297.0') No water used
242							. (242.0 - 254.0') Topock - Alluvium Deposits; S	andy oilt with a	rovol	(242.0 - 252.0')	
243							(ML); reddish brown (2.5YR 4/4); medium plas medium grained sand, angular to subround; litt pebbles, angular to round; little clay; trace cob	ticity; some ver tle granules to la oles, angular to	y fine to arge	Drill rods chattering	
244_							subangular; moist; weak cementation; iron oxid	de staining			
								•			
246											
247	120						, , ,				
				Topock - Alluvium	ML						
249_			MW-B-VAS- 247-252	Deposits							
			(<0.83 U ppb) 2/17/2019 11:25:00 AM								
	-										
251				·			(251.0 - 251.2'); core slightly saturated				
 252										(252.0 - 254.0')	
253	-									`Rough drilling´	
	-						(254.0 - 269.0') Topock - Alluvium Deposits; S gravel (MH); reddish brown (2.5YR 4/4); high fine to coarse grained sand, angular to subrou	olasticity; some	very		
255	-						. small pebbles, subangular to subround; little cl	ay; moist			
256	120						· ·				
				Topock -			:				
257				Alluvium Deposits	МН						
				Борозна							
	•										
							(258.5'); some granules to very large pebbles, subround; little clay; trace cobbles, subround; plasticity	subangular to medium to high			
260							1				
		s: USCS =	Unified Soil (Classificati	on Syst	em, ft	= feet, bgs = below ground surface,	amsl = abo	ove mea	an sea level, G\	N =
· —	dwater		411 "	- 1-1			it only and 190				
Rema	rks: U	= not detec	ted above the	e iaboratoi	ry report	ing lim	nit, ppb = parts per billion				

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	eet: 14 of	18
	Started					Elevation:	N/A	Borin	ng No.:	MW-Bd	
		eted: <u>02/28/</u>				g (NAD83):	N/A	_			
Drilling	g Co.: g Meth	Casca od: Sonic			Total D	(NAD83):	N/A 357 ft bgs	Client: Project:	PG&E	W Remedy Ph	1
1	g Metri Rig Typ		e Track Mour			epու. le Diameter:	_	-		<u>rv Remedy Fi</u> Fopock, Need	
	Name					o First Wate		Location	. <u> OQL</u>	ropoon, rtood	ioo, Gairionnic
	g Asst:		ner/ J. Cande		-	ng Method:	10 ft Core Barrel	- _ Project N	lumber:	RC000753.00	51
Logge	er:	G. Will	ford / C. Bon	essi	Samplii	ng Interval:	Continuous	-			
Editor	•	<u>Sean N</u>	<u>//cGrane</u>		Conver	ted to Well:	Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
											(0.0 - 297.0') No water used
261	120										
-											
262											
264											
8. – –				Topock - Alluvium	MH						
265				Deposits							
	-										
266	_		MW-B-VAS- 264-269							(266.0 - 269.0')	
	-		(<0.33 U							Drill rods chattering	
267	120		ppb) 2/18/2019 2:00:22 PM							Challening	
268_	1										
2	1										
269_) - 272.0') Topock - Alluvium Deposits; Gr				
270						pebbl	dark red (2.5YR 3/6); low plasticity; some es, subangular to round; little very fine to v	erv coarse ar			
219				Topock - Alluvium	ML	sand, ceme	angular to subround; little clay; moist to dr ntation	y; moderate			
271_				Deposits	IVIL						
5						(271')	strong cementation; dry at 271-271.4				
272_											
	-					(ML);	0 - 282.0') Topock - Alluvium Deposits; Silreddish brown (2.5YR 4/4); low plasticity;	some granule	s to very		
273	_					: graine	pebbles, angular to subround; some very f d sand, angular to subround; little clay; tra	rine to very co ace cobbles,	arse		
						subar	gular to subround; moist				
274	1										
275_	1									(275.0 - 276.0')	1
9				Topock -						Drill rods chattering	
276	120			Alluvium Deposits	ML						
277											
200]										
279_											
<u> </u>	_										
280	: - #	11000					hara — halannan — I — f				\ <u>\</u>
	viation dwater		unified Soil (Jassiticati	on Syst	em, rt = feet	bgs = below ground surface,	amsi = abo	ove mea	n sea ievel, G	vv =
<u> </u>			ted above the	e lahorato	rv renor	ting limit po	n = parts per billion				

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	St	neet: 15 of	18
	Started				Surface	Eleva	tion: <u>N/A</u>	Boring No.	: MW-Bd	
	•	eted: <u>02/28/</u>			Northin	g (NA[•			
Drilling	-	<u>Casca</u>	de		Easting	(NAD	•	Client: PG&E		
1	g Meth				Total D	-	357 ft bgs	· · · · · · · · · · · · · · · · · · ·	<u>GW Remedy Ph</u>	
	ig Typ		e Track Mou				neter: <u>6 inches</u>	Location: <u>PG&E</u>	Topock, Needl	les, California
	Name		etrone		-		Water: 21 ft bgs			
1	g Asst:	-	<u>mer/ J. Cand</u>		Samplii	•		Project Number:	RC000753.00	51
Logge			lford / C. Boı		Samplii	-				
Editor	:	<u>Sean I</u>	<u>McGrane</u>		Conver	ted to	Well: ⊠ Yes ☐ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Descript	ion	Drilling Notes	Drilling Fluid
 281 	120			Topock - Alluvium Deposits	ML					(0.0 - 297.0') No water used
282 283	-						(282.0 - 288.0') Topock - Alluvium Depc (ML); reddish brown (2.5YR 4/4); mediu coarse grained sand, angular to round; I pebbles, angular to subround; little clay;	m plasticity; some very fine to ittle granules to medium		
284	-									
285	-			Topock - Alluvium Deposits	ML					
286										
	-									
287	120									
	-				<u> </u>		(288.0 - 293.0') Topock - Alluvium Depo			
	-		MW-B-VAS- 287-292 (<0.17 U				(ML); reddish brown (2.5YR 4/4); mediu coarse grained sand, angular to subrour pebbles, subangular to subround; little c moist; strong cementation	nd; little granules to medium		
290			ppb) 2/20/2019							
	1		12:15:33 PM	Topock - Alluvium Deposits	ML					
	-								(292.0 - 297.0') Drill rods	
293	1								chattering	
	1				T	t X F	(293.0 - 295.0') Topock - Weathered Be gravel (GM); reddish brown (2.5YR 4/4)			
294	1			Topock - Weathered			pebbles, subangular to subround; little v	ery fine to coarse grained		
	1			Bedrock - conglomerate	GIVI	12 P	sand, angular to subround; little silt; little subangular to subround; dry	clay; trace copples,		
295	60			Congionicial	<u> </u>					
]					177	(295.0 - 298.0') Topock - Weathered Be Gravelly elastic silt with sand (ML); redd	edrock - conglomerate; ish brown (2.5YR 4/4): low		
296				Topock - Weathered Bedrock -	ML		plasticity; some granules to large pebble very fine to coarse grained sand, angula	s, angular to subround; little		
297				conglomerate	е	14/9			(297.0 - 301.0')	(297.0 - 307.0')
	-]		Rough drilling	200 gal of water
298	-					'المليام	(298.0 - 299.5') Topock - Weathered Be	adrock - conglomorato: Silty		used
299_	120			Topock - Weathered Bedrock - conglomerate	SM		(298.0 - 299.5) Topock - Weathered Be sand with gravel (SM); brown (7.5YR 5/- grained, angular to subround; little grant subangular to subround; little silt; little cl	4); fine grained to very coarse ules to small pebbles,		
200	1				GM	FYT	(299.5 - 301.5') Topock - Weathered Be	edrock - conglomerate; Silty		
300 Abbre	viation	s: USCS =	Unified Soil	Classificati	on Svst	em, ft	.l = feet, bgs = below ground sur	face, amsl = above mea	an sea level. G	W =
	dwater				- , - ,	-, ••	, , , 3 341	, 1 1.50.0		
			ted above th	a laborato	rv rener	tina lim	nit nnh = narte ner hillion			

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 16 of	18
	Started					Elevati		Borin	ıq No.:	MW-Bd	
	-	eted: <u>02/28/</u>				g (NAD	•				
Drilling	g Co.: g Meth	Casca			Easting Total D	(NAD8	3): <u>N/A</u> 357 ft bgs	Client: Project:	PG&E	W Remedy Ph	2000 1
-	g Metri Rig Typ		e Track Mou			•	eter: <u>6 inches</u>			<u>rv Remedy Pr</u> Fopock, Needl	
	· Name						Vater: 21 ft bgs	Location	. <u> Oal </u>	ороск, песси	C3, California
	g Asst:		ner/ J. Cando		-	ng Meth	•	Project N	 lumber: <u>I</u>	RC000753.00	51
Logge	-	-	ford / C. Bor		-	ng Interv					
Editor	:	Sean N	<u> </u>		Conver	ted to V	/ell: ⊠ Yes 🗌 No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
301_				Topock - Weathered Bedrock - conglomerate	GM	BP1d	gravel with sand (GM); yellowish red (5YR 4/6); pebbles, subangular to round; little fine to very cangular to subround; little silt; trace cobbles, and clay; wet	oarse grained	sand,	(297.0 - 301.0') Rough drilling	(297.0 - 307.0') 200 gal of water used
302							(301.5 - 313.5') Topock - Weathered Bedrock - elastic silt with gravel (MH); yellowish red (5YR 4	4/6): high plas	ticity:		
-	1					+1.1111	some granules to large pebbles, angular to subro subangular to subround; some very fine to very angular to subround; little clay; moist; moderate	coarse graine	d sand.		
303	1						primarily composed of metadiorite.	cementation,	graver		
304	120										
8											
305_											
<u> </u>											
306	-										
	1										
307_				Topock -							(307.0 - 322.0')
308_	1			Weathered Bedrock - conglomerate	MH						400 gal of water used
5 300				Congiornerate							
309											
2 2 310_										(210.0219.0')	
<u> </u>	_									(310.0 - 318.0') Rough drilling	
311_	-										
	1										
312_	1										
313	1										
	180										
314_	100						(313.5 - 320.0') Topock - Weathered Bedrock - sand with gravel (SM); yellowish red / light brown	n(5YR 5/6); fii	ne .		
	-						grained to very coarse grained, angular to subro large pebbles, subangular to subround; little silt;	und; little grar	rules to		
315_	-						cobbles, subangular to subround				
	1										
316	1			Topock -							
	1			Weathered Bedrock -	SM						
_/الح				conglomerate	9						
			MW-B-VAS-								
			317-322 (<0.17 U								
319	1		ppb) 2/21/2019								
ÿ – –	-		11:00:33 AM								
320 Abbro	victi	o: USCS =	 Inified Call (Clossificati	on Surat	III III	fact has = holour around surface -	amal = =!	21/0 m = = :	a and layer C	<u> </u>
<i></i>	dwater		onnieu Soil (JiassiiiCa[[(on Syst	5111, IL =	feet, bgs = below ground surface, a	aiiisi – abi	ove mear	ı sea level, G	vv —
ă –			ted above th	e lahorator	v report	ina limit	t_ppb = parts per billion				

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 17 of	18
Date S	Started	: <u>01/05/</u>	2019		Surface	Eleva	tion: <u>N/A</u>	Borin	a No.:	MW-Bd	
		eted: <u>02/28/</u>			Northin	g (NAD	•			<u> 24</u>	
Drilling	-	<u>Casca</u>			Easting	•	,	Client:	PG&E		
1	g Meth		•		Total D	-	<u> </u>	•		W Remedy Ph	
	ig Type		<u>e Track Mou</u>					Location:	PG&E	<u> Topock, Needl</u>	es, California
	Name				-		Water: <u>21 ft bgs</u>				
	g Asst:	-	ner/ J. Cando		Samplir	•		Project N	lumber: .	RC000753.00	51
Logge			ford / C. Bor		Samplir	-					
Editor	:	<u>Sean N</u>	<u> McGrane</u>		Conver	ted to \	Vell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
321	180		MW-B-VAS- 317-322 (<0.17 U ppb) 2/21/2019 11:00:33 AM	Topock - Weathered Bedrock - conglomerate	ML		(320.0 - 322.0') Topock - Weathered Bedrock - o silt with gravel (ML); reddish brown (2.5YR 4/4); r some very fine to coarse grained sand, angular to granules to medium pebbles, subangular to subrocobbles, subround; moist; strong cementation	nedium plast subround; li	icity; ittle		(307.0 - 322.0') 400 gal of water used
322						 	(322.0 - 337.0') Topock - Weathered Bedrock - C	onglomerate	;	(322.0 - 335.5')	(322.0 - 337.0')
-							Gravelly silt with sand (ML); reddish brown (2.5Yl little granules to medium pebbles, subangula <mark>r to</mark> s	R 4/4); low pl	asticity; e verv	tight hard drilling	300 gal of water used
323							fine to coarse grained sand, angular to subround; cobbles, subround; moist	little clay; tra	ace		
						699	cossics, sustouria, most				
324											
1300/						600					
325_	1										
	1										
326	-					ام ام					
2	-										
<u>327</u>	-					ا الم					
	-										
328						ا الم	(328'); 4-6" dry layer				
<u>-</u>						000	(010), 10 d.y.laye.				
g 329				Topock -							
왕	180			Weathered Bedrock -	ML	9					
330				conglomerate							
<u> </u>											
<u> </u>							(331'); 4-6" dry layer				
	-						(001), 4-0 dry layer				
332						699					
	-										
333	-					[4]	(333'); 4-6" dry layer				
- P	-						(// . 5 //)				
334	-										
	-					ام ام					
S335	-						(335'); 4-6" dry layer				
-	-					P4701	(000), +-0 dry layer			(335.5 - 337.0')	
336										Soft drilling	
COME						Pa 701<					
_337				L	L		(227.0. 244.0) Tanack Wasters I Ball II		Claver		(227.0 247.01)
S							(337.0 - 344.0') Topock - Weathered Bedrock - c sand with gravel (SC); red (2.5YR 4/6) to reddish	brown (2.5Y	R 4/4);		(337.0 - 347.0') No water used
338				Topock -			very fine grained to very coarse grained, subangu some clay; little granules to medium pebbles, sub	angular to su	ıbround;		
3/OSE	120			Weathered	sc		little silt; trace cobbles, subround; dry to moist; str				
339_				Bedrock - conglomerate							
<u></u>											
340											
₹			Unified Soil (Classification	on Syst	em, ft =	feet, bgs = below ground surface, a	msl = abo	ove mea	n sea level, G\	N =
<u> </u>	dwater										
≣Rema	rks: U	= not detec	ted above th	e laborator	y report	ing lim	it, ppb = parts per billion				

9/	4RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 18 of	18
Date S	Started	: <u>01/05/</u>	2019	(Surface	Elevat	ion: N/A	Borin	u No .	MW-Bd	
Date (Date Completed: <u>02/28/2019</u>		1	Northin	g (NAD	83): <u>N/A</u>	Borin	g 110	IVIVV-DU		
Drilling	-	<u>Casca</u>	de	[Easting	(NAD8	3): <u>N/A</u>	Client:	PG&E		
Drilling	g Meth	od: <u>Sonic</u>	Drilling		Total D			Project:	Final G\	N Remedy Ph	ase 1
	ig Type		<u>e Track Mou</u>					Location:	PG&E T	opock, Needl	<u>es, California</u>
	Name				•		Water: <u>21 ft bgs</u>				
	g Asst:	-	ner/ J. Cand		-	ng Meth		Project N	umber: <u>F</u>	RC000753.00	51
Logge			lford / C. Bor		-	ng Inter					
Editor	:	<u>Sean I</u>	<u> McGrane</u>	_	Conver	ted to V	Vell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
	- 120		MW-B-VAS- 339-344 (<0.33 U ppb) 2/27/2019 12:28:00 PM	Topock - Weathered Bedrock - conglomerate	SC)			(337.0 - 347.0') No water used
_344	-						(344.0 - 347.0') Topock - Weathered Bedrock - c	onglomerate;	Clayey		
							sand (SC); reddish brown(2.5YR 4/3); very fine g grained, subangular to subround; little clay; trace	silt; moist to			
345_				Topock - Weathered			moderate cementation; clay and sand are interbed	dded			
99-	1			Bedrock -	SC						
្ន <u>ី346_</u>	1			conglomerate							
ATE	1										
<u>347_</u>							(347.0 - 356.0') Topock - Weathered Bedrock - c		Clayey	(347.0 - 356.0')	(347.0 - 357.0')
348_	-						sand with gravel (SC); reddish brown (2.5YR 4/4) brown(2.5YR 4/3); very fine grained to very coars subangular to subround; some granules to very late subround; little silt; little clay; dry to moist; mode to subround; little silt; little clay; dry to moist; mode to subround; little silt; little clay; dry to moist; mode to subround; little silt; little clay; dry to moist; mode to subround; little silt; little clay; dry to moist; mode to subround; little silt; little clay; dry to moist; mode to subround; little silt; little clay; dry to moist; mode to subround; little silt; little clay; dry to moist; mode to subround; little silt; little clay; dry to moist; mode to subround; little clay; dry to subround; little clay; dry to subround; little clay; dry to subround; little clay; dry to subround; little clay; dry to subround; little clay; dry to subround; little clay; dry to subround; little clay; dry to subround; little clay; dry to subround; little clay; dry to subround; little clay; dry to subround; little clay; dry to subround; little clay; dry to subround; little clay; dry to subround; little clay; dry to subround; little clay; dry to subround; little clay; dry to subround;	se grained, arge pebbles,	angular ation	Rough drilling	400 gal of water used
Г											
ਹ ਲ _350_											
ATABA											
MOT/09				Topock - Weathered	sc						
5 5 252	108			Bedrock - conglomerate	1						
FILES											
353											
0010											
254_			MW-B-VAS-								
			352-357 (<0.33 U								
355			ppb) 2/28/2019 3:05:00 PM								
356356											
MENTAL ST				Topock - Weathered			(356.0 - 357.0') Topock - Weathered Bedrock - c sand (SC); reddish brown(2.5YR 4/3); very fine g			(356.0 - 357.0') Soft drilling	
357				Bedrock - conglomerate	sc		grained, subangular to subround; little clay; trace	small to med	ium	30it drilling	
GRANE			•	-congionierate	/		pebbles, subangular to subround; trace silt; moist End of Boring at 357.0 'bgs.		ilalion /	•	
NOSER 1											
5 5 _ 359_											
360											
	viation	s: USCS =	Unified Soil (Classificatio	n Syst	em, ft =	feet, bgs = below ground surface, a	msl = abo	ve mear	n sea level, G	N =
× <u></u>	dwater										
ਫ਼੍ਰ∣Rema	rks: U	= not detec	ted above th	e laboratory	y report	ting limi	t, ppb = parts per billion				

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 1 of	5
Date S					Surface		·	Borin	na No.:	MW-G	
	•	ted: <u>02/18/2</u>			Northing		•	_			
Drilling Drilling	-	Cascac			Easting	•	83): <u>N/A</u> <u>87 ft bgs</u>		PG&E	W Remedy Ph	I
Drill Ri	-		<u>Drilling</u> ic Truck Moi			-	neter: <u>N/A</u>	-		-	
Driller			/asquez				Water: 50 ft bgs			opook, rtooak	oo, oamorna
Drilling	g Asst:	L. Ama	ya/ O. Flores	S	Samplin	ng Meth	hod: 4 inch x 10 ft Core Barrel	_ Project N	lumber: <u>F</u>	RC000753.005	51
Logge			<u>1cGrane</u>		Samplir	-		_			
Editor:		<u>Craig F</u>	runier		Convert	ed to V	Well: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
							(0.0 - 4.0') Topock - Fill; No recovery (NR); Ha clearance cuttings not logged	nd cleared for เ	utility		(0.0 - 86.0') 50 gal of water
_ 1 _											used
<u> </u>											
_ 2 _				Topock - Fil	I NR						
_ 3 _											
+ , +	48										
							(4.0 - 8.5') Topock - Fill; Well graded sand with (SW-SM); brown (7.5YR 4/3); very fine grained				
5_5_							grained, angular to subround; little granules to to subangular; little silt; little clay; coarser clasts	large pebbles, a			
							metadiorite; dry	s composed of			
_ 6 _											
-				Topock - Fil	I SW-SM						
_ 7 _											
-											
- 8 - 							(7.75'); some granules to very large pebbles, a	ngular to subar	ngular		
-							(8.5 - 15.5') Topock - Fill; Clayey sand with gra	vel (SC); (5YR	4/3);		
9 _							very fine grained to very coarse grained, angul granules to very large pebbles, angular to suba	angular; little silt	ar; little i; little		
10							clay; coarser clasts composed of metadiorite; d	iry			
11							(10.5'); trace cobbles, subangular; iron oxide st	ū			
-							(11'); some granules to very large pebbles, and	guiar to subang	ular		
12	120			Topock - Fil	ı sc						
13							(13'); little granules to very large pebbles, angu	lar to subangul	ar		
14_											
							445.5 40.00 7	1/22:		(15.0 - 17.0') Lost 2 ft of down	
16							(15.5 - 18.0') Topock - Fill; Clayey sand with gi brown / moderate brown(5YR 4/4) and reddish	brown (5YR 5/	4); very	the hole	
							fine grained to very coarse grained, angular to granules to very large pebbles, angular to suba	angular; little sill	; little		
17				Topock - Fil	ı sc		clay; trace cobbles, subangular; some coarser conglomerate; little coarser clasts composed of	clast composed f metadiorote; d	d of lry	(17.0 - 24.0')	
										Recovered 15 to 18 ft. bgs, 18 to	
18				Topock -			(18.0 - 18.5') Topock - Alluvium Deposits; San			24 ft. fell out of core barrel, ran	(18.0 - 18.5') 5
10	84			Alluvium Deposits			low plasticity; some very fine to very coarse gra subround; little granules to large pebbles, angu	ılar to subangul		6 inch casing to 18 ft. and	gal of water used
19_				Topock - Alluvium	sc		clay; coarser clasts composed of metadiorite; n (18.5 - 24.0') Topock - Alluvium Deposits; Clay		ravel	recovered 6 ft. of drill run 3, total	
20				Deposits			(SC); brown (7.5YR 4/3); very fine grained to v	ery coarse grai	ned,	recovery 7 ft.	
Notes:	US	CS = Unified	Soil Classif	ication Sy	stem, p	pb = P	Parts per Billion.	.,	•		

Sieve Sample ID Groundwater Sample ID Groundwater Sample ID Groundwater Sample ID Solid By Solid Description Drilling Notes Drilling Fluid Subangular; little silt; little clay; coarser clasts composed of (17.0 - 24.0') (0.0 - 86.0') 5	9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet: 2 of	5
Northring (No. 12.18/2019 No. 11.18									Boring No	o.: MW-G	
Topock Some Delining Annual Projects Some Some Some Some Some Some Some Some		•						•	_		
Politic Name: Story 4 Sequence 2 Depth of Track Mount Borehole Diameter: NA Location: PG&E Topock, Needles, Califor Nimiter Name: Story 4 Sequence 2 Depth of First Water 50ft bgs Service 1 Service 4 Sequence 2 Depth of First Water 50ft bgs Service 1 Service 4 Sequence 2 Depth of First Water 50ft bgs Service 1 Service 4 Sequence 2 Depth of First Water 50ft bgs Service 1 Service 4 Sequence 2 Depth of First Water 50ft bgs Service 1 Service 4 Sequence 2 Depth of First Water 50ft bgs Service 1 Service 4 Sequence 4						_	•	,			
Project Number: Steve Vasquez Depth to First Water: 50 ft bgs Single About Amaya/ O. Entres Sampling Method Ainch x 10 ft Core Barrel Project Number: RC000753.0051	_	-		•			•	<u>~</u>	-	•	
Sean McGrane Sean McGrane Sampling Interval: 10 th Core Barrel Project Number: RC000753.0051 Sean McGrane Sampling Interval: Continuous Sampling Interval: 10 th Continuous S									_ Location: <u>PG&</u>	E Topock, Needi	es, Calliorni
Sage McGrane Sampling Interval: Confundations Craig Prunier Converted to Well: © Yes No Converted to W				•		•		<u> </u>	- Proiect Numbe	er: RC000753 005	 51
Converted to Well: Service	_	-		-		-	-		_ 1 10,001 11011100	71. <u>110000700.001</u>	
Single D Conumbitator Sample ID Samp	Editor:					-	-		_		
authoraptair title sitt, title day, coarner disets composed of mediacritic day of the state of 18 th by 18 to 28 of 18 th by 18 to 29 and of write used used used used 22%; no cobbies, angular to subangular 22	Depth (ft)	Recovery (in)			Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
Alluvium SM Deposits Continue	 22 	84			Alluvium	SC		metadiorite; dry (21'); trace cobbles, angular to subangular	omposed of	Recovered 15 to 18 ft. bgs, 18 to 24 ft. fell out of core barrel, ran 6 inch casing to 18 ft. and recovered 6 ft. of drill run 3, total	(0.0 - 86.0') 5(gal of water used
Topock-Altuvium Deposits SM Deposits Topock-Altuvium Deposits SM Deposits Topock-Altuvium Deposits SM Deposits Topock-Altuvium Deposits Topock-Altuvium Deposits Topock-Altuvium Deposits Topock-Altuvium Deposits SM Deposits Topock-Altuvium Deposits SM Topock-Altuvium Deposits					Alluvium	SM		brown (7.5YR 4/3); very fine grained to very cost to subround; little granules to large pebbles, and little silt; little clay; coarser clasts composed of r	arse grained, angular´ gular to subangular;		
angular to subround; little stilt; little clay: coarse grained, angular to subround; little stilt; little clay: coarse relast composed of conglomerate; coarse clasts composed of metadiorote; dry (30); trace clay; increase in sand Topock-Alluvium Deposits SM 332 344 355 366 378 378 388 389 380 380 381 380 381 381 382 383 384 385 386 387 388 388 388 388 388 388	27 28 =	78			Alluvium	SM		(25.0 - 29.3') Topock - Alluvium Deposits; Silty brown (7.5YR 5/4); very fine grained to very cot to subangular; some granules to very large peb subangular; little silt; trace clay; coarser clast co	arse grained, angular bles, angular to omposed of		
Topock-Alluvium Deposits SM 33 — 84 34 — 35 — 36 — 37 — 38 — 39 — 78 39 — 78 30 — 78 Topock-Alluvium Deposits SM Topock-Alluvium Deposits Topock-Al						S		reddish brown (5YR 5/4); very fine grained to we angular to subround; little granules to large peb subround; little silt; little clay; coarser clast comp coarser clasts composed of metadiorote; dry	ery coarse grained, bles, angular to	(30.0 - 37.0') Top 0.5 ft of	
trace cobbles, subangular; no clay trace cobbles, subangular; no clay (35.0 - 37.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); (7.5R 5/4); very fine grained to very coarse grained, angular to subround; some silt; trace cobbles, subround; trace clay; coarser clast composed of conglomerate; dry (37.0 - 43.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); red sib brown (5YR 4/3); very fine grained to very coarse grained, angular to subround; some silt; trace clay; coarser clast composed of conglomerate; dry (37.0 - 43.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); red sib brown (5YR 4/3); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, angular to subround; ittle silt; trace clay; coarser clasts composed of metadiorite; coarser clast composed of conglomerate; dry (37.0 - 43.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); red sib brown (5YR 4/3); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, angular to subround; ittle silt; trace clay; coarser clasts composed of metadiorite; coarser clast composed of conglomerate; dry					Alluvium	SM					
Topock - Alluvium Deposits SM Topock - Alluvium Deposits SM Topock - Alluvium Deposits Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (5YR 4/3); very fine grained to very coarse grained, angular to subround; some silt; trace clay; coarser clast composed of conglomerate; dry (37.0 - 43.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (5YR 4/3); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, angular to subround; little silt; trace clay; coarser clasts composed of metadiorite; coarser clast composed of conglomerate; dry SM Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (5YR 4/3); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, angular to subround; little silt; trace clay; coarser clasts composed of metadiorite; coarser clast composed of conglomerate; dry		84						trace cobbles, subangular; no clay			
38					Alluvium	SM		(7.5R 5/4); very fine grained to very coarse grai subround; some granules to very large pebbles some silt; trace cobbles, subround; trace clay; c of conglomerate; dry	ined, angular to , angular to subround; coarser clast composed	d	
	 38 39 	78			Alluvium	SM		reddish brown (5YR 4/3); very fine grained to wangular to subround; some granules to very larg subround; little silt; trace clay; coarser clasts co	ery coarse grained, ge pebbles, angular to	Top 0.5 ft. of core is slough	
Total Color Chilled Coll Classification Cystem, ppb - 1 and por billion.		. 110	CS = Unific	d Soil Classi	l fication Sv	stem n	nh = Pa	arts ner Rillion			
	10103.	. 00	SS - Offille	a con ciassi	noution Oy	οιοιιι, μ	ν _ν ν – ι σ	into por Dillion.			

-/-///	CADIS	Design & Consultancy for natural and built assets		Во	ring L	og	S	heet: 3 of	5
ate Started					Elevation	N/A	Boring No	.: <u>MW-G</u>	
•	eted: <u>02/18/</u> <u>Casca</u>				g (NAD83	N/A N/A	Client: PG&E		
rilling Co.: rilling Meth				_	(NAD83):	87 ft bgs		: GW Remedy Ph	nase I
rill Rig Typ	-				•	_	Location: <u>PG&E</u>	•	
riller Name		Vasquez				er: <u>50 ft bgs</u>			
rilling Asst	L. Am	aya/ O. Flores	S	Samplin	ng Method	4 inch x 10 ft Core Barrel	Project Number	: RC000753.005	51
ogger:		<u>McGrane</u>		-	ng Interval	Continuous			
ditor:	<u>Craig</u>	Prunier		Convert	ed to We				
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
- _41 - 78 _42			Topock - Alluvium Deposits	SM				(37.0 - 43.0') Top 0.5 ft. of core is slough	(0.0 - 86.0') 5 gal of water used
.43 44 45 48			Topock - Alluvium Deposits	SM	red : an su	0 - 48.0') Topock - Alluvium Deposits; Silt ish brown (5YR 4/3); very fine grained to ilar to subround; some granules to very la ngular; little silt; trace clay; coarser clasts diorite; dry	very coarse grained, arge pebbles, angular to		
.484950	MW-G-SS- 47.0-52.0 2/16/2019 3:55:52 PM				(48 rec su	trace cobbles, subangular; moist to wet 5.55.0') Topock - Alluvium Deposits; Sitt sh brown (5YR 4/3); very fine grained to ngular to round; some silt; little granules bround; trace cobbles, subangular; trace bosed of metadiorite; moist to wet	very coarse grained, to large pebbles, angular	(47.0 - 50.0') Vadose zone moist to wet	
51			Topock - Alluvium Deposits	SM	(50	wet; no cobbles			
.53									
54	MW-G-SS- 52.0-57.0 2/16/2019 4:00:34 PM	MW-G-VAS- 52.0-57.0 (680 ppb) 2/13/2019							
-55 48 - -56 -	7.00.34 FIVI	4:28:34 PM	Topock - Alluvium Deposits	SM	red co pe) - 57.0') Topock - Alluvium Deposits; Silt ish brown / moderate brown(5YR 4/4); ve se grained, angular to subround; some gr les, angular to subround; little silt; little cla cosed of metadiorite; wet	ry fine grained to very ranules to very large		
_57			Topock -	+) - 57.8') Topock - Alluvium Deposits; Sal	ndv silt (MI): vellowish	(57.0 - 67.0')	
.58	MW-G-SS- 57.0-62.0	Alluvium Deposits	Alluvium Deposits	ML	red pe to	light brown(5YR 5/6); medium plasticity; les, angular, little very fine to very coarse bangular; little clay; wet; very stiff 3 - 62.0') Topock - Alluvium Deposits; Sal	little granules to medium grained sand, angular	Rough drilling, drilled like rock, core was hot with moist to dry	
- 120 -59	2/16/2019 4:05:27 PM		Topock - Alluvium Deposits	ML	red	5YR 4/6); low plasticity; and very fine to v l, angular to subround; little granules to la ound; little clay; dry to moist; hard; weak o	very coarse grained large pebbles, angular to	sediments	
4									
60 otes: US	200 - 11-:5	d Soil Classif	ination O	oto	nh = D=:'	nor Pillion			

7 /-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 4 of	5
	tarted				Surface			Borin	g No.:	MW-G	
	omple Co.:	ted: <u>02/18/</u> <u>Casca</u>			Northing Fasting		*	Client:	PG&E		
	Meth				_	•	87 ft bgs			W Remedy Ph	ase I
_	g Type		nic Truck Mo			•		-		Topock, Needle	
ler l	Name:	Steve	Vasquez		Depth to	o First	Water: <u>50 ft bgs</u>				·
_	Asst:		aya/ O. Flore:		-	-		Project No	umber: <u>J</u>	RC000753.005	51
gger		·			Samplir	-					
tor:		Craig	Prunier		Conver	ted to	Vell: X Yes ☐ No				
(ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Flu
1		MW-G-SS- 57.0-62.0 2/16/2019 4:05:27 PM		Topock - Alluvium Deposits	ML					(57.0 - 67.0') Rough drilling, drilled like rock, core was hot with moist to dry sediments	(0.0 - 86.0') gal of wate used
2 - 3 - 1	120	MW 0 00		Topock - Alluvium Deposits	ML		(62.0 - 64.5') Topock - Alluvium Deposits; Sandreddish brown / moderate brown(5YR 4/4); low p fine to very coarse grained sand, angular to subto large pebbles, angular to subround; little clay; composed of metadiorite; dry; hard; weak cemer	lasticity; some ound; little gra coarser clasts	very		
- - - S-		MW-G-SS- 62.0-67.0 2/16/2019 4:10:27 PM		Topock - Alluvium Deposits	CL		(64.5 - 67.0') Topock - Alluvium Deposits; Sandy (CL); brown (7.5YR 4/3); medium plasticity; som coarse grained sand, angular to subround; little g pebbles, angular to subround; little silt; moist; so	e very fine to v granules to ver	ery		
-				Topock - Alluvium Deposits	ML		(67.0 - 67.8') Topock - Alluvium Deposits; Sandbrown (5YR 5/4); low plasticity; some very fine to sand, angular to subround; little granules to very	very coarse g	rained	(67.0 - 69.5') Wet zone that might produce	
3_ - 9_		MW-G-SS-	MW-G-VAS-	Topock - Alluvium Deposits	SM		angular to round; little clay; trace cobbles, angula composed of metadiorite; moist; very stiff (67.8 - 69.0") Topock - Aluvium Deposits; Silty s brown (7.5YR 4/3); very fine grained to very coato subround; some silt; little granules to large pel	and with graverse grained, ar	el (SM); igular	water, attempt to collect sample	
_ 0 - 1	60	67.0-72.0 2/16/2019 4:15:27 PM	67.0-72.0 (920 ppb) 2/14/2019 4:42:39 PM		5		subround; little clay; wet (69.0 - 76.0') Topock - Alluvium Deposits; Sand- brown (5YR 5/4); low plasticity; some very fine to sand, angular to subround; little granules to very angular to round; little clay; coarser clasts compo- moist; very stiff	y silt (ML); redo o very coarse o large pebbles osed of metadi	dish rained	(69.5 - 72.0') Drilled like rock core hot and dry	
_							(69.5'); trace cobbles, subangular to subround; composed of conglomerate; dry; weak cementati	on			
3_				Topock - Alluvium Deposits	ML		(72'); moist to wet; weak cementation			(72.0 - 86.0') Used water to flush fines out of casing for well install	
- 5—		MW-G-SS- 72.0-77.0 2/17/2019 4:15:27 PM									
; 	120			Topock - Alluvium Deposits	SM		(76.0 - 77.5') Topock - Alluvium Deposits; Silty s reddish brown / moderate brown(5YR 4/4); very coarse grained, angular to subround; little granul angular to subangular; little silt; little clay; coarse metadiorite; wet	fine grained to es to large pel	very bles,		
3_ - 9_		MW-G-SS- 72.0-77.0 2/17/2019 4:15:27 PM	MW-G-VAS- 77.0-82.0 (600 ppb) 2/15/2019 12:12:10 PM	Topock - Alluvium Deposits	SM		(77.5 - 79.5') Topock - Alluvium Deposits; Silty s reddish brown (2.5YR 4/4); very fine grained to v angular to subround; little granules to very large subangular; little silt; coarser clasts composed of	very coarse gra pebbles, angu	ained, ar to		
0					SM		(79.5 - 81.0') Topock - Alluvium Deposits; Silty s	and with grave	el (SM);		
		00 - H-:£-	d Soil Classif	fication Sys	stem n	pb = F	arts per Billion.				

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	9		Sheet: 5 of	5
Date S	Started	: 02/12/2	2019			Elevation:	N/A	Borina N	o.: <u>MW-G</u>	
		eted: <u>02/18/</u>			_) (NAD83):	N/A	_		
Drilling		<u>Casca</u>			•	(NAD83):	N/A	Client: PG&		
Drilling	•		-		Total De	•	87 ft bgs		I GW Remedy Ph	
Drill Ri			nic Truck Mo			e Diameter:		Location: <u>PG8</u>	&E Topock, Needl	es, California
Drilling			Vasquez aya/ O. Flore		-	o First Water g Method:	4 inch x 10 ft Core Barrel	— Project Number	or: DC000752 004	
Logge			iya/ О. Fiore //cGrane		-	ig ivietriod. ig Interval:	Continuous	Project Number	er. <u>KC000755.00</u>)
Editor:			Prunier		-	ed to Well:				
		<u> </u>		_	T					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
 81 82	120	MW-G-SS- 72.0-77.0 2/17/2019 4:15:27 PM	MW-G-VAS- 77.0-82.0 (600 ppb) 2/15/2019 12:12:10 PM	Topock - Alluvium Deposits Topock - Weathered Bedrock - conglomerate	SM	some colay; colay; colay; colay; colay; colay; colay; colay; colarse	brown (2.5YR 4/4); very fine grained ranules to large pebbles, angular to st barser clasts composed of metadiorite; 82.0') Topock - Weathered Bedrock - avel (SM); reddish brown (2.5YR 4/4); grained, angular to subround; some g to subround; little silt; little clay; trace	ubround; some silt; trace wet conglomerate; Silty sand very fine grained to very ranules to large pebbles,	flush fines out of casing for well install	(0.0 - 86.0') 50 gal of water used (72.0 - 86.0') 600 gal of water used (72.0 - 86.0') 600 gal of water
83 						moist (82.0 -	87.0') Topock - Competent Bedrock - 2.5YR 4/4); dry; weak cementation; fr	conglomerate; reddish	(83.0 - 87.0') Core barrel was geting hung up	used
84	60			Topock - Competent Bedrock - conglomerate	:		12/		in hole, possible indication of bedrock	
86 87										
							End of Boring at 87.0 'l	ogs.		
88						0				
90										
91										
92										
93										
94 95										
97										
98										
99										
100 Notes:	US	CS = Unifie	d Soil Classi	fication Svs	stem. n	pb = Parts no	er Billion.			
13.00.		32 Simo	: : - : : : : : : : : : : : : : :		, P	1 GITO PI				

ate Started: ate Complet	ADIS	Design & Consultancy for natural and built assets		Bo	ring Lo	g		She	eet: 1 of	12
ate Complet	03/02/				Elevation:	N/A	Borin	g No.:	IRZ-17 Pi	lot
-					(NAD83):	N/A				
illing Co.:	<u>Casca</u>			Easting Total De	(NAD83):	N/A 227 ft bgs	_ Client:		Gas & Electric	
illing Metho iller Name:		<u>Drilling</u> Vasquez			eptn: e Diameter:	<u>227 π bgs</u> <u>6 in</u>	Location:	<u>Groun</u> <u>Needle</u>	dwater Remed	y rnase i
lling Asst:		<u>vasquez</u> res, L. Amaya			e Diameter. First Water:		_	INCCUIT	.o, o <i>r</i> t	
gger:		Jeffers	•	-	g Method:	10 ft Core Barrel	Proiect No	umber:	RC000753.00	 51
itor:		McGrane			g Interval:	Continuous				
eather:		sunny to part		-	-	☐ Yes 区 No	-			
(ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Flu
1 2 3 4 5 6 7 8 9 10 0 11 12 13 13 13				NR		9.5') (NR); No recovery loose dredgrarrel could not provide core will accu		ut of	(0.0 - 17.0') Due to loose dredge sand, driller did not core.	
14							- <i>1</i> 200 - 11 -	·	(17.0 - 19.5') Loose dredge sands continuosly fell out of core barrel.	
15 - 16 17 - 18			 Topock - Fi	iil Sp	(19.5 -	21.5') Topock - Fill; Poorly graded s	and (SP); yellow	ish —	Loose dredge sands continuosly fell out of core	
15	CS = Unifie	d Soil Classific	1			21.5') Topock - Fill; Poorly graded s above the laboratory reportin			Loose dredge sands continuosly fell out of core barrel.	

9/	AR(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log Sheet: 2 of 12
Date S	Started	03/02/2	2019	§	Surface	Elevat	Boring No.: IRZ-17 Pilot
	•	ted: <u>03/07/2</u>			Northin	- '	083): <u>N/A</u>
Drilling		Casca			Easting	•	•
Drilling			<u>Drilling</u>		Total De	•	227 ft bgs Location: Groundwater Remedy Phase I
	Name:		√asquez		Borehol		
Drilling			es, L. Amaya		•		Water: 24 ft bgs
Logge Editor:		Gantt J			Samplir Samplir	-	·
Weath			//IcGrane sunny to part			•	
VVCall		vvaiiii			JUNEN	T T	Tes NO
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Description Drilling Notes Drilling Fluid
21				Topock - Fill	SP		brown / moderate yellowish brown(10YR 5/4); very fine grained to fine grained, angular to subround; trace silt; little mica; dry to moist; no odor; no staining; moist at 20.5' bgs
22	90			Topock - Fluvial Deposits	SM		(21.5 - 24.0') Topock - Fluvial Deposits; Silty sand with gravel (SM); dark yellowish brown (10YR 4/4); very fine grained to very coarse grained, subangular to round; some granules to very large pebbles, subangular to round; little silt; trace cobbles, subangular to subround; moist; no odor; no staining; larger clasts consist of sandstone, granodiorite and metadiorite. Higher gravel content at bottom 4" of soil bed.
25		IRZ-17-SS- 22-27 3/7/2019 11:28:00 AM		Topock - Fluvial Deposits	ML		(24.0 - 28.0') Topock - Fluvial Deposits; Sandy silt with gravel (ML); yellowish brown / moderate yellowish brown(10YR 5/4); no plasticity, slow dilatency; some very fine to fine grained sand, subangular to subround; little granules to very large pebbles, subangular to round; trace cobbles, subround to round; trace mica; wet; medium stiff; no odor; no staining (26'); some granules to very large pebbles, subangular to round;
27							trace fine to very course sand, 3" lense at 26' bgs of decrease in silt. (28.0 - 29.0') Topock - Fluvial Deposits; Silty sand with gravel
		IRZ-17-SS-		Topock - Fluvial Deposits Topock -	SM		(SM); yellowish brown / moderate yellowish brown(10YR 5/4); very fine grained to fine grained, subangular to round; and silt; little granules to very large pebbles, subangular to round; little mica; wet; no odor; no staining; trace med to very fine sand.
30	60	27-32 3/7/2019 11:33:00 AM		Fluvial Deposits	ML		(29.0 - 30.0') Topock - Fluvial Deposits; Sandy silt with gravel (ML); yellowish brown / moderate yellowish brown(10YR 5/4); medium plasticity, slow dilatency; some very fine to fine grained sand, subangular to subround; little granules to very large
3131				Topock -		Ш	pebbles, subangular to round; trace mica; wet; medium stiff; no odor; no staining (30.0 - 33.5') Topock - Fluvial Deposits; Elastic silt with sand (MH); yellowish brown / moderate yellowish brown(10YR 5/4);
32 33				Fluvial Deposits	MH	Ш	high plasticity, no dilatency; little very fine grained sand, subangular to subround; trace granules to very large pebbles, subround to round; trace cobbles, round; trace clay; trace mica; wet; very soft; no odor; no staining; increase granules to very large
		IRZ-17-SS- 32-37 3/7/2019	IRZ-17-VAS-				pebbles at bottom of soil bed (4"), oxidized staining observed at bottom of bed. (33.5 - 35.5') Topock - Fluvial Deposits; Silty sand with gravel (SM); yellowish brown / moderate yellowish brown(10YR 5/4); very
35	48	3/7/2019 11:36:00 AM	32-37 (67 ppb) 3/2/2019 1:14:00 PM	Topock - Fluvial Deposits	SM		fine grained to very coarse grained, subangular to round; some silt; little granules to very large pebbles, subround to round; trace cobbles, round; trace clay; little mica; wet; no odor; iron oxide staining
36							(35.5 - 38.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); yellowish brown / moderate yellowish brown(10YR 5/4); very fine grained to very coarse grained, angular to subangular; some granules to very large pebbles, angular to subangular; little silt;
37 38		IRZ-17-SS- 36-42		Alluvium Deposits	SM		little mica; wet; no odor; no staining
39	240	3/7/2019 11:45:00 AM		Topock - Alluvium Deposits	GM		(38.0 - 44.5') Topock - Alluvium Deposits; Silty gravel with sand (GM); reddish brown (5YR 4/3); granules to very large pebbles, angular to subround; some very fine to very coarse grained sand, angular to subround; little silt; trace mica; wet; no odor; no staining; larger clasts consist of granodiorite.
<u>0 40</u> Notes:	US	CS = Unified	Soil Classific	cation Syste	m, U =	not de	tected above the laboratory reporting limit, ppb = Parts per Billion.
Z Z Z		230	2.222.110	- , - , - , - ,	, -) 133 EL

rted: mplet	03/02/2	019								
•	- A. 02/07/2				Elevation:	N/A	Borine	a No.:	IRZ-17 Pi	lot
`~ ·					g (NAD83):	N/A				
	Cascad			_	(NAD83):	N/A	Client:		Gas & Electric	
1etho		•		Total De	•	227 ft bgs	Location:		dwater Remed	<u>y Phase I</u>
ame:					e Diameter:	6 in		Needle	es, CA	
sst:		-		•			Droiget Nu		DC000752 00	E 1
				•	•		Projectivi	imber.	RC000753.00	01
					•					
	vvaiiii s	suring to parti		T	ed to vveii.					1
(in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Flui
_	IRZ-17-SS- 36-42 3/7/2019 11:45:00 AM		Topock - Alluvium Deposits	GM		ncrease in granules to very large pebble	es.			
	42-47 3/7/2019 11:50:00 AM				o ♥ ♥ (44.5 (SM);	re <mark>ddish brown / moderate brown(5YR 4/</mark> coarse grained, angular to subangular;	/4); very fine g ; little granules	rained s to		
					angula of grai	ur, little mica; wet; no odor; no staining; l nodiorite and metadiorite.	larger clasts o			
							angular to			
				45						
240			Topock -	1						
	ID7 47 CC		Alluvium Deposits	SM						
	47-52						very large peb	bles.		
					(49.5)	; decrease in silt.				
					0 0 0 0 0 0	54.00 T		1 201		
	IRZ-17-SS- 52-57		Topock - Alluvium Deposits	SW	gravel graine angula mica;	(SW); brown (10YR 4/3); very fine grain d, angular to subround; little granules to ar to subround; trace cobbles, subround; wet; no odor; no staining; larger clasts o	ned to very coa very large pe ; trace silt; littl	arse bbles,		
	3/7/2019 12:10:00 PM		Topock -		(54.0 (SM);	57.0') Topock - Alluvium Deposits; Silty reddish brown / moderate brown(5YR 4/	/4); very fine g	rained		
			Alluvium	SM						
			2 3000110							
			T !		silt an	d gravel (SW-SM); reddish brown (5YR	4/3); very fine			
120	IRZ-17-SS- 57-62 3/7/2019 12:25:00 PM		Alluvium Deposits	SW-SM	granul	es to very large pebbles, angular to sub nica; wet; no odor; no staining; larger cl	round; little sil			
			Topock - Alluvium Deposits	ML SM	(ML); i	eddish brown / moderate brown(5YR 4/	4); low plastic	ity, no		
	((u)) 40	Gantt J Sean M Warm s Sieve Sample ID IRZ-17-SS- 36-42 3/7/2019 11:45:00 AM IRZ-17-SS- 42-47 3/7/2019 11:50:00 AM IRZ-17-SS- 3/7/2019 11:55:00 AM	Gantt Jeffers Sean McGrane Warm sunny to part Sieve Sample ID IRZ-17-SS- 36-42 3/7/2019 11:50:00 AM IRZ-17-SS- 47-52 3/7/2019 11:55:00 AM IRZ-17-SS- 57-62 3/7/2019 12:10:00 PM	Gantt Jeffers Sean McGrane Warm sunny to partly cloudy. (a) RZ-17-SS-36-42 3/7/2019 11:45:00 AM	RZ-17-SS-47-52-377/2019 11:55:00 PM RZ-17-SS-57-62-377/2019 12:10:00 PM RZ-17-SS-57-62-377/2019 12:10:00 PM RZ-17-SS-57-62-377/2019 12:25:00 PM RZ-17-SS-57-62-377/2019 12:25:00 PM RZ-17-SS-57-62-377/2019 Sean McGrane Warm sunny to partly cloudy. Sieve Sample ID RZ-17-SS-36-42 37/2019 11:55:00 AM IRZ-17-SS-47-52 37/2019 11:55:00 PM IRZ-17-SS-57-62 37/2019 12:25:00 PM RZ-17-SS-57-62 37/2019 13:25:00 PM RZ-1	Sampling Method: Sean McGrane Warm sunny to partly cloudy. Converted to Well: Seanpling Interval: Continuous Server Sample ID Groundwater Sample ID RE2-17-SS-36-42 377/2019 11:50:00 AM RE2-17-SS-47-52 377/2019 11:50:00 AM RE2-17-SS-37/2019 12:10:00 PM RE2-17-SS-37/2019 13:10	Gantt Jeffers Sean McGrane Sampling Method: 10 ft Core Barrel Project Number Sean McGrane Warm sunny to partly cloudy. Converted to Well: Yes No Description Sieve Sample ID Groundwater Sample ID	Sampling Method: 10 ft. Core Barrel Project Number: Sampling Interval: Continuous Project Number: Sean McGrane Warm sunny to partly cloudy. Coverted to Well: Yes No Yes No Project Number: Sample Project Number: Sa	Sam McGrane Sampling Interval: Sampling Interval: Sampling Interval: Sampling Interval: Sample ID Groundwater Groundwater Sample ID Groundwater Groundwa	

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9/	4R (CADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	eet: 4 of	12
Date S	Started	03/02/2	2019	;	Surface	Elevation:	N/A	Boring	ı No.:	IRZ-17 Pi	lot
	Comple	eted: <u>03/07/2</u>	2019			g (NAD83):	N/A				
Drilling	•	<u>Casca</u>			_	(NAD83):	N/A	Client:		Gas & Electric	
_	y Metho		<u>Drilling</u>		Total De	•	227 ft bgs			dwater Remed	<u>y Phase I</u>
	Name:					le Diameter:	6 in	-	Needle	s, CA	
Drilling			<u>es, L. Amaya</u>		•	o First Water		Dualaat Nic		0000752.00	-1
Logge Editor:			Jeffers //cGrane	·		ng Method: ng Interval:	Continuous	Projectinu	imber: <u>i</u>	RC000753.00	<u> </u>
Weath			sunny to part		•	•	☐ Yes ☒ No	=			
VVCati		vvaiiii			T	TO TO TO THE					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS	Description			Drilling Notes	Drilling Fluid
61 62 62 63		IRZ-17-SS- 57-62 3/7/2019 12:25:00 PM		Topock - Alluvium Deposits	SM	subar staini (59.5 (SM); to ver very li wet; r granc (60').	und; little granules to very large pebbles igular; trace mica; wet; medium stiff to song - 64.0') Topock - Alluvium Deposits; Silt reddish brown / moderate brown(5YR 4 y coarse grained, subangular to subrourarge pebbles, angular to subangular; sor io odor; no staining; larger clasts consistiorite. little silt; increase in sand. some silt; decrease in sand.	stiff; no odor; no y sand with gra y/4); very fine grand; some grand me silt; little m	avel rained ules to ica;		
64	120	IRZ-17-SS- 62-67	IRZ-17-VAS- 62-67 (0.604 J	Topock - Alluvium	GM		- 65.0') Topock - Alluvium Deposits; Silt reddish brown / moderate brown(5YR 4				
65	-	3/7/2019 1:05:00 PM	ppb) 3/2/2019 3:50:00 PM	Deposits	0.111	large graine odor, (65.0	pebbles, angular to subangular; and vered sand, subangular to subround; little sino staining 75.5') Topock - Alluvium Deposits: Silt	y fine to very collit; little mica; v	oarse vet; no avel		
66 67	_					angul to sub ceme	brown (10YR 5/3); very fine grained to var to subround; some granules to very laborated angular; little silt; trace mica; wet; no obtation; no staining	arge pebbles, a dor; weak	ined, ingular		
68_		ID7 47 00				decre (67'); increa	eddish brown / moderate brown(5YR 4/ ase in granules to very large pebbles, no little granules to very large pebbles, ang ase in sand, increase in silt, weathered of es observed.	o cementation. Jular to subang	ular;	(67.0 - 87.0') Core compaction observed. switch back to 10' runs.	
70 70		IRZ-17-SS- 67-72 3/7/2019 1:12:00 PM		Topock - Alluvium Deposits	SM	(70.5' subar); some granules to very large pebbles, igular; weathered granules to very large	angular to pebbles obser	ved.		
72	-										
74	192	IRZ-17-SS- 72-77); little granules to very large pebbles, ar ase in silt.	ngular to subar	ngular;		
75		72-77 3/7/2019 1:25:00 PM					00 FD T				
76						(ML); granu fine to	 - 80.5') Topock - Alluvium Deposits; Sar reddish brown (5YR 5/4); no plasticity, s les to very large pebbles, angular to sub o very coarse grained sand, subangular to wet; stiff; no odor; no staining 	slow dilatency; pangular; some	some very		
		IRZ-17-SS- 77-82 3/7/2019 1:35:00 PM		Topock - Alluvium Deposits	ML						
80		00 - 11 :5	10-101 17	-4: 0 :			Labarra Abad J. L. C	D 14	D- 1	Dill:	
Notes	: US	US = Unified	Soll Classific	ation Syste	em, U =	not detected	l above the laboratory reporting	ıımıt, ppb =	Parts p	er Billion.	
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KC	ADIO	for natural and built assets		BO	ınıg	Log		Sile	eet: 5 of	12
							Borine	:.oN	IRZ-17 Pi	ilot
					•	,	_			
				_	•					
		•			•	•				<u>y Phase I</u>
		•					_	iveedie	s, CA	
		•		•			– Project Nu	ımher: F	⊋C000753 00	 51
	· · · · · · · · · · · · · · · · · · ·				-		_ 1 10,600 140	iiiibei. <u>i</u>	10000733.00	<u> </u>
er:				•	•					
	Sieve Sample ID	Groundwater Sample ID				Description			Drilling Notes	Drilling Flui
ď			0 K						(67.0 - 87.0')	
	IRZ-17-SS- 77-82 3/7/2019 1:35:00 PM		Topock - Alluvium Deposits	SM		SM); reddish brown / moderate brown(5YR o very coarse grained, angular to subround ery large pebbles, angular to subangular; s	4/4); very fine g some granules	rained to	Core compaction observed. switch back to 10' runs.	
}						82.0 - 85.5') Topock - Alluvium Deposits; S	andy silt with gra	avel		
						ML); reddish brown (5YR 5/4); no plasticity.	no dilatency; so	ome		
						ne to very coarse grained sand, subangula nica; wet; very stiff; no odor; weak cementa	r to subround; tr tion; iron oxide	ace		
192			Alluvium	ML		taining				
	IRZ-17-SS- 82-87		Deposits							
	3/7/2019 1:51:00 PM									
						SM); reddish brown / moderate brown(5YR	4/4) trace dusk	/		
			Topock -					ir to		
			Alluvium Deposits	SM		subangular; some silt; trace mica; wet; no o	dor; iron oxide			
						g,				
						88.0. 06.5") Tapack, Alluvium Dapacite: S	andy silt with an	avel		
						ML); reddish brown (5YR 5/4); no plasticity,	no dilatency; so	ome		
	IRZ-17-SS-					coarse grained sand, angular to subround; t				
	87-92 3/7/2019					tiff; no odor				
	2:01:00 PM									
120			Topock - Alluvium	ML			granules to very	large		
			Deposits			bebbles, decrease in sand.				
	IRZ-17-SS- 92-97									
	3/7/2019 2:07:00 PM									
						00 5 440 00 T				
						SM); reddish brown / moderate brown(5YR	4/4); very fine g	rained		
						ery large pebbles, angular to subround; sor				
	IRZ-17-SS-		Topock -							
120	97-102		Alluvium Deposits	SM						
	2:12:00 PM									
						99.5'); little silt; increase in granules to very	large nehbles			
LIC	00 - Heife -	l Soil Classie	notion C: ""	om II:	not det	cted above the laboratory reporting		Dorto =	or Dillion	
	arted: pmple Co.: Method ame: Asst: er: has a simple Co.: ame: Asst: are simple Co.: ame: Asst: are simple Co.: ame: Asst: are simple Co.: ame: Asst: are simple Co.: ame: Asst: are simple Co.: ame: Asst: are simple Co.: ame: Asst: are simple Co.: ame: Asst: are simple Co.: ame: Asst: are simple Co.: a	RZ-17-SS-87-92-97-3/7/2019 RZ-17-SS-92-97-3/7/2019 RZ-17-SS-92-92-97-3/7/2019 RZ-17-SS-92-92-97-3/7/2019 RZ-17-SS-92-92-97-3/7/2019 RZ-17-SS-92-92-97-3/7/2019 R	Sieve Sample ID	Sieve Sample ID Siev	arted: 03/02/2019 Surface ompleted: 03/07/2019 Northin Co.: Cascade Easting Method: Sonic Drilling Total D Sample ID Sean McGrane Samplir Sean McGrane Sample ID Sampl	Surface Elevatio Surface Elevation Surface Surfac	arted: 03/02/2019 Surface Elevation: N/A mpleted: 03/07/2019 Northing (NAD83): N/A Co: Cascade Easting (NAD83): N/A Method: Sonic Drilling Total Depth: 227 ft bgs ame: Steve Vasquez Depth to First Water: 24 ft bgs Gantt Jeffers Sampling Method: Sampling Interval: Sean McGrane Warm sunny to partly cloudy. Converted to Well: Yes No Sieve Sample ID Sieve Sample ID Groundwater See Sample ID Groundwater See See Sample ID Foods: Alludium Deposits See See See See See See See See See Se	arted: 03/02/2019 Surface Elevation: NJA Borring (MAD83): NJA Collect: Conciled (03/07/2019) Northing (MAD83): NJA Collect: Scaade Easting (NAD83): NJA Collect: Coll	arried: 03/02/2019 Surface Elevation: NI/A Boring No.: mpleted: 03/07/2019 Northing (NAD83): NI/A Client: Pacific Coc: Cascade	And Surface Elevation: Number 1930/2/2019 Northing (NADR3): NVA Northing (NADR3): NVA Client: Pacific Gas & Electric Cool: Gascade. Easing (NADR3): NVA Client: Pacific Gas & Electric Cool: Sonic Drilling. Total Depth: 227 ft bgs. Location: Groundwater Remed Needles. CA. Sonic Drilling. Total Depth: 227 ft bgs. Location: Groundwater Remed Needles. CA. Sonic Drilling. Total Depth: 227 ft bgs. Location: Groundwater Remed Needles. CA. Sonic Drilling. Total Depth: 227 ft bgs. Location: Groundwater Remed Needles. CA. Sonic Drilling. Total Depth: 227 ft bgs. Location: Groundwater Remed Needles. CA. Sampling Method: Sampling method: Sampling interval: Continuous. Project Number: RC000753.00 Sampling therval: All ft bgs. Sampling Drilling Notes Sampling Drilling National Drilling National Drilling National Drilling National Drilling National Drilling National Drillin

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 6 of	12
Date S	Started	03/02/2	2019		Surface	Elevation	n: <u>N/A</u>	Borino	· oN r	IRZ-17 Pi	lot
Date 0	Comple	ted: <u>03/07/2</u>	2019		Northin	g (NAD8	•		j 140	<u> </u>	<u>10t</u>
Drilling	-	Cascac			Easting	•	,	Client:		Gas & Electric	
_	g Metho		<u>Drilling</u>		Total D	•	•	Location:		dwater Remed	<u>y Phase I</u>
	Name:		/asquez		Boreho				Needle	es, CA	
Drilling Logge		O. Flor	<u>es, L. Amaya</u> leffers		Samplin		dater: 24 ft bgs d: 10 ft Core Barrel	Project Nu		RC000753.00	 51
Editor			1cGrane		Samplin	-		i iojectivi	iiiibei. <u>i</u>	10000733.00	<i>J</i> 1
Weath			sunny to part	ly cloudy.	-	-					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	OSCS Code	USCS	Description			Drilling Notes	Drilling Fluid
		IRZ-17-SS- 97-102 3/7/2019 2:12:00 PM					(102'); some silt; moderate cementation; decre granules to very large pebbles.	ease in sand a	and		
103							(103'); increase in sand and granules to very la	arge nebbles			
 104	120		IRZ-17-VAS-				decrease in silt.	a. go pozz.es,			
		IRZ-17-SS- 102-107 3/7/2019	102-107 (<0.17 U ppb) 3/3/2019								
105		2:18:00 PM	11:50:00 AM								
106	_						(106'); decrease in sand, increase in granules	to very large			
107							pebbles, silt nodules. (107'); increase slit, decrease in granules to ve	erv large nebh	iles		
 108							, <u>.</u>	, g- p			
 109							(108.5'); and granules to very large pebbles, an	ngular to subr	ound;		
		IRZ-17-SS- 107-112 3/7/2019		Topock - Alluvium Deposits	SM		(109.5'); some silt; increase in silt, decrease ir	n granules to v	ery/		
110	1	2:22:00 PM		30,000.0			arge pebbles.				
	1										
111											
 112	400										
113	120						(112') reddish brown / moderate brown(5YR 4/ red(5R 3/4); increase silt, decrease granules to pebbles, trace weathered gravel, mottling.	/4) some dusk to very large	sy		
 114	-										
	1	IRZ-17-SS- 112-117 3/7/2019									
115	1	2:26:00 PM									
116	1										
117							(4.171) roddiob brown / (5.17)	/4), li ttl - '''			
	-						(117') reddish brown / moderate brown(5YR 4/ decrease in silt, increase sand, no mottling.	/4); IITIIE SIIT;			
118	1	IRZ-17-SS- 117-122									
119	120	3/7/2019 2:31:00 PM									
	1	O 1.00 I⁻IVI		Topock - Alluvium	ML		(119.0 - 124.0') Topock - Alluvium Deposits; S (ML); reddish brown / moderate brown(5YR 4/ red(5R 3/4); low plasticity, no dilatency; some	trace dusky	/		
120 Notes:	. 110	CC = 115:6-1	Soil Classifis	Deposits		11111	ected above the laboratory reporting I			or Dillion	
1 10163.	. 03	oo – oninea	Jon Classiff	auon Syst	0 –	not dell	social above the laboratory reporting r	mint, ppu –	i aits p	GI DIIIIOII.	

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9/	AR(CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 7 of	12
Date S	Started	03/02/2	2019		Surface	Elevat	on: <u>N/A</u>	Borine	a No.:	IRZ-17 Pi	ilot
	•	eted: <u>03/07/</u>			Northin		•				
Drilling		<u>Casca</u>			Easting	•	•	Client:		Gas & Electric	
	Metho		<u>Drilling</u>		Total De	•	227 ft bgs	Location:		<u>dwater Remed</u>	<u>y Phase I</u>
	Name:		Vasquez		Borehol				Needle	es, CA	
Drilling			<u>res, L. Amaya</u> Jeffara		•		Vater: 24 ft bgs od: 10 ft Core Barrel	Drainat Nu		RC000753.00	E 1
Logge Editor:		Gantt .	McGrane		Samplir Samplir	•		Projectivi	imber. <u>i</u>	KC000753.00	01
Weath			sunny to part		•	•					
VVCati	_	<u>vvaiiii</u>					761. 163 140				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Fluid
 121 _122_ _123_		IRZ-17-SS- 117-122 3/7/2019 2:31:00 PM		Topock - Alluvium Deposits	ML		large pebbles, angular to subangular; some we coarse grained sand, angular to subround; we stiff; no odor; no staining; larger clasts consist metadiorite. (120'); decrease in sand, increase in granules pebbles. (122'); decrease silt, increase sand.	et; medium stif t of granodiori	f to		
 124	120	IRZ-17-SS-					(424.0. 422.0) Taxadi. Allahiyan Danasita S	Niltura and with	are vel		
125		122-127 3/7/2019 2:36:00 PM					(124.0 - 132.0') Topock - Alluvium Deposits; S (SM); brown (7.5YR 4/3) some (7.5R 4/6); ver- coarse grained, angular to subround; some gr pebbles, angular to subround; little silt; trace r	y fine grained anules to very	to very large		
9.21:24							no staining; larger clasts consist of quartzite, ometadiorite, weathered gravel observed.	granodiorite, a	ind		
126							(126') reddish brown / moderate brown(5YR 4	/4): some silt:			
	-						decrease sand.	74), SOITIC SIIL,			
127											
		IRZ-17-SS- 127-132		Topock - Alluvium Deposits	SM						
130_		3/7/2019 2:40:00 PM					(129.5 - 132.0'); little silt; increase sand.				
131_ 131											
132	120						(422.0 . 422.0) Tanada Allaniana Danasita C	Na			
<u> </u>	-			Topock - Alluvium	ML		(132.0 - 133.0') Topock - Alluvium Deposits; S (ML); reddish brown / moderate brown(5YR 4/	(4); low plastic			
133				Deposits			dilatency; some granules to very large pebbles subround; some very fine to very coarse grain	ed sand, andu	lar to		
2 – –						600	subround; trace cobbles, subangular to subroundor; no staining; larger clasts consist of meta	und; wet; stiff; adiorite.	no		
134	-	IRZ-17-SS-	IRZ-17VAS- 132-137				(133.0 - 136.5') Topock - Alluvium Deposits; S (GM); reddish brown / moderate brown(5YR 4	Silty gravel with /4); granules t	n sand o very		
135_ 135		132-137 3/7/2019 2:45:00 PM	(<0.17 U ppb) 3/13/2019 12:05:00 PM	Topock - Alluvium Deposits	GM		large pebbles, angular to subround; some ven grained sand, angular to subround; some sith subangular to subround; trace mica; wet; no o larger clasts consist of granite, granodiorite, a	y fine to very o trace cobbles dor; no stainir	oarse , ng;		
						600	weathered granules to very large pebbles observith gravel lense at 134' bgs.				
136	-					3	with graver letise at 134 bys.				
107							(136.5 - 156.5') Topock - Alluvium Deposits; S				
137							(SM); reddish brown / moderate brown(5YR 4/ to very coarse grained, angular to subround; s	ome granules	to		
	120	IRZ-17-SS- 137-142 3/7/2019 2:47:00 PM	IRZ-17-VAS- 137-142 3/12/2019 2:50:00 PM	Topock - Alluvium Deposits	SM		very large pebbles, angular to subangular; sor wet; no odor; no staining; larger clasts consist granodiorite, trace weathered granules to very (137'); decrease granules to very large pebble	t of metadiorite coarse pebbl	e and es.		
140	-										
<u>140_</u> Notes:	US	CS = Unified	Soil Classific	ation Syste	m, U =	not de	ected above the laboratory reporting	limit, ppb =	Parts p	er Billion.	I
Y N							<i>z</i> . c				

9/	4R(CADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	eet: 8 of	12
	Started					Elevation:	N/A	Borine	a No.:	IRZ-17 P	ilot
	Comple					g (NAD83):	N/A				
Drilling		<u>Casca</u>			-	(NAD83):	N/A	Client:		Gas & Electric	
1	g Metho Name:		Drilling √asquez		Total De	eptn: le Diameter:	227 ft bgs 6 in	Location:	<u>Ground</u>	dwater Remed	ıy Pnase ı
	g Asst:	·	es, L. Amaya			o First Water		-	iveedie	5, CA	
Logge		Gantt .			-	ng Method:	10 ft Core Barrel	- Proiect Nu	ımber:	RC000753.00	51
Editor			<i>I</i> lcGrane		-	ng Interval:	Continuous	- , -			
Weath	ner:	<u>Warm</u>	sunny to part	tly cloudy. (Convert	ted to Well:	☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Fluid
	-	IRZ-17-SS- 137-142 3/7/2019 2:47:00 PM	IRZ-17-VAS- 137-142 3/12/2019 2:50:00 PM			(142)	; little silt; decrease in granules to very	arge nebbles			
143144145146147	120	IRZ-17-SS- 142-147 3/7/2019 2:50:00 PM	IRZ-17-VAS- 142-147 (84 ppb) 3/4/2019 10:24:00 AM			increa	; some silt; decrease in sand.	arge pennies,			
148 149 150 151 152	120	IRZ-17-SS- 147-152 3/7/2019 2:53:00 PM	IRZ-17-VAS- 147-152 (<0.33 U ppb) 3/12/2019 11:05:53 AM	Topock - Alluvium Deposits	SM	(450)	dade gravish braum (2 EV 4(2)) dagrage				
153 154 155 156		IRZ-17-SS- 152-157 3/7/2019 2:57:00 PM	IRZ-17-VAS- 152-157 (7.0 ppb) 3/4/2019 12:00:00 PM			(153')	dark grayish brown (2.5Y 4/2); decreasome mottling. ; increase in sand, decrease silt, no mo		ease		
157 158 159 160	120	IRZ-17-SS- 157-162 3/7/2019 2:59:00 PM		Topock - Alluvium Deposits	ML	(ML); dilate subro subro grano (158') sand. (158.9)	5 - 160.5') Topock - Alluvium Deposits; reddish brown / moderate brown(5YR 4 ncy; some granules to very large pebble und; some very fine to very coarse grain und; wet; stiff; no odor; no staining; larg diorite, metadiorite, and feldspars.; moist; hard; weak cementation; decrease; wet; very stiff; increase silt, no ceme	(/4); Iow plastic is, angular to ned sand, anguer clasts consi ase silt, increa intation.	ity, no llar to st of se		
Notes	: US	CS = Unified	Soil Classific	cation Syste	m, U =	not detected	l above the laboratory reporting	limit, ppb =	Parts p	er Billion.	

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			Design & Consultancy for natural and built assets		Вυ	;	g Log		0.	neet: 9 of	12
Date St				•	Surface			Borin	g No.	: IRZ-17 P	ilot
	•	ted: <u>03/07/</u>			Northing	- '	•				
rilling rilling		<u>Casca</u>			Easting Total De	•	083): <u>N/A</u> 227 ft bgs	_ Client:		c Gas & Electric ndwater Remed	
riller N			•			•				es, CA	iy Filase i
rilling			•				t Water: 24 ft bgs	_	110001	00, 07 (
ogger			Jeffers		-		_	_ _ Project N	umber:	RC000753.00	51
ditor:		<u>Sean I</u>	<u> </u>		Samplin	ig Inte	erval: <u>Continuous</u>	_			
Veathe	er:	<u>Warm</u>	sunny to part	ly cloudy.	Convert	ed to	Well: ☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Flu
		IRZ-17-SS-			ML			0:11			
161_		157-162					(160.5 - 162.5') Topock - Alluvium Deposits reddish brown / moderate brown(5YR 4/4);	ery fine graine	d to		
4		3/7/2019 2:59:00 PM		Topock - Alluvium	SM		∴ very coarse grained, angular to subangular,∴ pebbles, subangular to subround, little silt, t	race mica; wet;	no		
162				Deposits			odor; no staining; 2-15 mm silt nodules, larç metadiorite.	er clasts consi	st of		
4							(162.5 - 164.0') Topock - Alluvium Deposits	Silty gravel wit	h sand		
163_				Topock - Alluvium	GM	60	(GM); reddish brown / moderate brown(5YR large pebbles, angular to subround; and ver	4/4); granules	to very		
+	120		ID7 47 \ (A O	Deposits	Givi		grained sand, angular to subround; little silt odor; no staining; larger clasts consist of grained sand, and were subround; little silt odor; no staining; larger clasts consist of grained sand; and were subround; little subroun	trace mica; we	t; no		
164		IRZ-17-SS-	IRZ-17-VAS- 162-167				metadiorite.				
405		162-167 3/7/2019	(<0.17 U ppb) 3/4/2019				(164.0 - 183.0') Topock - Alluvium Deposits (SM); reddish brown / moderate brown(5YR	4/4); very fine of	grained		
165		3:01:00 PM	5:01:00 PM				 ∴ to very coarse grained, angular to subangular to subangular to subround; little silt 	: trace mica: we	s to et; no		
166							odor; no staining; larger clasts consist of mo (165.5'); some granules to large pebbles, ar	etadiorite. Igular to subrou	ınd;		
.100_							decrease in sand, increase in silt.				
167											
168_											
169_		IRZ-17-SS-									
4		167-172 3/7/2019									
170		3:02:00 PM					∷ ∷ (170') dark reddish brown (5YR 3/3); and gr	anules to large			
-							pebbles, angular to subround; decrease in s				
171											
				Topock -			점 지				
172_	120			Alluvium Deposits	SM		Ä				
470				Doposito							
173_							(173') dark reddish brown (5YR 3/3) and bla	ck (5YR 2.5/1);	silt		
174_			IRZ-17-VAS-				mottled. (173.5') reddish brown / moderate brown(5)				
		IRZ-17-SS- 172-177	172-177 (<0.17 U				to large pebbles, angular to subround; trace increase in sand, no mottling.	coddies, subro	una;		
175_		3/7/2019 3:04:00 PM	` ppb) 3/5/2019								
			3:20:00 PM				Å				
176_											
177				ļ			(177'): como cilt: traca ele::	nuloo to v	rao		
4							(177'); some silt; trace clay; decrease in graph pebbles and grain size, decrease sand.	nules to very la	ige		
_178		IRZ-17-SS-									
4	120	177-182 3/7/2019					(178.5'); little silt; no clay, increase sand, tra	ce weathered			
179		3:05:00 PM					granules to very large pebbles.				
-							(179.5'); some silt; decrease in sand.				
400						11.11	(A)				
180 otes:	US	CS = Unified	Soil Classific	cation Syste	em. U =	not d	etected above the laboratory reporting	g limit. ppb =	ः Parts ।	oer Billion.	

9/	AR(CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 10 of	12
Date S	Started	03/02/2	2019	;	Surface	Elevat	ion: <u>N/A</u>	Borine	. oN	IRZ-17 Pi	lot
Date 0	Comple	eted: <u>03/07/</u> 2	2019	l	Northing	g (NAD	83): <u>N/A</u>	Domi		_	
Drilling	g Co.:	<u>Casca</u>	de		Easting	(NAD8	•	Client:		Gas & Electric	
Drilling	g Metho		Drilling		Γotal De	epth:		Location:	Ground	dwater Remed	<u>y Phase I</u>
Driller			√asquez		3orehol				Needle	es, CA	
Drilling			es, L. Amaya		•		Water: 24 ft bgs				
Logge		<u>Gantt .</u>			Samplin	-		Project Nu	ımber: <u>l</u>	RC000753.005	51
Editor:			<u>//cGrane</u>		Samplin	•					
Weath	ner:	<u>Warm</u>	sunny to part	ly cloudy. (Convert	ed to V	Vell: ☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Fluid
		IRZ-17-SS- 177-182 3/7/2019 3:05:00 PM		Topock - Alluvium Deposits	SM		(180.5'); little granules to large pebbles, angula increase sand.	ar to subround	d;		
183	-					414	(183.0 - 185.5') Topock - Alluvium Deposits; G				
-	120						(ML); yellowish red (5YR 4/6); low plasticity, no granules to very large pebbles, angular to suba	angular; some	every		
184	1	IRZ-17-SS- 182-187		Topock - Alluvium	ML	999	fine to very coarse grained sand, angular to su wet; stiff to very stiff; no odor; no staining; large				
405	-	3/7/2019		Deposits		1993	granodiorite and metadiorite.				
185	-	3:06:00 PM				999					
100	-						(185.5 - 187.0') Topock - Alluvium Deposits; S	ilty sand with	gravel		
186	-			Topock - Alluvium	SM		(SM); yellowish red (5YR 4/6); medium grained grained, angular to subangular; some silt; little	d to very coars small to larg	se e		
100	-			Deposits			pebbles, angular to subangular; little mica; wei	t; no odor; no			
를187 -							(187.0 - 192.0') Topock - Alluvium Deposits; S				
188_	- 60	IRZ-17-SS- 187-192 3/7/2019 3:07:00 PM		Topock - Alluvium Deposits	ML		(ML); yellowish red (5YR 4/6); low plasticity, no granules to very large pebbles, angular to subr fine to very coarse grained sand, angular to su wet; stiff; no odor; no staining; larger clasts con	ound; some v bround; trace	ery mica;		
5132					<u> </u>		(192.0 - 206.5') Topock - Weathered Bedrock Silty sand with gravel (SM); reddish brown (2.5	- conglomera	te;		
							grained to very coarse grained, angular to suba granules to very large pebbles, angular to suba	angular; some	e		
507.							some mica: wet: no odor: weak cementation: r				
194_							weathered granules, tight formation.				
195_	60										
======================================]			Topock - Weathered	CN4						
# 1 JU				Bedrock - conglomerate	SM						
				Congiomerate							
-101-											
			IRZ-17-VAS-								
- JO-]		197-202 (<0.17 U								
ร์ – - รู้ <u></u> 199	60		ppb) 3/6/2019								
F - 199-	1		11:20:00 AM								
200	-										
Notes:	US	CS = Unified	Soil Classific	ation Syste	m, U =	not de	tected above the laboratory reporting I	imit, ppb =	Parts p	er Billion.	I
SOKING							,				

9/.	ARC	ADIS	Design & Consultancy for natural and built assets		Bo	ring Lo	g		She	eet: 11 of	12
Date S						Elevation:	N/A	Boring	a No.:	IRZ-17 Pi	lot
Date C	•	· ·				g (NAD83):	N/A				
Drilling		Casca			_	(NAD83):	N/A	Client:		Gas & Electric	
Drilling			•		Total D	•	227 ft bgs	_ Location:		dwater Remed	y Phase I
Driller			√asquez			le Diameter:	6 in	-	Needle	es, CA	
Drilling			es, L. Amaya		-	o First Water:	_	- Duniant Ni		DC000752 004	-1
Logge		Gantt .	<u>Jeπers</u> //cGrane		•	ng Method:	10 ft Core Barrel	_ Project Nu	ımber: <u> </u>	RC000753.00	01
Editor: Weath			sunny to part			ng Interval:	Continuous ☐ Yes ☒ No	-			
vveau		vvaiiii	Suring to part		T	Ted to vveii.					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
201	60		IRZ-17-VAS- 197-202 (<0.17 U ppb) 3/6/2019 11:20:00 AM								
203 204 205 206				Topock - Weathered Bedrock - conglomerate	SM						
						(206.5	- 209.5') Topock - Weathered Bedrock	c - conglomerat	te;		
_207	120					Sandy dilater	silt with gravel (ML); red (2.5YR 4/6); k cy; some granules to very large pebble	ow plasticity, no es. angular to	0		
208				Topock - Weathered Bedrock - conglomerate	ML	suban to sub cemer granod	ular; some very fine to very coarse gra ound; trace mica; wet; very stiff; no od tation; no staining; larger clasts consis liarite trace weathred granules to very l	ained sand, and or; weak ot of metadiorite arge pebbles.	e and		
210						:: :: (209.5 :: :: Silty sa	 - 213.0') Topock - Weathered Bedrock and with gravel (SM); reddish brown (2. 	c - conglomerat .5YR 4/4); very	te; fine		
						graine	d to very coarse grained, subangular to es to very large pebbles, angular to sub	subround; sor	ne		
_211				Topock -		∷∷∷ some	nica; wet; no odor; no staining; trace w				
				Weathered Bedrock -	SM	very la	rge pebbles.				
212				conglomerate	е						
										(212.0 - 222.0') Soft drilling	
213							- 215.5') Topock - Weathered Bedrock silt with gravel (ML); red (2.5YR 4/6); le				
214				Topock -		dilater	cy; some granules to very large pebble gular; some very fine to very coarse gra	s, angular to			
				Weathered Bedrock -	ML	to sub	ound; trace mica; wet; very stiff; no ode	or; no staining;	larger		
215				conglomerate	е		consist of metadiorite and granodiarite es to very large pebbles.	. race weathre	ed		
216	100					(215.5 Silty e	- 227.0') Topock - Weathered Bedrock and with gravel (SM); reddish brown (2.	c - conglomerat	te; fine		
217	120					graine granul some	and with graver (SM); redulsh brown (2.d to very coarse grained, subangular to es to very large pebbles, angular to suk mica; wet; no odor; no staining; trace w rge pebbles.	subround; sor pangular; some	ne silt;		
ļ .				Topock - Weathered			• .				
218			IRZ-17-VAS- 217-222	Bedrock -	SM						
<u> </u>			(<0.17 U	conglomerate	е						
219			ppb) 3/6/2019								
			4:17:00 PM								
220											
Notes:	US	CS = Unified	Soil Classific	cation Syste	em, U =	not detected	above the laboratory reporting	limit, ppb =	Parts p	er Billion.	

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9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		She	eet: 12 of	12
Date S						Elevation:	N/A	Borin	a No.:	IRZ-17 Pi	lot
	-	ted: <u>03/07/</u> 2				g (NAD83):	N/A				
Drilling		Casca				(NAD83):	N/A	Client:		Gas & Electric	
Drilling			-		Total De	-	227 ft bgs	Location:		<u>dwater Remed</u>	<u>y Phase I</u>
Driller N			/asquez			e Diameter:	<u>6 in</u>		Needle	es, CA	
Drilling	Asst:		<u>es, L. Amaya</u>		-	First Water:					
Logger		<u>Gantt .</u>			•	g Method:	10 ft Core Barrel	Project N	umber:	RC000753.00	51
Editor:			<u>/IcGrane</u>		-	g Interval:	Continuous				
Weath	er:	<u>Warm</u>	sunny to part	<u>ly cloudy.</u> (Convert	ed to Well:	☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Fluid
	120		IRZ-17-VAS- 217-222 (<0.17 U ppb) 3/6/2019 4:17:00 PM							(212.0 - 222.0') Soft drilling	
	60			Topock - Weathered Bedrock - conglomerate	SM		11/3				
 _226 _ _227							End of Boring at 227.	Ω'has			
230											
231_											
233											
234											
235											
236											
_237											
_ 238 _											
239											
240 Notes:	110	CS = Unified	Soil Classific	ation Syste	m II-	not detected	above the laboratory report	ting limit and -	: Parte n	er Rillion	
.5.55.			Juli Cidoome		, 🗸				. д.ю р		

, , , , , , , ,	ADIS	Design & Consultancy for natural and built assets		ВО	ring	og		SII	eet: 1 of	3
ate Started					Elevatio		Boring	No.	: <u>MW-W</u>	
· ·	ted: <u>03/30/</u>				y (NAD8			*		
rilling Co.:	Casca			_	(NAD83	N/A			Gas & Electric	
rilling Metho		<u>Drilling</u>		Total De	-	43 ft bgs			ndwater Remed	<u>y Phase I</u>
riller Name:		Vasquez			e Diame		_	<u>ineeai</u>	es, CA	
rilling Asst:		aya/ O. Flores		-		ter: 5 ft bgs	— Designet No.		DC0007E2 00	
ogger:		<u>Jeffers</u>		-	g Metho		_ Project Nu	mber:	RC000753.00	01
ditor: /eather:		McGrane , sunny, cloud		-	ig Interva ed to W		_			
	<u>vvann</u>	, suriny, cloud		Conven	ed to vv	. A res I no				
Depth (ft) (Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Flui
.1						0 - 5.0') (NR); No recovery, hand augered	for utility cleara	nce.	(0.0 - 5.0") hand augered for utility clearance.	(0.0 - 12.0°) gal of wate used
3 60				NR		11/3				
5 6 ₂₄			Topock - Fluvial	SP-SM		0 - 6.5') Topock - Fluvial Deposits; Poorly P-SM); brown (7.5YR 5/4); very fine graine bangular to subround; little silt; trace gran and; trace cobbles, round; trace mica; mo	ed to fine grained ules to small pel	l, obles,	(5.0 - 12.0') Soft drilling (5.0') Approximate	
24			Deposits			ining; larger clasts consist of granodiarite), NO	depth to water	
7						5 - 26.0') Topock - Fluvial Deposits; Poorl	y graded sand (SP);	table	
′ –						wn (10ÝR 5/3); very fine grained to fine g pround; little mica; moist to wet; no odor;	rained, subangu iron oxide stainir	iar to		
_										
8						very fine grained to medium grained; Inc	rease in grain si	ze		
-) ·	nd, no iron oxide staining.				
9 _		MW-W- VAS-7-12								
- 60		(<0.17 U ppb)								
10		3/27/2019 4:55:00 PM								
4		4.55.00 PIVI				(40)(D 0/4) to 11/4				
11						0.5') very dark gray (10YR 3/1); trace silt; t crease in sand.	race organics;			
12										
									(12.0 - 27.0') soft drilling,	(12.0 - 27.0) gal of wat
13_			Tanaak						compaction of soils in core.	used
			Topock - Fluvial	SP					John III Core.	
, -			Deposits							
14_										
15										
16156										
+										
17										
4										
18										
_										
.19										
				<u></u> _						
20						ed above the laboratory reporting				

9/	ARCADIS Design & Consultancy for natural and built assets				Во	ring Lo	og		She	eet: 2 of	3
	Started					Elevation:	N/A	Borine	a No.:	MW-W	
	•	ted: <u>03/30/</u>				g (NAD83):	N/A	_		<u> </u>	
Drilling		<u>Casca</u>			_	(NAD83):	N/A	_ Client:		Gas & Electric	
_	Metho		•		Total De	•	43 ft bgs	_ Location:		dwater Remed	y Phase I
	Name:		/asquez			e Diameter	·	_	Needle	es, CA	
Drilling			ya/ O. Flores			o First Wate		_			
Logge		<u>Gantt</u>			-	g Method:	10 ft Core Barrel	_ Project Nu	ımber: <u> </u>	RC000753.00	51
Editor:			/IcGrane		-	ig Interval:	Continuous	_			
Weath		<u>Warm,</u>	sunny, cloud		Convert	ed to Well:					T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Description			Drilling Notes	Drilling Fluid
21	156		MW-W- VAS-22-27 (<0.33 U ppb) 3/28/2019 1:00:00 PM	Topock - Fluvial Deposits	SP	brov	0 - 29.2') Topock - Fluvial Deposits; Silty n (2.5Y 5/2); very fine grained to fine graind; little silt; little mica; little organics;	ained, subangu	ar to	(12.0 - 27.0') soft drilling, compaction of soils in core.	(12.0 - 27.0°) 50 gal of water used
28 29 30 31 32	60			Topock - Fluvial Deposits Topock - Weathered Bedrock - conglomerat	SIVI	sand grain grar wet; cons	2 - 31.0') Topock - Weathered Bedrock - with gravel (SM); reddish brown (2.5YF) ned to coarse grained, angular to subroulles to very large pebbles, angular to sun o odor; no staining; trace very coarse sist of metadiorite and granodiorites. 1 - 43.0') Topock - Competent Bedrock - ish brown (2.5YR 3/4); dry; moderate ce	R 4/4); very fine and; and silt; little abangular; trace sand, larger cla	e mica; st dark	(31.0 - 32.0') Rough drilling	
33	24									(34.0 - 40.0')	
35 36				Topock - Competent Bedrock - conglomerat						Core was hot	
37 38 39 40	72										
Notes:	US	CS = Unified	Soil Classific	ation Syst	em, U =	not detecte	d above the laboratory reporting	j limit, ppb =	Parts p	er Billion.	

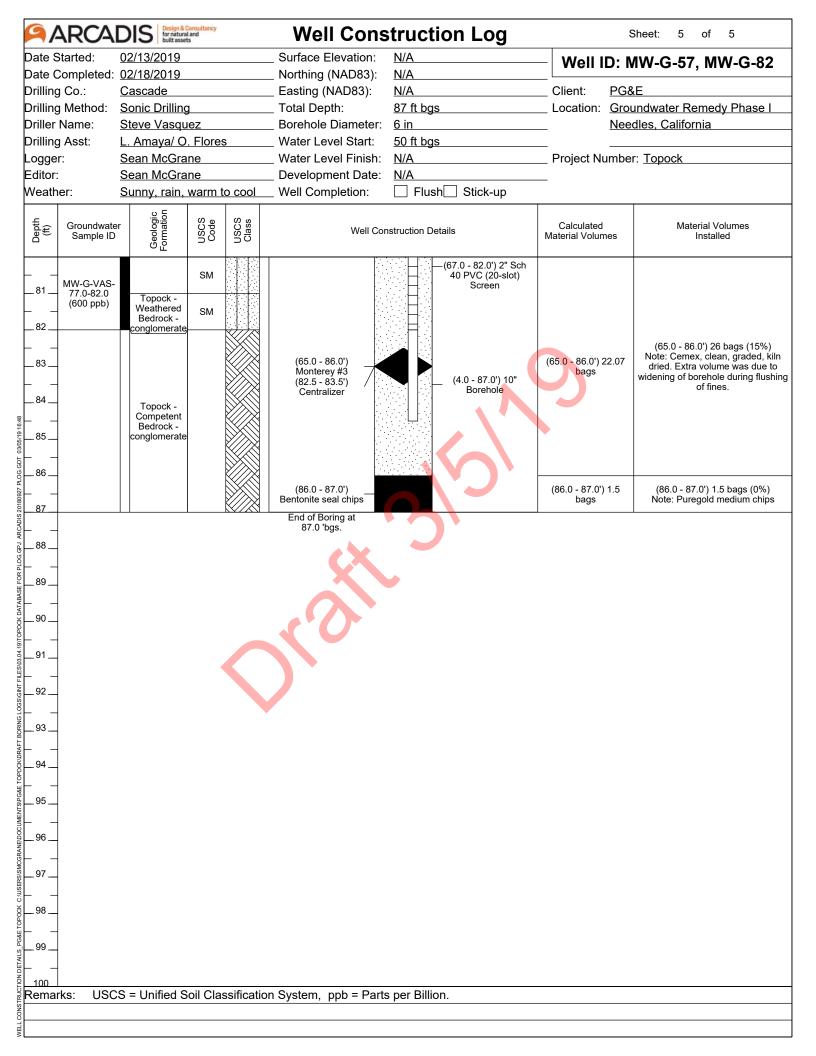
9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring Lo	<u> </u>			She	eet: 3 of	3
Date S	Started	03/27/2	2019		Surface	Elevation:	N/A		Borine	a No :	MW-W	
	-	eted: <u>03/30/</u>				g (NAD83):	N/A		_		<u> </u>	
Drilling		<u>Casca</u>				(NAD83):	N/A		_ Client:		Gas & Electric	
Drilling			•		Total De	-	43 ft bgs		_ Location:		<u>dwater Remed</u>	y Phase I
Driller			√asquez			le Diameter:	<u>6 in</u>		_	<u>Needle</u>	es, CA	
Drilling			aya/ O. Flores			o First Water:			_			
Logge		<u>Gantt</u>				ng Method:	10 ft Core I		_ Project Nu	ımber:	RC000753.00	51
Editor:			/IcGrane		-	ng Interval:	Continuous		_			
Weath	er:	<u>Warm,</u>	sunny, cloud	ly.	Convert	ted to Well:	× Yes	No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Description			Drilling Notes	Drilling Fluid
 41 _42_ _43	36			Topock - Competent Bedrock - conglomerat								
- 44 - 44 45							Ē	nd of Boring at 43.0 'bo	js.	'		
46												
_47												
48												
49												
50												
5 51_												
52												
53												
54												
55												
56												
57												
58												
59												
60 Notes:	US	CS = Unified	Soil Classific	cation Syste	em, U =	not detected	above the la	boratory reporting	limit, ppb =	Parts n	er Billion.	
				- , 5				, , ,	, , , , r =	P	·	
3												

SC (4.0 - 87.0) 10° Borehole SC (4.0 - 87.0) 10° Borehole	ARCA	DIS Design & Consultancy for natural and built assets	Well Cons	truction Log	Sheet: 1 of 5			
NR (0.0 - 47.4) 2° PVC Sch 40 Casing (0.0 - 13.0°) 2° EVC Sch 40 Casing (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 g	Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger: Editor:	O2/18/2019 Cascade Sonic Drilling Steve Vasquez L. Amaya/ O. Flores Sean McGrane Sean McGrane	Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Water Level Start: Water Level Finish: Development Date:	N/A N/A 87 ft bgs 6 in 50 ft bgs N/A N/A	Client: PG8 Location: Grou	kE undwater Remedy Phase I dles, California		
NR (0.0 - 47.4) 2° PVC Sch 40 Casing (0.0 - 13.0°) 2° EVC Sch 40 Casing (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 gallons (9%) Note: Type I, II, and V and hydrology (0.0 - 13.0°) 55 g	Groundwate Sample ID	Geologic Formation USCS Code	S SS Well Cons	struction Details				
16	R PLOG GPJ ARCADIS 20180877 PLOS GPJ ARCADIS 2018087 SW-SM	Sch 40 Casing (0.0 - 13.0') Portland Cement 5%	Sch 40 Casing (0.0 - 4.0') 12" Borehole	(0.0 - 13.0') 50 gallons	(0.0 - 13.0') 55 gallons (9%) Note: Type I,II, and V and hydrogel			
FL ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '		ML SC	Bentonite (17.5 - 18.5') Centralizer	per Billion.	(13.0 - 41.3') 164	(13.0 - 41.3') 165 (1%) Note: Type I,II, and V and hydrogel		
	VELL CONST							

ARCA	DIS Design & Consultancy for natural and built assets	Well Cons	truction Log	Sheet: 2 of 5			
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger: Editor: Weather:	02/13/2019 02/18/2019 Cascade Sonic Drilling Steve Vasquez L. Amaya/ O. Flores Sean McGrane Sean McGrane Sunny, rain, warm to coo	Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Water Level Start: Water Level Finish: Development Date: Well Completion:	N/A N/A N/A 87 ft bgs 6 in 50 ft bgs N/A N/A Plush Stick-up	Client: <u>PG8</u> Location: <u>Gro</u>	undwater Remedy Phase I dles, California		
td (#) Groundwate Sample ID		Well Con	struction Details	Calculated Material Volumes	Material Volumes Installed		
21 — 22 — 23 — 23 — 24 — 25 — 26 — 27 — 28 — 25 — 26 — 27 — 28 — 27 — 28 — 28 — 28 — 28 — 28	SM SM	(13.0 - 41.3') Portland Cement 5%— Bentonite	(4.0 - 87.0') 10" Borehole	(13.0 - 41.3') 164	(13.0 - 41.3') 165 (1%) Note: Type I,II, and V and hydrogel		
Remarks: USC	55 = Unined Soil Classific	ation System, ppb = Parts	в рег вішоп.				
WE							

ARCAL	DIS Design & Consultancy for natural and built assets	Ţ	Well Cons	truction Log	Sheet: 3 of 5			
Date Completed: Q Drilling Co.: Q Drilling Method: Q Driller Name: Q Drilling Asst: L Drilling Asst: L Drilling Asst: Q Drill	Cascade Sonic Drilling Steve Vasquez L. Amaya/ O. Flores Sean McGrane Sean McGrane Sunny, rain, warm to c	No Eas Tot Bou Wa Wa		N/A N/A N/A 87 ft bgs 6 in 50 ft bgs N/A N/A Plush Stick-up	Client: PG& Location: Grou	undwater Remedy Phase I dles, California		
Groundwater Sample ID	Geologic Formation USCS Code	Class	Well Cons	struction Details	Calculated Material Volumes	Material Volumes Installed		
41 42 43 44	SM	(0.0) S	(13 - 41.3') tland Cement 5%— Bentonite 0 - 47.4') 2" PVC — sch 40 Casing (41.3 - 45.0') ttonite seal chips	(0.0 - 67.0') 2" PVC Sch 40 Casing	(41.3 - 45.0') 2.79 bags	(13.0 - 41.3') 165 (1%) Note: Type I,II, and V and hydrogel (41.3 - 45.0') 3 bags (7%) Note: Puregold medium chips		
45	SM SM ML ML		(45.0 - 61.0') Nonterey #3 (52.5 - 53.5') Centralizer	(4.0 - 87.0') 10" Borehole	(45.0 - 61.0') 15.05 bags	(45.0 - 61.0') 18 bags (16%) Note: Cemex, clean, graded, kiln dried. Extra volume was due to widening of borehole during flushing of fines.		
Remarks: USCS	S = Unified Soil Classif	rication Sys	stem, ppb = Parts	per Billion.				
WELL C								

ARCA	DESIgn & Consultancy for natural and built assets		Well Construction Log	Sheet: 4 of 5			
Date Started:	02/13/2019		Surface Elevation: N/A	Well ID: N	/IW-G-57, MW-G-82		
Date Completed			_ Northing (NAD83): N/A		•		
Drilling Co.:	Cascade		_ Easting (NAD83): N/A	Client: PG8			
Drilling Method: Driller Name:	Sonic Drilling Steve Vasquez		_ Total Depth: <u>87 ft bgs</u> _ Borehole Diameter: <u>6 in</u>		undwater Remedy Phase I dles, California		
Drilling Asst:	L. Amaya/ O. Flores		_ Water Level Start: 50 ft bgs	<u> </u>	ules, California		
Logger:	Sean McGrane	•	_ Water Level Finish: N/A	 Project Numbe	r [.] Topock		
Editor:	Sean McGrane		_ Development Date: N/A		<u></u>		
Weather:	Sunny, rain, warm t	o cool	Well Completion: ☐ Flush☐ Stick-up				
Hat (£) Groundwat Sample II		USCS Class	Well Construction Details	Calculated Material Volumes	Material Volumes Installed		
61	ML		(45.0 - 61.0') ————————————————————————————————————	(45.0 - 61.0') 15.05 bags			
62 63 64	ML		(61.0 - 65.0') Bentonite seal — pellets	(61.0 - 65.0') 3.81 buckets	(61.0 - 65.0') 4 buckets (5%) Note: Pel-Plug 3/8" TR30		
91 et - MCADIS 201602527 PLOG GDT 03005/19 16.	CL		— (67.0 - 82.0') 2" Sch 40 PVC (20-slot) Screen				
00 d	- SM		(4.0 - 87.0') 10" Borehole		(65.0 - 86.0') 26 bags (15%)		
73	ML		(65.0 - 86.0')	(65.0 - 86.0') 22.07 bags	Note: Cemex, clean, graded, kiln dried. Extra volume was due to widening of borehole during flushing of fines.		
77.0 YOUNG - 78 - MW-G-VAS - 77.0-82.0	SM						
79 (600 ppb)							
N D E	CM						
를 80 Remarks: US0	SM	esificatio	hn System, ppb = Parts per Billion.				
Enternarks. USC	Jo – Unineu Son Clas	Somealle	и зувієні, рри – ганз рег вішоп.				
VELL CX							
~ <u></u>							



A	RC/	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	DDAEI	Shee	et: 1 of	13
Date Sta	arted:	10/31/2	2018		Surface		· · ·	DRAF 1	Boring No	.: <u>IRZ-15</u>	Pilot
Date Co	-	d: <u>11/15/:</u> <u>Casca</u>	2018 de		Northing Easting		•		Client: PG&E		
Drilling N			Drilling		Total De	•	•	bgs		water Remedy	Phase I
Driller Na		Nick P					neter: <u>6 in</u>		<u>Needles</u>	, California	
Drilling A	Asst:	-	ner/J. Cande		-		Water: N/A	<u> </u>			
Logger: Editor:			cia / G Jeffer //dGrane		Samplir Samplir	-			_ Project Number: <u>T</u>	ороск	
Weather	·:		warm to hot		Convert	-		es 🗵 No	_		
Depth (ft)	(in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Description		Drilling Notes	Drilling Fluid
	ř			0 %			(0.0 - 2.0'): No F	Recovery lost during hand c	learance		
_ 1	0						(0.0 = 0.0 %, 0.0 0.0 %)				
_ 2							yellowish brown angular to round	y graded sand (SP); yellow (10YR 5/4); very fine graind d; little coarse to very coars nules to small pebbles, sub	ed to medium grained,		
_ 4 _	60				SP		dry; no staining				
_ 5 _					OF .						
6							(7.0. 47.0)) D-	the standard (CD), have	(40VD 410)		
ARCADIS 20180927 PL							grained to medi coarse grained	orly graded sand (SP); brow um grained, angular to roun sand, angular to round; trac and; trace silt; trace clay; dro	id; little coarse to very se granules to small		
POR PLOGGED 10 10 10 10 10 10 10 1											0 gal of water used
11											
12 12 1	120				SP						
14											
COMENIA											
17 18				 			4/4); very fine g	ty sand with gravel (SM); drained to very coarse graine to large pebbles, angular to	ed, angular to subangular;	-	
19					SM						
20 Notes:	USC	S = Unifie	d Soil Classit	ication Sv	l stem. U	= not c	l letected abov	e the laboratory repo	rting limit, ppb = Parts	per Billion.	<u> </u>
S C C C C C C C C C C C C C C C C C C C											
SOILE		-		-							

Siller Once Cascade Ca	atte Completed: 11/15/2018 Northing (NADB3): NA Client: PGSE Cascade Easting (MADB3): NACCAGE Easting (MAD	AR	CADIS	Design & Consultancy for natural and built assets		Bor	ing Lo	g		Sheet	t: 2 of	13
Sample (b)	Accordance and the completed of the control of the								Bor	ing No.	.: IRZ-15	Pilot
Total Depth: 257 ft bgs	Total Depth: 257. hgs Location: Groundwater Remedy Phase I file Name: Mick Petrone Borehoe Diameters 6in	•				_	•					
Illiar Name: Nick Petrone Borehole Diameter: Sin Needles, California	Miles Name Nick Petrone Borehole Diameter 6. in Needles, California							\ <u>-</u>				
The continuence of the continu	Table Continuous Continuo	-		-				· ·			-	Phase I
A. Garcia / G. Jeffers Sampling Method: Sean M.GGrane Sampling Interval Continuous Sampling Interval Co	Sampling Method: 10 ft Core Barrel Project Number: Topock		· ·							<u>iveedies,</u>	, Calliottila	
Search Converted to Well: Vel Solve	Sean McGrane Sunny warm to hot Converted to Well: Sold Description De	-	-						 Project Ni	ımber: To	nnock	
eather: Sunny warm to hot Converted to Welt: Yes S No Serve Converted to Well: Yes No Description Drilling Notes Drilling	ditor:					-		1 10,000110	umbor. <u>10</u>	роск		
Simple ID Groundwinter Sample ID Sample ID Sample ID Simple ID Sim	See Semple ID Grundwater Sample ID Semple ID Semple ID Semple ID September ID September ID September ID Semple ID Se	/eather:					-					
22 120 SM SM SM (24.5 - 27.0) Well graded gravel with all and sand (GW-GM); very dark grayes brown (10YR 3/2) granules to large pebbles, angular to banden gravel with said sand, angular; little all, mode, no staining state of the very course grained sand, angular; little all, mode, no staining state of the very fine to very course grained sand, angular; little all, mode, no staining state of the period of the very fine to very course grained sand, angular to subangular; little all, mode, no staining state of the period of the very fine to very course grained sand, angular to subangular; little all, well trace clay; wet; no staining state of the period of the very fine to very course grained sand, subangular; and all, tittle very fine to very course grained sand, subangular to round; trace large pebbles, angular to subangular; and sittle very fine to very course grained sand, subangular to round; trace large pebbles, angular to subangular, wet; no staining state of the period of the period of the very course grained sand, subangular to round; trace large pebbles, angular to subangular, wet; no staining state of the period of the very course grained sand, subangular, wet; no staining state of the period of the pe	22	Depth (ft) (Recovery (in)			Geologic Formation	USCS	USCS Class	Description	n		Drilling Notes	Drilling Fluid
30 _ 30 _ 30 _ 30 _ 30 _ 30 _ 30 _ 30 _	30 _ 30 _ 31 _ 32 _ 120	.21				GW-GM	dark g suban silt; m (27.0 - plastic little v	gular; little very fine to very coarse oist; no staining - 29.5') Gravelly silt with sand (ML bity; little granules to very large pelery fine to very coarse grained sar	s to large pebbles, e grained sand, and); brown (10YR 4/3 bbles, angular to su	angular to gular; little); medium ıbangular;	Approximate depth of water	
IRZ-15-SS- 30-35 IRZ-15-VAS- 32-37 (13 ppb) GM O O O O O O O O O O O O O	IRZ-15-SS- 30-35 IRZ-15-VAS- 32-37 (13 ppb) GM O O O O O O O O O O O O O O O O O	3031				0000	to med very c	dium pebbles, angular to subangu oarse grained sand, subangular to	lar; and silt; little ve	ry fine to		0 gal of wate used
37	37	33	IRZ-15-SS- 30-35	32-37		GM						
38		-	IRZ-15-SS-									
otes: USCS = Unified Soil Classification System, U = not detected above the laboratory reporting limit, ppb = Parts per Billion.	otes: USCS = Unified Soil Classification System, U = not detected above the laboratory reporting limit, ppb = Parts per Billion.	.38	35-40									
, , , , , , , , , , , , , , , , , , , ,		otes: US	SCS = Unifie	d Soil Classifica	ation Sys	tem, U =	not detecte	ed above the laboratory re	porting limit, pr	b = Parts	per Billion.	
					-							

9/-	R	CADIS	Design & Consultancy for natural and built assets		Вс	oring Lo	g			Sheet	3 of	13
Date S	tarted	: <u>10/31/</u>	2018		Surface	e Elevation:	N/A		Bor	ina No.	: <u>IRZ-15</u>	Pilot
Date C	omple	eted: <u>11/15/</u>	2018		Northin	ng (NAD83):	N/A					<u></u>
Drilling	Co.:	<u>Casca</u>	de		Easting	g (NAD83):	N/A		Client:	PG&E		
Drilling	Meth	od: <u>Sonic</u>	Drilling		Total D	epth:	257 ft bgs		Location:	Groundw	ater Remedy	/ Phase I
Driller	Name		etrone			ole Diameter:				Needles,	California	
Drilling	Asst:	<u>T. Aylı</u>	<u>mer/J. Cande</u>	laria	Depth	to First Wate						
Logge		A. Gar	<u>rcia / G Jeffer</u>	S		ng Method:	10 ft Core Barrel		Project No	umber: <u>To</u>	pock	
Editor:		<u>Sean l</u>	<u>McGrane</u>		Sampli	ng Interval:	Continuous					
Weath	er:	Sunny	warm to hot		Conve	rted to Well:	☐ Yes ⊠ No					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Description			Drilling Notes	Drilling Fluid
	96	IRZ-15-SS- 40-45			GM							
46 — 46 — 47 — 47 — 48 — 49 — 49 — 50 —		IRZ-15-SS- 45-50				granu very o	- 57.0') Silty gravel with les to medium pebbles, oarse grained sand, sul pebble, angular to suba gular; wet; no staining	angular to suba bangular to rour	ngular; some id; little large t	very fine to to very		0 gal of water used
55	96	IRZ-15-SS- 50-55			GM							used
56		IRZ-15-SS- 55-60			GM	reddis subar round	- 69.5') Silty gravel with sh brown (5YR 5/3); gran ngular; some very fine to ; little large to very large ace cobbles, subangular	nules to medium o very coarse gra e pebbles, angul	n pebbles, ang ained sand, su ar to subangu	gular to ubangular to		
្ន ី 60 Notes:	US	CS = Unifie	d Soil Classif	ication Sv	stem II	Kal N Y = not detect	ed above the labor	ratory reporti	na limit pr	b = Parts i	er Billion	
- 1 10103.	- 50		G COII CIASSII	iodilon Oy	J.J.11, U	1101 401001	Sa above the label	atory roporti	g, pp	i uito	201 DIMOIT.	
OIL BO												
Ж												

AR	CADIS	Design & Consultancy for natural and built assets		Boring	g Lo	g			Sheet:	4 of	13
Date Started	<u> </u>			Surface Eleva		N/A		Bor	ing No.:	IRZ-15	Pilot
Date Comple				Northing (NA	,	N/A		. L			
Drilling Co.:	<u>Casca</u>			Easting (NAD	083):	N/A		Client:	PG&E		
Drilling Meth		<u>Drilling</u>		Total Depth:		257 ft bgs		Location:		ater Remedy	Phase I
Driller Name Drilling Asst		<u>etrone</u> mer/J. Candel	orio	Borehole Dia		6 in			Needles,	Calliornia	
Logger:	-	rcia / G Jeffers		Sampling Me		10 ft Core Barre	 I	Project Nu	umber: <u>To</u> p	nock	
Editor:		McGrane	<u> </u>	Sampling Inte		Continuous	I	i iojectivi	лпьег. <u>то</u> р	JOCK	
Weather:		warm to hot		Converted to		☐ Yes ⊠ No					
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code USCS Class			Description			Drilling Notes	Drilling Fluid
61 62 108 63 64 65	IRZ-15-SS- 60-65	IRZ-15-VAS- 62-67 (0.459 J ppb)		M C C C C C C C C C C C C C C C C C C C							
EOR PIOG GPJ 19819	IRZ-15-SS- 65-70				Ц (7.5YR	74.5') Well graded gra 4/3); granules to large	e pebbles, angul	ar to subangu	lar: some		0 gal of water
71	IRZ-15-SS- 70-75			GW-GM	very fir trace v staining	ie to very coarse grain ery large pebbles, ang g	ed sand, angula jular; trace cobbl	r to subangula es, subangula	ar; little silt; ar; wet; no		used
BOBING TO CO. CHURCHS SINGERS	IRZ-15-SS- 75-80			SW-SM	(7.5YR subrou	87.0') Well graded sai 4/3); very fine grained nd; and granules to ve t; wet; no staining	to very coarse	grained, angu	lar to		
Notes: US	SCS = Unifie	d Soil Classifi	cation Sy	stem, U = not	detecte	d above the labo	ratory reporti	ng limit, pp	b = Parts p	er Billion.	1
ORING				•			, ,				
SOIL BO											

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring Lo	og		Sheet	: 5 of	13
Date S		-			_	Elevation:	N/A	Bor	ina No.	: <u>IRZ-15</u>	Pilot
1	-	eted: <u>11/15/2</u>				g (NAD83):	N/A				
Drilling	-	Cascad				(NAD83):	N/A	_ Client:	PG&E		
Drilling	-		•		_ Total D	-	257 ft bgs	_ Location:		ater Remedy	Phase I
Driller						le Diameter:		_	Needles,	California	
Drilling			ner/J. Cande		•	o First Wate		_			
Logge			cia / G Jeffer	<u>S</u>	-	ng Method:	10 ft Core Barrel	_ Project N	umber: <u>To</u>	pock	
Editor			<u>/////////////////////////////////////</u>		-	ng Interval:	Continuous	_			
Weath	ner:	Sunny	warm to hot		Conver	ted to Well:	☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Description			Drilling Notes	Drilling Fluid
81 82 83 84 85	- 108	IRZ-15-SS- 80-85			SW-SM						
		IRZ-15-SS- 85-90				to lar	- 97.0') Silty gravel with sand (GM); bi ge pebbles, angular to subangular; soi coarse grained sand, angular to subro les, angular; trace clay; metadiorite pe	me silt; little ver und: trace verv	y fine to large		0 gal of water
91 92 93 93 94 94 95 95 95	96	IRZ-15-SS- 90-95			GM						used
96_		IRZ-15-SS- 95-100			SM	very grani	- 104.5') Silty sand with gravel (SM); if ine grained to very coarse grained, ar alles to very large pebbles, angular; littlar; wet; no staining	gular to subang	gular; and		
100 Notes	. 119	CS = Unified	Soil Classif	ication S	/stem II	= not detec	ed above the laboratory repor	ting limit on	h = Parte	ner Rillion	1
1000	. 00	,oo - onniec	a Jon Olassiii	ioddioi1 O	, 5.0111, 0	not detec	above the laboratory repor	ang mint, pp	– i aits	por Dillion.	

9/-	\R(CADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sheet:	6 of	13
Date S		·			-	Elevation:	N/A	Bor	ing No.:	IRZ-15	Pilot
	-	eted: <u>11/15/</u>				g (NAD83):	N/A				
Drilling Drilling		Casca	<u>ae</u> Drilling		_Easung _Total D	(NAD83):	N/A 257 ft bgs	Client:	PG&E Groundwa	iter Remedy	Phase I
Driller			etrone			le Diameter:	6 in		Needles, 0	•	1 11400 1
Drilling	Asst:	T. Aylı	mer/J. Cand	elaria	Depth t	o First Water:					
Logge			cia / G Jeffe	ers	•	ng Method:	10 ft Core Barrel	Project Nu	ımber: <u>Top</u>	ock	
Editor:			McGrane warm to ho		•	ng Interval: ted to Well:	Continuous ☐ Yes ☒ No				
Weath		Suring	warm to no		Conver	ted to vveii.	Yes NO				<u> </u>
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwate Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
101	96	IRZ-15-SS- 100-105	IRZ-15-VAS- 102-107 (< 0.17 U ppb)		SM SM SM	(116.0 brown) subang trace of the contract of	- 106.5') Silty sand with gravel (SM); re 5YR 4/4); very fine grained to very coagular; some granules to very large peblobbles, angular; wet; no staining - 116.0') Sandy silt with gravel (ML); re 5YR 4/4); medium plasticity; some gra, angular to subangular; wet; weak cemeangular to subangular; wet; weak cemeangular to subangular; wet; weak cemeangular; and silt; little very fine to very coarto subangular; wet; weak cementatio - 120.0') Sandy silt with gravel (ML); re 5YR 4/4); medium plasticity; ome grants, and silt; little very fine to very coarto subangular; wet; weak cementatio - 120.0') Sandy silt with gravel (ML); re 5YR 4/4); medium plasticity; some very fine angular to subangular; wet; weak cemerations, some very fine subangular; some very fine angular to subangular; wet; weak cemerations, some very fine an	eddish brown / nules to very le to very coarsentation; no staining eddish brown / nules to very le to very coarsentation; no staining eddish brown / nules to very le to very le to very le to very le to very le to very coarsentation in the le to very le to very le to very coarsentation in the le to very le to very coarsentation in the le to very coarsentation in the le to very le to very coarsentation in the le	moderate arge and, moderate arge and, moderate arge and, moderate arge arge and, moderate arge arge arge arge arge arge arge arg		0 gal of water used
708 T											
120 Notes:	US	CS = Unifie	d Soil Class	ification Sy	/stem, U	= not detecte	ed above the laboratory reporti	ng limit, pp	b = Parts p	er Billion.	1
BORING							•		·		
SOIL1											

Service Completed: 11/15/2018 Northing (NADS3): NA Clerk PG&E	Date Completed: 11/15/2018 Northing (NAD83): N/A Client: PG& Cascade Easting (NAD83): N/A Client: PG& Cascade Spelling Asst. Total Depth: 257 ft bgs Location: Groundwater Remedy! Note Petrone Borehole Diameter: 6 in Needles, California Diamet	ARC	ADIS	for natural and built assets	,	Во	rinç	Log		Sheet	: 7 of	13
According Note Acco	Northing (ANDBS): N/A Client: Sassade Esting (NADBS): N/A Client: N/A Client: Sassade Esting (NADBS): N/A Client: Somic Drilling Total Depth: 1257, ft bgs Location: Note Percone Northing (ANDBS): N/A Client: Somic Drilling Total Depth: 1257, ft bgs Location: Note Percone Northing (ANDBS): N/A Client: Somic Drilling Total Depth: 1257, ft bgs Location: Somic Drilling Northing (NADBS): N/A Client: Northing (NADBS): N/A Client: Northing (NADBS): N/A Client: Northing (NADBS): N/A Client: Northing (NADBS): N/A Client: Northing (NADBS): N/A Client: Northing (NADBS): N/A Client: Northing (NADBS): N/A Client: Northing (NADBS): N/A Client: Northing (NADBS): N/A Client: Northing (NADBS): N/A Client: Northing (NADBS): N/A Client: Northing (NADBS): N/A Client: Northing (NADBS): N/A Client: NADBS: Northing (NADBS):		·						Bor	ing No.	: IRZ-15	Pilot
Total Depth: 257 ft tgs Location: Groundwater Remedy Phase Right Name (Line) (L	Tilling Method: Sonic Drilling Total Depth: 257 ft bgs Location: Groundwater Remedy. Needles, California Tilling Asst. A. Garcial / G. Jeffers Sampling Interval: Sampling Interval: Sampling Method: 10.ft Core Barrel Project Number: Topock Seam McGrane Sampling Interval: Continuous Converted to Well: Sampling Interval: Sampling Interv	•					• •	,	_ Clianti	DC0F	<u>'</u>	
Miler Name: Nick Petrone Borehole Diameter: 6 in Needles, California	Sile Name: Nick Petrone Borehole Diameter: 6 in Needles, California Needles, Needl	-				_	•				otor Domodu	, Dhasa I
Thing Asts: T. Aylmer\(L. Candeladia\) Depth to First Water\(NA\) Sampling Method: Sean McGrane Sampling Interval: Confinious Sean McGrane Sampling Interval: Confinious Sampling Interval: Confinious Sean McGrane Sampling Interval: Confinious Converted to Welt: Sampling Interval: Confinious Description Description Description Description Description Description Descrip	T. Aylmer/J. Candelaria Depth to First Water: N/A Sampling Method: Sampling Method: Continuous Continuous Sampling Intervent Continuous Sampling Intervent Continuous Sampling Intervent Sampling Intervent Sampling Intervent Continuous Sampling Intervent	-		-			-	_			•	/ Filase i
Sampling Method: 10 ft Cere Barrel Project Number: Topock Sean McGrane Sampling Interval: Continuous Continuous Summy warm to hot Converted to Well: Yes No Description Description District Summy warm to hot Converted to Well: Yes No Description Description District Summy warm to hot Converted to Well: Yes No Description Description District Summy warm to hot Converted to Well: Yes No Description Description District Summy warm to hot Converted to Well: Yes No Description Description District Summy warm to hot Converted to Well: Yes No Description Description District Summy summy summy public summy summy feet before the very large pebbles, angular to be before the very large pebbles, angular to subangular some subangul	Sampling Interval: Sean McGrane Sampling Interval: Sunny warm to hot Converted to Well: Yes ② No Groundwater Sample ID Groundwater S							·	_	ivecuies,	Camorna	
Sample D Sean MG/Grane Sunny warm to hot Converted to Well: Yes IND Description Description Sunny warm to hot Converted to Well: Yes IND Description	Sean McGrane Sunny warm to hot Converted to Well: Yes X No Groundwater Sunny warm to hot Sample ID Groundwater Sunny warm to hot Sample ID Sunny warm to hot Sunny warm to hot Sunny warm to hot Sunny warm to hot Sunny warm to hot Sunny warm to hot Sunny warm to hot Sunny warm to hot Sunny warm to hot Sunny warm to hot Sunny warm to hot Sunny warm to hot Sunny warm to hot Sunny warm to hot Sunny warm to war you warm to war you warm to war you warm to war you warm to warm you warm you warm to warm you warm to warm you warm	-							Project N	umber: To	pock	
Sumply Robert Sumply warm to hot Converted to Well: Yes No Description Drilling Notes Drilling I Sample D Gambaratar Sumply warm to hot D Gambaratar Sumply Robert Ro	Sunny warm to hot Converted to Well: Yes No Converted to Well: Yes No Description Drilling Notes See Serve Sample ID Groundwater Sample ID Grou				510	-	-		_ 1 10,00011	umbon. <u>10</u>	poor	
Drilling Notes Drilling Description Desc	Sie Sieve Sample ID Groundwater Sumple ID Gr				ot		•		_			
Detailed to subangular to subangular to subangular to subangular to subangular to subangular some self, week cementation, no staining; pebbles composed of metadiorite. Composed of metadiorite.	SM SL School Sc		Sieve	Groundwate		USCS	USCS Class				Drilling Notes	Drilling FI
22	22	1_				GM	1 1 1 K	brown(5YR 4/4); granules to very large pebl subangular; some silt; little very fine to very	oles, angular to)		
28 17.0	127.0 - 137.0 / Silty gravel with sand (GM); reddish brown / moderate brown(STR 4/4); gravules to very large pebbles, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some very fine to very large pebbles, angular to subangular some very fine to very large pebbles, angular to subangular some very fine to very coarse grained sand, angular to subangular some very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large pebbles, angular to were very fine to very large very fine to very fine to very large very fine to very large very fine to very large very fine to very large very fine to very large very fine to very large very fine to very large very fine to very large very fine to very large very	3 4 5				ML		brown(5YR 4/4); medium plasticity; some gi pebble, angular to subangular; little very fine	ranules to very e to very coarse	large e grained		
GM GM GM GM GM GM GM GM GM GM	182 96 182 96 182 96 183 132 137 (< 0.17 U ppb) 185 132 137 (< 0.17 U ppb) 186 137 139 137 (< 0.17 U ppb) 187 139 139 139 139 139 139 139 139 139 139	_					Policy	brown(5YR 4/4); granules to very large pebl subangular; some very fine to very coarse g subangular; some silt; wet; weak cementation	oles, angular to rained sand, a	ngular to		
33. 34. IRZ-15-VAS- 132-137 (<0.17 U ppb) 36. 37. ML ML (137.0 - 139.5') Gravelly silt with sand (ML); reddish brown / moderate brown(5YR 4/4); low plasticity; some granules to very large pebbles, angular to subangular; some very fine to very coarse grained sand, angular to subangular; wet; weak cementation; no staining	33. 34. IRZ-15-VAS- 132-137 (< 0.17 U ppb) 36. 37. (137.0 - 139.5') Gravelly silt with sand (ML); reddish brown / moderate brown(5YR 4/4); low plasticity; some granules to very large pebbles, angular to subangular; some very fine to very coarse grained sand	0						composed of metadionie.				0 gal of waused
35. IRZ-15-VAS- 132-137 (< 0.17 U ppb)	35	3				GM						
37. (137.0 - 139.5') Gravelly silt with sand (ML); reddish brown / moderate brown(5YR 4/4); low plasticity; some granules to very large pebbles, angular to subangular; some very fine to very coarse grained sand, angular to subangular; wet; weak cementation; no staining	(137.0 - 139.5') Gravelly silt with sand (ML); reddish brown / moderate brown(5YR 4/4); low plasticity; some granules to very large pebbles, angular to subangular; some very fine to very coarse grained sand	-		132-137 (< 0.17 U								
38	(137.0 - 139.5') Gravelly silt with sand (ML); reddish brown / moderate brown(5YR 4/4); low plasticity; some granules to very large pebbles, angular to subangular; some very fine to very coarse grained sand	-										
	angular to subangular; wet; weak cementation; no staining	8				ML		brown(5YR 4/4); low plasticity; some granul angular to subangular; some very fine to ve	es to very large ry coarse grain	e pebbles, ed sand,		
SM [計画] (139.5 - 144.5') Silty sand with gravel (SM); reddish brown (2.5YR	SM (139.5 - 144.5') Silty sand with gravel (SM); reddish brown (2.5YR	-				CN4	1441	(139.5 - 144.5') Silty sand with gravel (SM):	reddish brown	(2.5YR		

Date Started: 10,031/2018 Surface Elevation: NAA United Completed: 11/5/2018 Northing (NADAS) NAA Client PGSE Drilling Account Project Name: NAA Client PGSE Drilling Method: Northing (NADAS) NAA Client PGSE Drilling Asset: Na Client PGSE Drilling A	9/-	\R(CADIS	Design & Consultancy for natural and built assets		Во	ring	g Log		Sheet	t: 8 of	13
Northing (NAD83) N/A								· · · · · · · · · · · · · · · · · · ·	Bor	ing No	.: IRZ-15	Pilot
Total Depth: 257 hgs		-					• •	•				
Driller Name Nick Petrone Borehole Diameter Sin Needles California	_								=		vater Remedy	, Dhaca I
Defining Assist T. Aymer/J. Candelaria Depth to First Water. NAA — Longer: Sean McGrane Sampling Method: 10 ft. Core Barrol Project Number: Topock — Sean McGrane Sampling Interval: Continuous — Description Sean McGrane Sampling Interval: Continuous — Description Description Description	_			-							•	r i ilase i
A A Carca A C Jeffers Sampling Method: 10 ft Core Barrie Project Number: Jepock					laria				-		,	
No. No.									Project Nu	umber: <u>To</u>	pock	
Section Continue	Editor:		<u>Sean I</u>	McGrane		Samplin	ng Inte		-			
141	Weath	er:	Sunny	warm to hot		Conver	ted to	Well: ☐ Yes ⊠ No				
some granules to very large pebbles, angular, little stit, trace cobbtes, angular, wet, no stanting 142 96 182.15.85- 143 140-145 144 144 145 140-145 145 145 145 145 145 145 145 145 145 145	Depth (ft)	Recovery (in)			Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Fluid
148.	142 143 144 145 146	96				SM		some granules to very large pebbles, angular angular; wet; no staining (144.5 - 161.0') Silty sand with gravel (SM); red/4/1; very fine grained to very coarse grained some granules to very large pebbles, angular	eddish brown , angular to su	e cobbles, (2.5YR ibangular;		
152_ 96	148 149							(147'); increase in granules and very large pe	ebbles, decrea	se in silt.		
	 152 _153_ _154_	96	IRZ-15-SS- 150-150			SM		(154.5'); no staining; decrease in silt, trace cl	ay.			
160	 157 158 		IRZ-15-SS- 155-160									
Notes: USCS = Unified Soil Classification System, U = not detected above the laboratory reporting limit, ppb = Parts per Billion.	159											
Notes: USCS = Unified Soil Classification System, U = not detected above the laboratory reporting limit, ppb = Parts per Billion.												
		U.S	CS = Unifie	■ d Soil Classif	⊥ ication Sv	stem. U	= not	detected above the laboratory reporti	ina limit. pp	b = Parts	per Billion	
			32 311110								r 5. 5511.	

9/	AR (CADIS	Design & Consultancy for natural and built assets		Во	rin	g Lo	g			Sheet	: 9 of	13
Date 9					Surface			N/A		Bor	ina No.	: <u>IRZ-15</u>	Pilot
	•		2018		Northin	- '		N/A					
Drilling	-	<u>Casca</u>			Easting	•)83):			Client:	PG&E		
Drilling	-		<u>Drilling</u>		_ Total D			257 ft bgs				ater Remedy	Phase I
Driller					Boreho					-	Needles,	California	
Drilling	-		mer/J. Cande		-					Desis et Ni			
Logge Editor			<u>rcia / G Jeffer</u> McGrane	S	₋ Samplir ₋ Samplir			10 ft Core Barre	2 1	. Project Nu	imber: 10	роск	
Weath			warm to hot		Conver			Yes X No	<u> </u>	•			
VVCall		Julilly	Walli to flot		Conver	T TO	VVCII.						1
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS			Description			Drilling Notes	Drilling Fluid
					SM								
						.0.	3/3); n	- 164.5') Gravelly silt o plasticity; some gra	nules to very larg	e pebbles, and	gular to		
162	96					00		gular; some very fine ind; wet; weak cemer			igular to		
163		IRZ-15-SS- 160-165			ML	.0.							
103	-					, 6							
164							4						
			IRZ-15-VAS- 162-167			<u> </u>	3						
165	-		(3200 ppb)				4/4); v	- 167.0') Silty sand w ery fine grained to ver	ry coarse grained	, angular to su	bangular;		
-	-							granules to very large s, angular; wet; no st		r; some silt; tra	ce		
166	-				SM								
	-												
167							(167.0	- 172.0') Silty sand w	rith gravel (SM); r	eddish brown (2.5YR		
		IRZ-15-SS- 165-170					4/4); v	ery fine grained to ver granules to very large	ry coarse grained	, angular to su	bangular;		
168	-						cobble	s, angular; trace clay	; wet; no staining				
	-												
	1				014								
170					SM								0 gal of water
													used
171													
<u> </u>													
172	114						(470.0	474 FI\ C:lt			/l t -		
		IRZ-15-SS- 170-175					brown	- 174.5') Silty gravel (5YR 4/4); granules to gular; some very fine gular; some silt; wet;	o very largè pebbl to very coarse gr	es, angular to ained sand, an			
					GM	60							
174						139							
	-					600	(174.5	- 187.0') Silty gravel	with sand (GM); r	eddish brown	/ moderate		
175	-					50		(5YR 4/4); granules to gular; some very fine			gular to		
176	-						suban	gular; some silt; wet;	weak cementation	n; no staining			
176_	-					15/13							
177	1					7 6							
					GM	15 P.J.	\triangleleft						
178						7 9							
						15 P.J.							
5 5179						14							
5						15 P.	\triangleleft						
180						14							
Notes	: US	SCS = Unifie	d Soil Classif	ication Sy	ystem, U	= not	detecte	ed above the labo	oratory reporti	ng limit, pp	b = Parts	per Billion.	

AR	CADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sheet	: 10 of	13
Date Started	d: <u>10/31/</u>	2018		Surface	Elevation:	N/A	Bor	ina No.	: IRZ-15 I	Pilot
	eted: <u>11/15/</u>				g (NAD83):	N/A				
Drilling Co.:	Casca			_	(NAD83):	N/A	_ Client:	PG&E		
Drilling Meth		<u>Drilling</u>		Total D	-	257 ft bgs	_ Location:		ater Remedy	Phase I
Driller Name		etrone	.lawia	='	le Diameter:	6 in	_	<u>Needles,</u>	California	
Drilling Asst Logger:	-	<u>mer/J. Cande</u> cia / G Jeffe			o First Water: ng Method:	. IN/A 10 ft Core Barrel	- _ Project Nı	ımber: To	nock	
Editor:		<u> McGrane</u>	15	-	ng Interval:	Continuous	_ FIOJECLINI	лпь с г. <u>то</u>	pock	
Weather:		warm to hot		-	ted to Well:	☐ Yes ⊠ No	-			
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	on	USCS	USCS	Description			Drilling Notes	Drilling Fluid
181	IRZ-15-SS-180-185 IRZ-15-SS-185-190 IRZ-15-SS-190-195	IRZ-15-VAS- 182-187 (140 ppb)		ML ML	4/4); no subang subrou	- 189.5') Gravelly silt with sand (ML); o plasticity; some granules to very largular; some very fine to very coarse grand; wet; weak cementation; no staining the same of the	reddish brown gular to sub g eddish brown gular to sub g eddish brown obbles, angular to sub g	(2.5YR no subangular; round; (2.5YR 4/4); to gular to	407! Zana ia	0 gal of water used
197 - 198 -	IRZ-15-SS- 195-200			SM	(2.5YR subang	- 200.0') Silty sand with gravel (SM); or 3/4); very fine grained to very coarse gular; some granules to very large peboobbles, angular; trace clay; wet; no sta	grained, angu bles, angular;	lar to	197' Zone is coarse grained and very saturated.	1
Notes: US	SCS = Unifie	d Soil Classi	fication Sy	/stem, U	= not detecte	ed above the laboratory report	ing limit, pp	b = Parts	per Billion.	1
N N N N N N N N N N N N N N N N N N N										
SOILE										

A	RC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sheet	: 11 of	13
Date St		-				Elevation:	N/A	Bor	ina No.	: <u>IRZ-15</u>	Pilot
	-	eted: <u>11/15/</u>				g (NAD83):	N/A	_			
Drilling		<u>Casca</u>			_	(NAD83):	N/A	_ Client:	PG&E	D	Disease
Drilling Driller N			<u>Drilling</u>			eptn: le Diameter:	257 ft bgs	_ Location:		ater Remedy California	Phase I
Drilling .			ner/J. Cande	laria		o First Water		_	incedies,	Callionna	
Logger:		-	cia / G Jeffe		•	ng Method:	10 ft Core Barrel	- _ Project Nı	umber: To	pock	
Editor:			McGrane		-	ng Interval:	Continuous	- , -			
Weathe	r:	Sunny	warm to hot		Conver	ted to Well:	☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
	108	IRZ-15-SS- 200-205			SM	4/4); v some	0 - 206.5') Silty sand with gravel (SM); ivery fine grained to very coarse grained granules to very large pebbles, angulass, angular; trace clay; wet; no staining	d, angular to ຣເ ir; some silt; tra	ibangular;		
207 - 207 -		IRZ-15-SS- 205-210			ML	low pl	5 - 212.0') Sandy silt with gravel (ML); r asticity; some very fine to very coarse und; little granules to very large pebble clay; wet; weak cementation; no stainir	grained sand, a s, angular to s	angular to		0 gal of water used
211 212 213 214 214 215 214 215 215 215 215 215 215 215 215 215 215	108	IRZ-15-SS- 210-215				plastic	5 - 227.0') Sandy silt with gravel (ML); r itty; some silt; little granules to very lar gular; little very fine to very coarse gra und; trace clay; wet; weak cementation	ge pebbles, an ined sand, and	gular to		
0401 = 216 = 217 = 217 = 218 = 219 =		IRZ-15-SS- 215-220			ML	(219.5	5') red (2.5YR 4/6) and gray (2.5Y 6/1);	no stainina			
220 Notes:	US	CS = Unifie	■ d Soil Classi	_ fication Sv	l /stem, U		ed above the laboratory report		b = Parts	 per Billion.	
OKING				7	., -		,	J -7 PP			
SOILE											

AF	RCADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet:	12 of	13
Date Star				Surface			Bor	ina No.:	IRZ-15 I	Pilot
	npleted: <u>11/15/</u>			Northin		•				
Drilling Co				Easting	•	•	Client:	PG&E	.ta = Da == adv	Dhasal
Drilling Me Driller Na		<u>Drilling</u>		Total D	-	<u>257 ft bgs</u> neter: <u>6 in</u>	Location:	Needles, 0	ter Remedy	Phase I
Drilling As		ner/J. Cande				Water: <u>N/A</u>	-	ineedies, v	JaiiiOiTiia	
Logger:	-	cia / G Jeffe		Samplir			Proiect Nu	ımber: Top	ock	
Editor:		/IcGrane		Samplir	-		. ,	<u></u>		
Weather:	Sunny	warm to hot		Conver	ted to V	Vell: ☐ Yes ⊠ No				
Depth (ft)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Fluid
221	0 IP7 15 SS	IRZ-15-VAS- 222-227 (< 0.17 U ppb)		ML		(227.0 - 232.0') Sandy silt with gravel (ML); re plasticity; some very fine to very coarse grain subround; little granules to very large pebbles little clay; wet; weak cementation; no staining grained to very coarse grained, angular to sulvery large pebbles, angular; some silt; trace on staining (237.0 - 247.0') Silty sand with gravel (SM); re grained to very coarse grained, angular to sulvery large pebbles, angular; some silt; trace of clay: more silt; tr	ed (2.5YR 4/6) bround; sangular to su	ilar to ubangular;); very fine granules to ar; moist;		0 gal of water used
239				SM		clay; moist; no staining				
	USCS = Unifie	d Soil Classi	fication Sys	stem, U	= not d	etected above the laboratory reporti	ng limit, pp	b = Parts p	er Billion.	
BORII										
SOIL										

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sheet:	13 of	13
Date S						Elevation:	N/A	Bor	ina No.	: <u>IRZ-15 l</u>	Pilot
	•	eted: <u>11/15/2</u>				g (NAD83):	N/A	_			
Drilling		Casca				(NAD83):	N/A	Client:	PG&E		
Drilling			-		Total D	•	257 ft bgs	Location:		ater Remedy	Phase I
Driller						le Diameter:		-	<u>ineedies,</u>	California	
Drilling		-	ner/J. Cande		-	o First Water: ng Method:		- Droiget Nu	umber: <u>To</u> r		
Logger Editor:			cia / G Jeffer //cGrane	<u>s</u>	•	ng Interval:	10 ft Core Barrel Continuous	Projectivi	illiber. <u>To</u> p	JOCK	
Weath			warm to hot			ted to Well:	☐ Yes ⊠ No	-			
110441		<u>Janny</u>			1						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
	108				SM	(247.0 grainer	- 255.0') Silty sand with gravel (SM); r d to medium grained, angular to subro	ed (2.5YR 4/6); very fine		
248 248 249 249 249 249 250 251 250 251 251 251 251 251 251 251 251 251 251	108			Topodk	SM	very la trace c	rge pebbles, angular; some silt; trace of oarse to very coarse sand	clay; moist; no	staining;		0 gal of water used
256				Topock - Competen Bedrock - conglomera			•				
258 259 260 Notes:	110	CS = Unified	1 Soil Classif	ication Sy	retam II	= not datects	End of Boring at 257.0 of End of Boring at 257.0 of End of Boring at 257.0 of End of Boring at 257.0 of End of Boring at 257.0 of End of Boring at 257.0 of End of Boring at 257.0 of End of Boring at 257.0 of End of Boring at 257.0 of End of Boring at 257.0 of End of Boring at 257.0 of End of Boring at 257.0 of End of Boring at 257.0 of End of Boring at 257.0 of End of Boring at 257.0 of End		h = Darte v	oor Billion	
INOIES.	US	os – uninec	JOH CHASSII	ication Sy	οι σ ΙΙΙ, U	- not detecte	a above the laboratory report	ing illilit, pp	u – raits þ	Jei DilliO[].	

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		CT		Sheet:	1 of	9
Date S					Surface			DRA	<i>\ </i>	Borin	a No.:	IRZ-21-I	Pilot
	•	ted: <u>12/19/</u> 2			Northin	- '			011				
Drilling Drilling	-	Casca			Easting	•		bgs	Clie	· · · · · · · · · · · · · · · · · · ·	G&E	ter Remedy	Phase I
Driller	•		Vasquez		Boreho	•		bys	LOC			California	riiase i
Drilling			ninguez/C. Al	lverez	-		Water: <u>N/A</u>			<u></u>	ioodioo, (Jamorria	
Logge		Conno	•		Samplir			Core Barrel	 Pro	ject Num	ber: Top	ock	
Editor:		Sean N	//cGrane		_ Samplir	-		nuous		•	·		
Weath	er:	<u>Sunny</u>	cool to warm	1	Conver	ted to \	Well: Ye	es 🗵 No					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Desc	cription			Drilling Notes	Drilling Fluid
1	84				SP		moderate yellor grained, suban- pebbles, suban- pebbles, suban- (4.5 - 11.5') We granules to ver- fine to medium	ly graded sand with wish brown(10YR 5 gular to subround; s gular to subround; gular to subround; large pebbles, sul grained sand, angu bund; trace silt; dry	th sand (GW); brangular to subrollar to subr	own (10YR ound; some	5/3); very		0 gal of water used
121213	120				SP		very fine graine	porly graded sand (d to fine grained, so bund; trace silt; dry	ubangular to rou				
14					GW		moderate yellov subangular to s	ell graded gravel w wish brown(10YR 5 ubround; some ver ubround; trace silt;	5/4); granules to r ry fine to medium	very large p	ebbles,		
					SP		very fine graine angular to subr	oorly graded sand (d to fine grained, so ound; trace cobbles	ubangular to rou s, angular to sub	ınd; trace gr angular; tra	ranules, ce silt;		
18					SP		moderate yellow grained, suban	oorly graded sand v wish brown(10YR 5 gular to subround; s gular to subround;	5/4); very fine gra some granules to	ained to med	dium		
20					GM		6/4); granules t	lty gravel with sand o very large pebble rained sand, angula	es, angular to sub ar to subangular	oround; little ; little silt; tr	e very ace		
Notes:	US	CS = Unified	d Soil Classifi	ication Sy	ystem, U	= not c	detected abov	re the laborator	ry reporting li	mit, ppb	= Parts p	er Billion.	
S S S S S S S S S S S S S S S S S S S													
JOS OF													

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet	: 2 of	9
	Started				Surface			Bor	ing No.	: <u>IRZ-21-</u>	Pilot
	•		2018		Northin	• (,	_			
Drilling	-	Casca			_ Easting			_	PG&E		
	g Meth		<u>Drilling</u>			-	<u>166 ft bgs</u>			ater Remedy	Phase I
	Name		Vasquez				eter: 6 in	_	Needles,	California	
	g Asst:		ninguez/C. Al		•			-			
Logge		Conno			_ Samplir	-		_ Project Nu	umber: <u>10</u>	pock	
Editor		· ·	<u>//cGrane</u>		_ Samplir	-		-			
Weath	ier:	Sunny	cool to warm		_ Conver	ted to V	/ell: ☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Description			Drilling Notes	Drilling Fluid
 21 22	120				GM		(21') boulders; 1 foot solid core of basalt.				
23						$D^{-}L^{\prime}$	(23.0 - 25.0') Silty gravel with sand (GM); lig yellowish brown(10YR 6/2); granules to very subangular to subround; some silt; little very	large pebbles, fine to verv co	arse		
24					GM		grained sand, angular to subangular; trace b boulder from 23-24.	ooulders; dry; p	owderized		
25						1:41	(25.0 - 34.5') Silty gravel with sand (GM); ye yellowish brown(10YR 5/4); granules to large subangular; some silt; little very fine to very	e pebbles, ang	ular to		
26						50 10 10 10 10 10 10 10 10 10 10 10 10 10	angular to subangular; dry	_			
						10 Pid 8					
27						139					
28						1912					
 29											
29						199					
30					GM	10 Pid					0 gal of water
00						137					used
 31											
51						99					
 32											
52	120					PLO					
 33											
						99					
34											
						PI					
35						PXP	(34.5 - 37.0') Silty gravel with sand (GM); lightown(5YR 6/4); granules to very large pebb				
							coarse grained sand, angular to subangular;		iiio to		
36					GM	P.P.					
00						P143					
 37						d for					
3/						t P D	(37.0 - 42.0') Silty gravel with sand (GM); gravel	anules to very I	arge .		
						BHID	pebbles, angular to subangular; some very f sand, angular to subround; little silt; dry	ine to coarse g	rained		
38						H Fol	, ,				
					GM	13 PJd					
39						BH					
<u> </u>	60					607					
40 Notes	. 116	CS = Unified	l Soil Classifi	ication S	vstem II	= not d	etected above the laboratory report	tina limit na	h = Parte	ner Rillion	
10103	. 00	SS - Offine	a Oon Olassiii	iodilon o	, J. (J. 111, U	- HOLU	stocted above the laboratory report		– i aits	por Dillion.	

ate Started		Design & Consultancy for natural and built assets		DU	;	Log			3 of	9
				Surface		· · · · · · · · · · · · · · · · · · ·	Bor	ing No.	: <u>IRZ-21-</u>	<u>Pilot</u>
-	eted: <u>12/19</u>			Northing	- '	•				
rilling Co.: rilling Meth	Casca	Drilling		Easting	•	3): <u>N/A</u> <u>166 ft bgs</u>	_ Client:	PG&E Groundw	ater Remedy	Dhace I
riller Name		Vasquez		Borehol		•	_ Location.		<u>California</u>	i ilasc i
rilling Asst		minguez/C. A				Vater: N/A	_	,	<u> </u>	
ogger:		or Mills		Samplin			_ _ Project N	umber: <u>To</u>	oock	
ditor:		McGrane		Samplir	-		_ ′			
/eather:	<u>Sunn</u> y	cool to warm	1	Convert	ed to	/ell: ☐ Yes ⊠ No				
Depth (ft) (Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Flui
41				GM						
42				SM	200	(42.0 - 43.5') Silty sand (SM); yellowish brown (10YR 5/4); fine grained to very coars subround; little granules to medium pebbles little silt; dry	e grained, suba	angular to		
44 - 60 45 46	IRZ-21-SS- 43-48					(43.5 - 52.0') Silty sand (SM); light yellowish grained to very coarse grained, angular to s granules to large pebbles, angular to subrout (44.5'); wet	ubround; some	silt; little	44.5' Approximate depth of water table	
47 - 48 49				SM						
505152120	IRZ-21-SS- 48-53									0 gal of wate
52 120 53 54 54						(52.0 - 57.0') Silty sand with gravel (ML); lig 6/4); no plasticity; some very fine to very co sand, angular to subangular; some silt; little angular to subangular; little clay; wet	arse grained sa	and grained		
55 - 56	IRZ-21-SS- 52-57	IRZ-21-VAS- 52-57 (97 ppb)		ML						
_5859	IRZ-21-SS- 57-62			ML		(57.0 - 62.0') Gravelly silt with sand (ML); ye yellowish brown(10YR 5/4); no plasticity; so pebbles, angular to subangular; little very fir angular to subangular; little clay; wet	me granules to	very large		
	1		1						1	
60 otes: US	SCS = Unifie	d Soil Classif	ication Sv	stem. II	= not	etected above the laboratory repor	tina limit nr	b = Parts i	per Billion	

Date Completed: 12/19/2018	9/	AR(CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet	:: 4 of	9
Date Completed: 12/19/2018 Northing (NAD83) NA									Bor	ing No.	: IRZ-21-	Pilot
Deliling Methods Sonic Dilling Sonic Dilli	1							•	_			
Dolling Asset Dolling Asse		-				_	•	•			ratas Dasa adv	Dhana I
Dollling Assi: N. Dominguez/C. Alverez Capper: Cornor Mills Sampling Malhort I oft Core Barrel Project Number: Topock Sean McGrane Sampling Malhort I oft Core Barrel Project Number: Topock Sampling Interval: Continuous Corverted to Well: Yes [2] No Description Dolling Notes Drilling Notes Drilling Fluid RVZ-21-88- RVZ-21-8		-		-			•	_			-	Phase I
Logger: Scan McGrane Sampling Interval: Continuous Continuous Sampling Interval: Continuous Sunny cool to warm Converted to Well: Ves No Description Drilling Notes Drilling Fluid 6 8 8 Sample ID			·	-		=		· ·	_	ineedies,	Calliottila	
Editor: Seam McGrane Sampling Interval: Continuous Weather: Sunny cool to warm Converted to Well: Yes S No By Sample (D Somple D) Semple (D Somp	1	_		•	<u> </u>	•			- Proiect Nu	ımber: To	pock	
Measurement Sunny cool to warm						-	-		,	<u></u>		
RZ_21-SS S7-62 ML	Weath	ner:	<u>Sunny</u>	cool to warm		-	-					
57-62 108 63	Depth (ft)	Recovery (in)			Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
G2_0 - 64,5 Silly and till gravel (SM) brown (7 SYR 5.0); very fine grained to very coarse grained, angular to subsrigular observed and set work. (§ 64.5 in set of the set of t						ML						
	_ 63_	108				SM		grained to very coarse grained, angular to so to very large pebbles, angular to subangular	ubangular; som ; some silt; wet	e granules		
Company Comp						SM		coarse grained, subround to round; some sil	5/3); fine graine t; little granules	ed to very to small		
Transport of the state of the s	68 69 70 71					sc		very fine grained to very coarse grained, and clay; little granules to medium pebbles, angu	gular to subang	ular; some		0 gal of water used
	73 74	108						brown(5YR 4/4); fine grained to very coarse subround; some granules to very large pebb	grained, angul les, angular to			
		-		77-82		SM		Sabangular, Some Sill, wel, lidde very länge	OCUDICO.			
	80	1										
,,, , , , , , , , , , , , , , ,		: US	CS = Unified	d Soil Classifi	cation Sy	/stem, U	= not d	etected above the laboratory repor	ting limit, pp	b = Parts	per Billion.	•

ØΑ	R	CADIS	Design & Consultancy for natural and built assets		Во	ri	n	g Lo	g				Sheet	:: 5 of	9
Date St		·			Surface				N/A			Bor	ina No.	.: <u>IRZ-21-</u>	Pilot
		eted: <u>12/19/</u>			Northin				N/A						
Drilling		Casca			Easting	•		083):	N/A			Client:	PG&E		
Drilling			<u>Drilling</u>			-			166 ft bgs			Location:		vater Remedy	Phase I
Driller N Drilling		·	Vasquez minguez/C. Al	lvoroz	Boreho Depth t								<u>ineedies,</u>	California	
Logger:			ninguez/C. Ai or Mills	iverez	. Deptir t . Samplir				10 ft Core	Rarrel		Project N	umber: To	nock	
Editor:			McGrane		Samplir	-			Continuou			i rojectiv	umber. <u>10</u>	роск	
Weathe	r:	·	cool to warm		Conver	_			Yes [
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	nscs Code		Class				escription			Drilling Notes	Drilling Fluid
81 82		IRZ-21-SS- 77-82	IRZ-21-VAS- 77-82 (1.1 ppb)	0 11	SM										
83	120							plasti subar	- 87.0') Sandy s city; some clay; igular; little very igular; trace bo id.	little granul fine to med	es to large pe dium grained	ebbles, angula sand, angula	ar to r to		
84															
_		IRZ-21-SS-			ML										
85		82-87													
_															
86															
_															
87							Ц	,); trace 4 inch fi - 89.5') Silty sai			lich brown (5	VD 5/4):		
 88 _89_					SM			very f	ine grained to v silt; little mediu lay; wet	ery coarse	grained, suba	angular to sùb	round;		
	120	IRZ-21-SS- 87-92			SM			very f	- 92.0') Silty sai ine grained to v medium to very lay; wet	ery coarse	grained, suba	angular to sub	round;		0 gal of water used
9394 95 96	120	IRZ-21-SS- 92-97			SM			very f	- 97.0') Silty sai ine grained to v les to large peb	ery coarse	grained, angı	ılar to subang	gular; some		
97								(07.0	117 0\\ 0:14	and with -	avol (CMA): =	Idiob beere '	moderat-		
98		IRZ-21-SS-			SM			browr subro	- 117.0') Silty sa (5YR 4/4); very und; some sma et; composed o	y fine graine all to large p	ed to very coa ebbles, angu	rse grained, a	angular to		
99		97-102						ă -							
_							1								
100															
Notes:	US	CS = Unifie	d Soil Classifi	ication Sy	/stem, U	= r	ot	detect	ed above th	e laborate	ory reporti	ng limit, pp	b = Parts	per Billion.	

Date Completion: 12/19/2018	9/	AR(CADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sheet	6 of	9
Drilling Methods Sonic Drilling Total Death:			· · · · · · · · · · · · · · · · · · ·						Bor	ing No.	: <u>IRZ-21-</u> I	Pilot
Drilling Method: Sonic Drilling Total Depth: 168 ft.logs Location: Groundwater Remedy Phase Location: Stowed Vascuez Schole Diameter 6 in Needles, California Needles, California Composition of Composi									_			
Drilling Name Dominguezic Alerez Soehole Diameter Sin Needles California	-	-									ater Remedy	Dhase I
Doiling Asst		-		•			-	_	_ Location.		-	i ilasc i
Description Description				•					_		<u> </u>	
Sumple Sumy cool to warm Converted to Well: Ves No	1			-		-			_ Project Nu	umber: <u>To</u>	oock	
Second S	Editor		<u>Sean</u>	McGrane					_			
101	Weath	er:	<u>Sunny</u>	cool to warr		Conver	ted to Well:	☐ Yes ⊠ No				
97-102 103 104 105 106 107 108 109 109 109 109 111 111 111 111 111 111	Depth (ft)	Recovery (in)			Geologic Formation	USCS Code	USCS	Description			Drilling Notes	Drilling Fluid
104 IRZ 21.SS 102-107 IRZ 21.SS 107-112 IRZ 21.SS 110 IRZ 21.SS 110 IRZ 21.SS 112-117 IRZ 21.SS 117-122 IRZ 21.S			IRZ-21-SS- 97-102									
104 RZ-21-SS-102-107 105 107-107 106 107 1	_102_	120										
104 RZ-21-SS 102-107 SM SM SM SM SM SM SM S												
105	103											
105	104		IRZ-21-SS-									
108	105											
108	ļ _											
108_	106											
108												
SM SM SM IRZ-21-SS- 107-112 O gal of water used III II	ဗ္ဗိ _107											
SM SM SM IRZ-21-SS- 107-112 O gal of water used III II	~											
110	a108											
110	100 -					SM						
110 107-112 120 1111 120 120 1111 120 120 1111 120 120	95.50		IRZ-21-SS-									
IRZ-21-SS 112-117 (< 0.17 U ppb) IRZ-21-SS 112-117 (< 0.17 U ppb) (117.0 - 121.0') Silty sand with gravel (SM); reddish brown / moderate brown(SYR 4/4); very fine grained to very coarse grained, subangular to round; little small to large pebbles, angular; little silt; little clay; wet; gravel composed of metadlorite	<u></u>		107-112									
112	ABASE											used
112	\delta \d											
112 120 113 IRZ-21-SS- 112-117 (c) 0.17 U ppb) 116 IRZ-21-SS- 112-117 (c) 0.17 U ppb) 117 IRZ-21-SS- 112-117 (c) 0.17 U ppb) 118 IRZ-21-SS- 117-122 SM 120 IRZ-21-SS- 117-122 SM	PATOPO –						(111.5	'): trace cobbles				
IRZ-21-SS-112-117 (< 0.17 U ppb) IRZ-21-SS-112-117 (< 0.17 U ppb) IRZ-21-SS-112-117 (< 0.17 U ppb) IRZ-21-SS-112-117 (< 0.17 U ppb) IRZ-21-SS-117-122 SM IRZ-21-SS-117-122	112_	120), il doc 3055.00				
IRZ-21-SS-112-117 (< 0.17 U ppb) IRZ-21-SS-112-117 (< 0.17 U ppb) IRZ-21-SS-112-117 (< 0.17 U ppb) IRZ-21-SS-112-117 (< 0.17 U ppb) IRZ-21-SS-117-122 SM IRZ-21-SS-117-122	- HE											
IRZ-21-SS- 112-117 IRZ-21-SS- 112-117 IRZ-21-SS- 112-117 IRZ-21-SS- 112-117 IRZ-21-SS- 112-117 IRZ-21-SS- 112-117 IRZ-21-SS- 112-117 IRZ-21-SS- 117-122 IRZ-21-SS- 117-122 IRZ-21-SS- IRZ-21-	S 113_											
IRZ-21-SS- 112-117 IRZ-21-SS- 112-117 IRZ-21-SS- 112-117 IRZ-21-SS- 112-117 IRZ-21-SS- 112-117 IRZ-21-SS- 112-117 IRZ-21-SS- 112-117 IRZ-21-SS- 117- IRZ-21-SS- 9 114												
115 (< 0.17 U ppb) 116 (117.0 - 121.0') Silty sand with gravel (SM); reddish brown / moderate brown(5YR 4/4); very fine grained to very coarse grained, subangular to round; little small to large pebbles, angular; little silt; little clay; wet; gravel composed of metadiorite SM IRZ-21-SS- 117-122 SM	180		IRZ-21-SS-									
116 117 118 118 1RZ-21-SS- 117-122 110 Silty sand with gravel (SM); reddish brown / moderate brown(5YR 4/4); very fine grained to very coarse grained, subangular to round; little small to large pebbles, angular; little silt; little clay; wet; gravel composed of metadiorite	월 115		112-117	(< 0.17 U								
(117.0 - 121.0') Silty sand with gravel (SM); reddish brown / moderate brown(5YR 4/4); very fine grained to very coarse grained, subangular to round; little small to large pebbles, angular; little clay; wet; gravel composed of metadiorite IRZ-21-SS- 117-122 SM	- 18E TOPC			PP~/								
[117.0 - 121.0') Sitty sand with gravel (SM); reddish brown / moderate brown(5YR 4/4); very fine grained to very coarse grained, subangular to round; little small to large pebbles, angular; little silt; little clay; wet; gravel composed of metadiorite SM [RZ-21-SS-117-122] SM	116											
[117.0 - 121.0') Sitty sand with gravel (SM); reddish brown / moderate brown(5YR 4/4); very fine grained to very coarse grained, subangular to round; little small to large pebbles, angular; little clay; wet; gravel composed of metadiorite SM [RZ-21-SS-117-122] SM	OUMEN -											
brown(5YR 4/4); very fine grained to very coarse grained, subangular to round; little small to large pebbles, angular; little silt; little clay; wet; gravel composed of metadiorite SM SM SM SM SM SM SM SM SM S	8117					+	(117.0	- 121.0') Silty sand with gravel (SM); ı	reddish brown	/ moderate		
gravel composed of metadiorite IRZ-21-SS- 117-122 IRZ-21-SS- 117-122	MCGR.						brown to rour	(5YR 4/4); very fine grained to very cond; little small to large pebbles, angula	arse grained, s	subangular		
5 119	SERS!		IR7-21-SS-				gravel	composed of metadiorite				
	등 동 _119		117-122			SM						
	A D											
Notes: USCS = Unified Soil Classification System, U = not detected above the laboratory reporting limit, ppb = Parts per Billion.	(1)			10 :: 0:	<u> </u>							
	S Notes:	US	SCS = Unifie	d Soil Classi	tication Sy	stem, U	= not detecte	ed above the laboratory report	ıng limit, pp	b = Parts _I	per Billion.	
	OIL BOI											

9/	AR(CADIS	Design & Consultancy for natural and built assets		Во	ring	ı Log		Sheet	: 7 of	9
Date S					Surface			Bor	ing No.	: <u>IRZ-21-</u>	Pilot
	•		<u>/2018</u>				•	_			
Drilling	-	Casca			_	•		Client:	PG&E	ratan Danasah	. Dhana I
Drilling Driller	-		<u>Drilling</u> Vasquez			•	<u>166 ft bgs</u> neter: <u>6 in</u>			ater Remedy California	r Priase i
Drilling			minguez/C. A					_	14000100,	<u> Camorria</u>	
Logge			or Mills		- ' _Sampliı			- _ Project Νι	ımber: <u>To</u>	pock	
Editor	:	<u>Sean</u>	McGrane		Samplii	ng Inte		_			
Weath	er:	<u>Sunn</u> y	cool to warn		Conver	ted to \	Well: ☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Description			Drilling Notes	Drilling Fluid
		IRZ-21-SS-			SM						
		117-122					(121.0 - 127.0') Silt with sand (ML); yellowish plasticity; some clay; little granules to mediur	n pebbles, ang	gular to		
122	120						subangular; little very fine to very coarse gra subround; wet; gravel composed of metadior		ular to		
123											
124					ML						
		IRZ-21-SS- 122-127									
125											
126											
927 PLO							(127.0 - 129.5') Sandy silt (ML); reddish brow plasticity; little granules to large pebbles, and	gular to subang	jular; little		
ଞ୍ଚି <u>_</u> 128							very fine to very coarse grained sand, angula composed of metadiorite	ar to subround;	wet; gravel		
4RCADI					ML						
129		ID7 04 00									
420 -		IRZ-21-SS- 127-132					(129.5 - 132.0') Silty sand (SM); reddish brow	vn (5YR 5/4); v	ery fine		0 gal of water
JO130							grained to very coarse grained, angular to su granules to medium pebbles, angular to suba				0 gal of water used
* DATABASE - 131_					SM		composed of metadiorite				
0000											
គ្គី132	137								(=) (=		
FILES/1;							(132.0 - 136.0') Clayey gravel with sand (GC 5/4); granules to large pebbles, angular to su	bangular; som	e clay; little		
133							very fine to very coarse grained sand, angula wet; gravel composed of metadiorite	ar to subangula	ar; little silt;		
10100											
134		ID7 04 00	IRZ-21-VAS-		GC						
405		IRZ-21-SS- 132-137	132-137 (< 0.17 U								
ਲ <u>ੂ</u> _135			ppb)								
- - - - - - - - - - - - - - - - - - -											
MENTS							(136.0 - 146.0') Sandy silt (ML); reddish brow some clay; little granules to medium pebbles	vn (5YR 5/4); n . angular to su	o plasticity;		
							little very fine to very coarse grained sand, a moist; gravel composed of metadiorite	ngular to suba	ngular;		
GRANE							, 5				
138					ML						
C:\USE		IRZ-21-SS- 137-142									
<u></u> _139											
B											
<u>្នុំ 140</u> Notes:	US	CS = Unifie	d Soil Classit	fication Sy	/stem, U	= not o	letected above the laboratory report	ing limit, pp	b = Parts	per Billion.	
BORIN											
SOIL											

9/	\R(CADIS	Design & Consultancy for natural and built assets		Во	rin	g Lo	g		Sheet	:: 8 of	9
Date S	Started	l: <u>12/15/</u>	2018		Surface	Elev	vation:	N/A	Bor	ina No.	: <u>IRZ-21-</u> F	Pilot
		eted: <u>12/19/</u>			Northin			N/A	_			
Drilling		Casca			Easting	•	•	N/A	_ Client:	PG&E		
Drilling			Drilling			-		166 ft bgs	_ Location:		<u>rater Remedy</u>	Phase I
Driller			Vasquez				ameter:	<u>6 in</u>	_	Needles,	California	
Drilling			minguez/C. A		•		st Water					
Logge			or Mills		Samplin			10 ft Core Barrel	_ Project N	umber: <u>To</u>	pock	
Editor:			McGrane		Samplin			Continuous	_			
Weath		Sunny	cool to warr		Conver	lea to	o vveii:	☐ Yes ⊠ No			T	ī
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	nscs	Cass	Description			Drilling Notes	Drilling Fluid
141		IRZ-21-SS- 137-142										
142	120											
L -												
143					ML							
144												
-		IRZ-21-SS- 142-147										
145												
146							(146.0	- 153.0') Silty sand with gravel (SM);	reddish brown	/ moderate		
1/4 							brown	(5YR 4/4); fine grained to very coarse some silt; little granule to medium pe	grained, subar	ngular to		
⁹ 147								ind; wet; gravel composed of metadic		ai to		
30927 F												
148_												
ARCAD												
149_			IRZ-21-VAS-									0 gal of water used
	54	IRZ-21-SS- 147-152	147-152 (3600 ppb)		SM							
<u>i</u> _130_			(3000 ppb)									
DATABASE 1												
² / ₀ 151_												
1810												
152_												
- 1E2												
153					-	\prod	(153.0	- 158.0') Sandy silt (ML); yellowish re	ed (5YR 4/6); no	plasticity;	1	
9 154_							granul	very fine to very coarse grained sand e to large pebble, subangular to subr	ound; dry to mo	ist; gravel		
F 134							compo	sed of metadiorite, some metadiorite	nas iron oxidat	ion		
155_		IRZ-21-SS-										
0000		152-158										
					ML							
ENTS.	100											
157_	102											
RANE												
USERS]	_			(158.0 (2.5YF	- 166.0') Topock - Competent Bedro	ck - conglomera	ate; red	158' Rough drilling	
ទី ಕ159				Topock - Competent			× (2.511)	· -· - // · ·· J				
TOPA				Bedrock - conglomerat								
160												
Notes:	US	SCS = Unifie	d Soil Classi	fication Sy	stem, U	= no	t detecte	ed above the laboratory repor	ting limit, pp	b = Parts	per Billion.	
BORIL												
Nos												

9/-	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g			Sheet	9 of	9
Date S						Elevation:	N/A		Bor	ina No.	: <u>IRZ-21-</u> F	Pilot
		eted: <u>12/19/</u> 2				g (NAD83):	N/A		_			
Drilling		Casca				(NAD83):	N/A		Client:	PG&E		D
Drilling Driller			Drilling Vasquez		Fotal De	eptn: e Diameter:	166 ft bgs		Location:		ater Remedy California	Phase I
Drilling			<u>vasquez</u> ninguez/C. A			e Diameter. o First Water:			-	incedies,	Calliornia	
Logge	-	Conno	-		-	ng Method:	10 ft Core Barrel		- ₋ Project Νι	ımber: Toı	oock	
Editor:			<i>I</i> lcGrane		-	ig Interval:	Continuous					
Weath	er:	<u>Sunny</u>	cool to warm	<u> </u>	Convert	ed to Well:	\square Yes $oxdiv No$					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Description			Drilling Notes	Drilling Fluid
161												
162												
163				Topock - Competent Bedrock -								
164	60			conglomerate	:							
 165												
 166												
1/4/19					1		End of E	Boring at 166.0	bgs.	I		
727 PLOG.GDT												
CADIS 201808												
169												
ABASE FOR B												
171												
172_												
173												
174_												
176												
178												
179												
180		00 - 11 :6	10-1101 11	:4: 0	4 !!	4 -1 1 1	d abassa (f. 17)			- D 1	D:II:	
Notes:	US	US = Unified	d Soil Classif	ication Sys	tem, U	= not detecte	d above the labor	atory report	ing limit, pp	p = Parts ן	oer Billion.	
SOIL BOI												

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ri	ոջ	Log	DDAF		Sheet	1 of	8
Date S	tarted	: <u>11/28/</u> 2	2018		Surface	Ele	eva	tion: N/A	DRAF	Вс	rina No.	: <u>IRZ-23</u>	Pilot
	•	ted: <u>12/03/</u> 2			Northin			•				<u></u>	
Drilling		<u>Casca</u>				•		,	haa		PG&E	otor Domodu	Dhasa I
Drilling Driller			Drilling Vasquez			•			bgs			ater Remedy California	Phase I
Drilling			•					Water: <u>N/A</u>		_	ivecuies,	California	
Logge		Conno	•						Core Barrel	– _ Project∃	Number: <u>To</u>	pock	
Editor:		Sean N	<i>d</i> cGrane		Samplir	ng I	nte			_			
Weath	er:	<u>Partly</u>	Cloudy 46 to	74 F	Conver	ted	to ۱	Well: 🗌 Ye	s 🗵 No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	SCSI	Class		Description			Drilling Notes	Drilling Fluid
_ 1 _					SP-SM			(7.5YR 5/3); ver subround; little	y graded sand with silt and y fine grained to medium gr granule to very large pebble obbles, subangular to round	ained, angula s, subangula	r to		
2	84				GM			large pebbles, a sand, angular to	gravel with sand (GM); brov ngular to subround; some v subround; some silt; trace a 2 inch streak of orangish	ery fine to me cobbles, ang	edium grained ular to		
_ 5 _					SW-SM				graded sand with silt (SW-S				
								angular to round					
					GM			large pebbles, a	gravel with sand (GM); brov ngular to subangular; some	very fine to r	nedium		
1/4/19					Givi			grained sand, au subangular; dry	ngular to subangular; trace	cobbles, angı	ılar to		
7													
DATABASE FOR PLOG GPJ ARCADIS 20180927 P								grained to media	rly graded sand with silt and um grained, subangular to s es, angular to round; little s	subround; son	ne granule to		0 gal of water used
MITOPOCK													
12	120				SP-SM								
# 13_								:					
TOGS/G													
_14													
RAFT B													
15													
å – – – – – – – – – – – – – – – – – – –													
16													
DCUME:								1					
Me 17_									ty sand (SM); reddish brown				
									lowish orange(10YR 6/6); v to subround; little silt; trace				
JSERS					SM			(18') very dark g	rayish brown (10YR 3/2); s	solid 1.5 ft cor	e of basalt		
 3 3 19_									uno.				
AOT	60												
20					SM			1	ty sand with gravel (SM); br	•		1	
Notes:	US	CS = Unified	d Soil Class	itication Sy	vstem, U	= n	ot o	detected abov	e the laboratory repor	tıng limit, ı	opb = Parts	per Billion.	
DIL BOF													
S													

9 /-	ARC	ADI	S Designation for natural built as	& Consultancy ural and sets		Во	ri	ng	Log		Sheet	: 2 of	8
	Started		28/2018			_ Surface				Bor	ing No.	: IRZ-23	<u>Pil</u> ot
	•	ted: <u>12/0</u>				_ Northin			•	_			
_	Co.:		cade			_	•		•	_ Client:	PG&E	ratan Danaadi	. Dhana I
_	Metho			•		_ Total D	•		147 ft bgs			ater Remedy	/ Phase I
	Name:			•	Alverez					_	<u>ineedies,</u>	California	
	y Asst:		nor Mill		Aiverez	=			Water: <u>N/A</u> nod: <u>10 ft Core Barrel</u>	— Project N	umber: <u>To</u>	nock	
ogge ditor:							-			_ Project N	ullibel. <u>10</u>	роск	
eath			ly Cloud			_ Sampiii _ Conver	-						
eauı		<u>raii</u>	iy Cloud	uy 40 ii			T	10 1	veii. Tes 🛆 NO				1
(ff)	Recovery (in)	Sieve Sample I		undwater ample ID	Geologic Formation	USCS	SSS	Class	Description			Drilling Notes	Drilling Flu
- 21						SM			grained to coarse grained, angular to subro large pebbles, angular to subround; some s to subangular; dry				
22						Sivi							
23_						ML	1 1		(23.0 - 23.5') Silt with sand (ML); gray (10Yl	R 5/1); no plast	ticity; little	1	
_ 24									very fine to coarse grained sand, angular to medium pebbles, angular to subround; dry;	soft	_		
4									(23.5 - 27.0') Well graded gravel with silt an brown (7.5YR 6/3); granules to very large p				
.5	60								coarse grained sand, angular to subround;	little silt; dry	,		
						GW-GM		1					
)6 							, q						
26								ŊŢ					
 27							i						
-1-							64	\ <u>\</u>	(27.0 - 30.5') Silty gravel (GM); brown (10Yl	R 5/3); granule	s to very	1	
							5	$\frac{1}{2}$	large pebbles, angular to subround; and silt grained sand, angular to subround; trace co	bbles, angular	; dry; gravel		
28								þ	composed of 1-4 in. metadiorite, cobbles we powder.				
, -						GM	0	7,					
9							100	7					
, -	60						10						O gol of
30							10	1					0 gal of wa
31 						SM	0000		(30.5 - 31.5') Silty sand with gravel (SM); lig 6/4); very fine grained to coarse grained, su granule to large pebble, subangular to subre	ibangular to sul ound; some silt	bround; and ; dry		
32_					L	ML_	Ц.	<u> </u>	(31.5 - 32.0') Silt with sand (ML); gray (10Yl very fine to coarse grained sand, angular to	subround; trac	e granule to		
33_									medium pebbles, angular to subround; dry; boulder at end of core. (32.0 - 35.0') Sandy silt with gravel (ML); br plasticity; some very fine to coarse grained	soft; 4.5 inch E	Basalt 		
-						ML			little granule to large pebbles, angular to su				
34													
-													
35_							+	+	(35.0 - 37.0') Gravelly silt with sand (ML); but	rown (7.5YR 5/	3): no		
-									plasticity; some granule to very large pebble little very fine to coarse grained sand, angul	es, angular to s	ubangular;		
36						ML			muo very ime to coarse grained sand, angui	iai to subatiguti	ui, uiy		
4													
37	120						+	+	(37.0 - 47.0') Sandy silt with gravel (ML); no	plasticity: som	ne verv fine		
4									to coarse grained sand, angular to subangu				
38									pebbles, angular to subangular; dry; soft				
-						ML							
39_													
4													
0	110	00 - 11 1	fied 0 :	1 01-	:E: 4:)t - :-: 11	Ш		atastad abaye the left	Alman David	- h - D: 1	D::::	
otes:	US	CS = Uni	nea Sol	ıı Class	ilication S	system, U	= n) JOI	etected above the laboratory repor	ung iimit, pp	op = Parts	per Billion.	

Date Surface: 11.282018 Surface Elevation: NA Boring No.: IRZ-23 Pilot Date Completed: 120302918 No. Northing (ANDAS) NA Client PG&E Easting (NADAS) NA Client PG&E Easting (NADAS) NA Client PG&E Easting (NADAS) NA Client PG&E Control Policy Method: Some Delling About Surface Easting (NADAS) NA Client PG&E Location: Groundwater Remedy Phase I Policy Name: A Common Mile Steve Vascusez Borehole Diameter: 6 in Name Medias, California Steve Vascusez Borehole Diameter: 6 in Name Medias, California Steve Vascusez Borehole Diameter: 6 in Name Medias, California Steve Vascusez Sampling Method: 10.18 Core Barrel Polycet Number: Topock Sampling Interval Continuous Surface Barryles of Careholete Sampling Method: 10.18 Core Barrel Polycet Number: Topock Sampling Interval Continuous Surface Barryles Sampling Method: 10.18 Core Barrel Polycet Number: Topock Sampling Method: 10.18 Core Barrel Polycet Number: Topock Sampling Method: 10.18 Core Barrel Polycet Number: Topock Sampling Method: 10.18 Core Barrel Polycet Number: Topock Sampling Method: 10.18 Core Barrel Polycet Number: Topock Sampling Method: 10.18 Core Barrel Polycet Number: Topock Sampling Method: 10.18 Core Barrel Polycet Number: Topock Sampling Method: 10.18 Core Barrel Polycet Number: Topock Sampling Method: 10.18 Core Barrel Polycet Number: Topock Sampling Number: Topock Samplin	9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	riı	ng	Log		Sheet	: 3 of	8
Date Completed: 12/03/2018 Northing (NAD83). NA Clear: 12/03/2018 Cascade	Date S	tarted	: <u>11/28/</u> 2	2018		Surface	Ele	evatio	n: <u>N/A</u>	Bor	ina No.	: IRZ-23 I	Pilot
Deliting Method: Deliting Assi: Del						-			•			<u></u>	
Doller Name: Steve Vasquez Borehole Diameter: 6.in Needles, California Doller Name: Needles, California Sampling Method: 10.ft. Core Barrel Project Number: Topock Sampling Method: 10.ft. Core Barrel Project Number: Topock Sampling Interval: Continuous	_					_	•		•	=			
Deliling Asst: N. Dominguez/C. Alverez Cager: Connor Mills Sampling Method: 1 oft Core Barrel Project Number: Topock Sean McGrane Sampling Method: 1 oft Core Barrel Project Number: Topock Sampling Interval: Continuous Sampling Interval: Continuous Sampling Interval: Continuous Description Description Des	_			-			-		_			-	Phase I
Logger: Connor Mills Sampling Interval: Continuous Partly Cloudy 46 to 74 E. Corrected to Well: Ves S No Each Sample ID Sampl			· ·	-		='			· · · · · · ·		Needles,	California	
Editor: Saan McGrane	_			•	iverez	-				Droigat Nu	ımbor: To	nook	
Meather: Partly Cloudy 46 to 74 F Converted to Well: Yes No						-	_			Projectivi	illiber. <u>10</u>	роск	
Siere Siere Sample D Groundstate Sample D Sample Sample D Sample Sample D Sample Sample D					74 F	-	-			-			
	vvcatin		<u>ı aray</u>			Johnson	Cu	T	163 🖭 160				
42 43 44 45 46 46 46 46 46 46 46 46 46 46 46 46 46	Depth (ft)	Recovery (in)			Geologic	USCS	nscs	Class	Description			Drilling Notes	Drilling Fluid
44 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	41												
ML ML ML ML ML ML ML ML ML ML	42												
	43												
47						ML							
47—48—48—48—48—48—48—48—48—48—48—48—48—48—	44												
108 IRZ-23-SS-45-50 IRZ-23-SS-45-50 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 108 IRZ-23-SS-45-50 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 108 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 109 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 100 IRZ-23-SS-57-62 (5.3 ppb) 100 IRZ-23-VAS-57-62 (5.3 ppb) 100 IRZ-23-VAS-	45												
108 IRZ-23-SS-45-50 IRZ-23-SS-45-50 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 108 IRZ-23-SS-45-50 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 108 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 109 IRZ-23-SS-55-60 IRZ-23-VAS-57-62 (5.3 ppb) 100 IRZ-23-SS-57-62 (5.3 ppb) 100 IRZ-23-SS-57-62 (5.3 ppb) 100 IRZ-23-SS-57-62 (5.3 ppb) 100 IRZ-23-SS-57-62 (5.3 ppb) 100 IRZ-23-VAS-57-62 (5.3 ppb) 10	16												
RZ-23-SS-45-90 RS-23-SS-45-90 RS-23-SS-55-60 RZ-23-VAS-57-62 (3.3 ppb) RS-23-SS-55-60 RS-23-SS-55-60 RS-23-SS-55-60 RS-23-SS-55-60 RS-23-VAS-57-62 (3.3 ppb) RS-	2 40 -												
LAS. LAS. LAS. LAS. LAS. LAS. LAS. LAS.	_47	108					12.34		47.0 40.5') Silty aged (SM); fine grained to	vorv ocerce ar	rainad	47'	
SM (49.5 - 52.0') Silty sand with gravel (SM); very fine grained to coarse grained, angular to subround; some silt; little granule to very large pebbles, angular to subangular; trace cobbles, angular to subangular; wet SM (52.0 - 59.5') Silt with sand (ML); no plasticity; little fine to coarse grained sand, angular to subround; trace medium to very large pebble, angular to subangular; wet (52.0 - 59.5') Silt with sand (ML); no plasticity; little fine to coarse grained sand, angular to subround; trace medium to very large pebble, angular to subangular; wet [RZ-23-SS-56-65] [RZ-23-SS-56-60] [RZ-23-SS-56-60] [RZ-23-VAS-57-62 (3.3 ppb)] [RZ-23-SS-57-62 (5.3 ppb)] [RZ-23-SS-57-62 (5.3 ppb)]	17600								ubangular to subround; some silt; little grant	ule to large pel	obles,	Approximate depth of water	
	48_					SM						table.	
grained, angular to subround; some sitt, little granule to very large pebbles, angular to subangular; wet SM SM SM SM SM SM SM SM SM S	_49												
	50												0 gal of water
	30_								ebbles, angular to subangular; trace cobbles	granule to very s, angular to si	y iarge ubangular;		
IRZ-23-SS-50-55	51_					SM							
IRZ-23-SS-50-55													
53	_52_		IR7-23-SS-										
	53_									dum to very la	ige pebble,		
								$\ \ $					
	54												
57 ₁₂₀	55												
57 ₁₂₀						MI							
RZ-23-SS-55-60	56					IVIL							
58 59 60 IRZ-23-VAS- 57-62 (5.3 ppb) SM (59.5 - 62.0') Silty sand with gravel (SM); brown (7.5YR 5/3); very fine	_57_	120											
IRZ-23-VAS- 57-62 (5.3 ppb) SM (59.5 - 62.0') Silty sand with gravel (SM); brown (7.5YR 5/3); very fine			IRZ-23-SS- 55-60					$\ \ $					
(5.3 ppb) SM (59.5 - 62.0') Silty sand with gravel (SM); brown (7.5YR 5/3); very fine	_58_												
SM (59.5 - 62.0') Silty sand with gravel (SM); brown (7.5YR 5/3); very fine	[$\ \ $					
	<u> </u>						i i		ED E (2001) (2)(h)1	100 /7 EVP E/0), vor : f		
rvotes. USCS – Onlined Soil Classification System, U – not detected above the laboratory reporting limit, ppb = Parts per Billion.		110	CC - Unific	d Soil Classif	ination C:		<u> </u> 					por Pillion	
	inoles:	05	CO – Unille	u ouii Ciassii	ication 5)	rsielli, U	<u> </u>	ot de	естей ароле пів іарогатогу геропі	пу шпц, рр	u – Paris	pei Dillion.	

RZ_23_VAS_	AR	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet	:: 4 of	8
Comparison Com							· · · · · · · · · · · · · · · · · · ·	Bor	ing No	: IRZ-23	Pilot
Total Depth: 147 ft bg. Location: Groundwater Remedy Phase Depthie Name: Streey Vasquez Sereko Dismaters 6 in Needles, California Needle							•	_			
Driller Name Steve Vasquez Sorehole Diameter: 6 in Needles, California	_				_	•	•			ratas Dasa adv	Dhasal
Delining Assist N. Deminguez/C. Alverez Depth to First Water: NA Congert Connor Mills San McGrane San	_		•				•	_ Location:		•	<u>Phase i</u>
Control Sean McCrane Sampling Interval Continuous Project Number: Topock			•					_	<u>ineedies</u>	Calliottila	
Saan McGrane Saan McGrane Sampling Interval: Continuous Continuous	_			VEIGZ	•			- Project Ni	umber: To	nnock	
Meather: Particy Cloudy 46 to 74 F. Converted to Well: Yes No						-		_ 1 10,00011	umbon. <u>10</u>	роск	
Sumple D Groundvater Sample D Groundvater Sample D S				74 F	•	•		_			
RZ_23_NAS_	1	Sieve	Groundwater		1	Τ				Drilling Notes	Drilling Flui
RZ_23_SS_60.65 RZ_23_SS_60.65 RZ_23_VAS_60.65 RZ_23_VAS_60	61		57-62		SM				silt; little		
RZ_23_SS_60.65 RZ_23_SS_60.65 RZ_23_VAS_60.65 RZ_23_VAS_60	62										
SM SM SM SM SM SM SM SM	63 64 						grained to very coarse grained, angular to s very large pebbles, subangular to subround	ubroùnd; some	granule to	were very	5
RZ-23-VS-67-72 (85 ppb) RZ-23-SS-70-75 RZ-23-SS-75-80 RZ-23-SS-75-8	66 67120				SM						
IRZ-23-SS-70-75 IRZ-23-SS-70-75 IRZ-23-SS-70-75 IRZ-23-SS-70-75 IRZ-23-SS-70-75 IRZ-23-SS-70-75 IRZ-23-SS-70-75 ML IRZ-23-SS-75-80 IRZ-23-SS-75-80	69 70 71		67-72		SM		grained to very coarse grained, angular to s very large pebbles, subangular to subround	ubround; little g	granules to		0 gal of wat used
	72						plasticity; little very fine to medium grained strace granule to small pebbles, angular to si	sand, angular to	o subround;	was tough, cores came out hot and	
	76 77 120 78				ML						
Notes: USCS = Unified Soil Classification System, U = not detected above the laboratory reporting limit, ppb = Parts per Billion.	80										
	Notes: US	SCS = Unifie	d Soil Classif	cation Sy	stem, Ū	= not	etected above the laboratory repor	ting limit, pp	b = Parts	per Billion.	

9/	AR (CADIS	Design & Consultancy for natural and built assets		Во	ring	g Log		Sheet	: 5 of	8
Date 9					_ Surface			Bor	ing No.	: <u>IRZ-23</u>	Pilot
	-	eted: <u>12/03/</u>			_ Northing		•				
Drilling	-	Casca			_ 0				PG&E		
Drilling	-		Drilling			-	<u>147 ft bgs</u>			ater Remedy	/ Phase I
Driller			Vasquez				meter: 6 in		Needles,	California	
Drilling	-		ninguez/C. Al		•						
Logge		Conno			- '	-		Project N	umber: <u>To</u>	pock	
Editor			<u>McGrane</u>		_ Samplir	-					
Weath	ner:	<u>Partly</u>	Cloudy 46 to	74 F	_ Convert	ed to	Well: ☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Descriptio	n		Drilling Notes	Drilling Fluid
 81 					ML						
82							(82.0 - 84.5') Silty sand (SM); brown (7.	5YR 4/4); very fine	grained to		
83 		IRZ-23-SS- 80-85			SM		coarse grained, angular to subangular; pebbles, angular to subangular; wet	and silt; Íittle ģranu	e to large		
84								(5)(5,5(4)			
85							(84.5 - 87.0') Sandy silt (ML); reddish br little granule to medium pebbles, angula to coarse grained sand, angular to suba	r to subangular; litt	le very fine		
86					ML						
87	108	IRZ-23-SS-					(87.0 - 94.5') Silty sand (SM); brown (7.	5YR 4/4); very fine	grained to		
88		85-90					coarse grained, angular to subangular; pebbles, angular to subangular; little cla	some silt; little gran y; wet	ule to large		
 89											
90											0 gal of water
							실 실				used
91					SM						
L _							<u>뙼</u>				
92							역 성				
		IRZ-23-SS-					역 성				
93		90-95									
 94											
	1		IRZ-23-VAS- 92-97								
 95			(<0.033 U				(94.5 - 97.0') Silty sand (SM); reddish bi			1	
			ppb)		ew.		very coarse grained, angular to subroun medium pebbles, angular to subround; v		ranule to		
96					SM						
							화 당				
97	120	JD7 00 00					(97.0 - 102.0') Silty sand (SM); dark yell	owish brown (10YF	R 4/4); fine		
98		IRZ-23-SS- 95-100					grained to very coarse grained, angular granule to large pebbles, angular to sub	to subround; some angular; wet	silt; trace		
99					SM						
100	- 54										
Notes	US	CS = Unifie	d Soil Classifi	cation S	ystem, U	= not	detected above the laboratory re	porting limit, pr	b = Parts	per Billion.	ı
				,	- , .		,	, , , , , ,		-	

SM Comparison	9/	AR(CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet	: 6 of	8
Date Completed: 12/03/2018 Northing (NADS): NIA						_			Bor	ing No.	: IRZ-23	Pilot
Deliling Methods Sonic Drilling Drilling Methods Sonic Drilling Drilling Asst Drilling		-						•	_			
Daller Name: Needles, California Need		-										
Delining Assit. N. Deminguez/C. Alverezy Depth to First Water: MA Logger Editor Sean McGrane Sampling Method: 10ft Core Barrel Sean McGrane Sampling Method: 10ft Core S	`	•		•			-	_			•	Phase I
Section Seam McGroene Sampling Interval Continuous Partly Cloudy 46 to 74 F Converted to Well: Yes No				-					_	Needles,	California	
Sam McGrane Sample ID Sa	_	-		•					_			
Partly Cloudy 46 to 74 F Converted to Well: Yes No						-	-		_ Project Nu	ımber: <u>To</u>	pock	
Sample ID Samp						-	-		_			
IRZ-23-88- 100-105 IRZ-23-88- 100-105 IRZ-23-88- 100-105 IRZ-23-88- 106-110 IRZ-23-88- 106-110 IRZ-23-88- 106-110 IRZ-23-88- 106-110 IRZ-23-88- 106-110 IRZ-23-88- 106-110 IRZ-23-88- 1106-110 IRZ-23-88- 1106-1100 IRZ-23-88- IRZ-2	Weath	er:	Partly (Cloudy 46 to		Conver	ted to V	Vell:				1
102 103	Depth (ft)	Recovery (in)			Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Fluid
103	 _101_ 					SM						
100-105 100-106 100-107 100	_102_						P ((102.0 - 103.0') Silty gravel (GM); brown (7.9	5YR 4/4); granı	iles to very		
104 106 106 107 107 107 107 107 107 107 107 107 107						GM	h MK	large pebbles, angular to subangular; some	silt; little very fi	ne to		
104. 105. 106. 107. IRZ-23-SS- 105-110 IRZ-23-SS- 110-115 IR	103						0 0	subangular; dry		•		
subangular; wet 106	104							(10YR 4/4); fine grained to very coarse grain	ned, subangula	r to		
100. 100. 100. 100. 100. 100. 100. 100. 110. 110. 110. 111. 111. 112. 113. 114. 115. 116. 117. 118. 118. 118. 118. 119. 119. 110. 110. 110. 110. 110. 110. 110. 110. 110. 110. 110. 110. 110. 110. 110. 110. 110. 110. 111. 111. 112. 113. 114. 115. 116. 117. 118. 118. 119. 119. 110.	104								ebbles, aligulai	10		
105. 107. 108. 108. 108. 109. 109. 110. 110. 111. 111. 112. 114. 115. 116. 117. 118. 118. 118. 118. 119. 119. 110. 110. 110. 111. 111. 111. 111. 111. 111. 111. 112. 113. 114. 115. 116. 117. 118. 118. 118. 119. 119. 110. 110. 110. 110. 110. 110. 111.	105											
IRZ-23-SS- 108 172 120 IRZ-23-SS- 110 172 120 IRZ-23-SS- 110 173 174 175 175 175 175 175 175 175 175 175 175	100					SM						
IRZ-23-SS- 108 172 120 IRZ-23-SS- 110 172 120 IRZ-23-SS- 110 173 174 175 175 175 175 175 175 175 175 175 175	106											
IRZ-23-SS-108-110 IRZ-23-SS-108-110 IRZ-23-SS-108-110 IRZ-23-SS-110-115												
IRZ-23-SS-108-110 IRZ-23-SS-108-110 IRZ-23-SS-108-110 IRZ-23-SS-110-115	107											
108 109-110 109 10								(107.0 - 117.0') Silty gravel (GM); brown (10 pebbles, subangular to subround; little fine t	YR 4/3); granu to very coarse c	les to large rained		
110	_108_		105-110				PAR	sand, angular to subround; little silt; little cla	y; dry; potentia	contact of		
110								, 0				
110	_109_											
IRZ-23-SS- 1115 116 117 IRZ-23-SS- 118 IRZ-23-SS- 118 IRZ-23-SS- 118 IRZ-23-SS- 118 IRZ-23-SS- 118 IRZ-23-SS- 118 SM IRZ-23-SS- 118 IRZ-23-SS- 118 IRZ-23-SS- 118 SM IRZ-23-SS- 119 IRZ-23-SS-												
1112	_110_						9					0 gal of water
IRZ-23-SS- 110-115 IRZ-23-SS- 116 IRZ-23-SS- 117 IRZ-23-SS- 118 IRZ-23-SS- 115-120											4004	
IRZ-23-SS- 110-115 114 115 116 117 IRZ-23-SS- 115-120 IRZ-23	_111_						Para					
IRZ-23-SS-110-115 IRZ-23-SS-110-115 IRZ-23-SS-110-115 IRZ-23-SS-115-120												
114	_112_	120				GM	Para					
							P P					
	113											
	-						PXP					
IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 SM IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- IRZ	114						1					
IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 SM IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- IRZ							P P					
IRZ-23-SS- 115-120 IRZ-23-SS- 119 110 IRZ-23-SS- 110 IRZ-23-SS- 110 IRZ-23-SS- 115-120 IRZ-23-SS- 11	115											
IRZ-23-SS- 115-120 IRZ-23-SS- 119 110 IRZ-23-SS- 110 IRZ-23-SS- 110 IRZ-23-SS- 115-120 IRZ-23-SS- 11							P. P. P					
IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 SM IRZ-23-SS- 115-120 IR	_116_											
IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 IRZ-23-SS- 115-120 SM IRZ-23-SS- 115-120 IR	447						P P					
granule to medium pebbles, angular to subangular; wet; tight formation, potential contact of weathered bedrock. SM SM	11/		ID7 22 CC		<u> </u>			(117.0 - 122.0') Silty sand with gravel (SM);	brown (7.5YR	1/4); very		
			115-120					granule to medium pebbles, angular to suba	angular; wet; tig	t; little ht	aniing, ary	
	118							formation, potential contact of weathered be	edrock.			
						SM						
	119											
	120 Notes:	US	SCS = Unified	d Soil Classifi	cation Sv	vstem. U	= not c	etected above the laboratory repor	tina limit, pp	b = Parts	per Billion	
, , ,						,, 0			J, FF			

	ADIS	Design & Consultancy for natural and built assets		Bo	rın	g Log		Sheet:	7 of	8
ate Started	·	/2018		Surface		· · · · · · · · · · · · · · · · · · ·	Bor	ing No.	IRZ-23	<u>Pilot</u>
	eted: <u>12/03</u>			Northin	- '	•				
illing Co.:	Casca			Easting	•	•	Client:	PG&E		DI I
illing Meth		Drilling				147 ft bgs	Location:		ater Remedy	<u>Phase I</u>
iller Name		Vasquez		Boreho			-	Needles,	California	
illing Asst:		minguez/C. A		•		t Water: N/A	Droiget Ni	umber: <u>To</u> r		
gger: itor:		or Mills McGrane		Sampliı Sampliı	-		. Project Ni	umber: <u>ro</u> p	DOCK	
eather:		Cloudy 46 to		Conver	-		•			
	railly	T Cloudy 40 to		T	T IC	Tes Mino				<u> </u>
(ft) (Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Flu
_ 21_ _				SM						
22 120	IRZ-23-SS- 120-125					(122.0 - 127.0') Sandy silt with gravel (ML); you no plasticity; little granule to medium pebbles little fine to medium grained sand, angular to	, angular to sໍເ	ubangular;		
4 5		IRZ-23-VAS- 122-127 (2000 ppb)		ML						
6										
78	IRZ-23-SS- 125-130					(127.0 - 133.0') Silty sand (SM); (5YR 4/8); fil grained, angular to subround; some silt; little pebbles, angular to subangular; wet; granules of trace pieces of metadiorite 1-4 in. dia.	granule to me	dium		
30	IRZ-23-SS- 130-135			SM						0 gal of wa used
34_ -						(133.0 - 136.5') Sandy silt (ML); reddish brow some very fine to medium grained sand, ang granule to medium pebbles, angular to subro	ular to subrou			
35 - 36				ML						
37				GM		(136.5 - 137.0') Silty gravel (GM); dark gray (
38	IRZ-23-SS- 135-140			GM		very large pebbles, angular to subangular; so medium grained sand, angular to subangular (137.0 - 139.5') Silty gravel with sand (GM); r brown(5YR 4/4); granules to large pebbles, a some silt; little fine to coarse grained sand, at clay; wet; trace pebbles of metadiorite 20-70	; dry eddish brown ngular to suba ngular to subro	/ moderate		
39		IRZ-23-VAS-		1	101	1				
39					[ト]	1		ı		
39 _ 40		139-144 (3000 ppb)		SM		(139.5 - 142.0') Silty sand (SM); yellowish red	(5YR 4/6); ve	ery fine		

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring I	Log		Sheet:	8 of	8
Date S	Started	: <u>11/28/</u>	2018	;	Surface	Elevation	n: <u>N/A</u>	Bori	ina No.:	: <u>IRZ-23 I</u>	Pilot
	•	eted: <u>12/03/</u>				g (NAD83	•				
Drilling	-	<u>Casca</u>			-	(NAD83)		Client:	PG&E		
Drilling	•		<u>Drilling</u>		Total D	-	_	Location:		ater Remedy	Phase I
Driller			Vasquez				ter: 6 in		Needles,	California	
Drilling Logge	-	Conno	<u>ninguez/C. A</u> r Mills			ng Method	ater: <u>N/A</u> d: <u>10 ft Core Barrel</u>	Project Nu	ımber: Tor	nock	
Editor:			McGrane			ng Interva		i iojective	11110C1. 10	JOOK	
Weath			Cloudy 46 to		-	ted to We					
	>										
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Description			Drilling Notes	Drilling Fluid
141			IRZ-23-VAS-		SM	to	rained to coarse grained, angular to subround medium pebbles, angular to subround; wet; letadiorite 10-40 mm.				
142	120		139-144 (3000 ppb)			(1	42.0 - 147.0') Topock - Competent Bedrock		te: Silt with	142' Drill was	
143			(3000 ppb)			Sa co	and (ML); yellowish red (5YR 4/6); no plastici parse grained sand, subangular to round; trad bund; dry; hard; strong cementation	ty; little very f	ine to	tough with rig chattering.	
 144		IRZ-23-SS- 140-147		Topock -							0 gal of water used
				Competent Bedrock - conglomerate	ML						
146											
DT 1/4/19											
ဗ္ဗိ <u>147</u>							End of Boring at 147.0 'b	ogs.			
80927 8							G	J			
^{ଞ୍ଚ} ୍ଚ148											
ARCAI											
149_											
원 8 150											
3ASE											
ĕ 4 _151_											
0.000											
្ត្រ											
LES/12											
트 153											
9019											
<u>154</u>											
DRAFT -											
ਲੋ155											
156											
WENTS!											
157_											
SRANE											
158											
SYNSER											
출 159											
08E TO											
្ <u>នី 160</u> Notes:	LIS	CS = Unifie	d Soil Classif	ication Svs	tem. II	= not det	ected above the laboratory reportin	na limit ppl	b = Parts r	er Billion	
ORING NO.		SS SIMILO		.sanon Oyo	, 0		assis abore the laboratory reporting	.g, pp	- 1 4110	. 5. Dilliott.	
SOIL B											

AR	CADIS	Design & Consultancy for natural and built assets		Во	ring	g Lo	g	DI) A F			Sheet	: 1 of	9
Date Starte	d: <u>12/04/2</u>	2018		Surface	Eleva	ation:	N/A	Ur	RAFT		Bori	na No.	: <u>IRZ-25-</u>	Pilot
	eted: <u>12/12/2</u>			Northin	- '		N/A						· <u> </u>	
Drilling Co.:				Easting	•	083):	N/A					PG&E		DI I
Drilling Metl		Orilling		Boreho	-	matarı		bgs		_ Loca			ater Remedy	Phase I
Driller Name Drilling Asst		√asquez ninguez/C. A	lvoroz							_		<u>ineedies,</u>	California	
	. <u>IN. Doll</u> Connoi	•	iverez	Samplir				ore Barre		– Proi	ect Nu	ımher: To	nock	
Logger: Editor:	' <u>'</u>	/IcGrane		Samplir	-		Conti		·I	_ 1 10j	ect ivu	iiiibei. <u>10</u>	роск	
Weather:		cool to warm	1	Conver	•			es 🗵 No		_				
			,		<u> </u>									
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS				Description				Drilling Notes	Drilling Fluid
1				SP-SM		(4'); 0. (4.5 - 6/3); v trace g subrous subro	5 ft thick (2.0') Pocery fine granules to find to round; sangular; littlers, angular; can determine the first angular; littlers, angular; can determine the first angular; littlers, ang	ell graded sa 3); very fine g e granules to e silt; trace co ar to subangu	n (10YR 3/2); ba	gravel (se grain se grain se grain se grain se grain se grain se grain se grain	ale brow bround; ind; trace	vn (10YR little silt; e cobbles,	7' rough drilling.	0 gal of water used
17				SM		graine granul angula (19') g	d to coarses to very r to suba	se grained, ar / large pebble ngular; trace	gravel (SM); br ngular to suban es, angular to s boulders, angu hite (10YR 8/1) ry hard.	ngular; so ubround ular to su	ome silt; l; trace c ıbangula	little cobbles, ar; dry		
20	CC - 11-:4:	1 Soil Ol:	ignation C:	otom !!	[] [] - n-t	dotast	d ch -	o tha laba	rotor: ro	tina !:-	nit r-	h = Da-t-	nor Dillion	
Š Notes: U	SCS = Unified	ı Suii Ciassit	ication Sy	rstem, U	<u> - not</u>	uelecte	u apov	e uie iabo	ratory repor	ung iir	ııı, ppi	u – Parts	per billion.	
H BO														
os														

A	RC/	IDIS	Design & Consultancy for natural and built assets		Во	riı	nç	g Log		Sheet	t: 2 of	9
Date Sta		12/04/			Surface				Bor	ina No	.: <u>IRZ-25-</u>	Pilot
		d: <u>12/12/</u>			_ Northin	• •		,				
Drilling (<u>Casca</u>			Easting				Client:	PG&E		
Drilling N					Total D			<u>172 ft bgs</u>			vater Remedy	Phase I
Driller N			Vasquez						-	Needles,	, California	
Drilling A	ASSI.		minguez/C. A or Mills	iverez	-				- Droiget Nu	umbor: To	nook	
Logger: Editor:			McGrane		₋ Samplir ₋ Samplir	-			_ Project Ni	ullibel. <u>10</u>	роск	
Weather	r·		cool to warm	1	_ Conver	_			-			
		Carring	COOI to Waini			T						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	nscs	Class	Description			Drilling Notes	Drilling Fluid
23	10				ML			(29.5'); to 32' powerdized rock and solid core composed of metadiorite. (32.0 - 40.0') Silty sand with gravel (SM); palfine grained to medium grained, angular to subround; trace boulders, angular composed of metadiorite.	e brown (10YF	o subround; ice cobbles, ; dry ers R 6/3); very		0 gal of wate used
37												
40 Notos:	Hecc	: = I Inifia	d Soil Classif	ication S	ustom 11	<u> </u>		detected above the laboratory reserve	ing limit no	h - Dorto	por Pillion	
Notes:	0808	s = Unitie	u Soil Classif	ication Sy	ysiem, U	= n	OI (detected above the laboratory report	ırıg ilmit, pp	ou = Parts	per Billion.	

			Design & Consultancy for natural and built assets		ВО	rıng	ı Log		Sheet	3 of	9
	arted:		/2018		Surface		· · · · · · · · ·	Bor	ing No.	: <u>IRZ-25-</u>	Pilot
	-	ed: <u>12/12</u>			•		•	_			
rilling		<u>Casca</u>				•	•	_ Client:	PG&E	ater Remedy	Dhasa I
Orilling Oriller N			Drilling Vasquez				<u>172 ft bgs</u> neter: <u>6 in</u>			<u>ater Remedy</u> California	Phase i
rilling			minguez/C. A					_	<u>recuics,</u>	Odillorrila	
ogger:			or Mills		Samplin			- Project Ni	umber: To	oock	
ditor:			McGrane		Samplin	_		- , -			
Veathe	er:	Sunny	cool to warn	<u>n</u>	Convert	ed to	Well: ☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Flui
_41					GM		(40.0 - 41.5') Silty gravel with sand (GM); pa granules to very large pebbles, angular to su medium grained sand, angular to subangula angular to subround; dry	ıbround; some	very fine to		
42 43 44 45 46	9				GW-GM		(41.5 - 49.5') Well graded gravel with silt and brown (7.5YR 6/4); granules to very large pe subround; some cobbles, angular to subrour medium grained sand, angular to round; little	bbles, subang nd; little very fir	ular to		
_47 _48 _49		RZ-25-SS- 47-52					(47'); moist; to 49.5 ft bgs (49.5 - 52.0') Silty sand with gravel (SM); bro	110VP 5/2) year fine	49.5'	
_50	9.5	41.02			SM		grained to very coarse grained, subangular t granules to medium pebbles, angular to sub	o subround; so angular; some	ome silt; wet	Approximate depth to water table.	
5354		RZ-25-SS- 52-57	IRZ-25-VAS- 52-57 (3500 ppb)		GM		(52.0 - 57.0') Silty gravel with sand (GM); red angular to subangular; some very fine to coa to subangular; some silt; little clay; dry to mo	arse grained sa	YR 5/4); ınd, angular		
_56											
58		RZ-25-SS- 57-62			ML		(57.0 - 59.5') Sandy silt (ML); reddish brown and very fine to very coarse grained sand, a granules to small pebble, angular to subang strong cementation	ngular to subar ular; wet to dry	ngular; little ; stiff;		
					GM	CK}	(59.5 - 68.0') Silty gravel with sand (GM); red	ddish brown (5	YR 5/4);		
60 lotes:							detected above the laboratory report				

, , ,, , ,	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet:	4 of	9
ate Started				Surface			Bor	ing No.	: <u>IRZ-25-</u>	Pilot
ate Comple illing Co.:	ted: <u>12/12/</u> <u>Casca</u>			Northin Easting	• `	•	_	PG&E		· · ·
lling Co Iling Meth		<u>Drilling</u>				172 ft bgs			ater Remedy	Phase I
ller Name		Vasquez		Boreho			Location.	Needles,	-	THUSCT
lling Asst:		minguez/C. A				Vater: N/A	_	,	<u> </u>	
gger:		or Mills		Samplin			_ _ Project Ni	umber: <u>To</u> r	oock	
tor:		McGrane		Samplir	-					
ather:	Sunny	cool to warm	1	Conver	ted to	Vell: ☐ Yes ⊠ No				
(ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Flu
1	IRZ-25-SS- 57-62					granules to very large pebbles, angular to s to coarse grained sand, angular to subangu dry to moist				
- 3 - 4 - 5 - 6 -	IRZ-25-SS- 62-67	IRZ-25-VAS- 62-67 (620 ppb)		GM						
- - - - -	IRZ-25-SS- 67-72			SM		(68.0 - 72.0') Silty sand with gravel (SM); revery fine grained to very coarse grained, su some silt; little granules to medium pebble,	bangular to sub	round;		0 gal of wa used
10	IRZ-25-SS- 72-77			SM		(72.0 - 77.0') Silty sand with gravel (SM); ye yellowish brown(10YR 5/4); fine grained to subangular to subround; some silt; little gra angular to subround; wet	very coarse gra	ined,		
7 - 3 - 9	IRZ-25-SS- 77-82			GM		(77.0 - 79.5') Silty gravel with sand (GM); regranules to large pebbles, angular to subarvery coarse grained sand, angular to subro	ngular; some ver und; little silt; we	ry fine to		
n -				SM		(79.5 - 87.0') Silty sand with gravel (SM); re	eddish brown (5)	YR 5/4);		

A	ARCADIS Design & Consultancy for natural and built assets					rin	g	Log		Sheet	: 5 of	9
Date St		·			Surface			· · · · · · ·	Bor	ina No.	: IRZ-25-	Pilot
	•	eted: <u>12/12</u>			Northin			•	_			
Drilling		<u>Casca</u>			Easting	•		•	Client:	PG&E	ratan Danasah	Dhasal
Drilling I Driller N			<u>Drilling</u> Vasquez		Borehol	-		<u>172 ft bgs</u> ter: <u>6 in</u>			rater Remedy California	Phase I
Drilling A			minguez/C. A					ater: N/A	-	ivecuies,	Camorna	
Logger:			or Mills		Samplir				- ₋ Project Νι	ımber: To	pock	
Editor:			McGrane		Samplir	-					•	
Weathe	r:	Sunny	cool to warn	<u>n</u> (Conver	ted to	o W	ell: ☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	nscs		Description			Drilling Notes	Drilling Fluid
81 82	5	IRZ-25-SS- 77-82					c	ery fine grained to very coarse grained, suba ranules to medium pebbles, angular to suba obbles, angular to subangular; wet; cobbles	angular; little si	lt; trace		
83	J											
84		IRZ-25-SS-			SM							
85		82-87										
86												
87 B B B B B B B B B B B B B B B B B B B							fi	87.0 - 94.5') Silty sand with gravel (SM); redo ne grained to very coarse grained, subangul ttle granules to medium pebble, angular to s	lar to round; so	me silt;		
- 88 _ R8								arge pebbles	0			
99	9	IRZ-25-SS- 87-92										0 gal of water
Sk DATABASE					SM							used
8/TOPOG												
92												
9393												
94		IRZ-25-SS-	IRZ-25-VAS- 92-97									
95		92-97	(130 ppb)		ML		lì	94.5 - 95.5') Gravelly silt (ML); reddish browr ttle granules to medium pebble, angular to sio o very coarse grained sand, angular to subai ebbles composed of metadiorite	ubangular; littl	e very fine		
96					SM		(b	95.5 - 97.0') Silty sand with gravel (SM); redo rown(5YR 4/4); very fine grained to very coa ubround; some granules to large pebble, and ome silt; trace cobbles; wet; cobble composi	arse grained, a	ngular to gular		
97							(97.0 - 102.0') Well graded sand with silt and	gravel (SW-SI	M); light		
		IRZ-25-SS-					r c t	eddish brown / light brown(5YR 6/4); fine gra rained, angular to round; some small to very o subangular; some silt; wet; trace very large netadiorite.	ained to very co / large pebbles	oarse , angular		
		97-102			SW-SM							
100				1								
Notes:	US	CS = Unifie	d Soil Classi	fication Sys	tem, U	= no	t de	tected above the laboratory reporti	ing limit, pp	b = Parts	per Billion.	
IL BOR												
OS												

		ADIS	Design & Consultancy for natural and built assets		DU	1111	ıy	Log		Sheet	6 of	9
ate St					Surface				Bor	ing No.	: <u>IRZ-25</u> -	<u> Pilot</u>
ate Co rilling	-	ted: <u>12/12/</u> <u>Casca</u>			Northing Easting			•	Client:	PG&E		
rilling			<u>Drilling</u>		_	•		172 ft bgs			ater Remedy	Phase I
riller N			Vasquez		Boreho	-		<u> </u>			California	1 11400 1
rilling	Asst:	N. Dor	minguez/C. /	Alverez	Depth t	o Fi	rst V	ater: <u>N/A</u>				
ogger:			or Mills		Samplir	-			Project N	umber: <u>To</u>	oock	
ditor:			<u>McGrane</u>		Samplin	-						
eathe	r:	Sunny	cool to warr	_	Conver	ted	to W	ell: Yes 🗵 No				
(ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic	USCS	nscs	Class	Description			Drilling Notes	Drilling Flui
01_		IRZ-25-SS- 97-102			SW-SM							
02	9.5				ML	***		102.0 - 103.5') Sandy silt with gravel (ML); liq rown(5YR 6/4); little granules to large pebblo ubangular; little very fine to very coarse grai ubround; little clay; trace cobbles; wet; conte	es, angular to ned sand, sub	pangular to		
-						6	H	netadiorite 103.5 - 109.5') Silty gravel (GM); reddish bro	wn (5YR 5/4)	; granules		
04		IRZ-25-SS-					· I\ I	o large pebbles, angular to subround; some oarse grained sand, angular to subround; tra ebble	silt; little very ace; wet; trace	tine to very e very large		
)5		102-107					, D	ebble				
						Pal						
06												
+					GM	2						
07												
00							4					
28						6						
09							7					
		IRZ-25-SS-				50						
10		107-112						109.5 - 117.0') Silty sand with gravel (SM); (ery coarse grained, subangular to subround	; some granul	es to very		0 gal of wate
4								arge pebbles, angular to subround; some silt race very large pebbles to small cobbles con				used
11_												
+												
12_	10											
12												
13_					SM							
14_												
		IRZ-25-SS-	IRZ-25-VAS- 112-117									
15		112-117	(< 0.17 U ppb)									
1												
16												
4												
17				 -		+	+	117.0 - 119.5') Silty sand with gravel (SM); re	eddish brown	/ moderate		
-								rown(5YR 4/4); very fine grained to very coab subround; little granules to medium pebble	rse grained, s	subangular		
18		IR7-25-99			SM			ttle silt; little clay; wet	<u> </u>	,		
19_		IRZ-25-SS- 117-122										
الـ					ML	T		119.5 - 124.5') Sandy silt with gravel (ML); re	eddish brown	/ moderate		1
20								tected above the laboratory reporti				

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	g Log		Sheet:	7 of	9
Date S		· · · · · · · · · · · · · · · · · · ·			Surface		· · · · · · · · · · · · · · · · · · ·	Bor	ina No.:	IRZ-25-	Pilot
		eted: <u>12/12/</u>			Northing		•				
Drilling	-	<u>Casca</u>			Easting	•	•	Client:	PG&E		DI 1
Drilling Driller			<u>Drilling</u> Vasquez		Total De Borehol		172 ft bgs meter: 6 in	Location:	Needles,	ater Remedy	/ Phase I
Drilling			<u>vasquez</u> minguez/C. A				meter: <u>6 in</u> Water: <u>N/A</u>		ineedles,	Callionnia	
Logge			or Mills		Samplin			Project Nu	umber: <u>Top</u>	nock	
Editor:			McGrane		Samplin			i roject i i	иппост. <u>то</u> р	DOOK	
Weath			cool to warn		Convert						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class				Drilling Notes	Drilling Fluid
	10	IRZ-25-SS- 117-122			ML		brown(5YR 4/4); some very fine to very coarse to subround; little granules to medium pebbles wet				
 123 _124_ 		IRZ-25-SS- 122-127			IVIL	in dece	(124.5 - 127.0') Silty sand (SM); reddish brow	n / moderate	brown/5VP		
125 126 127		122-121			SM		4/4); very fine grained to coarse grained, suba some silt; little granules to medium pebbles, a wet	angular to sub ngular to sub	oround; angular;		
128	10	IRZ-25-SS- 127-132			GM		(127.0 - 132.0') Silty gravel with sand (GM); regranules to large pebbles, angular to subangular to coarse grained sand, angular to subangmoderate cementation	ılar; and silt; li gular; dry to n	ittle very noist;		0 gal of water used
133 134 135 136	10	IRZ-25-SS- 132-137			ML		(132.0 - 137.0') Sandy silt with gravel (ML); re brown(5YR 4/4); no plasticity; little granules to angular to subangular; little very fine to very cangular to subround; dry to moist	medium peb	bles,		
137 138 139 		IRZ-25-SS- 137-142			ML		(137.0 - 139.5') Sandy silt (ML); reddish brown 4/4); no plasticity; some very fine to coarse gr subround; little granules to medium pebbles, a little clay; wet; dessicated	ained sand, a angular to sub	ingular to pangular;		
Notes:	US	CS = Unifie	d Soil Classi	fication Sy	stem, U	= not	detected above the laboratory reporting	ng limit, pp	b = Parts p	er Billion.	
									•		
131											
_				_	_				_		

9/	AR(CADIS	Design & Consultancy for natural and built assets		Во	rir	ng	Log		Sheet	: 8 of	9
Date S					Surface				Bor	ing No.	: <u>IRZ-25-</u>	Pilot
		eted: <u>12/12/</u>			٠,			•	_			
Drilling Drilling	•	Casca	ae Drilling		_	•		3): N/A 172 ft bgs	Client:	PG&E Groundw	ater Remedy	Phase I
Driller	-		Vasquez			-		-			California	riiase i
Drilling			minguez/C. A						-			
Logge	-		or Mills		Samplin				_ Project Nu	umber: <u>To</u>	pock	
Editor:			<u>McGrane</u>		Samplin	_			_			
Weath	er:	Sunny	cool to warn		Convert	ed 1	to V	Vell: ☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	SOSO	Class	Description			Drilling Notes	Drilling Fluid
141		IRZ-25-SS- 137-142						brown(5YR 4/4); no plasticity; little granules is angular to subangular; little very fine to coars to subangular; little clay; hard	to medium peb se grained san	bles, d, angular		
142	10											
L -	10											
143												
144		IRZ-25-SS-			ML							
145		142-147										
146												
[5]147						7. 45.	গ্ৰ	(147.0 - 157.0') Silty sand with gravel (SM); r	roddiob brown	(EVD 4/2):	147' very	
R0927 PI								fine grained to very coarse grained, subangu granules to large pebbles, angular to subrou	ılar to round; so	ome	loose saturated	
_148								cobbles, angular to subangular; wet; trace sr metadiorite	nall cobbles co	omposed of	material with potential to	
ତ୍ୟୁ ଅ149											poduce a lot of water.	
9.90-1-19		IRZ-25-SS-	IRZ-25-VAS- 147-152									
150_		147-152	(3600 ppb)									0 gal of water
DATABASE 121												used
출 151												
POTOPO –												
152	9				SM							
= - -												
153												
154_												
AFT BO		IRZ-25-SS-										
원 155		152-157										
- Ae TOP												
156												
DCUME:												
0157	9						11:1	(157.0 - 162.0') Gravelly silt (ML); reddish bro	own (5YR 5/4);	; no		
38WCG 158_								plasticity; little granules to large pebbles, and very fine to medium grained sand, angular to	jular to subang subangular; d	guiar; ιιττί e Iry		
USERS					ML							
្តី					IVIL							
%E TOP,												
្ន <mark>ី 160</mark> SNotes:	110	CS = Unific	d Soil Classi	fication S	stem II		Ot 4	etected above the laboratory report	ing limit po	h = Parte	ner Billion	
JI NOIES.	. 03	Jos – Offille	u 0011 014551	noadon O	rateiri, U	- 110	or u	oloolog above the laboratory report	ing illilit, pp	– i aits	אסווווטוז.	
SOIL B												

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	rinç	g Log		Sheet:	9 of	9
Date S					Surface		-	Bor	ing No.	: <u>IRZ-25-</u>	Pilot
Date 0	-	eted: <u>12/12/</u> <u>Casca</u>	2018	[[Northing		•	Client:	PG&E	<u> </u>	
Drilling	-		<u>ue</u> Drilling				,			ater Remedy	Phase I
Driller	-		Vasquez					Location.		<u>California</u>	1 11400 1
Drilling	g Asst:	N. Dor	ninguez/C. A	lverez [Depth to	First					
Logge			or Mills		Samplin	-		Project Nu	ımber: <u>To</u> p	pock	
Editor			McGrane		Samplin	-					
Weath	1	Sunny	cool to warn		Convert	ea to	Well: ☐ Yes ⊠ No				1
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
161					ML						
162											
163							(162.0 - 166.0') Gravelly silt (ML); reddish brown (5YR 4/4); low plasticity; some granules angular to subround; little very fine to coarse gubround; wet; stiff	to medium p	ebbles,	162' Drill rods chattering	
164		IRZ-25-SS- 162-166	IRZ-25-VAS- 162-167 (3000 ppb)		ML						
165 166			(3000 μμω)								0 gal of water
167167	5						(166.0 - 172.0') Topock - Competent Bedrock silt (ML); reddish brown (5YR 5/4); no plasticit pebbles, angular to subangular; little very fine sand, angular to subangular; dry; moderate ce	y; little granul to medium gr	es to large		used
RCADIS 20180927 168				Topock -							
169 170 170				Competent Bedrock - conglomerate	ML						
- 171_											
01/817 172											
ES/12.				-	•	1	End of Boring at 172.0 'b	ogs.	I		I.
173_ 173_											
174_											
176											
178											
179_ 											
្ន <mark>ី 180</mark> Notes:	. 119	CS = Unifie	d Soil Classit	fication Sve	tem II:	= not	detected above the laboratory reporting	na limit nn	h = Parte r	ner Billion	
ORING	. 50	.ss - onine	a con ciassii			1101	assisted above the laboratory reporting	.9, pp	~ 1 (11(0)	oor Dimorr.	
SOILB											

AR	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet:	1 of	10
Date Starte	d: <u>10/18/</u>	2018		Surface			Bori	ina No.:	IRZ-20 I	Pilot
-		2018				· · · · · · · · · · · · · · · · · · ·	_			
Drilling Co.:				_		-	Client:	PG&E		
Drilling Met		Drilling			-	187 ft bgs			ater Remedy	Phase I
Driller Name		nos/S. Vasque					-	Needles,	California	
Drilling Assi	-	mer/C.Alverez or Mills		Samplir			- Project Nu	ımbor: Toı	nock	
Logger: Editor:		McGrane		Samplir			_ Project Nu	illibel. <u>To</u> l	JUCK	
Weather:		Warm to hot		Conver			-			
				1						
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Fluid
1			Topock - Fluvial Deposits	GW-GM		(0.0 - 4.0') Topock - Fluvial Deposits; Well gr sand (GW-GM); very pale brown (10YR 8/3); pebbles, angular to subround; and very fine t sand, angular to round; little silt; trace cobble dry (4.0 - 5.5') Topock - Fluvial Deposits; Poorly; (SP-SM); very pale brown (10YR 8/3); very file	granules to ve o very coarse (ss, angular to s	iry large grained ubangular; ith silt		
5			Fluvial Deposits	SP-SM		grained, angular to subround; little silt; dry; h	omogeneous			
6 7			Topock - Fluvial Deposits	SM		(5.5 - 7.0') Topock - Fluvial Deposits; Silty sa (10YR 8/3); very fine grained to very coarse (and silt; trace granule to small pebbles, angu	grained, angula	ar to round;		
1.78			Topock - Fluvial Deposits	SM		(7.0 - 13.0') Topock - Fluvial Deposits; Silty s brown (10YR 8/3); fine grained to fine grained silt; dry (13.0 - 15.0') Topock - Fluvial Deposits; Silty	sand (SM); ve	ry pale		
1414			Topock - Fluvial Deposits	SM		brown (10YR 8/3); very fine grained to very c subround; little silt; trace granules to very lar subround; trace cobbles, angular to subround	oarse grained, ge pebbles, and d; dry	angular to gular to		
28KTOP/ONEDRIVE_1.124			Topock - Fluvial Deposits	SM		(15.0 - 17.0') Topock - Fluvial Deposits; Silty brown (10YR 8/3); very fine grained to fine grained to fine grained; little silt; dry	sand (SM); ver rained, angular	ry pale · to		
			Topock - Fluvial Deposits	GM		(17.0 - 33.0') Topock - Fluvial Deposits; Silty grayish brown (10YR 5/2); very fine grained to round; some fine to very coarse grained so little silt; little clay; trace cobbles, angular to s	o coarse grain	ed, angular round;		
Notes: U	SCS = Unifie	d Soil Classific	ation Sys	stem						
BORIN										
Nos										

AR	CADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sheet:	2 of	10
Date Started	·				Elevation:	N/A	Bor	ing No.:	IRZ-20 F	Pilot
	eted: <u>11/30/</u>				g (NAD83):	N/A	. ———			
Drilling Co.:	Casca			_	j (NAD83):	N/A	Client:	PG&E		
Drilling Meth		•		Total D	-	187 ft bgs	Location:		ater Remedy	Phase I
Driller Name		<u>nos/S. Vasqւ</u>			le Diameter:		-	Needles,	California	
Drilling Asst	-	mer/C.Alverez		-	o First Water					
Logger:	Conno				ng Method:	10 ft Core Barrel	Project Nu	ımber: <u>To</u> r	oock	
Editor:		<u> McGrane</u>		-	ng Interval:	Continuous	-			
Weather:	<u>Sunny</u>	Warm to hot		Conver	ted to Well:	☐ Yes ⊠ No				
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
<u> </u>										
25										
_26			Topock -							
			Fluvial Deposits	GM						
29										
30										
ARCADIS 20180927										
32_										
O L										
33 33 33 33 33 33 33 33 34						36.0') Topock - Fluvial Deposits; Silty				
34_					round;	(10YR 5/3); very fine grained to coarse some silt; little clay; trace granules to				
SMTOP			Topock - Fluvial	SM	subrou	ınd; dry				
_35			Deposits	JIVI						
-172										
36					(36.0 -	39.0') Topock - Fluvial Deposits; Silty	sand with grav	vel (SM);		
0dol					suban	(10YR 4/3); very fine grained to very congular; little granule to very large pebble lt; dry; strong cementation	oarse grained, s, angular to s	angular to subround;		
30008/00			Topock - Fluvial	SM	inue Si	is, ary, surong contentation				
38			Deposits							
S C C C C C C C C C C C C C C C C C C C										
39			Topock -			47.0') Topock - Alluvium Deposits; Silt				
40 d			Alluvium Deposits	SM	grayisi	n brown (10YR 5/2); very fine grained to rr to subangular; and granule to very la	o very coarse rge pebbles, a	granieu, ingular to		
	SCS = Unified	d Soil Classif		stem	1 • r · h' 'I			L		
ORING										
SOILE										

9/-	۱RC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sheet	: 3 of	10
Date S	started	: <u>10/18/</u>	2018		Surface	e Elevation:	N/A	Bor	ina No.	: <u>IRZ-20 F</u>	Pilot
	•	eted: <u>11/30/</u>				g (NAD83):	N/A	_			
Drilling		<u>Casca</u>			Easting	j (NAD83):	N/A	Client:	PG&E		
Drilling			Drilling		Total D	-	187 ft bgs	_ Location:		ater Remedy	Phase I
Driller			<u>nos/S. Vasqւ</u>			le Diameter:	<u>6 in</u>	_	Needles,	California	
Drilling		-	mer/C.Alvere			o First Water:		-			
Logge		Conno			-	ng Method:	10 ft Core Barrel	Project Nu	ımber: <u>To</u>	pock	
Editor:			<u>McGrane</u>		-	ng Interval:	Continuous	-			
Weath	er:	Sunny	Warm to hot		Conver	ted to Well:	☐ Yes ⊠ No				T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
						subrou	ind; little silt; trace clay; dry				
41											
	96										
42											
43				Topock -							
-				Alluvium	SM						
44				Deposits							
45											
46											
47						0 (47.0 -	56.0') Topock - Alluvium Deposits; Sili	ty gravel with s	and (GM):		
		IRZ-20-SS- 45-50				brown	(10YR 4/3); granules to large pebbles, very fine to coarse grained sand, angu	angular to sul	pangular;		
48						moist	very lifte to coarse grained saild, aligu	iai to Subiouiit	i, iittie Siit,	Soil starts	
										getting moist	
.06.GDT 12/4/18											
3.GDT											
⊒ 1 ⊃U 1											
ARCADIS 20180927 F											
51				T		PJ 87					
				Topock - Alluvium	GM						
52	114			Deposits		2119					
ORPL		IRZ-20-SS- 50-55				2					
53		00 00	ID7 00 \ (A 0								
53			1RZ-20-VAS- 51-56			6 P P					
54			(150 ppb)			(54'); v	vet			Approximate	
SMIT						10 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				depth of water table	
55						SPIC					
1						d for					
56				Tongols		0 \ \ (56.0 -	57.0') Topock - Alluvium Deposits; Sil	ty sand with or	avel (SM)·		
NO/QO				Topock - Alluvium	SM	dark gr	rayish brown / dark yellowish brown(10	YR 4/2); very	fine		
57				Deposits		pebble	d to coarse grained, angular to subrou s, angular to subangular; some silt; we	et			
SGOODS		IRZ-20-SS- 55-60				(57.0 - brown	65.0') Topock - Alluvium Deposits; Sil' / moderate yellowish brown(10YR 5/4)	ty sand (SM); y); very fine grai	ellowish ned to fine		
58		-2 00		Tonosti		grained	d, angular to subround; and silt; trace on singular to subround; moist				
O:NUSE				Topock - Alluvium	SM	pennie	o, angular to subround, Moist				
¥59				Deposits							
8E TOI											
60 Notes	110	00 11:15	d Call Oleren	ination O	1						
Notes:	US	CS = Unitie	d Soil Classif	ication Sys	siem						
OIL BOI											
<u>ა</u>											

9/	AR (CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet	: 4 of	10
Date S					Surface			Bor	ina No.	: <u>IRZ-20 l</u>	Pilot
	•	eted: <u>11/30/2</u>			Northing	•	•	_			
Drilling	-	Cascad			Easting			_	PG&E		
Drilling	-		-		Total De	-	187 ft bgs			ater Remedy	Phase I
Driller Drilling			nos/S. Vasqu ner/C.Alverez				eter: <u>6 in </u>	_	<u>ineedies,</u>	California	
Logge	-	<u> Connoi</u>		<u> </u>	Samplin			- _ Project Nı	ımber: To	nock	
Editor			1cGrane		Samplin	-		_ 1 10,000114		poor	
Weath			Warm to hot		Convert	-		_			
	>	-		υ <u>Ε</u>							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
61 62 63 64	96	IRZ-20-SS- 60-65		Topock - Alluvium Deposits	SM						
65							(65.0 - 69.0') Topock - Alluvium Deposits; Sa (10YR 5/3); no plasticity; some very fine to c angular to subround; little small pebbles, and	oarse grained	sand,		
66 67				Topock - Alluvium	ML			,	,		
68		IRZ-20-SS- 65-70		Deposits							
69_							(69.0 - 71.0') Topock - Alluvium Deposits; Sa (7.5YR 4/4); no plasticity; some fine to coars	e grained sand	l, angular		
70				Topock - Alluvium Deposits	ML		to subround; little granule to small pebbles, a moist	angular to suba	ingular;		
71 							(71.0 - 77.0') Topock - Alluvium Deposits; Sa (7.5YR 4/4); no plasticity; and silt; little very f sand, angular to subround; trace granule to to subangular; moist	fine to coarse of	rained		
		IRZ-20-SS- 70-75					to coolingular, model				
74				Topock - Alluvium Deposits	CL						
75											
76											
77		•					(77.0 - 83.0') Topock - Alluvium Deposits; Sa	andv silt (ML): I	orown		
 78		IRZ-20-SS- 75-80					(7.5YR 4/4); no plasticity; some very fine to rangular to subround; trace granule, angular to	medium graine	d sand,		
79				Topock - Alluvium Deposits	ML						
80											
Notes	: US	CS = Unified	Soil Classifi	cation Sy	stem						

9/	\R(ADIS		Во	rin	g Lo	 g		Sheet:	5 of	10	
Date S	Started	: <u>10/18/</u>	2018		Surface	Ele	/ation:	N/A	Bor	ina No.:	IRZ-20 F	Pilot
	-	eted: 11/30/2			Northing			N/A	. 🗠			
Drilling	-	Casca			Easting			N/A	Client:	PG&E	. (Diameter 1
Drilling Driller	-		Drilling		Total De Borehol	-		187 ft bgs 6 in	Location:		ater Remedy	Phase I
Drilling			nos/S. Vasqu ner/C.Alverez		Depth to					<u>ineedies,</u>	California	
Logge	-	Conno			Samplin			10 ft Core Barrel	Project Nu	umber: To	oock	
Editor			McGrane		Samplin	_		Continuous				
Weath	er:	<u>Sunny</u>	Warm to hot		Convert	ed to	Well:	☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	nscs	500	Description			Drilling Notes	Drilling Fluid
81 82	114			Topock - Alluvium Deposits	ML							
		IRZ-20-SS-										
83		80-85			. 		(02.0	107.0') Topock - Older Alluvium Depos	site. Cilty again	(CM).		
							:: brown	(10YR 4/3); very fine grained to coarse and; and silt; little granule to small pebb	grained, ang	ular to		
84			IRZ-20-VAS-					gular; wet	iles, aligulai ti			
			82-87 (<0.33 ppb)									
85			(
86												
87												
ļ -		IRZ-20-SS- 85-90										
88												
89												
90												
ARCAL				Topock - Older	SM							
92	132			Alluvium Deposits	0							
		IRZ-20-SS- 90-95										
93												
94 <u>_</u>												
5 – – 5 <u>–</u> 95_												
124												
<u></u> 96												
97												
0000		IRZ-20-SS- 95-100										
98												
- - 												
PA-0-1												
100												
Notes:	US	CS = Unified	d Soil Classifi	cation Sys	stem							
E BOX												

9/	\R(CADIS	Design & Consultancy for natural and built assets		Boring Log Sheet: 6 of 10				10		
Date S		·			Surface			Boring No.	: IRZ-20 I	Pilot	
Date C Drilling		eted: <u>11/30/</u> <u>Casca</u>			Northing Easting			Client: PG&E			
Drilling					Total D	•	187 ft bgs	Location: Groundy	vater Remedy	Phase I	
Driller			nos/S. Vasqı		Boreho	•	-		, California		
Drilling		-	mer/C.Alvere		-		Water: N/A	<u> </u>			
Logge Editor:		Conno	o <u>r Mills</u> McGrane		Samplir Samplir	-		Project Number: To	pock		
Weath		<u></u>	Warm to ho		Conver	-		-			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Description		Drilling Notes	Drilling Fluid	
101											
102	120	IRZ-20-SS-									
103		100-105		Topock - Older	SM						
104				Alluvium Deposits	Olvi						
105											
106											
108		IRZ-20-SS- 105-110	105-110 Topo Old Alluvi		SM	(107.0 - 109.0') Topock - Older Alluvium Deposits; Sandy silt with gravel (SM); brown (7.5YR 4/3); fine grained to coarse grained, angular to subround; and silt; little granule to small pebbles, angular to subangular; wet					
109 124/18				Deposits			(109.0 - 117.0') Topock - Older Alluvium Dep brown (10YR 4/3); no plasticity; some fine to		_		
ARCADIS 20180927 PLOG.							angular to subround; trace granule, angular to wet				
S PLO	103.2	IRZ-20-SS- 110-115		Topock - Older	ML						
SMTOPOCK DATABASE FOF			ID7 00 V40	Alluvium Deposits	IVIL						
115			IRZ-20-VAS- 112-117 (<0.17 ppb)								
116											
117_		IRZ-20-SS- 115-120					(117.0 - 123.0') Topock - Older Alluvium Dep strong brown (7.5YR 4/6); no plasticity; little (granule to medium	_		
_118		113-120		Topock - Older	N 41		pebbles, angular to subangular; little fine to c angular to subround; wet	oarse grained sand,			
T119				Alluvium Deposits	ML						
120 Notes:	l IC	CS = Unific	d Soil Classit	fication Sva	tem						
SHOIRS.	08	oo – omine	u ooli Olassii	iicauoii SyS	CIII						
SOIL B.											

9/-	۱RC	ADIS	Design & Consultancy for natural and built assets		Во	rin	g Lo	g		Sheet:	7 of	10
Date S	Started	: <u>10/18/</u>	2018	{	Surface	Elev	ation:	N/A	Bori	ina No.:	IRZ-20 F	Pilot
Date C	Comple	eted: <u>11/30/</u>	2018	1	Northin	g (NA	D83):	N/A		9	1112 201	<u> </u>
Drilling		<u>Casca</u>			Easting		083):	N/A		PG&E		
Drilling			Drilling			-		187 ft bgs			ater Remedy	Phase I
Driller			nos/S. Vasqu					<u>6 in</u>	-	Needles,	California	
Drilling		-	ner/C.Alverez		•		t Water		-			
Logge		<u>Conno</u>			Samplir	•		10 ft Core Barrel	Project Nu	ımber: <u>To</u> ı	pock	
Editor:			<u>McGrane</u>		-	-		Continuous	-			
Weath	er:	Sunny	Warm to hot		Convert	ea to	vveii:	☐ Yes ⊠ No				T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS		Description			Drilling Notes	Drilling Fluid
 121 _122_ 	132	IRZ-20-SS- 120-125		Topock - Older Alluvium Deposits	ML							
123				Topock - Older Alluvium	GM		sand (- 124.5') Topock - Older Alluvium Dep GM); yellowish brown / moderate yellow es to very large pebbles, angular to sul	wish brown(10 bangular; som	YR 5/4); e silt; little		
124				Deposits			very fir	ne to coarse grained sand, angular to s				
125							brown	- 127.0') Topock - Older Alluvium Dep (7.5YR 4/3); no plasticity; little granule	to medium pe	bbles,		
126				Topock - Older Alluvium Deposits	ML			r to subangular; little fine to coarse gra nd; moist	ined sand, an	gular to		
_127		IRZ-20-SS-						- 131.0') Topock - Older Alluvium Dep n brown / moderate brown(5YR 4/4); n				
128		125-130		Topock - Older Alluvium Deposits	ML		graine	d sand, angular to subround; trace grain to subangular; wet				
J ARCADIS 20180927							brown	- 136.5') Topock - Older Alluvium Dep (7.5YR 5/3); fine grained to coarse gra	ined, angular i	to		
132_	132	IRZ-20-SS- 130-135					round;	nd; some silt; little granule to medium wet	peddies, suba	ngular to		
133			IRZ-20-SS-	Topock -			선 성					
134_			131-136 (<0.17 ppb)	Older Alluvium Deposits	SM							
135_												
136							성 집					
2 137 137							(136.5	- 157.0') Topock - Older Alluvium Dep n brown (5YR 5/4); very fine grained to	osits; Silty san	d (SM);		
DS/DE		IRZ-20-SS-					∴ to sub	angular; and silt; little granule to very la	arge pebbles, a	angular to		
138_		135-140		Topock -				gular; wet; Granules and pebbles throu sed of metadiorite 50-60 mm)	ignout the core	e are		
JSERS				Older Alluvium	SM							
ੋਂ 5139				Deposits								
TOPA												
140												
Notes:	US	CS = Unified	d Soil Classif	cation Sys	tem							
BOR												
SOI												

9/	\R(CADIS	Design & Consultancy for natural and built assets	Boring Log Sheet: 8 of 10					10		
Date S						Elevation:	N/A	Bor	ing No.:	IRZ-20 I	Pilot
	-	eted: <u>11/30/</u>				g (NAD83):	N/A	_			
Drilling Drilling		Casca	ae Drilling		∟asτing Total D	(NAD83):	N/A 187 ft bgs	Client:	PG&E	ater Remedy	Phasa I
Driller			nos/S. Vasqı			le Diameter:	6 in	Location.	Needles,	-	i ilase i
Drilling			ner/C.Alvere			o First Water:		-			
Logge		Conno				ng Method:	10 ft Core Barrel	Project Nu	umber: <u>To</u> p	ock	
Editor:		·	<u>McGrane</u>		•	ng Interval:	Continuous	-			
Weath	er:	Sunny	Warm to hot		Conver	ted to Well:	☐ Yes ⊠ No				T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
141	132	IRZ-20-SS- 140-145		Topock - Older Alluvium Deposits	SM						
157 157		IRZ-20-SS- 155-160		Topock - Weathered Bedrock - conglomerate	ML	(157.0 silt (ML sand, a clay; m	- 160.0') Topock - Weathered Bedrock .); brown (7.5YR 5/4); no plasticity; an angular to subround; trace granule, an noist	c - conglomera d fine to coars gular to suban	ate; Sandy e grained gular; trace		
Notes:	US	CS = Unified	d Soil Classif	fication Sys	tem						
BORIN											
SOIL											

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sheet	: 9 of	10
Date S	Started	: <u>10/18/</u>	2018		Surface	Eleva	tion: N/A	Boring No.	: IRZ-20 F	Pilot
	•		2018		Northin					
Drilling	-	Casca			Easting		,	Client: PG&E		
1	g Meth		<u>Drilling</u>			-	_	Location: Groundw	-	Phase I
	Name		nos/S. Vasqı					Needles,	California	
	g Asst:	-	ner/C.Alvere		•		Water: N/A	Duningt Niverbow, To	n a a l	
Logge Editor		Conno	McGrane		Samplir Samplir	-		Project Number: 10	роск	
Weath			Warm to ho		Convert	-				
vvcati		Ourning					Tes E No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description		Drilling Notes	Drilling Fluid
161	-						(160.0 - 166.0') Topock - Weathered Bedrock clay with sand (CL); brown (10YR 4/3); low pla medium pebbles, angular to subangular; some sand, angular to subround; little silt; trace cob	asticity; some small to e fine to coarse grained		
162	132						subangular; dry			
163	_	IRZ-20-SS- 160-165		Topock - Weathered Bedrock -	CL					
164	-			conglomerate	Э				Rough drilling, had to go back	
165									down again with core	
									barell to get remaining 2 ft.	
166							(166.0 - 179.5') Topock - Weathered Bedrock silt with gravel (ML); dark yellowish brown (10'		of core	
167		IRZ-20-SS- 165-170					plasticity, some fine to coarse grained sand, a granule to small pebbles, angular to subangul			
168		165-170								
169_ 169_										
	-									
ARCADIS 20180927 P										
ARCAD										
172_	87.6									
		IRZ-20-SS-		Topock -						
<u>173</u>		170-175		Weathered Bedrock -	ML					
DATA	1			conglomerate	3					
SWITOPOCK DATABASE FOR										
ω'	-									
175_	-		IRZ-20-VAS-							
	-		173-178 (<0.83 ppb)							
176										
40 L 177_										
DDS/DE		IRZ-20-SS- 175-180								
178		175-180								
NUSER										
ğ179										
8E TOF	79.2				1		(179.5 - 182.0') Topock - Competent Bedrock	- conglomerate: dark		
180 Notes	. 110	CS = Unific	d Soil Classit	fication Syn	tem		(congioniorate, dank		
NOCES	. 03		u ouii Ciassii	iicauon Sys	CIII					
SOIL B										

9/	4RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet:	10 of	10
	Started				Surface			Bori	na No.:	IRZ-20 F	Pilot
	•	eted: <u>11/30/2</u>			Northing						
Drilling	•	Casca			Easting		•		PG&E	tor Domondu	Dhasa I
1	g Meth Name		nos/S. Vasqu		Total De	-	<u>187 ft bgs</u> Loneter: <u>6 in</u>		Needles,	ater Remedy California	Pilase i
	g Asst:		ner/C.Alverez				Water: N/A		recuics,	Odillomia	
Logge	-	Conno			Samplin			Project Nu	mber: Top	ock	
Editor		Sean N	/IcGrane		Samplin	ig Inter	val: <u>Continuous</u>	-			
Weath	ner:	Sunny	Warm to hot		Convert	ed to V	Vell: ☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Description			Drilling Notes	Drilling Fluid
181				Topock - Competent Bedrock - conglomerat			yellowish brown (10YR 4/4); granules to very larg subangular; some fine to coarse grained sand, a some silt; dry; moderate cementation (182.0 - 187.0') Topock - Competent Bedrock - c	angular to su	ıbangular;	very rough	
		IRZ-20-SS- 180-187		Touri			yellowish red (5YR 4/6); and silt; some granule to angular to subangular; little fine to coarse graine round; trace cobbles, angular to subangular; moi	to small pebl ed sand, ang	bles, jular to	drilling, couldnt advance past 182'. Had to pull it out and make another	
185 186	58.8			Topock - Competent Bedrock - conglomerat						run for 182-187'.	
180											
							End of Boring at 187.0 'bgs	S.			
188 											
- 1	-										
191	-										
¥ - 192_											
# 193	-										
₹ \$ 194											
[5]195 	-										
196											
197_											
	-										
5 199											
- 10PA											
200 Notes	: US	CS = Unified	d Soil Classifi	cation Svs	stem						
3 10100	. 50										
310											

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sheet	: 1 of	8
Date S					Surface		-	Boring No.	: MW-E	
	-		2018		Northin				· <u> =</u>	
Drilling		<u>Casca</u>			Easting	•	•	Client: PG&E	rata u Danaadı r	Dhasal
Drilling Driller I			Drilling Vasques			-	<u>150 ft bgs</u> neter: <u>10 in</u>	Location: <u>Groundw</u>	California	Phase I
Drilling							Water: N/A	<u>11000100</u> ,	Odinomia	
Logger		Conno	-					Project Number: <u>To</u>	pock	
Editor:			<u> McGrane</u>		-	-				
Weath	er:	63 to 8	88° Sunny		Conver	ted to \	Vell: ⊠ Yes ☐ No			
Depth (ff)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description		Drilling Notes	Drilling Fluid
1	72			Topock - Fluvial Deposits	SW-SM		(0.0 - 4.5') Topock - Fluvial Deposits; Well grayers (SW-SM); brown (7.5YR 4/3); fine grain angular to subround; some small to very large subround; little silt; trace cobbles, angular to subround; little silt;	ned to coarse grained, e pebbles, angular to subrounded; dry; no odor		
5 20 1809277 PLOG.GOT 1244/18				Topock - Fluvial Deposits	SP-SM		(4.5 - 8.0') Topock - Fluvial Deposits; Poorly gravel (SP-SM); brown (7.5YR 4/3); fine grain subangular to round; some small to very large subround; little silt; trace cobbles, angular to grained grained sand, subangular to round; d	ned to medium grained, e pebbles, angular to subangular; trace coarse		
SSH12 04.2018/10PPOCK DATABASE FGR PLOS GPJ ARCADIS	85.2			Topock - Fluvial Deposits	GM		(8.0 - 12.5') Topock - Fluvial Deposits; Silty gyellowish brown / moderate yellowish brown('very large pebbles, angular to subround; som sand, subangular to round; some silt; trace coround; dry	10YR 5/4); granules to be fine to coarse grained		
(10RAFT BORING LOGS)GINT FILL				Topock - Fluvial Deposits	SM		(12.5 - 15.0') Topock - Fluvial Deposits; Silty brown / moderate yellowish brown(10YR 5/4) medium grained, angular to subround; little grangular to round; little silt; trace cobbles, subadry	; very fine grained to ranule to large pebbles,		
2 PGRE TOPACK CIUSERSISMICGRANEIDOCUMENTSIPGRE TOPOCKI				Topock - Fluvial Deposits	GP-GM		(15.0 - 32.0') Topock - Fluvial Deposits; Poorl (GP-GM); light brownish gray / pale yellowish granules to very large pebbles, angular to subangular; little silt; trace boulder trace fine to medium grained sand, angular to boulders 10 inch cores of metadiorite rock.	brown(10YR 6/2); cangular; some cobbles, s, angular to subround;	Rough drilling. Drilled through a boulder, rock was pulverized into a fine powder.	
Notes:	US	CS = Unified	d Soil Classi	fication Sys	tem					
BOR III										
Sc										

9/	\R(CADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sheet:	2 of	8
Date S						e Elevation:	N/A	Bor	ing No.:	MW-E	
	-	eted: <u>11/27/</u>				g (NAD83):	N/A	_			
Drilling		<u>Casca</u>			_	(NAD83):	N/A	Client:	PG&E	.t	Dhasal
Drilling Driller			Vasques		Total D	epւn: le Diameter:	150 ft bgs 10 in	_ Location:	Needles, 0	<u>ater Remedy</u> California	Phase i
Drilling			ninguez/C. <i>I</i>			o First Water		-	11000100,	<u>Janioi ina</u>	
Logge		Conno	-		-	ng Method:	10 ft Core Barrel	- . Project Νι	ımber: <u>Top</u>	ock	
Editor:			<u> McGrane</u>		•	ng Interval:	Continuous	-			
Weath	er:	63 to 8	88° Sunny	-	Conver	ted to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Fluid
21 	93.6										
23 											
25				Tanada							
26				Topock - Fluvial Deposits	GP-GM						
28											
GPJ ARCADIS											
FOR PLOG.G	54										
DATABASE 1											
32						(32.0 -	34.5') Topock - Fluvial Deposits; Silty	sand with grav	vel (SM);	Rough drilling	150 gal of water used
1 33 33				Topock - Fluvial Deposits	SM	to subi	rown (10YR 6/3); very fine grained to n round; and granule to very large pebble It; trace cobbles, angular to subangular	es, angular to s	d, angular subround;		
34	54.0			Берозна							
APG&E TOPOCKUDRA	51.6			Topock - Fluvial	SM	light ye angula	37.0') Topock - Fluvial Deposits; Silty ellowish brown (10YR 6/4); fine grained ir to round; and granules to small pebb gular; little cobbles, angular to subroun	d to coarse gra les, angular to	ined,		
				Deposits							
PORE TOPACK C:\USERS\RMCGRANE\RT \\ 38	48			Topock - Fluvial Deposits	GM	light ye angula well-ro boulde	42.5') Topock - Fluvial Deposits; Silty ellowish brown (10YR 6/4); granules to ir to round; some fine to coarse grainer unded; some silt; trace cobbles, angulars, subround; dry; one boulder is a 10 sh green olivine crystals and a frothy te	very large pet d sand, angula ar to subangul inch core of ba	obles, r to ar; trace		
Notes:	US	CS = Unified	d Soil Classi	fication Sys	stem				1		
BORIN											
SOIL											

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g	Sheet: 3 of 8			
Date S	Started	: <u>11/02/</u>	2018		Surface	Elevation:	N/A	Bor	ina No.	: <u>MW-E</u>	
	•	eted: <u>11/27/</u>	2018		Northin	g (NAD83):	N/A	_		· <u></u>	
Drilling	-	<u>Casca</u>			_	(NAD83):	N/A	Client:	PG&E		
Drilling	-		Drilling				150 ft bgs	Location:		ater Remedy	Phase I
Driller			•			le Diameter:		-	Needles,	California	
Drilling			•			o First Water		<u>. </u>			
Logge		Conno				ng Method:	10 ft Core Barrel	Project Nu	ımber: <u>To</u>	pock	
Editor:			McGrane		-	-	Continuous	-			
Weath	er:	63 to 8	88° Sunny		Conver	ted to Well:					T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
41 42				Topock - Fluvial Deposits	GM						
42						d for					
43						light ye	47.0') Topock - Alluvium Deposits; Silt ellowish brown (10YR 6/4); fine grained r to subround; some granules to very l	to coarse gra	ined,		
44						suban	gular; little silt; trace clay; dry				
 45				Topock - Alluvium Deposits	SM						
46											
47_											
47						brown	54.5') Topock - Alluvium Deposits; Silt (7.5YR 6/4); low plasticity; little fine to	coarse graine	d sand,	Approximate depth of water	
48							r to subangular; little clay; trace granul r to subround; moist	le to medium p	ebbles,	table.	
FOR PLOG.GPJ AF											
FOR P.											
ABASE 20_											
51				Topock - Alluvium	ML						
0401				Deposits							
52_	400										
ES/12.0	120										
=											
BORING LOGS/GINT FILES/12.04.20/18/170POCK DATABAS 2.04.20/18/170POCK DATAB											
54											
RAFTB			MW-E-VAS- 52-57			0 V V (54.5 -	64.0') Topock - Alluvium Deposits; Silf	hy graval with -	and (CM):		
55			(7.0 ppb)			pale bi	own (10YR 6/3); granules to large peb gular; some fine to medium grained sai	bles, angular t	60 (GIVI),		
PG&E TOP						subang	gular; some silt; trace clay; dry	na, anyulal 10			
OMENTS!											
57				Topock - Alluvium	GM					Core came out	
SMCGRA				Deposits	GIVI	The state of the s				hot and dry	
58						6 PJ					
5959						663					
TOPAC						5 PJ					
60						[46]					
Notes:	US	CS = Unifie	d Soil Classit	ication Sy	stem						
L BORI.											
SO											

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sheet	: 4 of	8
Date S		· ·				Elevation:	N/A	Bor	ing No.	: <u>MW-E</u>	
		eted: 11/27/2				g (NAD83):	N/A				
Drilling	-	Casca				(NAD83):	N/A	Client:	PG&E		
Drilling	-		<u>Orilling</u>				150 ft bgs			vater Remedy	Phase I
Driller			-			le Diameter:			<u>ineedles,</u>	California	
Drilling Logge		Conno				o First Water ng Method:	10 ft Core Barrel	Project Nu	ımber: To	nock	
Editor			//cGrane		-	ng Interval:	Continuous	, i iojectivi	iiiibei. <u>10</u>	роск	
Weath			8° Sunny		-	ted to Well:		•			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Oode	USCS	Description			Drilling Notes	Drilling Fluid
-											
61											
				Topock -		600					
62	120			Alluvium Deposits	GM						
				Бороско		600					
63						[H4]					
64						600					
04						(64.0 -	67.0') Topock - Older Alluvium Deposi n brown (5YR 5/4); no plasticity; some	its; Sandy silt (ML);		
65							subangular to subround; little granule to r to subangular; trace clay; moist; no s	o medium peb	bles,		
				Topock - Older	ML	angula	i to subangular, trace clay, moist, no s	tairiirig			
⁴ –66 –				Alluvium Deposits	IVIL						
12) TO				Deposits							
g 67						(07.0	07.01\ T	Cile 1	CM).		
180927						reddis	87.0') Topock - Older Alluvium Deposi n brown (5YR 5/4); very fine grained to	coarse graine	d, angular		
68							round; some silt; little granule to large p gular; wet	oebbles, angul	ar to		
ARCA											
-08 F.06.6P											
~ -											
#_70_											
OCK DATABAS											
P P											
72_	100										
LES/12.	108										
분 73											
				Topock - Older	SM						
74				Alluvium Deposits							
				'							
8 _75_											
0 T T T T T T T T T T T T T T T T T T T											
76											
OCCUME											
C:USERSISWOCGRAVIEDOCOMMENTS:DEGRE TOPOCKIDBAI											
SERS/											
× 70											
10PAG											
80											
Notes:	US	CS = Unified	d Soil Classif	ication Sy	stem						
BOR BOR											
SC											

AR	CADIS	Design & Consultancy for natural and built assets		Во	ring Lo	og		Sheet	: 5 of	8
Date Starte				Surface	e Elevation:	N/A	Bor	ina No.	: <u>MW-E</u>	
	leted: <u>11/27/</u>				g (NAD83):	N/A	_		<u> </u>	
Drilling Co.				_	(NAD83):	N/A	_ Client:	PG&E		
Drilling Met		Drilling			-	150 ft bgs	_ Location:		ater Remedy	Phase I
Driller Nam		<u>Vasques</u>			le Diameter:		-	Needles,	California	
Drilling Ass		ninguez/C. A		-	o First Wate		- Designet No			
Logger: Editor:	Conno	or Mills McGrane			ng Method: ng Interval:	10 ft Core Barrel Continuous	Project Nu	ımber: <u>10</u>	роск	
Weather:		88° Sunny		-	ted to Well:	× Yes	-			
		Curing			TCG to VVCII.					
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	Class	Description			Drilling Notes	Drilling Fluid
		MW-E-VAS-82-87.0 (200 ppb)	Topock - Older Alluvium Deposits Topock - Older Alluvium Deposits Topock - Older Alluvium Deposits	SM SM	reddi sand pebb	- 94.5') Topock - Older Alluvium Depos sh brown (5YR 5/4); low plasticity; some angular to subangular; some clay; little es, angular to subangular; wet - 97.0') Topock - Older Alluvium Depos sh brown (5YR 5/4); medium grained to bround; some silt; little granule to mediungular; wet	e fine to coarse granule to me its; Silty sand of coarse graine im pebbles, an	(SM); d, angular gular to		
904E TOPACK CIUSERSISMOS			Topock - Older Alluvium Deposits	ML		ar to subangular; little fine to coarse gra und; wet; no odor	ained sand, an	gular to		
	SCS = Unifie	d Soil Classi	fication Sy	stem		-			·	
BORIN			·							
SOIL										

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	rin	g Lo	g		Sheet	: 6 of	8
Date S		· · · · · · · · · · · · · · · · · · ·			Surface	Elev	ation:	N/A	Bor	ina No.	: <u>MW-E</u>	
		eted: <u>11/27/</u>			Northing			N/A	_		<u> </u>	
Drilling		Casca			Easting	•	•	N/A	_ Client:	PG&E		
Drilling			Drilling		Total De			150 ft bgs	_ Location:		ater Remedy	Phase I
Driller			<u>Vasques</u>		Borehol			<u>10 in</u>	_	Needles,	California	
Drilling		N. Dor Conno	ninguez/C. A		Depth to				- Duningt Ni			
Logge Editor:			McGrane		Samplir Samplir			10 ft Core Barrel Continuous	Project Nu	ımber: <u>10</u>	роск	
Weath			88° Sunny		Convert				-			
-				0.5	1		1					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS		Description			Drilling Notes	Drilling Fluid
101_												
102	104.4											
103												
104				Topock - Older	ML							
105				Alluvium Deposits								
106				,								
G.GDT												
007107												
ARCADIS 2018												
109												
m1 110 1							gravel	- 118.0') Topock - Older Alluvium Dep (SM); reddish brown (5YR 5/4); fine gr	rained to coars	e grained.		
ESI12.04.2018)TOPOCK DATABASIS							angula to suba	r to subangular; and silt; little granule angular; wet; some green staining in s	to large pebble pots within the	es, angular core.		
<u>¥</u> _111_												
7 2018\T							(1) (1)					
112	102											
IID\SDC				Tanaak								
114_				Topock - Older Alluvium	SM							
AFT BC			MW-E-VAS- 112.0-117.0	Deposits								
_115			(3100 ppb)									
) 기					
MENTS												
117_												
MCGRAN							서					
118							(118.0	- 122.0') Topock - Older Alluvium Dep	oosits; Sandy s	ilt (ML);		
ลัก ช 119				Topock -	N.61		sand, a	n brown (5YR 5/3); no plasticity; some angular to subround; little granule to la				
TOPAC				Older Alluvium	ML		supang	gular; moist; very weathered.				
120				Deposits								
Notes:	US	CS = Unifie	d Soil Classi	fication Sy	stem							
DIL BOR												

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	rir	ng	Log		Sheet:	7 of	8
Date S					Surface			· · · · · · · · ·	Bor	ing No.:	MW-E	
	-	ted: <u>11/27/</u>			Northin			•	. ———		<u></u>	
Drilling		<u>Casca</u>			Easting	•		•	Client:	PG&E	ton Donos du	Dhasal
Drilling Driller			Drilling Vasques		Borehol	•		150 ft bgs eter: 10 in	Location:	Needles, (ter Remedy	Phase I
Drilling			ninguez/C. <i>F</i>					·	-	recuics, v	Jamorria	
Logge		Conno	-		Samplir				· . Project Νι	ımber: <u>Top</u>	ock	
Editor:		· · · · · · · · · · · · · · · · · · ·	<u> McGrane</u>		Samplir	-			-			
Weath	er:	<u>63 to 8</u>	88° Sunny		Conver	ed	to V	Vell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	nscs	Class	Description			Drilling Notes	Drilling Fluid
121				Topock - Older Alluvium Deposits	ML							
122	108							(122.0 - 127.0') Topock - Older Alluvium Depo	osits: Silty san	d with		
123								gravel (SM); light reddish brown / light brown grained to coarse grained, angular to subrour to large pebbles, angular to subangular; wet; metadiorite.	(5YR 6/4); ven nd; and silt; litt	y fine le granule		
124				Topock -				metadionie.				
125				Older Alluvium Deposits	SM							
126_												
								(127.0 - 137.0') Topock - Weathered Bedrock	c - conglomera	te; Silty		
								sand (SM); reddish brown (5YR 5/4); very fine grained, angular to subround; some silt; little angular to subangular; wet	e grained to co granule to larg	parse le pebbles,		
- 129_ 129_												
ABASE FOR L												
131												
132_ 132	120			Topock - Weathered Bedrock - conglomerat	SIVI							
133_				g.:s.uk								
AFT BORING L												
135_												
136												
137								/127 0 120 El) Tamade Ma-4 1 D. 1	c congle	to: Silt:	Pough deillin -	
SERS'SMCGRANE			MW-E-VAS-	Topock - Weathered Bedrock - conglomerat	SIM			(137.0 - 138.5') Topock - Weathered Bedrock sand (SM); reddish brown / moderate brown(coarse grained, angular to subround; some simedium pebbles, angular to subangular; wet	5YR 4/̈4); fine ilt; little granule	grained to	Rough drilling	
139			137-142 (7300 ppb)	Topock - Weathered Bedrock - conglomerat	IVIL			(138.5 - 139.5') Topock - Weathered Bedrock (ML); reddish brown / moderate brown(5YR 4 granule to medium pebbles, angular to subar	l/4); no plastici ngular; trace fir	ty; trace ne grained		
140				Ü	SM			sand, angular to subround; dry; very weather (139.5 - 142.0') Topock - Weathered Bedrock				
Notes:	US	CS = Unifie	d Soil Classi	fication Sy	stem			sand				
H BORI												
SC												

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	J Log		Sheet	8 of	8
Date S		·			Surface			Bor	ina No.	: <u>MW-E</u>	
	•	ted: 11/27/2			Northing		•			· <u></u>	
Drilling		Casca			Easting			Client:	PG&E		
Drilling	-		<u>Drilling</u>		Total De	•	150 ft bgs			ater Remedy	Phase I
Driller			Vasques		Borehol			-	<u>Needles,</u>	California	
Drilling		N. Don Conno	ninguez/C. A		Samplin		Water: <u>N/A</u> hod: <u>10 ft Core Barrel</u>	Project Nu	ımbar: Tai		
Logge Editor:			// ///////////////////////////////////		Samplin	•		Flojectivi	1111ber. <u>10</u> 1	JUCK	
Weath		·	8° Sunny		Convert	•		•			
	l				1		T				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Description			Drilling Notes	Drilling Fluid
141			MW-E-VAS- 137-142 (7300 ppb)	Topock - Weathered Bedrock - conglomerat	SIVI		(SM); reddish brown (5YR 5/4); fine grained t to subangular; some silt; little granule to med subangular; wet	o coarse grain ium pebbles, a	ed, angular ingular to		
142	114						(142.0 - 150.0') Topock - Competent Bedrock	- conglomera	te; brown	Rough drilling	
143							(7.5YR 5/4); very fine grained to medium peb subangular; and silt; trace granule to medium	pebbles, and	ular to		
143							subangular; trace fine grained sand, angular cementation; hard.	to subround; d	ry; strong		
144											
145											
-				Topock -							
146				Competent Bedrock -							
				conglomerat	е						
147											
148											
	36										
149_											
150						V///	End of Boring at 150.0 '	bgs.			
454											
151_											
152											
154											
<u>-</u>											
155											
156											
157											
157											
158											
5 159											
-											
160		00:	10 " 0"								
Notes	: US	CS = Unified	d Soil Classif	ication Sys	stem						

AR	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet:	1 of	16
Date Starte	·			Surface			Bori	na No.:	MW-Ld	
	leted: <u>12/02/</u>			Northin						
Drilling Co.				Easting	•	•	Client:	PG&E	ton Domondu	Dhasa I
Drilling Met Driller Nam		Drilling 'Mara		Boreho	-	315 ft bgs neter: 10 in		Needles, 0	ter Remedy	Phase I
Drilling Ass		ellmantel / J.						ineedies, C	Janiomia	
Logger:		McGrane	•	•			Project Nu	mber: Top	ock	
Editor:		McGrane		•	•					
Weather:	78 to 8	84° Partly Clo	oudy (Conver	ted to V	Vell: ⊠ Yes □ No				
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Fluid
_ 1 _			Topock - Alluvium Deposits	SW		(0.0 - 1.5') Topock - Alluvium Deposits; Well g (SW); brown (10YR 4/3); very fine grained to angular to subround; some granule to large p very coarse grained sand, subangular to subr trace boulders, angular to subangular; trace s	very coarse gr ebbles; some ound; trace co silt; dry	ained, coarse to bbles;		
2 3 72 4 5 6	0		Topock - Alluvium Deposits	SW		(1.5 - 6.0') Topock - Alluvium Deposits; Well g (SW); brown (7.5YR 4/3); very fine grained to subangular to round; some granule to mediun subangular; trace silt; dry	very coarse g	rained,		
7 — 7 — 7 — 8 — 7 — 8 — 9 — 9 — 100			Topock - Alluvium Deposits	SM		(6.0 - 11.0') Topock - Alluvium Deposits; Silty brown (7.5YR 4/3); very fine grained to very c subround; some granule to very large pebbles some silt; trace cobbles, angular; trace boulde subangular; dry	coarse grained, s, angular to si ers, angular to	, angular to ubangular;		
IRINE 1 134-2018 SWINDOOK DATABASE FOR PLOG GBP A MEGA			Topock - Alluvium Deposits	SW-SM		(11.0 - 16.0') Topock - Alluvium Deposits; We and gravel (SW-SM); dark grayish brown / da 4/2); very fine grained to very coarse grained, some granule to large pebbles; little silt; trace subangular; dry	rk yellowish br , angular to sul	own(10YR bangular;		
- 17 - 17 - 17 - 17 - 17 - 17 - 17 - 17			Topock - Alluvium Deposits	SW-SM		(16.0 - 21.5') Topock - Alluvium Deposits; We and gravel (SW-SM); very dark gray (10YR 3/ very coarse grained, angular to subangular; s large pebbles; little silt; trace cobbles, angular	/1); very fine grome granule to	rained to o very	Lost core barrel down hole	
Notes: N	R = No Reco	very, USCS	= Unified So	oil Clas	sificatio	on System				
BORI										
SO										

9/	۱RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet	2 of	16
Date S	Started	10/03/2	2018		Surface	Elevati	on: <u>N/A</u>	Bori	ina No	: MW-Ld	
Date C	Comple	ted: <u>12/02/</u>	2018		Northin	g (NAD8	3): <u>N/A</u>		g	IVIVY EQ	
Drilling	g Co.:	Casca	de		Easting	(NAD8	B): <u>N/A</u>	Client:	PG&E		
Drilling	Meth	od: <u>Sonic l</u>	Drilling		Total D	epth:	315 ft bgs	Location:	Groundw	ater Remedy	Phase I
Driller	Name	Dan O	'Mara		Borehol	e Diame	eter: <u>10 in</u>	_	Needles,	California	
Drilling	y Asst:	E. Hue	ellmantel / J.	Campbell	Depth to	o First V		-			
Logge	r:		<u> </u>					Project Nu	ımber: <u>To</u>	pock	
Editor:			<u> </u>		-	_		-			
Weath	er:	78 to 8	4° Partly Clo	oudy	Conver	ted to W	ell: 🗵 Yes 🗌 No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
21	96			Topock - Alluvium Deposits	SW-SM						
22				Topock - Alluvium Deposits	SM		(21.5 - 22.5') Topock - Alluvium Deposits; Silt dark gray (10YR 4/1); very fine grained to ver io subround; some granule to very large pebb subangular; some silt; dry	ry coarse grain	ed, angular		
23				Topock - Alluvium Deposits	GP	600	(22.5 - 24.0') Topock - Alluvium Deposits; Poblack (10YR 2/1); small cobbles to large cobbdry	orly graded gra oles, angular to	avel (GP); subround;		
25					NR		(24.0 - 26.0') (NR); No Recovery sample bag	s broke			
26							(26.0 - 28.0') Topock - Alluvium Deposits; Sa			Rough drilling	
27				Topock - Alluvium Deposits	ML		prown (10YR 5/3); no plasticity; some very fir sand, angular to subangular; little granule to angular to subangular; trace cobbles, angular mica; dry	very large pebl	oles,		
28 29	60			Topock - Alluvium Deposits	ML		(28.0 - 29.5') Topock - Alluvium Deposits; Sa brown (10YR 5/3); no plasticity; and very fine sand, angular to subangular; little granule to angular to subangular; trace cobbles, angular mica; dry	to very coarse very large peb	grained oles,		
ARCADIS 20180927 PLOG.GI				Topock - Alluvium Deposits	GW		(29.5 - 31.0') Topock - Alluvium Deposits; We sand (GW); dark yellowish brown (10YR 4/4); cobbles, angular to subround; little very fine t subangular to subround; dry	; granules to si	mall		
OOCK DATABASE FOR PLOG. GPJ ARCADI				Topock - Alluvium Deposits	ML		(31.0 - 34.5') Topock - Alluvium Deposits; Sa brown (10YR 5/3); no plasticity; some very fir sand, angular to subangular; little granule to angular to subangular; trace cobbles, angular mica; dry	ne to very coar very large pebl	se grained bles,	Lost core barrel down hole	
35	84						(34.5 - 38.0') Topock - Alluvium Deposits; Silt (10YR 5/3); very fine grained to fine grained, and silt; dry				
MOODS/DESKTOP/ONEDRING				Topock - Alluvium Deposits	SM						
1. TOPACK C.NUSERSNLW				Topock - Alluvium Deposits Topock - Alluvium	SM		(38.0 - 39.0') Topock - Alluvium Deposits; Silt grayish brown (2.5Y 5/2); very fine grained to angular to subround; some silt; little granule t to subangular; moist (39.0 - 43.0') Topock - Alluvium Deposits; Silt grayish brown (2.5Y 3/2); very fine grained to	very coarse g to large pebble tv sand (SM): v	rained, s, angular verv dark		
g 40				Deposits			o subangular; and silt; trace granule to medi	um pebbles, a	u, angulai ngular to		
Notes:	NR	= No Reco	very, USCS =	= Unified So	oil Clas	sification	ı System				
BORII											
SOIL											

A	RCAI	DIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet	3 of	16
Date Sta		10/03/2			Surface			Bor	ing No.:	: MW-Ld	
	mpleted:				Northin						
Drilling C		Casca			Easting	-	-	Client:	PG&E		
Drilling M			<u>Drilling</u>			-	•			ater Remedy	Phase I
Driller Na			Mara						Needles,	California	
Drilling A			llmantel / J. (//cGrane	•	•			Drainat Nu	ımbarı Ta	n o olí	
Logger: Editor:			AcGrane AcGrane		Samplir Samplir	-		Project Nu	imber: 10	DOCK	
⊏uitor. Weather:			4° Partly Clo		Conver	•					
		10 10 0			T		veii. A res I no				<u> </u>
Depth (ft)		ieve nple ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Fluid
4142	96			Topock - Alluvium Deposits	SM		subangular; trace clay; moist				
44 45				Topock - Alluvium Deposits	SW		(43.0 - 46.0') Topock - Alluvium Deposits; Welbrown (7.5YR 5/3); very fine grained to very creations to subround; trace granule to very to subround; trace cobbles, subround; trace si	oarse grained large pebbles	l,		
46 47 48 48				Topock - Alluvium	SM		(46.0 - 51.5') Topock - Alluvium Deposits; Silty brown (10YR 4/3); very fine grained to very cosubangular to subround; little granule to very I subangular to subround; little silt; trace cobble subround; trace clay; trace mica; dry; gravel c formation.	parse grained, arge pebbles es, subangula	r to		
49 50 51 ₁	120			Deposits		0 0 0 0 0					
525354				Topock - Alluvium Deposits	SW-SM		(51.5 - 52.0') Topock - Alluvium Deposits; Wel (SW-SM); brown (10YR 5/3); very fine grained angular to subround; trace silt; little mica; dry (52.0 - 59.0') Topock - Alluvium Deposits; Wel gravel (SW); very dark grayish brown (10YR 3 very coarse grained, angular to subangular; at pebbles, subangular to round; trace cobbles, some mica; dry	I to medium g II graded sand I/2); very fine and granule to	d with grained to very large		
55 56				Topock - Alluvium Deposits	sw						
57 58 59											
60				Topock - Alluvium Deposits	SM		(59.0 - 62.0') Topock - Alluvium Deposits; Silty (10YR 5/3); very fine grained to very coarse g subround; little silt; little clay; trace granule to	rained, angula	ar to		
Notes:	NR = No	Recov	ery, USCS =	Unified So	oil Clas	sificatio	n System				

AR	CADIS Design & Consultre for natural and built assets	ncy B	oring	Log	Sheets	4 of	16
Date Starte			ce Elevati	ion: N/A	Boring No.:	: MW-Ld	
1	eted: <u>12/02/2018</u>		ing (NAD			<u> </u>	
Drilling Co.:			ng (NAD8	·	Client: PG&E	atar Damadı	Dhasa I
Drilling Meth Driller Name	•	Total Boreh	Depth: iole Diam	•	Location: Groundwa	California	Phase I
Drilling Asst		J. Campbell Depth			ivecuics,	Camorna	
Logger:		Samp			Project Number: Top	pock	
Editor:		Samp	ling Interv				
Weather:	78 to 84° Partly		erted to W	Vell: ⊠ Yes □ No			
Depth (ft) Recovery (in)	Sieve Groundwa Sample ID Sample I		USCS	Description		Drilling Notes	Drilling Fluid
61120		Topock - Alluvium SM Deposits		subround; dry			
62				(62.0 - 65.5') Topock - Alluvium Deposits; We			
63		Topock - Alluvium GW		sand (GW); light brownish gray / pale yellowis granules to small cobbles, angular to subroun coarse grained sand, angular to subround; tra subangular; dry	d; little very fine to very		
64 65		Deposits					
				(65.5 - 67.0') Topock - Alluvium Deposits; Siltv	y sand with gravel (SM);		
66	-	Topock - Alluvium SM		dark grayish brown / dark yellowish brown(10 grained to very coarse grained, angular to sub			
67		Deposits		large pebbles, angular to subangular; little silt cobbles, angular; dry (67.0 - 69.0') Topock - Alluvium Deposits; We (SW-SM); light brownish gray / pale yellowish	; little clay; trace		
68		Topock - Alluvium Deposits	SM	(SW-5M), light brownish gray / pale yellowish fine grained to very coarse grained, angular to trace granule to medium pebbles, subangular	subangular; little silt;		
720 LOG.60DT 124/18				(69.0 - 79.5') Topock - Alluvium Deposits; Silty brown (7.5YR 5/3); fine grained to very coarse subround; little granule to very large pebbles, little silt; trace cobbles, angular to subangular subangular to well-round; little mica; dry	e grained, subangular to subangular to round;		
75 — 74 ARCADIS 2010 001 120 120 120 120 120 120 120 12				outer guid. to won round, made mice, any			
DATABASE FOR F				(72.5') olive / moderate olive brown(5Y 4/4); s large pebbles	ome granule to very		
74		Topock - Alluvium SM Deposits		(74') dark grayish brown / dark yellowish brow	rn(10YR 4/2)		
75				(75') dark brown (7.5YR 3/4); moist			
SDESKTOPIONEDRY				(76') brown (7.5YR 4/3); and granule to very la to round; little silt; trace cobbles, subangular t	arge pebbles, subangular o round; wet; water table	Approximate depth of water table	
PACK C: UNSERSITION DDS	MW-L-VAS 76-81 (31 ppb)	5-					60 gal of water used
08E TC		Topock - ML		(79.5 - 80.0') Topock - Alluvium Deposits; Sar	ndy silt with gravel (ML):		
୍ଧି 80 Notes: Ni	R = No Recovery, USC	Alluvium	1º1Vº1	·		1	<u> </u>
NING.		5 51.1110G 0011 01E	.55,1104110	5,5.0			
SOILB							

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet:	5 of	16
Date S	Started	10/03/2	2018		Surface	Eleva	tion: N/A	Bor	ina No.:	MW-Ld	
	•	ted: <u>12/02/2</u>	2018		Northing		•				
Drilling	g Co.:	Casca	de		Easting	(NAD			PG&E		
Drilling	g Meth	od: <u>Sonic I</u>	<u>Drilling</u>		Total De	epth:	315 ft bgs	Location:	Groundwa	ater Remedy	Phase I
Driller	Name		Mara		Borehol				Needles,	California	
Drilling	g Asst:		llmantel / J. (=	-						
Logge			/IcGrane					Project Nu	ımber: <u>To</u> p	ock	
Editor			/IcGrane		-	-					
Weath	er:	<u>78 to 8</u>	4° Partly Clo	<u>udy</u>	Convert	ed to \	Well: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Fluid
			MW-L-VAS- 76-81 (31 ppb)	Deposits			reddish brown(2.5YR 4/3) with reddish brown no dilatency; some very fine to very coarse gr to subround; little granule to very large pebble	rained sand, s	ubangular		
81_	120		(31 ppb)	Topock - Alluvium	SM		wet		•		
				Deposits	SIVI		(80.0 - 82.5') Topock - Alluvium Deposits; Silt dark grayish brown / dark yellowish brown(10				
82							grained to very coarse grained, angular to sult to large pebbles, angular to subround; some	bangular; som			
							(82.5 - 86.0') Topock - Alluvium Deposits; Silt	•	rovioh		
83							brown (10YR 5/2); very fine grained to very co	oarse grained,	angular to		60 gal of water
							subangular; and silt; trace granule to very larg subangular; trace cobbles, angular; trace clay				used
84				Topock -			strong cementation				
L -				Alluvium Deposits	SM						
85				Doposito							
86											
L							(86.0 - 93.5') Topock - Alluvium Deposits; Silt dark grayish brown / dark yellowish brown(10				
87							grained to very coarse grained, angular to subgranule to very large pebbles, angular to subgranule	bangulár; som	e silt; little		
							moderate cementation	angular, illile c	iay, moist,		
88											
00											
^β											
89											
- 1.00 - 1.00				Topock - Alluvium	SM		(89.5'); decrease in ganules to large pebbles,	increase in si	lt		
일 90				Deposits							
50180											
<u>91_</u>	120										20 gal of water used
- AR											
୍ଟ୍ର92_											
I											
93											
DATA -				Topock -			(02.5. 04.0') Topock, Allunium Dopocito: So	ndy oilt with an	ovol (ML):		
ğ94_				Alluvium	ML		(93.5 - 94.0') Topock - Alluvium Deposits; Sar grayish brown (2.5Y 5/2); no plasticity, no dila	atency; some v	ery fine to		
SMAT				Deposits Topock -	SM		very coarse grained sand, angular to subroun pebbles, angular to subround; little silt; little c				
95				Alluvium Deposits			cementation				
127					1		(94.0 - 95.0') Topock - Alluvium Deposits; Silt dark grayish brown / dark yellowish brown(10	YR 4/2); very	fine		
<u></u> 96							grained to very coarse grained, angular to sul granule to large pebbles, angular to subangul	lar; little clay; t	race		
ONE							cobbles, angular to subangular; moist; moder	ate cementation	on		
[97_							(95.0 - 112.0') Topock - Alluvium Deposits; Sa grayish brown (2.5Y 5/2); no plasticity, no dila	atency; some v	ery fine to		
DOSADE				Topock -	N 41		very coarse grained sand, angular to subangularge pebbles, angular to subangular; trace cl				
- 98_ - 98_				Alluvium Deposits	ML		strong cementation (96'); moist to dry; increase in granules to ver	•			50 gal of water
SERS							decrease in sand, increase in granules to ver		J.,		used
ਲੋ 99	1										
PAG											
- 108 -											
្ន ី 100 Solution	. NR	= No Recov	/ery, USCS =	Unified S	oil Class	sification	n System			1	1
N TOTOS			. 5. 5, 5500 -	5G	J., Olub						
SOIL BC											

AR	CADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sheet:	6 of	16
Date Starte	d: <u>10/03/</u>	2018		Surface	Elevation:	N/A	Bor	ina No	MW-Ld	
Date Comp	eted: 12/02/2	2018		Northing	g (NAD83):	N/A			initi Ed	
Drilling Co.:	<u>Casca</u>	de		Easting	(NAD83):	N/A	Client:	PG&E		
Drilling Met	nod: <u>Sonic</u>	Drilling		Total De	epth:	315 ft bgs	Location:	Groundwa	ater Remedy	Phase I
Driller Nam		'Mara			le Diameter:	<u>10 in</u>	-	Needles,	California	
Drilling Ass				•	o First Water		-			
Logger:		<u>McGrane</u>		-	-	10 ft Core Barrel	Project Nu	ımber: <u>To</u> l	oock	
Editor:		<u>McGrane</u>		-	-	Continuous	-			
Weather:	78 to 8	84° Partly Clo		Convert	ted to Well:					_
Depth (ft) Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
102 _103_										50 gal of water
104										used
105										
106 ₁₂₀ 107			Topock - Alluvium Deposits	ML		wet; moderate cementation; decrease s, increase in sand	in granules to	large		
107 					(107'); pebble	moist to dry; strong cementation; incress, decrease in sand	ease in granule	es to large		
109 1274/18		MW-L-VAS- 106-111 (<0.84 ppb)								
ZI IIU I										
G GPU ARCADIS 20180927 F										100 gal of water used
ATABASE FOR PLOC			Topock - Alluvium Deposits	ML	(ML); t plastic subanq subanq	 - 114.0') Topock - Alluvium Deposits; forown (10YR 5/3) little dark reddish brown, to dilatency; some granule to very gular; some very fine to very coarse granuler; trace clay; trace mica; little calich 	own (2.5YR 3/4 large pebbles, ained sand, an	; no angular to gular to		
114_					(ML); g	- 121.0') Topock - Alluvium Deposits; a grayish brown (2.5Y 5/2); no plasticity,	no dilatency; s	ome very		
124-2018 					to very	very coarse grained sand, angular to s large pebbles, angular to subangular; liche; moist; moderate cementation; in	trace clay; tra	ce mica;		
116					(116')	prown (10YR 4/3); no caliche; iron oxid	le staining			
			Topock - Alluvium	ML		, , , , , , , , , , , , , , , , , , , ,	3			
SERSILWOODSI			Deposits							130 gal of water used
TOPACK C: III										
120	<u> </u>	11000	11.50.50	.:. 0:	<u> </u>	I				
Notes: N	≺ = No Reco	very, USCS	= Unified S	oii Class	sification Sys	tem				
OIL BOF										
σ̄.										

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	J Log		Sheet:	7 of	16
	Started				Surface		· · · · · · · · · · · · · · · · · · ·	Bori	ing No.:	MW-Ld	
	-		2018								
Drilling	-	Cascac			_	-	•	Client:	PG&E		Division
	Meth		Drilling Mare			-	315 ft bgs neter: 10 in			-	Phase I
	Name: Asst:		iviara Ilmantel / J. (Needles, (Jailiomia	
Logge			Innanter 7 3. C IcGrane	•	Samplir			Project Nu	ımher: Ton	nck	
Editor			AcGrane AcGrane		Samplir	-		i iojectivi	шист. <u>тор</u>	OCK	
Weath			4° Partly Clo		Convert	•					
	I I										
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
121	108			Topock - Alluvium Deposits	ML						
	108						. (121.0 - 126.0') Topock - Alluvium Deposits; § (ML); brown (10YR 4/3) and reddish brown / r 4/4); no plasticity, no dilatency; some granule	noderate brow to very large	vn(5YR pebbles,		
-122							angular to subangular; some very fine to very angular to subangular; trace mica; trace calic				
123							cementation; iron oxide staining				130 gal of
				Topock - Alluvium	ML						water used
124				Deposits							
125											
							· ·				
126							(126.0 - 131.0') Topock - Alluvium Deposits; § (ML); dark grayish brown / dark yellowish brov				
127							plasticity, no dilatency; some granule to very l subangular; some very fine to very coarse gra- subangular; trace clay; little mica; moist; weal	arge pebbles, ained sand, an	angular to gular to		
128				Topock -			staining				
				Alluvium Deposits	ML						
129				Bopoolio							
등는 - 130											
130_											
^୭ ୮ - ୭୮ - 131											140 gal of
4RCAD							(131.0 - 139.5') Topock - Alluvium Deposits; S (ML); dark yellowish brown (10YR 4/4); no pla	Sandy silt with	gravel		water used
							some very fine to very coarse grained sand, a little granule to large pebbles, angular to suba	ingular to suba	angular;		
APLO							mica; wet; iron oxide staining (132'); no dilatency; some granule to large pe	•			
 							 subangular; trace clay; iron oxide staining; de 	crease sand, i	increase		
DATAB -							silt				
Š134											
ร็ <mark>ล135</mark>				Topock - Alluvium	ML						
				Deposits	IVIL						
<u>ੇ</u> _136_	182.4						(136'); iron oxide staining; increase gravel, de	crease silt			
427 427							· ·				
137_ 137_											
5 138_							:				60 gal of water
USERS											used
ਹੈ ਤੂੱ _139_							:				
m –							(120 5 146 0) T	Dravalle - 21 - 22	th oard		
140				11.20 . =	ML	<u>[</u> [][]	(139.5 - 146.0') Topock - Alluvium Deposits; (ravelly silt wi	in sand		
Notes	: NR	= No Recov	ery, USCS =	unified S	oli Class	SITICATIO	on System				
OIL BO											

AR	Design & Consultancy for natural and built assets		Bori	ing	Log	Sheet	8 of	16
Date Started	i: <u>10/03/2018</u>	Sı	urface E	levat	ion: N/A	Boring No.:	: MW-Ld	
	eted: 12/02/2018		orthing (-			
Drilling Co.:			asting (N		-	Client: PG&E		<u> </u>
Drilling Meth			•		315 ft bgs	Location: Groundwa	-	Phase I
Driller Name Drilling Asst			orehole			<u>Needles,</u>	California	
Logger:	Sean McGrane	•	•			Project Number: To	nock	
Editor:	Sean McGrane		ampling			. 10,000 110	500 10	
Weather:	78 to 84° Partly Cl		onverted					
5		o 5						
Depth (ft) (Recovery (in)	Sieve Groundwater Sample ID Sample ID	Geologic	Code	Class	Description		Drilling Notes	Drilling Fluid
					(ML); brown (10YR 4/3); no plasticity, no dilat very large pebbles, angular to subangular; so coarse grained sand, angular to subangular; to oxide staining	me very fine to very		
142		Topock -		000				
143	MW-L-VAS- 141-146	Alluvium Deposits	ML .	000				60 gal of water used
144	(<0.33 ppb)		0	000				
_145			٥	000				
_146			•	9°]<	(146.0 - 151.0') Topock - Alluvium Deposits; S		seepage from	
147 					(SM); dark grayish brown / dark yellowish bro grained to very coarse grained, angular to sub to very large pebbles, angular to subangular; coarse grained sand, angular to subangular; angular; trace mica; dry; weak cementation; ir	bangular; some granule some very fine to very ittle silt; trace cobbles,	outside conductor casing. pull 6" casing and 7" conductor	
148		Topock - Alluvium	SM		(0,70,30,0)	5,	casing and install 12" conductor casing. while	
149_		Deposits					reinstalling 6" casing to 146' bgs, 100	
150_							gallons of water added from 116` to	
150 120 120 120 120 120 120 120 120 120 12							126` bgs, 100 gallons added	40 gal of water
A ARCAI		Tanada			(151.0 - 153.0') Topock - Alluvium Deposits; S (SM); brown (10YR 4/3); very fine grained to	very coarse grained,	from 126` to 136` bgs and 60 gall	used
៉ូ <u></u> _152		Topock - Alluvium Deposits	SM		angular to subround; some granule to very lar subangular; some silt; little clay; trace cobbles wet; weak cementation; iron oxide staining; (2	s, angular; trace mica;	oo gali	
등 - 岁153								
XK DATAB		Topock - Alluvium Deposits	GM 0		(153.0 - 154.0') Topock - Alluvium Deposits; S (GM); brown (10YR 4/3); granules to very larg subangular; some very fine to very coarse granules.	ge pebbles, angular to		
0doLM8.		Topock - Alluvium	SM		subangular; some silt; trace mica; moist; wea staining (154.0 - 155.0') Topock - Alluvium Deposits; \$,		
155_		Deposits Topock -			(SM); brown (10YR 4/3); very fine grained to vangular to subround; some granule to very lar	very coarse grained, ge pebbles, angular to		
156		Alluvium Deposits	ML		subangular; some silt; little clay; trace cobbles wet; moderate cementation (155.0 - 156.0') Topock - Alluvium Deposits; S		rofill accide	
		Topock - Alluvium Deposits	GM)	\mathbb{M}	(ML); brown (10YR 4/3); low plasticity, no dila very large pebbles, angular to subangular; so coarse grained sand, angular to subangular; l	tency; some granule to me very fine to very	refill casing (110 gallons) after sampling from 261-266ft	
158		Topock - Alluvium	SM		moist; strong cementation (156.0 - 157.0') Topock - Alluvium Deposits; S (GM); brown (10YR 4/3); granules to very larg subangular; some very fine to very coarse gra subangular; little silt; little clay; trace mica; we iron oxide staining	ge pebbles, angular to ained sand, angular to	bgs	50 gal of water used
159_		Deposits			(157.0 - 163.0') Topock - Alluvium Deposits; S (SM); brown (10YR 4/3); very fine grained to vangular to subround; some granule to very lar subangular; some silt; little clay; trace mica; n	very coarse grained, rge pebbles, angular to		
160 Notes: NF	R = No Recovery, USCS	= Unified Soil	l Classifi	icatio				I
ORING								
SOILE								

9/-	۱RC	ADIS	Design & Consultancy for natural and built assets		Во	ing Log Sheet:	9 of 16
Date S	started	10/03/2	2018	;	Surface	Elevation: N/A Boring No.:	MW-I d
Date C	omple	ted: <u>12/02/</u> 2	2018	1	Northin	(NAD83): N/A	IVIV-LU
Drilling	Co.:	Casca	de	[Easting	NAD83): <u>N/A</u> Client: <u>PG&E</u>	
Drilling	Meth	od: Sonic I	Drilling		Total D	oth: 315 ft bgs Location: Groundwate	er Remedy Phase I
Driller	Name:	Dan O	'Mara	[Boreho	Diameter: 10 in Needles, Ca	alifornia
Drilling	Asst:	E. Hue	llmantel / J.	Campbell [Depth t	First Water: N/A	
Logge	r:	Sean N	/IcGrane	;	Samplir	Method: 10 ft Core Barrel Project Number: Topo	ck
Editor:		Sean N	<u>//cGrane</u>	(Samplir	Interval: Continuous	
Weath	er:	<u>78 to 8</u>	4° Partly Clo	oudy (Conver	d to Well: 🗵 Yes 🗌 No	
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	Description	Orilling Notes Drilling Fluid
	120			Topock - Alluvium Deposits	SM	cementation; iron oxide staining	
 163							50 gal of water
				Topock - Alluvium Deposits	SM	(163.0 - 166.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (5YR 5/4); very fine grained to very coarse grained, angular to subangular; some granule to very large pebbles, angular to subangular; some silt; little clay; little mica; wet; weak cementation; iron oxide staining	used
 166							
167				Topock - Alluvium Deposits	GM	(166.0 - 167.5') Topock - Alluvium Deposits; Silty gravel with sand (GM); brown (10YR 4/3); granules to boulders, angular to subangular; some very fine to very coarse grained sand, angular to subangular; little silt; little clay; some mica; wet; strong cementation; iron oxide	
168				Topock - Alluvium Deposits	SM	staining (167.5 - 170.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (10YR 4/3); very fine grained to very coarse grained, angular to subround; some granule to very large pebbles, angular to subangular; some silt; little clay; trace mica; wet; strong cementation; iron oxide staining	
K DATABASE FOR PLOG GPJ ARCADIS 20180827 P	120			Topock - Alluvium Deposits	GM	(170.0 - 174.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); brown (10YR 5/3); granules to boulders, angular to subangular; some very fine to very coarse grained sand, angular to subangular; little silt; trace clay; some mica; wet; strong cementation; iron oxide staining	45 gal of water used
NE_1242018_SWITOPOC				Topock - Alluvium Deposits	GM	(174.0 - 176.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); dark grayish brown / dark yellowish brown(10YR 4/2); granules to very large pebbles, angular to subangular; some very fine to very coarse grained sand, angular to subangular; some silt; little clay; some mica; wet; strong cementation; iron oxide staining	
ODS/DESKTOP/ONEDRIN				Topock - Alluvium Deposits	SM	(176.0 - 177.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/3); very fine grained to very coarse grained, angular to subangular; some small to very large pebbles, angular to subangular; some silt; little clay; little mica; wet; strong cementation; iron oxide staining	
				Topock - Alluvium Deposits	SM	(177.5 - 181.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/3); very fine grained to very coarse grained, angular to subangular; some silt; little small to very large pebbles, angular to subangular; trace clay; little mica; wet; moderate cementation; iron oxide staining	20 gal of water used
SNotes:	NR	= No Recov	very, USCS =	= Unified So	oil Clas	fication System	
NON NO NO NO NO NO NO NO NO NO NO NO NO							
SOILE							

9/	RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet:	10 of	16
Date S	tarted:	10/03/2	2018	;	Surface	Elevati	on: <u>N/A</u>	Bori	na No.:	MW-Ld	
	•		2018			g (NAD8	•	_			
Drilling		Casca			_	(NAD8	-	=	PG&E		
Drilling			Drilling				315 ft bgs			ter Remedy	Phase I
Driller I Drilling			ilmantel / J.			e Diame		-	Needles, C	<i>J</i> alitornia	
Logger			McGrane		•			- Proiect Nu	mher: Ton	ock	
Editor:					-	ng Interv		_ 1 10,000110		OOK	
Weath	er:	78 to 8	4° Partly Clo		-	ted to W		-			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Description			Drilling Notes	Drilling Fluid
	134.4			Topock - Alluvium Deposits	SM						
182 183 184			MW-L-VAS- 181-186 (3.3 ppb)	Topock - Alluvium Deposits	ML		(181.5 - 184.5') Topock - Alluvium Deposits; (ML); brown (10YR 5/3); medium plasticity, sl granule to very large pebbles, angular to sub to very coarse grained sand, angular to subro staining	low dilatency; s angular; some	ome very fine		20 gal of water used
185				Topock - Alluvium	SM		(184.5 - 186.5') Topock - Alluvium Deposits; (SM); brown (10YR 5/3); very fine grained to angular to subround; some small to very largular; some silt; trace clay; some mica;	very coarse gra e pebbles, ang	ained, ular to		
_186				Deposits							
 187 _188_				Topock - Alluvium Deposits	ML		(186.5 - 188.5') Topock - Alluvium Deposits; (ML); brown (7.5YR 4/3); no plasticity, no dila very large pebbles, angular to subangular; so coarse grained sand, angular to subangular; cementation; iron oxide staining	atency; some gr ome very fine to	ranule to very		
8 SWITOPOOK DATABASE FOR PLOG GDJ 1294/18	120			Topock - Alluvium Deposits	SM		(188.5 - 195.0') Topock - Alluvium Deposits; (SM); brown (7.5YR 5/4); very fine grained to angular to subangular; some granule to very subangular; some silt; little clay; some mica; cementation; iron oxide staining	very coarse gr large pebbles,	rained, angular to		35 gal of water used
195195				Topock - Alluvium Deposits	ML		(195.0 - 201.0') Topock - Alluvium Deposits; (ML); reddish brown / moderate brown(5YR 44/3); low plasticity, no dilatency; some granul angular to subangular; some very fine to very angular to subangular; trace clay; some mica cementation; iron oxide staining	1/4) and brown le to very large / coarse graine	(10YR pebbles, d sand,		20 gal of water
100_P0&E TOPACK C:\(\text{RSR}\)\(\text{POWE TOPACK C:\(\text{RSR}\)\(\text{RSR}\)\(\text{POWE TOPACK C:\(\text{RSR}\)\(\text{RSR}\)\(\text{POWE TOPACK C:\(\text{RSR}\)\(NID	= No Poss	very, USCS =	= Unified S	oil Class	sification	n Svetam				used
JINOIES:	INK	- NO Recov	very, USCS =	- Offilied St	JII CIAS	sincalioi	ı oyalem				
SOIL BO											

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet:	11 of	16
Date S	Started	: <u>10/03/</u> 2	2018		Surface	Elevati	on: <u>N/A</u>	Borine	a No .	MW-Ld	
Date 0	Comple	eted: 12/02/2	2018		Northin	g (NAD	33): <u>N/A</u>		9 110	<u> </u>	
Drilling	g Co.:	Casca	de		Easting	(NAD8			G&E		
Drilling	y Meth	od: <u>Sonic I</u>	Drilling		Total D	epth:	315 ft bgs	Location: G	roundwat	<u>er Remedy</u>	Phase I
Driller			'Mara			le Diam		<u>Ne</u>	eedles, C	alifornia	
Drilling	g Asst:		ellmantel / J.		•						
Logge			<u> </u>		-	-		Project Numb	ber: <u>Topo</u>	ock	
Editor:			McGrane		•	•		-			
Weath	er:	<u>78 to 8</u>	4° Partly Clo		Conver	ted to W	/ell: X Yes No				
Depth (ff)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Description			Orilling Notes	Drilling Fluid
	100			Topock - Alluvium Deposits	ML						
	120						(201.0 - 205.0') Topock - Alluvium Deposits; (SM); brown (10YR 5/3); very fine grained to angular to subround; some granule to very la	very coarse graine rge pebbles, angu	ed, ular to		
							subround; some silt; trace clay; some mica; d cementation; iron oxide staining	lry to moist; mode	rate		
203				Topock - Alluvium	SM						20 gal of water
				Deposits							used
204											
205							(205.0 - 206.5') Topock - Alluvium Deposits;	Sandy silt with gra	avel		
-				Topock - Alluvium	ML		(ML); brown (10YR 5/3) and reddish brown / (4/4); no plasticity, no dilatency; some granule	moderate brown(5	5YR		
206				Deposits	IVIL		some very fine to very coarse grained sand, a trace clay; little mica; wet; medium stiff; mottle	angular to subang	ıular;		
						HY H	iron oxide staining				
_207				Topock - Alluvium	GM		(206.5 - 208.0') Topock - Alluvium Deposits; (GM); dark grayish brown / dark yellowish brown	own(10YR 4/2); gra	ranules		
208				Deposits		69 D	to very large pebbles, angular to subangular; to very coarse grained sand, angular to subar	ngular; little clay; t	ry fine trace		
200						d'X'i	mica; moist; moderate cementation; iron oxid (208.0 - 215.0') Topock - Alluvium Deposits;		and		
209							(GM); dark grayish brown / dark yellowish broto very large pebbles, angular to subangular;	own(10YR 4/2); gra	anules		
12 TO						12 P	dilatency; some very fine to very coarse grain subangular; some silt; little clay; trace mica; r	ed sand, angular	to		
210							cementation; iron oxide staining	noist, moderate			
80927						12 P					
se 211	133.2										40 gal of water
ARCAL	133.2			Topock - Alluvium	GM	6 p					used
212				Deposits	Givi	BHI					
R PLO						P P					
일 월_213_						5 Pid					
DATAB/						de					
ğ 214_						19 Pid					
SMATO						H					
ຊຶ່_215_				Tanaak		10 Pid	(0.45.0.00.00.7				
- 12				Topock - Older	SM		(215.0 - 216.0') Topock - Older Alluvium Dep gravel (SM); brown (7.5YR 4/4) and reddish b	prown (5YR 5/4); v	very fine		
216_				Alluvium Deposits			grained to very coarse grained, angular to su to very large pebbles, angular to subangular;	some silt; trace m			
NO/90							moist; mottled; weak cementation; iron oxide (216.0 - 219.5') Topock - Older Alluvium Dep		vith		
됩_217							gravel (SM); reddish brown / moderate brown grained to very coarse grained, angular to su	n(5YR 4/4); very fir	ne		
S000				Topock - Older	014		to very large pebbles, angular to subangular;				
218				Alluvium Deposits	SM		iron oxide staining				20 gal of water used
C:VUSE			MW-L-VAS-	2000000							
ž 219_			218-223								
G&E TC			(66 ppb)		GM	ly ll	(219.5 - 222.0') Topock - Older Alluvium Dep	osits; Silty gravel v	with		
<u>220</u> Notes:	NR	= No Recov	very, USCS =	Unified S		sificatio					
ORING TO TO TO			J.,, 2000		5.00		- <i>y</i> =				
SOILE											

9/	۱RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	J Log		Sheet:	12 of	16
Date S	Started	10/03/2	2018		Surface	Eleva	ation: <u>N/A</u>	Bor	ina No.:	MW-Ld	
Date 0	Comple	ted: <u>12/02/</u> 2	2018		Northing					<u></u>	
Drilling		Casca	de		Easting	•	,	Client:	PG&E		
Drilling			Drilling		Total De	-	_	Location:		ter Remedy	Phase I
Driller					Borehol				Needles, C	California	
Drilling	•		<u>llmantel / J. (</u>	-	-						
Logge			<u>//cGrane</u>			-		Project Nu	ımber: <u>Top</u>	ock	
Editor:			<u>//cGrane</u>		Samplin	-					
Weath	er:	<u>78 to 8</u>	4° Partly Clo		Convert	ed to	Well:		T		
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Description			Drilling Notes	Drilling Fluid
 221 	111.6		MW-L-VAS- 218-223 (66 ppb)	Topock - Older Alluvium Deposits	GM		sand (GM); reddish brown / moderate brown(s very large pebbles, angular to subangular; sor coarse grained sand, angular to subround; sor iron oxide staining	me very fine to	o very		
							(222.0 - 227.5') Topock - Older Alluvium Depo gravel (ML); reddish brown (5YR 5/4) with gra	osits; Sandy si	ilt with		
223							6/1); no plasticity, no dilatency; some granule angular to subangular; some very fine to very	to very large	pebbles,		20 gal of water
							angular to subangular; trace clay; little mica; n mottled; moderate cementation; iron oxide sta	moist; stiff to v	ery stiff;		used
224				Topock -							
 _225				Older	ML						
				Deposits							
226											
227											
228							(227.5 - 236.0') Topock - Older Alluvium Depo gravel (ML); reddish brown (5YR 5/4); no plas granules to very large pebbles, angular to sub	sticity, no dilate pangular; som	ency; some e very fine		
229							to very coarse grained sand, angular to suban mica; moist; stiff to very stiff; moderate cemen staining	ngular; little cla ntation; iron ox	ay; little kide		
230_							(230') yellowish red (5YR 4/6); dry; very stiff; s	strong cement	tation; iron		
= - = _231_							oxide staining				
23 [120			Topock -							
232				Ölder Alluvium	ML						
				Deposits							
233											1125 gal used
											1125 gai useu
234							(233.5'); trace clay; iron oxide staining; increas	ise in sand an	d silt		
235											
236_							(236.0 - 240.0') Topock - Older Alluvium Depo	osits; Sandy si	ilt with		
							gravel (ML); reddish brown (5YR 5/4); no plas granule to very large pebbles, angular to suba to very coarse grained sand, angular to suban	angular; some	very fine		
				Topock -			subangular; trace clay; little mica; moist to well iron oxide staining				
238				Older	ML		l l l l l l l l l l l l l l l l l l l				
				Deposits							
239_											
240 Notes:	NR	= No Recov	/ery, USCS =	Unified S	oil Class	⊥	on System				
							,				
<u> </u>											

9/	RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Sheet	: 13 of	16
Date S	tarted	10/03/2	2018		Surface	Eleva	tion: N/A	Boi	ring No	: MW-Ld	
Date C	omple	ted: 12/02/2	2018		Northing	JAN) g	083): <u>N/A</u>		ing ito.	. <u>IVIVV-Lu</u>	
Drilling	Co.:	Cascac	de		Easting	(NAD	33): <u>N/A</u>	Client:	PG&E		
Drilling	Meth	od: Sonic [Drilling		Total De	epth:	315 ft bgs	Location:	Groundw	ater Remedy	Phase I
Driller I	Name:	Dan O'	Mara		Borehol	e Diar	neter: 10 in		Needles,	California	
Drilling	Asst:	E. Hue	Ilmantel / J. (<u>Campbell</u>	Depth to	First	Water: N/A				
Logger	:	Sean N	/IcGrane		Samplin	ig Met	nod: <u>10 ft Core Barrel</u>	Project N	lumber: <u>To</u>	pock	
Editor:		Sean N	/IcGrane		Samplin	g Inte	val: <u>Continuous</u>				
Weath	er:	78 to 8	4° Partly Clo	udy	Convert	ed to	Well: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Descript	ion		Drilling Notes	Drilling Fluid
241 242 243 244	120			Topock - Older Alluvium Deposits	SM		(240.0 - 244.0') Topock - Older Alluviu gravel (SM); reddish brown / moderate grained to very coarse grained, angula to very large pebbles, angular to subre subangular; little mica; wet; iron oxide	e brown(5YR 4/4); ve ar to subangular; sor ound; some silt; trac	ery fine ne granule		
245							(244.0 - 254.0') Topock - Older Alluviu gravel (ML); reddish brown / moderate no dilatency; some granule to very lar subangular; some very fine to very co subangular; little mica; moist to wet; n staining	e brown(5YR 4/4); no ge pebbles, angular arse grained sand, a	plasticity, to ingular to		1125 gal used 1100 gal of water used 1100 gal of water used
											water useu
247											
248 				Topock - Older	ML						
GDT 12				Alluvium Deposits	IVIL						
^{වී} _250_											
180927											
g251	114										
ARCAL	114										
252											
- OR PLOC											
253253											40 gal of water used
5											
Jack Strategies							(254.0 - 258.0') Topock - Older Alluviu			1	
255				Topock -			gravel (ML); reddish brown / moderate no dilatency; some granule to very lar subangular; some very fine to very co subangular; trace cobbles, angular; tr medium stiff to stiff; weak cementation	ge pebbles, angular arse grained sand, a ace clay; little mica;	to ingular to moist;		
256_				Older Alluvium	ML			J			
NO MODE				Deposits							
257											
00MI ₈ 258						Ш					140 gal of
259				Topock - Older Alluvium Deposits	ML		(258.0 - 262.5') Topock - Older Alluviu gravel (ML); reddish brown / moderate plasticity, no dilatency; some granule subangular; some very fine to very co subangular; little clay; little mica; mois cementation; iron oxide staining	e brown(5YR 4/4); m to very large pebbles arse grained sand, a	edium s, angular to angular to		water used
Notes:	NR	= No Recov	ery, USCS =	Unified S	oil Class	sificati	on System			1 1	
SI SI SI SI SI SI SI SI SI SI SI SI SI S			,,	254 0	5.400		- J				
SOIL B											

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	J Log	Shee	et: 14 of	16
Date S	Started	10/03/2	2018		Surface			Boring No	.: MW-Ld	
	-		2018		Northing			-	<u> </u>	
Drilling		Casca			Easting	•	•	Client: PG&E		Di I
Drilling Driller			Drilling 'Mara		Total De Borehol	-	315 ft bgs neter: 10 in	Location: Ground	water Remedy s, California	Phase I
Drilling			ellmantel / J.					Needles	<u>,, CalliOffila</u>	
Logge			McGrane	-	-			Project Number: T	opock	
Editor:			<u> McGrane</u>		-	-		-		
Weath	er:	78 to 8	84° Partly Clo	oudy	Convert	ed to	Well: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Description		Drilling Notes	Drilling Fluid
	108			Topock - Older Alluvium Deposits	ML		(261'); dry to moist; moderate cementation; in	on oxide staining		
262				Deposits						
					1		(262.5 - 283.0') Topock - Older Alluvium Dep	osits; Sandy silt with	-	140
263			MW-L-VAS-				gravel (ML); dark reddish brown (2.5YR 3/4); dilatency; some granule to very large pebbles	s, angular to subangular;		140 gal of water used
			261-266 (<0.17 ppb)				some very fine to very coarse grained sand, a little clay; little mica; wet; medium stiff; iron or	angular to subangular; xide staining		
265										
266										30 gal of water
_267										3333
268 							(268'); some clay; little granule to very large p subangular; little very fine to very coarse grai subangular; moist; stiff; weak cementation; in	ned sand, angular to		
20180927 PI										
271_	138			Topock - Older						
J ARC				Alluvium Deposits	ML					40 gal of water used
272_				2 opcosts						
FOR -										
273										
5 274										
SIMITOF										
275_										
/E_1_1/2										
276_										
277 277 277										
277										
278_										
NUSER										
ğ 279_										
98E TOF										
280 Notes:	NR	= No Recov	very, USCS :	 = Unified S	oil Class	ificati	n System			
ORING NING	1411	11011000	. 5. , , 5555	5.moa 0	O.u.s.		5 5 ₃ 5.6			
SOILB										

9/	۱RC	CADIS	Design & Consultancy for natural and built assets		Во	rir	ng	Log		Sheet	: 15 of	16
Date S	Started	: <u>10/03/</u>	2018	;	Surface	Ele	vat	ion: <u>N/A</u>	Bor	ina No	: <u>MW-Ld</u>	
Date C	Comple	eted: <u>12/02/</u>	2018	!	Northing	g (N	AD	83): <u>N/A</u>	_		. <u>iiii La</u>	
Drilling		<u>Casca</u>			Easting				_ Client:	PG&E		
Drilling			Drilling					315 ft bgs	_ Location:		ater Remedy	Phase I
Driller			'Mara		Borehol				_	Needles,	California	
Drilling			ellmantel / J.						-			
Logge			<u>McGrane</u>		•	_			Project N	umber: <u>To</u>	pock	
Editor:			McGrane		-	-			-			
Weath	er:	<u>/8 to 8</u>	34° Partly Clo		Convert	ea t	:O V	Vell: ⊠ Yes □ No			Γ	Г
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	SOS	Class	Description			Drilling Notes	Drilling Fluid
	120			Topock - Older Alluvium	ML							
282				Deposits								
283						\mathbb{H}	+	(283.0 - 299.0') Topock - Older Alluvium Dep	osits; Gravelly	silt with		
								sand (ML); reddish brown / moderate brown(plasticity, no dilatency; some granule to very subangular; little very fine to very coarse gra subangular; little silt; little clay; trace mica; m cementation; iron oxide staining	5YR 4/4); med large pebbles ined sand, and	lium , angular to gular to		
285								cementation, non oxide staining				
286												
_287												
288												
289												
3.GDT												
_290												
4RCADIS 2018095	120			Topock - Older Alluvium Deposits	ML							
292 292				2 opcone								
DATABASE FC												
294												
295												
296											lost core down	
TIOPIC											hole.	
_297												
298												
299_ 299			MW-L-VAS- 299-304	<u> </u>		K		(299.0 - 306.0') (NR); No Recovery, sample 1	fell out of core	barrel.	Attempted to collect GW	
300			(Did not		NR	\bigvee					sample but formation was	
Solution Notes:	NR	R = No Reco	very, USCS	= Unified So	oil Class	sifica	atio	n System				
BORIN												
SOIL												

9/	۱RC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g		Sheet:	16 of	16
Date S	Started	10/03/2	2018		Surface	Elevation:	N/A	Bor	ina No :	MW-Ld	
Date 0	Comple	ted: <u>12/02/</u> 2	2018		Northing	g (NAD83):	N/A		g 110	IVIV EU	
Drilling	g Co.:	Casca	de		Easting	(NAD83):	N/A	Client:	PG&E		
Drilling	y Meth	od: <u>Sonic I</u>	Drilling		Total De	epth:	315 ft bgs	Location:	Groundwa	ter Remedy	Phase I
Driller						e Diameter:			Needles, 0	California	
Drilling			ellmantel / J. (-	-						
Logge			<u> McGrane</u>		-	ng Method:	10 ft Core Barrel	Project Nu	ımber: <u>Top</u>	ock	
Editor:					-	ng Interval:	Continuous				
Weath	er:	<u>78 to 8</u>	4° Partly Clo		Conver	ed to Well:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Description			Drilling Notes	Drilling Fluid
			produce)							non-permeable and produced	
301	36					\ /				no water.	
	30					\ /					
302			MW-L-VAS- 299-304			\					
L _			(Did not produce)			\					
303					NR	Y					
L _					1417						
304						/ \					
						/ \					
305						/ \				Drill rods	
L -						/ \				chattering	
306					-	H					
						silt (M	I - 311.0') Topock - Weathered Bedrock L); dark reddish brown(2.5YR 3/3); med	dium plasticity,	no		
_307	18						ncy; some fine to medium grained sand, granule to small pebbles, angular to sub		subround;		
L -						coarse	e-grained sand; trace mica; dry; very sti kide staining		entation;		
308				Topock -			ado otali ili g				
				Weathered	ML						
309_				Bedrock - conglomerat	e						
<u> </u>											
310_											
§311					_	(211.0	- 315.0') Topock - Bedrock - metadiori	to: dr.: Dortial	h/	Rough drilling	
	84					Weath	nered Metadiorite	ie, ury, Farilai	y		
g 312											
유 -				.							
313_				Topock - Bedrock -							
<u> </u>				metadiorite						Core barrel	
314_										stuck down hole. Pulled	
										both core barrel and 6"	
315						<u> </u>	End of Boring at 315.0 '	bas.		casing.	
							1 3g at 5 70.0	J -			
_316											
<u> </u>											
317											
_318											
<u>_</u> 319_											
<u> </u>											
320 Notes:	ND	= No Reco	very, USCS =	Unified 9	oil Class	sification Sve	:tem				
TINOICS.	INIX	- 140 1/600	voi y, 0000 -	Jillieu 3	UII UIAS	sincation Sys	nom				
<u></u>											



BORING NUMBER:

AOC13-GRBS-B-01 SHEET 1 OF 2

SOIL BORING LOG

PROJECT : PG&E Topock; Pipeline F Retaining Wall LOCATION : 34° 42' 50.64", - 114° 29' 31.92"

ELEVATION: 608.0 DRILLING CONTRACTOR: Cascade Drilling

			ncountere		START: 10/8/2018 END: 10/8	•
EPTH E	BELOW GI	ROUND SI	JRFACE (ft)	SIANDARD	SOIL DESCRIPTION	COMMENTS
	INTERV.	AL (ft)		PENETRATION TEST RESULTS		
		RECOV	ERY (ft)		SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND
			#TYPE	6"-6"-6" (N)	CONSISTENCY, SOIL STRUCTURE, MINERALOGY	INSTRUMENTATION
-	1.0				4" Asphalt Concrete Poorly-graded SAND with GRAVEL (SP) light brown;	
_		4.0	1		dry; fine to coarse grained, ~10% GRAVEL to 2" diameter. [FILL]	CR, M=4% (Bulk), Hand Auger to 5'
_	4.0	4.0			- -	
5	5.0				-	
	6.5	1.2	2	3-5-7 (12)	Loose.	M=2%, PA (Ring)
-						
- -					- - -	
10	10.0	1.0	3	2-4-8	~20% GRAVEL to 1" diameter	M=4% (SPT)
-	11.5	1.0	3	(12)	- - -	(OFI)
-	-				Poorly-graded SAND (SP) light brown; moist; medium dense; fine grained; micaceous; homogenous. [NATIVE]	
15	15.0				- -	PA
-	16.5		4	8-10-14 (24)		(SPT)
- -					Fat CLAY with SAND (CH) brown: moist: very stiff: ~	
20	20.0				Fat CLAY with SAND (CH) brown; moist; very stiff; ~ 25% fine to medium SAND. horizontal laminations.	
-	21.5	1.5	5	6-10-10 (20)	Poorly-graded SAND (SP) light brown; moist;	(SPT), PP = 4.0 tsf
-					medium dense; fine grained; micaceous; homogenous - -	
- -					- -	
25 -	25.0	0.1	6	6-7-10	<u>-</u>	(SPT)
- -	26.5	0.1	0	(17)	- - -	
-	1				Fat CLAY (CH) reddish brown; moist; hard; horizontal laminations.	
-	1				<u>-</u>	



BORING NUMBER:

AOC13-GRBS-B-01 SHEET 2 OF 2

SOIL BORING LOG

PROJECT : PG&E Topock; Pipeline F Retaining Wall

LOCATION : (34° 42' 50.64", - 114° 29' 31.92")

ELEVATION : 608.0

DRILLING CONTRACTOR : Cascade Drilling

WATER	LEVELS	S : Not Er	ncountere	d	START: 10/8/2018 END: 10/	8/2018 LOGGER : D. Jankly
			JRFACE (ft)		SOIL DESCRIPTION	COMMENTS
	INTERV			PENETRATION TEST RESULTS		
			EDV (#)	TEST RESULTS	SOIL NAME, USCS GROUP SYMBOL, COLOR,	DEPTH OF CASING, DRILLING RATE,
		RECOV	#TYPE	6"-6"-6"	MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
			#11171	(N)		
-			7	5-7-9 (16)		(SPT), PP > 4.5 tsf
35 40 45 50	30.0 31.5		7	5-7-9	Total Depth: 31.5', No Groundwater Encountered, Backfilled with Portland Cement Grout, Concrete Patch at Surface.	(SPT), PP > 4.5 tsf
55 - -					- - - -	
- - - -					- -	
60 -				1	-	1



BORING NUMBER: AOC13-GRBS-B-02

SHEET 1 OF 2

SOIL BORING LOG

PROJECT : PG&E Topock; Pipeline F Retaining Wall

LOCATION : (34° 42' 50.68", -114° 29' 30.59")

ELEVATION : 597.0

DRILLING CONTRACTOR : Cascade Drilling

WATER) I EV/EI S	: Not Er	ncountere	d	START: 10/8/2018 END: 10/8	8/2018 LOGGER : D. Jankly
			JRFACE (ft)		SOIL DESCRIPTION	COMMENTS
	INTERV			STANDARD PENETRATION		33
	INTERV			TEST RESULTS	SOIL NAME, USCS GROUP SYMBOL, COLOR,	DEPTH OF CASING, DRILLING RATE,
		RECOV			MOISTURE CONTENT, RELATIVE DENSITY OR	DRILLING FLUID LOSS, TESTS, AND
			#TYPE	6"-6"-6" (N)	CONSISTENCY, SOIL STRUCTURE, MINERALOGY	INSTRUMENTATION
_	1.0				4" Asphalt Concrete Poorly-graded SAND with SILT and GRAVEL	
_	1.0				(SP-SM) brown; dry; fine sand, ~37% GRAVEL; ~	CR, PA
_					10% COBBLES to 12" diameter. [FILL]	(Bulk); Hand Auger to 5'
-	1				-	
	1	4.0	1			
-					Many COBBLES at 3 to 5 feet.	
5 -	5.0				-	
	0.0			5-10-15	Medium Dense.	(Ring)
_		1.0	2	(25)	CANDY OF TV OF AV /CL B41 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	DC DI M-170/ 1104-100
-	6.5			` -/	SANDY SILTY CLAY (CL-ML) brown; medium dense; moist. [NATIVE]	DS, PI, M=17%, UW=100 pcf
-]					1
_					Fat CLAY (CH) brown; moist; very stiff; homogenous.	
-	-				-	1
-	1				-]
10	10.0					
-	-	1.5	3	3-6-11	-	M=24%, Pl (SPT); PP=3.5 tsf.
-	11.5	1.5		(17)	-	(61 1), 11 6.6 6.1.
_					Poorly-graded Sand (SP) Light brown; moist; fine grained; homogenous.	
-	-				grained, nomogenous.	-
-	1				Fat CLAY (CH) brown; moist; very stiff; homogenous;	i
					few fine SAND; laminations <1/8" thick.	
15	15.0				-	-
15_	13.0			6-6-10		DS, M=23%, UW=102 pcf
_		1.3	4	(16)	-	(Ring); PP=3.5 tsf.
-	16.5			` '	-	1
_	4				<u>-</u>	
-	1				-	1
_	1				_	1
20	20.0				-	M-240/
-	1	1.5	5	5-6-7	CILTY CLAY (CL ML) brown web acts acts acts acts acts	M=24% (SPT)
_	21.5			(13)	SILTY CLAY (CL-ML) brown; wet; soft; saturated; homogenous.	
-	-				Fat CLAY (CH) brown; moist; very stiff; homogenous;	1
-	†				few fine SAND; laminations <1/8" thick.	1
_					_]
-	1				-	1
25_	25.0				-	1
_		4 -		4-6-12	Hard.	PI (ODT): PD 4044
-	26.5	1.5	6	(18)	-	(SPT); PP=4.0 tsf.
-					-	1
_					_]
-	-				-	1
-	1				-]
]				_]
30	1		I			



BORING NUMBER:

AOC13-GRBS-B-02

SHEET 2 OF 2

SOIL BORING LOG

PROJECT : PG&E Topock; Pipeline F Retaining Wall

LOCATION : (34° 42′ 50.68″, -114° 29′ 30.59″)

ELEVATION : 597.0

DRILLING CONTRACTOR : Cascade Drilling

WATER	R LEVELS	S: Not Er	countered	d	START: 10/8/2018 END: 10/8	3/2018 LOGGER : D. Jankly
DEPTH BELOW GROUND SURFACE (ft) STANDARD					SOIL DESCRIPTION	COMMENTS
	INTERVAL (ft) RECOVERY (ft)		PENETRATION TEST RESULTS			
			[SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND	
			#TYPE	6"-6"-6" (N)	CONSISTENCY, SOIL STRUCTURE, MINERALOGY	INSTRUMENTATION
	30.0		7	7-10-20	-	(SPT); PP=4.5 tsf.
-	31.5			(30)	Total Doothy 21 5! No Oroundurator Engagnitured	
-	-				Total Depth: 31.5', No Groundwater Encountered, Backfilled with Portland Cement Grout, Concrete Patch	
					at Surface.	
-					_	
35_	1				_	-
-					-	
					-	
-					-	
-	1				- -	
40_					<u>-</u>	_
-					_	
-					-	
-					-	
					-	
45_					-	
	-					_
-					- -	
-					_	
-					_	
-					-	
50_					-	-
-					-	
-	1				-	
-	1				- -	1
-					-	
55_						_
45					-	
					-	
					-	
-	1				-	
-	1				- -	
60		1	1	I I		1



BORING NUMBER:

AOC13-GRBS-B-03 SHEET 1 OF 2

SOIL BORING LOG

PROJECT : PG&E Topock; Pipeline F Retaining Wall

LOCATION : (34° 42′ 50.82″, -114° 29′ 29.34″)

ELEVATION : 587.0

DRILLING CONTRACTOR : Cascade Drilling

			ncountere JRFACE (ft)	STANDARD	START: 10/9/2018 END: 10 SOIL DESCRIPTION	/9/2018 LOGGER : D. Jankly COMMENTS	
INTERVAL (ft) INTERVAL (ft) INTERVAL (ft) INTERVAL (ft)				PENETRATION			
		RECOV	ERY (ft)	123111230213	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND	
			#TYPE	6"-6"-6" (N)	CONSISTENCY, SOIL STRUCTURE, MINERALOGY	INSTRUMENTATION	
_	1.0				4" Asphalt Concrete	=	
_	1.0				Poorly-graded SAND with GRAVEL (SP) brown; moist; medium dense; mostly fine to medium sand,	(Bulk), Hand Auger to 5'	
_					GRAVEL to 3" diameter. [FILL]	1	
-	-	3.0	1			-	
]]	
-	4.0					4	
5_	5.0						
_		4.0		6-7-15	SILTY SAND (SM) light brown; moist; medium dense;	(Ring)	
-	6.5	1.3	2	(22)	fine grained; homogeneous. [NATIVE]	PA, M=9%, UW=99 pcf DS, M=14%, UW=111 psf, PP=4.0 tsf	
_	1				Fat CLAY (CH) brown; moist; hard; massive; homogeneous		
-	-				U	-	
_]						
_	4					4	
10	10.0					†	
_		4 -		3-5-6	_	CR, M=23%, PI	
-	11.5	1.5	3	(11)		(SPT); PP=4.0 tsf	
_	1				some fine SAND.] PI	
-	-				Fat CLAY (CH) brown; moist; hard; massive; homogeneous	-	
_]				nomogonoodo	1	
_	-					-	
15	15.0					†	
_		4.5		3-5-6	SANDY SILTY CLAY (CL-ML) brown; wet; very soft;	(SPT); PP=4.25 tsf.	
-	16.5	1.5	4	(11)	some fine sand.	-	
_					Fat CLAY (CH) brown; moist; hard; massive; homogeneous]	
-	1				Homogeneous	_	
_						<u></u>	
_	4					4	
20 -	20.0					†	
_		4.5		4-5-10	_	(SPT); PP=4.5 tsf.	
_	21.5	1.5	5	(15)		†	
_						1	
-	-					-	
_	1					1	
_	-					4	
25_	25.0						
		4 -		4-10-20	Interbedded with SILTY SAND (SM); moist; medium	(SPT)	
-	26.5	1.5	6	(30)	dense; fine grained; homogeneous. Beds are 2 to 4 inches thick.	†	
_]	
-	-					-	
-]						
_]	
30 -	-					4	



BORING NUMBER:

AOC13-GRBS-B-03

SHEET 2 OF 2

SOIL BORING LOG

PROJECT : PG&E Topock; Pipeline F Retaining Wall

LOCATION : (34° 42′ 50.82″, -114° 29′ 29.34″)

ELEVATION : 587.0

DRILLING CONTRACTOR : Cascade Drilling

WATER L	LEVELS	: Not Er	countered		START: 10/9/2018 END:	10/9/2018 LOGGER : D. Jankly
DEPTH BELOW GROUND SURFACE (ft)					SOIL DESCRIPTION	COMMENTS
 	INTERVAL (ft) PENETRATION			PENETRATION TEST RESULTS		
	RECOVERY (ft)		TEST RESULTS	SOIL NAME, USCS GROUP SYMBOL, COLOR,	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND	
			#TYPE	6"-6"-6" (N)	MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	INSTRUMENTATION
	30.0	1.0	7	8-16-32		_ (SPT)
1 1	31.5	1.0	, '	(48)	── Poorly-graded GRAVEL with SAND and COBBLE	- - -
					(GP) gray; moist; dense; fine to coarse GRAVEL; medium to coarse SAND.	
					Total Depth: 31.5', No Groundwater Encountered, Backfilled with Portland Cement Grout, Concrete Patch at Surface.	·]
35						4 -
]
						1
						1
40						3
1 =						1
8 –						1
r; 11/9/						3
GO - 45 -						1
SEOTE -						3
CHZM -						1
S.GPJ;						1
ORING						3
50						-
19; TOF]
86.6						=
						1
55_ 55_						-
Soll Boring Log; JACOBS-GEOTECH_SG.GLB; TOPOCK BORINGS.GPJ; CH2M GEOTECH.GDT; 11/9/18 9 9 1 1 1 1 1 1 1 1 1 1						1
90100]
BORIN]
d 60 −						-



TEST PIT NUMBER: AOC13-GRBS-TP-1

SHEET 1 OF 1

TEST PIT LOG

PROJECT: PG&E Topock; Pipeline F Retaining Wall	LOCATION: (34° 42' 50.82", -114° 29' 30.58")	
ELEVATION: 601.0 ft	CONTRACTOR: Phillips Excavating Inc.	
EXCAVATION EQUIPMENT: Backhoe with 24-inch bucket	DATE EXCAVATED: 10/8/2018	LOGGER: D. Jankly

WATER	LEVELS: N	ot Encountered LENG	-H: W	<u> WIDTH</u>	
		SOIL DESCRIPTION			COMMENTS
DEPTH BELOW SURFACE	#TYPE	SOIL NAME, USCS GROUP SYMBOL MOISTURE CONTENT, RELATIVE DE CONSISTENCY, SOIL STRUCTURE, MI	COLOR, NSITY OR GRAP NERALOGY LOG		DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
1 2 3	1	Poorly-graded SAND with GRAVEL (SP) light massive; GRAVEL ~ 30% to 3" diameter; COBBL 20%. Local areas of poorly-graded GRAVEL with unit has occassional rootlets to 1 ft below bgs. [FI	brown; dry; very loose; ES to 12" diameter ~ SAND and COBBLES; 		CP, DS, PA (Bulk)
		Total Depth=3 feet.			
4 5 _		No Groundwater Encountered Backfilled with soil cuttings			=
6					
7 -					_
8					-
9 -					-
10					
11_					
12					_
13					_
14					_
15					<u>-</u>
16					_ _
17					- -
18					- -
19					-
20					
21					=
22_					-
23					-
24					-
25					
26					-
27					-
28					=
29					=
30					



EXCAVATION EQUIPMENT: Backhoe with 24-inch bucket

PROJECT NUMBER: 707614CH.01.01 TEST PIT NUMBER:

AOC13-GRBS-TP-2 SHEET 1 OF 1

TEST PIT LOG

PROJECT: PG&E Topock; Pipeline F Retaining Wall	LOCATION: (34° 42' 50.96", -114° 29' 29.39")	
ELEVATION: 589.0 ft	CONTRACTOR: Phillips Excavating Inc.	
EXCAVATION EQUIPMENT: Backhoe with 24-inch bucket	DATE EXCAVATED: 10/8/2018	LOGGER: D. Jankly

WATER LEVELS: Not Encountered WIDTH: LENGTH: DEPTH: COMMENTS SOIL DESCRIPTION DEPTH SOIL NAME, USCS GROUP SYMBOL, COLOR, DEPTH OF CASING, DRILLING RATE, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY GRAPHIC DRILLING FLUID LOSS, TESTS, AND BELOW INSTRUMENTATION LOG #TYPE SURFACE At 0 to 0.3 feet: Poorly-graded GRAVEL with SAND and COBBLES (GP) brown; dry; very loose. Predominantly coarse gravel and cobbles to 8-inch diameter. [FILL]

At 0.3 to 3.5 feet: Poorly-graded SAND (SP) light brown; dry; loose; fine grained with 1-2" thick poorly-graded, fine GRAVEL with SAND CP, DS, PA 2 (Bulk) 1 3 (GP) interbeds; horizontally dipping. [NATIVE] 4 Total Depth=3.5 feet. No Groundwater Encountered 5 Backfilled with soil cuttings 6 8 9 10_ 11_ 12 13 14_ 15 16_ 17 18 19 20_ 21 22 23 24 25 26 27 28_ 29 30



PROJECT NUMBER: BORING NUMBER:

SHEET 1 OF 1

BORING LOG EXPLANATION

ELEVAT]	ON:			<u> </u>	LOCATION : DRILLING CONTRACTOR :	
		OD AND E	OUIPME	NT:	STALLING CONTINUE ON T	
	LEVELS :		201111		START: END:	LOGGER :
		OUND SUR	FACE (ft)	STANDARD	SOIL DESCRIPTION	COMMENTS
	INTERVA	RECOVE	RY (ft) #TYPE	PENETRATION TEST RESULTS 6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION
_						_
- - -	2.5	1.5			Sample Interval: Top/Bottom (ft. bgs) Amount of Sample Recovered (ft) bgs = below ground surface	Comments Comments and observations regarding drilling or sampling made by the driller or field personnel.
5	5.0		1		Sample Type - Sample Number (SPT) Standard split-spoon drive sampler, 2.0-inch (51-mm) outside diameter,	PP=Pocket Penetrometer in tons/sqft Laboratory tests include the following: M Moisture Content (ASTM D-2216)
- - - -					1.4-inch (35-mm) inside diameter, (without liners) (Ring) Modified California split-spoon drive sampler, 3.0-inch (76-mm) outside	UW Dry Unit Weight (ASTM D-2937) in pounds per cubic foot (pcf) PA Grain Size analysis (ASTM D-422)
10					diameter, 2.4-inch (64-mm) inside diameter (with ring liners) (B) Bulk sample collected from drill cuttings	with or without hydrometer analysis PI Atterberg Limits (ASTM D-4318) DS Direct Shear (ASTM D-3080)
- - -					Standard Penetration Test Results	CR Corrosion Suite (California Test Methods 532, 643, 417, 422)
- - - - 15	15.0				Number of blows required to advance driven sampler over three 6-inch (152-mm) increments. Number in parenthesis is the total number of blows required to advance the sampler 12-inch (305 mm) beyond the first 6-inch (152-mm) interval. Drive samplers	CP Max Density/Opt Moisture (ASTM D-1557
- - -	16.5			3-5-6 (11)	advanced using a 140 lb (63.5 kg) Hammer with the 30-inch (762-mm) drop. The blow counts given have not been modified to account for field and/or depth conditions.	-
20					General Notes 1) Soil classifications are based on the Unified Soil Classification System. Classifications and descriptions made in the field have been modified based on the results of laboratory testing. The relative density / consistency presented on the logs are based on blow counts corrected for the Cal Modified sampler, and for N60	- - - - - - - -
- - - - 25					 Boring logs depict subsurface conditions only at the specific locations and times the boring was made. Logs do not necessarily reflect strata variations that may exist between boring locations. 	- - - - - -