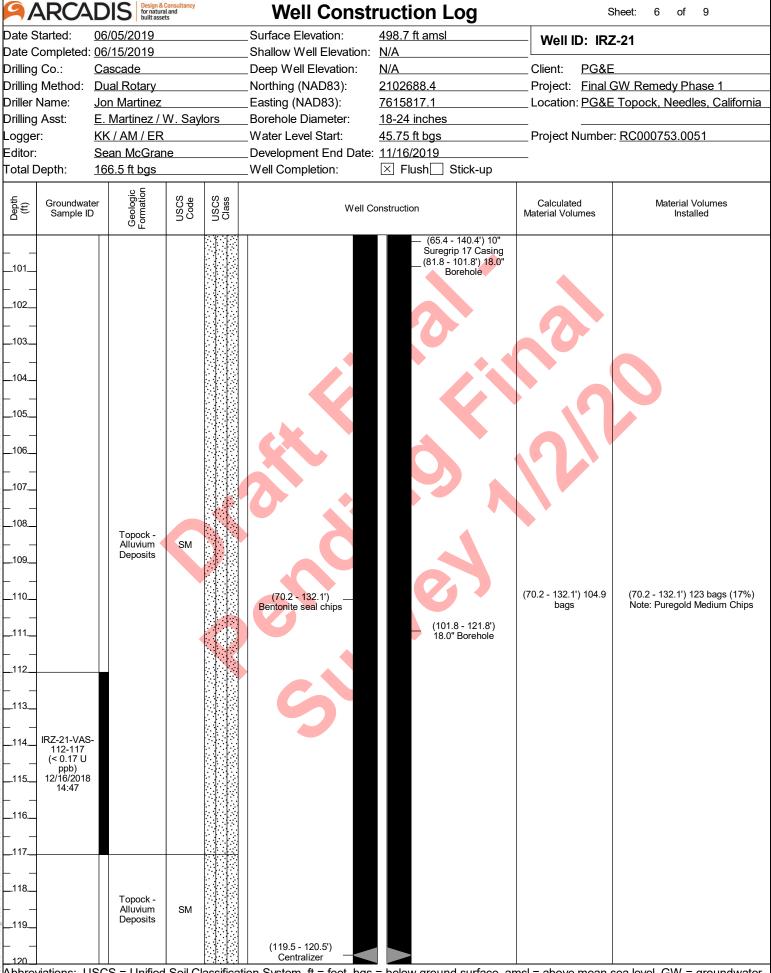
ARC4	DIS Design & for natura built asse	Consultancy al and ts	Well Const	ruction Log	5	Sheet: 1 of 9		
Date Started:	06/05/2019		Surface Elevation:	498.7 ft amsl	Well ID: IRZ	Z-21		
Date Completed:			Shallow Well Elevation:					
Drilling Co.:	Cascade		Deep Well Elevation:	N/A	Client: PG&E			
Drilling 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: RC000753.0051			
Editor:	Sean McGran	ne	Development End Date:		_			
Total Depth:	166.5 ft bgs		Well Completion:	⊠ Flush Stick-up				
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 15 16	Topock - Fluvial Deposits	GW						
	Topock - Fluvial Deposits	SP						
18	Topock - Fluvial Deposits	SP						
20	Topock - Fluvial Deposits	GM 000						
I								

Date Started: Date Completed Drilling Co.:				_Surface Elevation: _Shallow Well Elevation:	498.7 ft amsl	Well ID: IR	Z-21				
-				Shallow Well Flevation:	NI/A		Well ID: IRZ-21				
rilling Co.:						Client: <u>PG&E</u>					
_				_Deep Well Elevation:	N/A						
Orilling Method:	<u>Dual Rotary</u>			_Northing (NAD83):	2102688.4	Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, Californ Project Number: RC000753.0051					
Oriller Name:	Jon Martinez		da ua	_Easting (NAD83):	7615817.1						
Orilling Asst:	E. Martinez / KK / AM / ER	-	iors	_Borehole Diameter: _Water Level Start:	18-24 inches 45.75 ft bgs						
.ogger: Editor:	Sean McGrar			_ vv aler Lever Start. _Development End Date		Froject Numbe	1. <u>NC000733.0031</u>				
Total Depth:	166.5 ft bgs	10		Bevelopment End Bate Well Completion:							
Groundwa Sample II		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed				
	JE		070	(0.0 - 47.4') 10" ———————————————————————————————————							
21			1	Garagrip II Gaoing	(0.0 - 21.8') 24.0" Borehole						
_	Topock - Fluvial	GM	12		Borelloie						
_22	Deposits		MA								
. 23											
4											
_24	Topock -	GM	9								
4	Deposits					Y					
25			RA								
26			90								
27			20								
4				(4.0 - 35.2') Portland Cement 3%		(4.0 - 35.2') 459.2	(4.0 - 35.2') 523 gallons (14				
.28			Polos	Bentonite		gallons	Note: Type I, II and V and Be				
_			P P								
29			201								
4	Topock -		P								
.30	Alluvium Deposits	GM									
4			620								
31			5/1/2		(21.8 - 41.8') 18.0" Borehole						
4			90								
.32			BHI								
4			4								
.33			12 Pid								
-			199								
.34			15 PJG								
-			[A]								
.35			600	(34.5 - 35.5')							
_	Topock -	C 1.4	1397			(35.0. 36.7), 0.5	(35.2 - 36.7') 3 bags (20%				
.36	Alluvium Deposits	GM		(35.2 - 36.7') Bentonite seal chips		(35.2 - 36.7') 2.5 bags	Note: Puregold Medium Ch drillers requested to add bent				
-			1397				chip seal to prevent grout mig				
.37			[5H]								
_			10 P. O								
_38	Topock -		1397	(36.7 - 40.4') Cemex		(00 7 15 17 5 1	(36.7 - 40.4') 10 hags (119				
4	Alluvium	GM		Bunker # 8 0/30 — \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$		(36.7 - 40.4') 9 bags	(36.7 - 40.4') 10 bags (119 Note: Lapis Lustre Sand				
_39	Deposits		1397	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,							
4											
hbrovistis '	1000 - 11:	10-110	POLY	tion Cyptage # = fort			 sea level, GW = groundw				

ARCADIS Design & Consultancy for natural and built assets					Well Consti	ruction Log	Sheet: 3 of 9			
Date S		06/05/2019			_Surface Elevation:	498.7 ft amsl	Well ID: IR	Z-21		
	-	06/15/2019			_Shallow Well Elevation:	•				
Drilling		Cascade			Deep Well Elevation:	N/A	Client: PG&E			
Drilling Driller I		Dual Rotary Jon Martinez			Northing (NAD83): Easting (NAD83):	2102688.4 7615817.1	Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, California			
Drilling		E. Martinez /		lors	Easting (NAD63). Borehole Diameter:	18-24 inches	Location. I Oak Topock, Needies, Oamornia			
Logger		KK / AM / ER	-	1013	Water Level Start:	45.75 ft bgs	Project Number: <u>RC000753.0051</u>			
Editor:		Sean McGrar			Development End Date:					
	ral Depth: 166.5 ft bgs				Well Completion:					
		. <u>.</u> 2 G								
Depth (ft)	Groundwate Sample ID		Code	USCS		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				0,			
44 45							1			
46 47		Topock -			(47.4 - 65.4') 10"		7			
48 49 50		Alluvium Deposits	SM		(47.4 - 65.4') 10" 25-slot 316L SS Wire Wrap Screen		(40.4 - 69.1') 70.1	(40.4 - 69.1') 91 bags (30%) Note: Lapis Lustre Sand, used >20%		
 51 52					# 2/16 mesh (16x30)	(41.8 - 61.8') 18.0" Borehole	bags	of calculated volume due to potential voids forming during drilling		
53 54 55	IRZ-21-VAS- 52-57-EB (97 ppb) 12/15/2018	Topock - Alluvium	SM							
56 57	14:50									
58		Topock - Alluvium Deposits	ML					aca lovel CW = groundwater		

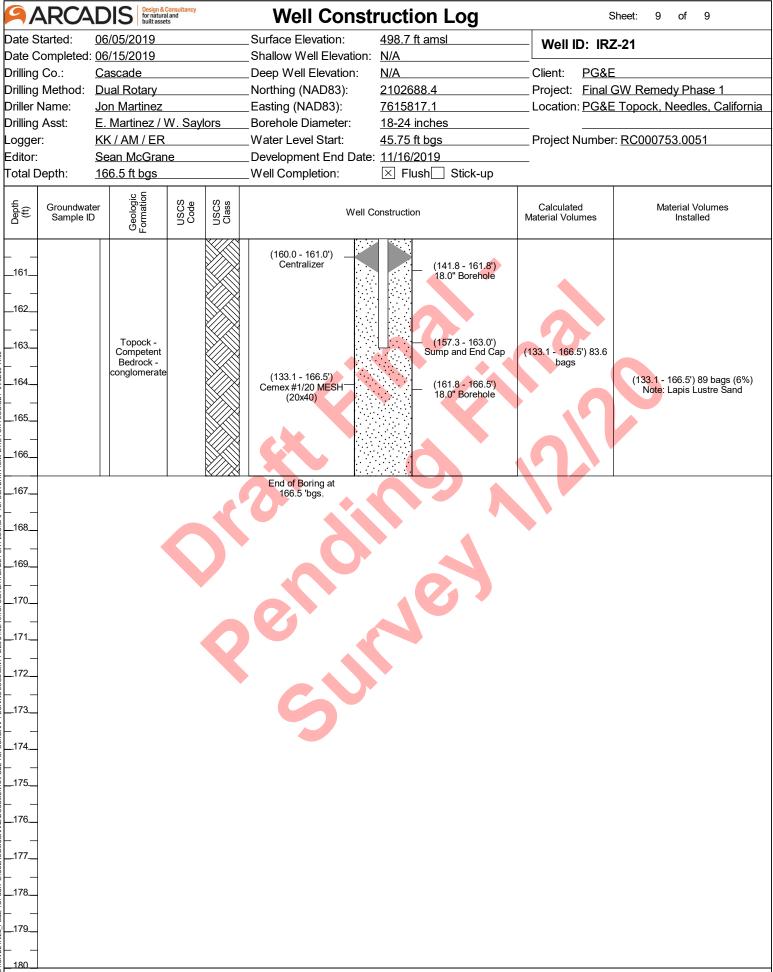
9/2	ARCA	DIS for natura built asset	al and ets		Well Const	ruction Log	\$	Sheet: 4 of 9				
Date St		06/05/2019			_Surface Elevation:	498.7 ft amsl	Well ID: IR	Z-21				
		06/15/2019			_Shallow Well Elevation:	N/A						
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&E					
_		Dual Rotary			_Northing (NAD83):	2102688.4		GW Remedy Phase 1				
Driller N		Jon Martinez			_Easting (NAD83):	7615817.1	Location: <u>PG&</u> E	Topock, Needles, California				
Drilling		E. Martinez / Y	-	lors	_Borehole Diameter:	18-24 inches	Desired Nemelse	D0000750 0054				
Logger	Logger: KK / AM / ER Editor: Sean McGrane				_Water Level Start:	45.75 ft bgs	Project Number: RC000753.0051					
Total D	onth:	166.5 ft bgs	<u>1e</u>		_Development End Date: _Well Completion:			_				
Total D	сриі.					i idan	1					
Depth (ft)	Groundwat Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed				
 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 64		Topock - Alluvium Deposits	SM		(40.4 - 69.1') Cemex		(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 mesh (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 72 73 74		Topock - Alluvium Deposits	SC		6	(61.8 - 81.8') 18.0" Borehole						
	IRZ-21-VAS 77-82 (1.1 ppb) 12/16/2018 09:25		SM		(70.2 - 132.1') — Bentonite seal chips		(70.2 - 132.1') 104.9 bags	(70.2 - 132.1') 123 bags (17%) Note: Puregold Medium Chips				
80 A b b rov	:-t:		 		(79.5 - 80.5') Centralizer			sea level GW = groundwater				

ARCADIS fornatural and built assets						Well Consti	ruction Log	Sheet: 5 of 9			
	Date Started: <u>06/05/2019</u> Date Completed: <u>06/15/2019</u>					_Surface Elevation:	498.7 ft amsl	Well ID: II	RZ-21		
						_Shallow Well Elevation:	N/A				
Drilling		Cascade				_Deep Well Elevation:	N/A	Client: <u>PG</u> 8			
_		Dual Rota	-			_Northing (NAD83):	2102688.4	•	al GW Remedy Phase 1		
Driller I		Jon Marti				_Easting (NAD83):	7615817.1	Location: <u>PG</u>	&E Topock, Needles, California		
Drilling		E. Martine		Sayl	ors	_Borehole Diameter:	18-24 inches		D0000750 0054		
Logge		KK / AM /				_Water Level Start:	45.75 ft bgs	Project Numb	per: RC000753.0051		
Editor:	itor: <u>Sean McGrane</u> tal Depth: <u>166.5 ft bgs</u>					_Development End Date: _Well Completion:	★ Flush Stick-up				
TOLAIL	лерии.					_ vveii Completion.	△ Flusii Stick-up				
Depth (ft)	Groundwate Sample ID			Code	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed		
81 81 82	IRZ-21-VAS- 77-82 (1.1 ppb) 12/16/2018 09:25	Topog	um 📗	SM			(65.4 - 140.4') 10" Suregrip 17 Casing (61.8 - 81.8') 18.0" Borehole		•		
83 84 85 86 87		Topos Alluvi Depos	um	ML							
88 89 89		Topod Alluvi Depos	um 💛	SM							
90 91 92		Topod Alluvi Depos	um 📗	SM		(70.2 - 132.1') — Bentonite seal chips	(81.8 - 101.8') 18.0" Borehole	(70.2 - 132.1') 104. bags	9 (70.2 - 132.1') 123 bags (17%) Note: Puregold Medium Chips		
9394959697		Topoc Alluvi Depos	um :	SM							



9/-	ARCA	DIS Design for na built a	n & Consultancy tural and assets		Well Const	ruction Log	Sheet: 7 of 9			
Date S		06/05/2019			_Surface Elevation:	498.7 ft amsl	Well ID: IR	Z-21		
	-	06/15/2019			_Shallow Well Elevation:	N/A				
Drilling	Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E			
Drilling	Method:	Dual Rotary	1		_Northing (NAD83):	2102688.4	•	GW Remedy Phase 1		
Driller I	Name:	Jon Martine	Z		Easting (NAD83):	<u>7615817.1</u>	Location: <u>PG&</u> E	Topock, Needles, California		
Drilling	Asst:	E. Martinez	/ W. Say	/lors	_Borehole Diameter:	18-24 inches				
Logge	r:	KK/AM/E	R		_Water Level Start:	45.75 ft bgs	Project Numbe	r: RC000753.0051		
Editor:		Sean McGra	ane		Development End Date:	11/16/2019				
Total D	Depth:	166.5 ft bgs	i		_Well Completion:					
Depth (ft)	Groundwat Sample II		USCS	USCS	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				
						16.0 Borenole				
122										
122										
100										
123										
		Topock -								
124		Alluvium Deposits	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										
424		Topock -				(121.8 - 141.8')				
131		Deposits				18.0" Borehole				
132				022	% % %	>		(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		
		Tanaak								
134	IRZ-21-VAS 132-137-EE	Alluvium	GC							
	(< 0.17 U ppb)	Deposits								
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				1189				
L										
139										
<u> </u>										
140							1	1		

1	4KO4	DIS for natura built asset	l and ts		well Consti	ruction Log	Sheet: 8 of 9				
Date S	Started:	06/05/2019			_Surface Elevation:	498.7 ft amsl	Well ID: IR	Z-21			
Date C	Completed:	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: RC000753.0051				
Editor:		Sean McGran	ie		_Development End Date:	11/16/2019	,				
Total [Depth:	166.5 ft bgs			_Well Completion:						
_		.p G									
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed			
		. For G					material volumes	in otaliou			
						(440 4 457 0) 407					
						(140.4 - 157.3') 10" 15-slot 316LSS					
141	•					Wire Wrap Screen					
	-										
142											
		Topock -				(121.8 - 141.8') 18.0" Borehole					
143		Alluvium	ML			\Box					
		Deposits									
144											
L _						H					
145											
146											
140											
-	-										
147											
-						HX					
148											
149	IRZ-21-VAS	_									
	147-152	Topock -	SM			Hiil					
150	(3600 ppb) 12/18/2018	Deposits	Civi		(133.1 - 166.5')		(133.1 - 166.5') 83.6	(133.1 - 166.5') 89 bags (6%)			
	10:07				Cemex #1/20 MESH (20x40)		bags	Note: Lapis Lustre Sand			
151						(141.8 - 161.8')					
131						18.0" Borehole					
152											
-											
153											
<u> </u>											
154											
155											
		Topock - Weathered	ML								
156		Bedrock - conglomerate				· 日記 : 1					
	1	Joshgiomerate									
	1										
157											
<u> </u>											
158	-										
<u> </u>		Topock -									
159		Competent									
L _		Bedrock - conglomerate									
_160						<u> </u>					
	ا بمصنامات	CCC - 11=:6=4	Cail C	la a aifi a ai	tion Cyclene # - foot bus	_ b_slave auacead accura		non laval CM = groundwater			



ARCADIS Design & Consultancy for natural and built assets			Во	ring	Log	Sheet: 1 of 9						
Date S	tarted:		12/15/2	2018		Surface	Elevati	on: 498.7 ft amsl	Borin	a No:	IRZ-21-P	ilot
Date C	omple	ted:	12/19/2	2018		Northing	g (NAD	83): <u>2102688.4</u>		9		
Drilling	Co.:		Cascad	le		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>	medy Phase
Drill Ri	д Туре	:	Proson	<u>ic Truck Mou</u>	nt	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	Topock, Needl	es, California
Drilling	Asst:		N. Dom	<u>ninguez/C. Al</u>	verez	Samplin	ig Meth	od: 4 inch x 10 ft Core Barrel	Project N	umber:	RC000753.00	51
Loggei	r:		Connor	Mills		Samplin	g Inter	/al: <u>Continuous</u>	_			
Editor:			Sean M	<u>lcGrane</u>		Convert	ed to V	/ell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)		sieve nple ID	Groundwater Sample ID	Geologic Formation	USCS	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 yellov 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					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,		
 12 	120				Topock - Fluvial Deposits	SP	•••	(11.5 - 13.0') Topock - Fluvial Deposits; Poorl yellowish brown (10YR 5/6); very fine grained subangular to round; trace granules, angular silt; dry	to fine graine	d,		
131415					Topock - Fluvial Deposits	GW		(13.0 - 16.0') Topock - Fluvial Deposits; Well sand (GW); yellowish brown / moderate yellow 5/4); granules to very large pebbles, subangul some very fine to medium grained sand, subatrace silt; dry	wish brown(10 lar to subroun	DYR d;		
16 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 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, sut subround; some granules to very large pebble subround; trace silt; dry	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); granu pebbles, angular to subround; little very fine to	iles to very lar	ge		

ARCADIS Design & Consultancy for natural and built assets			Во	ring	Log		Sheet: 2 of 9					
Date S					Surface	Elevati	on: <u>498.7 ft amsl</u>		Borin	a No.:	IRZ-21-P	ilot
	•	ted: <u>12/19/</u>	2018		Northing		•					<u></u>
Drilling		<u>Casca</u>			Easting	•	•			PG&E		
Drilling					Total De	•	<u>166 ft bgs</u>		-		oundwater Re	medy Phase
Drill Ri			nic Truck Mou		Borehol		•		Location: <u>1</u>			
Driller I			Vasquez		-		Vater: 44.5 ft bgs				•	es, California
Drilling			<u>ninguez/C. Al</u>		Samplin	•		<u>re Barrel</u> I	Project N	umber: <u>F</u>	RC000753.00	51
Logge	r:	Conno			Samplin	-						
Editor:		<u>Sean I</u>	<u> </u>		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
						UX.	sand, angular to subangular;	little silt; trace bou	ılders; dry			(0.0 - 158.0')
21												No water used
				Topock -		PP	(21'); one foot solid rock core	from a boulder co	mposed of I	oasalt		
				Fluvial Deposits	GM	15 Pic						
22						66						
						6 D						
23						C Pr	(23.0 - 25.0') Topock - Fluvia					
	120			Topock -		1° P1<	(GM); light brownish gray / pa granules to very large pebble					
24				Fluvial	GM	3	little very fine to very coarse of trace boulders; dry; pulverize	grained sand, angu	ılar to subar	gular;		
				Deposits			trace boulders; dry; pulverize	a boulder from 23-	-24			
25				<u></u>			(25.0 - 34.5') Topock - Alluviu	Im Denosits: Silty	gravel with s			
							(GM); yellowish brown / mode	erate yellowish bro	wn(10YR 5/	4);		
26							granules to large pebbles, an very fine to very coarse grains	i <mark>gula</mark> r to subangula ed sand, angular to	ar; some silt o subangula	r; little r; dry		
L 4												
27						Polo						
						P P						
28												
						PP						
						600						
25				l	•.	10 h						
				Topock - Alluvium	GM	600						
30				Deposits		99						
31						20						
					Ť	12 P						
32	120											
						PP						
33						1° 1° 1° 1° 1° 1° 1° 1° 1° 1° 1° 1° 1° 1						
L -						3						
34						600						
<u> </u>						1919	(0.4.5					
35							(34.5 - 37.0') Topock - Alluviu (GM); light reddish brown / light	ght brown(5YR 6/4	.); granules t	o very		
[]				Topock -		PTA	large pebbles; some very fine subangular; little silt; dry	to coarse grained	d sand, angu	lar to		
36				Alluvium	GM	PXP	Subangular, mue siit, ury					
				Deposits								
7						d fol						
37						t Pt	(37.0 - 42.0') Topock - Alluviu					
 						B. P.IC	(GM); granules to very large property very fine to coarse grained sa					
38				Topock -				-	•	[]		
 	60			Alluvium	GM	6 PIC						
39				Deposits		[3]						
						[. 6]						
40		. 11000 - 1	:f: O-: O	 :c : -: :	. 0	12 K	ot has - holow ground	£			1 1 0 1 1	<u> </u>

9/	ARC	CADIS	for natural and built assets		Во	ring	Log		She	eet: 3 of	9	
Date S					Surface			Borir	ıa 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:		&E Topock, Needles, California		
Driller			Vasquez		-		Water: 44.5 ft bgs			•		
Drilling			minguez/C. Al	<u>verez</u>	Samplin	-		_ Project N	lumber:	RC000753.00	51	
Logge Editor:			or Mills McGrane		Samplin Convert	-						
Editor.		<u>Sean</u>	vicGrane		Conven	ted to v	veii. 🛆 fes 🗌 No				1	
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Fluid	
41	60			Topock - Alluvium Deposits	GM						(0.0 - 158.0') No water used	
42 43				Topock - Alluvium Deposits	SM	0	(42.0 - 43.5') Topock - Alluvium Deposits; S yellowish brown / moderate yellowish brow grained to very coarse grained, subangular granules to medium pebbles, angular to su	n(10YR 5/4); fir to subround; lit	ne itle			
 44							(43.5 - 52.0') Topock - Alluvium Deposits; Syellowish brown (10YR 6/4); fine grained to					
44	00						angular to subround; some silt; little granule	es to large pebl	oles,			
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								lable		
									1	<u>.</u>		
47												
				Topock -								
48				Alluvium Deposits	SM							
				Deposits								
49												
		IRZ-21-SS-										
50		48-53 12/19/2018										
		08:40					:					
51												
52	120						: (52.0 - 57.0') Topock - Alluvium Deposits; §	Silty sand with o	ıravel			
 53							(SM); light yellowish brown (10YR 6/4); no fine to very coarse grained sand grained sa subangular; some silt; little granules to sma subangular; little clay; wet	olasticity; some nd, angular to	very			
-							Subangular, illie olay, wet					
54		IRZ-21-SS-	IRZ-21-VAS- 52-57	Topock -								
-		52-57 12/19/2018	(97 ppb) 12/15/2018	Alluvium Deposits	SM							
55		08:45	14:14	Deposits								
56												
57						Ÿ	(57.0 - 62.0') Topock - Alluvium Deposits; (
58							(ML); yellowish brown / moderate yellowish plasticity; some granules to very large pebb	les, angular to	,			
	465	IRZ-21-SS- 57-62		Topock -		600	subangular; little very fine to coarse grained subangular; little clay; wet	ı sand, angular	to			
59	108	12/19/2018 08:50		Alluvium Deposits	ML							
00		20.00				600						
60						<u> </u>						
		. 11000 -	Unitinal Cail CI	ifiti	- Ct	- 4 - 4	oot has - holow around surface or			- level C\\/		

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		. 5
Drilling			<u>ייווווחg</u> 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		Topock, Need	les California
Drilling			ninguez/C. Al		Samplin		<u> </u>	- 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	108	IRZ-21-SS- 62-67		Topock - Alluvium Deposits	SM		(62.0 - 64.5') Topock - Alluvium Deposits; Sili (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		12/19/2018 08:55		Topock - Alluvium Deposits	SM		(64.5 - 67.0') Topock - Alluvium Deposits; Sili (10YR 5/3); fine grained to very coarse grains 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 graine grained, angular to subangular; some clay; lit medium pebbles, angular to subangular; little	ed to very coattle granules t	arse		
73 74 74	108	IRZ-21-SS- 72-77 12/19/2018					(74.5 - 82.0') Topock - Alluvium Deposits; Sil	ty sand with ç	gravel		
75 76 77 78 79	120	09:05 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	for natural and built assets		Во	ring	Log			She	eet: 5 of	9
Date S					Surface	Elevat	on: <u>498</u>	.7 ft amsl	Borin	a No.:	IRZ-21-P	ilot
Date C	omple	ted: <u>12/19/</u>	2018		Northing	g (NAD	83): <u>210</u>	2688.4	_			<u></u>
Drilling		<u>Casca</u>			Easting	•	•	5817.1	_ Client:	PG&E		
Drilling					Total De	•		ft bgs	_ Project:		oundwater Re	medy Phase
Drill Ri			nic Truck Mou		Borehol			2 inches	_ Location:			
Driller I			Vasquez		•		Vater: <u>44.5</u>		_		<u> Fopock, Needl</u>	
Drilling			ninguez/C. Al		Samplin	•		ch x 10 ft Core Barrel	_ Project N	lumber: <u>l</u>	RC000753.00	51
Logge	r:	<u>Conno</u>			Samplin	•		<u>ntinuous</u>	_			
Editor:		Sean I	<u> McGrane</u>		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		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
83 84 85 86 87	120	IRZ-21-SS- 82-87 12/19/2018 09:15		Topock - Alluvium Deposits	ML		(ML); brown (large pebbles grained sand subangular; o	Topock - Alluvium Deposits; S (7.5YR 5/4); no plasticity; some s, angular to subangular; little v, angular to subangular; trace try to moist; tightly packed	e clay; little gran	nules to lium		
88 89 90		IRZ-21-SS- 87-92 12/19/2018 09:20		Topock - Alluvium Deposits	SM		(SM); reddish grained, subs large pebbles (89.5 - 92.0') (SM); reddish	Topock - Alluvium Deposits; S n brown (5YR 5/4); very fine grangular to subround; some silt; s, angular to subangular; little c n subangular to subround; some mec n subangular to subround; some mec	nined to very co little medium to clay; wet litty sand with g nined to very co	ravel		
 91 92	120			Topock - Alluvium Deposits	SM		pebbles, ang	ular to subangular; little silt; littl	le clay; wet			
93 94 95 96 97		IRZ-21-SS- 92-97 12/19/2018 09:25		Topock - Alluvium Deposits	SM		(SM); reddish grained, ang angular; som	n brown (5YR 5/4); very fine gra ular to subangular; some granu e silt; little clay; wet	ined to very co	earse bbles,		
98 99 	120	IRZ-21-SS- 97-102 12/19/2018 09:30		Topock - Alluvium Deposits	SM		(SM); reddish to very coarse	') Topock - Alluvium Deposits; : ne orown / moderate brown(5YR e grained, angular to subround; ular to subangular; some silt; w	4/4); very fine ; some small to	grained large		

9/	AKC	ADIS	for natural and built assets		Во	ring Lo	og		She	eet: 6 of	9
Date S	Started	12/15/2	2018		Surface	Elevation:	498.7 ft amsl	Borin	a No.:	IRZ-21-P	ilot
l l	-	ted: <u>12/19/2</u>				g (NAD83):	2102688.4	_			<u></u>
Drilling		Cascad			_ Easting (NAD83):		7615817.1	_ Client:	PG&E		
Drilling					Total Depth:		166 ft bgs	-		roundwater Re	medy Phase
Drill Ri			ic Truck Mou			e Diameter:	4-12 inches er: 44.5 ft bgs	_ Location:		Topock, Needl	oo California
	Driller Name: <u>Steve Vasquez</u> Drilling Asst: <u>N. Dominguez/C. Alverez</u>					g Method:	4 inch x 10 ft Core Barrel	– Project N		RC000753.00	
_	Logger: Connor Mills					ig Interval:	Continuous	_ 1 10,00011	diribor.	110000100.00	01
Editor						ed to Well:					
	2			.p G							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	Class	Soil Description			Drilling Notes	Drilling Fluid
-		IRZ-21-SS- 97-102									(0.0 - 158.0') No water used
101		12/19/2018									
102		09:30									
-											
103	400										
104	120	IRZ-21-SS-									
		102-107 12/19/2018									
105		09:35									
106											
107											
				Topock - Alluvium	SM						
109		IRZ-21-SS-		Deposits							
<u> </u>		107-112 12/19/2018									
110		09:40									
111											
112	120					(111	.5'); trace cobbles				
-											
113											
114		IRZ-21-SS-	IRZ-21-VAS- 112-117								
-		112-117 12/19/2018	(< 0.17 U ppb) 12/16/2018								
115_		09:45	12/16/2018 14:47								
116											
_117						(117	.0 - 121.0') Topock - Alluvium Deposits;	Silty sand with	n gravel		
440						(SM)); reddish brown / moderate brown(5YR ery coarse grained, subangular to round;	4/4); very fine of little small to little	grained arge		
118	100	IRZ-21-SS- 117-122		Topock -	014		oles, angular; little silt; little clay; wet; gra adiorite	avel composed	l of		
119	120	117-122 12/19/2018 09:50		Alluvium Deposits	SM						
120_				L	<u> </u>					<u> </u>	

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	j Lo	g		She	eet: 7 of	9
Date S			5/2018		Surface	Eleva	ition:	498.7 ft amsl	Borin	a No.:	: <u>IRZ-21-P</u>	ilot
		ted: <u>12/19</u>			Northing		,	2102688.4				
Drilling		<u>Casc</u>			_	,		7615817.1	Client:	PG&E		
Drilling			Drilling		•			166 ft bgs	Project:		roundwater Re	emedy Phase
Drill Ri			nic Truck Mou					4-12 inches	Location:			
Driller I			Vasquez		•			44.5 ft bgs			Topock, Need	
Drilling			N. Dominguez/C. Alverez Connor Mills			ig Me		4 inch x 10 ft Core Barrel	Project N	umber:	RC000753.00	51
Logge					Samplin	-		Continuous No.	•			
Editor:		<u>sean</u>	McGrane		Convert	ea to	vveii:					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	nscs Code	USCS		Soil Description			Drilling Notes	Drilling Fluid
 _121		IRZ-21-SS- 117-122		Topock - Alluvium Deposits	SM							(0.0 - 158.0') No water used
	120	12/19/2018 09:50 IRZ-21-SS- 122-127 12/19/2018 09:55		Topock - Alluvium Deposits	ML		yellowi mediun coarse of meta	- 127.0') Topock - Alluvium Deposits; S sh red (5YR 4/6); low plasticity; some of n pebbles, angular to subangular; little grained sand, angular to subround; we adiorite	clay; little grai very fine to v et; gravel com	nules to ery aposed		
128 129 130		IRZ-21-SS- 127-132 12/19/2018 10:00		Topock - Alluvium Deposits	ML		reddisl pebble graine metadi	- 129.5') Topock - Alluvium Deposits; Sabrown (5YR 5/4); low plasticity; little gs, angular to subangular; little very fined sand, angular to subround; wet; grave orite - 132.0') Topock - Alluvium Deposits; Sabrown (5YR 5/4); very fine grained to red to subangular; and silt; little granules or to subangular; wet; gravel composed	granules to lai to very coars el composed Silty sand (SN very coarse o to medium p	rge se of //); grained, ebbles,		
131 _132_	1644			Alluvium Deposits								
		IRZ-21-SS- 132-137 12/19/2018 10:05	IRZ-21-VAS- 132-137 (< 0.17 U ppb) 12/17/2018 11:12	Topock - Alluvium Deposits	GC		sand (angula graine	 - 136.0') Topock - Alluvium Deposits; (GC); reddish brown (5YR 5/4); granule; r to subangular; some clay; little very fild sand, angular to subangular; little silt; sed of metadiorite 	s to large peb ne to very coa	bles,		
137 138 139 140	120	IRZ-21-SS- 137-142 12/19/2018 10:10		Topock - Alluvium Deposits	ML		reddisl mediui coarse	- 146.0') Topock - Alluvium Deposits; S n brown (5YR 5/4); no plasticity; some on m pebbles, angular to subangular; little grained sand, angular to subangular; r sed of metadiorite	clay; little gra very fine to v	nules to		

9/	AK (ADIS	for natural and built assets		Во	ring	Log	Sh	eet: 8 of	9
Date S Date C Drilling Drilling	Comple Co.:	eted: <u>12/19/</u> <u>Casca</u>	2018		Surface Northin Easting Total D	g (NAD (NAD8	83): <u>2102688.4</u>	Boring No. Client: PG&E Project: Final G	: IRZ-21-P	
Drill Ri			nic Truck Mo	unt	Boreho	-	•	_ Location: <u>1</u>	Touridwater Ne	incuy i nasc
Driller			Vasquez		-		Vater: 44.5 ft bgs	_	Topock, Needl	
_	Drilling Asst: N. Dominguez/C. Alverez			lverez	Samplin	-		_ Project Number:	RC000753.00	51
Logge Editor:			or Mills McGrane		Samplin	•		_		
Euitoi.		Sean	VICGIANE		Conver	led to v	reii. 🔼 res 📋 No			<u> </u>
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 - Alluvium	ML					
	120			Deposits						
144		IRZ-21-SS-								
 145		142-147 12/19/2018 10:15					.01			
		10.10								
146							(146.0 452.0) Tanak Allurium Danaita	City and with gravel		
							(146.0 - 153.0') Topock - Alluvium Deposits; (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							of metadonic			
140										
149		IRZ-21-SS-	IRZ-21-VAS-							
	54	147-152 12/19/2018	147-152 (3600 ppb) 12/18/2018	Topock - Alluvium	SM					
150		10:20	10:07	Deposits						
 151										
152										
153							(153.0 - 158.0') Topock - Weathered Bedroc Sandy silt (ML); yellowish red (5YR 4/6); no p			
154							fine to very coarse grained sand, angular to subro	subround; little		
		IRZ-21-SS-					gravel composed of metadiorite, some metadioxidation			
155		152-158 12/19/2018		Topock -						
450		10:25		Weathered Bedrock -	IVIL					
156	102			conglomera	te					
157										
<u> </u>										
158							(158.0 - 166.0') Topock - Competent Bedroc	k - conglomerate: red	(158.0 - 161.0')	
- - -				Topock -			(2.5YR 5/6); dry; friable	Jong Jinorate, 1ed	Rough drilling encountered	
159				Competen Bedrock - conglomera					bedrock at approximately	
160				Longiomera					158 feet bgs	
	viation	: IISCS = I	Unified Soil C	laccification	n System	o ft = fc	et has = helow around surface am	sl = ahove mean se	a = 1000 GW = 1	aroundwater

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring L	.og		She	eet: 9 of	9	
Date S				_	Surface Elevation: 498.7 ft amsl				Boring No.: IRZ-21-Pilot			
	-	ted: <u>12/19/2</u>			_ Northing (NAD83):			_				
Drilling		Cascad			_ Easting (NAD83):			_ Client:	PG&E			
Drilling			-		_ Total Depth:		166 ft bgs	Project:		<u>roundwater Re</u>	medy Phase	
Drill Ri			ic Truck Mou	<u>int</u>		e Diamete		_ Location:		TI. NIII.	O - lif i -	
Driller			/asquez		-		ter: 44.5 ft bgs : 4 inch x 10 ft Core Barrel	- Droiget N		Topock, Needle RC000753.005		
	Drilling Asst: N. Dominguez/C. Alverez Logger: Connor Mills				g Method g Interval:		_ FTOJ e CLIN	umber.	KC000733.000	J I		
Editor:			1cGrane		-	ed to Wel		_				
				ں ح								
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid	
 _161	102									(404.0400.01)		
-										(161.0 - 166.0') Rough drilling drilled an		
162										additional 5 feet		
				Topock -						to confirm bedrock		
163				Competent Bedrock -	t							
	60			conglomera	te							
164												
103												
166												
		·					End of Boring at 166.0 'bg	js.				
167												
<u> </u>												
168												
169												
_170												
171												
171_												
172												
173												
174												
-												
175												
176												
177												
178												
-1/0-	1											
179												
<u> </u>												
180	viotions						has - holow ground surface am			a layal CW = a		

ตี first VAS interval

ARCADIS | Design & Consultant of the Consultant **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

ARCA	DIS Design 8 for natur built ass	Consultancy ral and ets		Temporary E	Backfill Log	Sh	Sheet: 2 of 9					
Date Started:	12/15/2018			Surface Elevation:	- Well ID: IR:	Well ID: IRZ-21-Pilot						
Date Completed:	- ',				_							
Drilling Co.:	Orilling Method: Sonic Drilling		Cascade		Cascade		Easting (NAD83): 7615817.1			Client: PG&E	_ Client: PG&E	
Drilling Method:			Total Depth:	166 ft bgs	Project: Final G	SW Remedy Phase 1						
Driller Name:			Borehole Diameter:	4-12 inches		Topock, Needles, California						
Drilling Asst:	N. Domingu	ez/C. A	lverez	Depth to First Water:	44.5 ft bgs							
Logger:	Logger: Connor Mills				Sean McGrane	Project Number:	RC000753.0051					
Groundwate Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed					
 21 22 23	Topock - Fluvial Deposits	GM										
24	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	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

9/	RCAI	DIS Design 8 for natur built ass	Consultancy ral and ets		Temporary I	Backfill Log	St	Sheet: 5 of 9			
Date St	tarted:	12/15/2018	2/15/2018 Surface Elevation: 498.7 ft amsl					Well ID: IRZ-21-Pilot			
Date Co	ompleted:	<u>12/19/2018</u> Northing (NAD83): <u>2102688.4</u>				2102688.4					
Drilling	Co.:			Cascade				Easting (NAD83):	7615817.1	Client: PG&E	
	Orilling Method: Sonic Drilling Oriller Name: Steve Vasquez Orilling Asst: N. Dominguez/C. Alverez		Sonic Drilling		 na		Total Depth:	166 ft bgs		GW Remedy Phase 1	
_					Borehole Diameter:	4-12 inches		Topock, Needles, California			
			 Depth to First Water:			,					
Logger	-				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			
81 82	IRZ-21-VAS- 77-82 (1.1 ppb) 12/16/2018 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"			
93 94 95 96 97		Topock - Alluvium Deposits	SM								
98 99 90	iations: US	Topock - Alluvium Deposits	sm	assificat	ion System, ft = feet bo	s = below ground surface, a	msl = above 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,

9/	ARCA	DIS Design & for natural built ass	& Consultancy ral and sets		Temporary I	Backfill Log	S	Sheet: 7 of 9			
Date Started: <u>12/15/2018</u> Date Completed: <u>12/19/2018</u>					Surface Elevation:	498.7 ft amsl	Well ID: IR	Well ID: IRZ-21-Pilot			
	-		- · · · · · · · · · · · · · · · · · · ·								
Drilling		Cascade	• ,				Client: PG&E				
_	Method: Name:	Sonic Drilling Steve Vasquez			Sonic Drilling			Total Depth: Borehole Diameter:	166 ft bgs 4-12 inches		GW Remedy Phase 1 Topock, Needles, California
Drilling		N. Domingu		lverez			Location. PG&E	: ropock, needles, California			
Logge		Connor Mills		IVCICZ	Depth to First Water: 44.5 ft bgs Editor: Sean McGrane		Project Number	RC000753.0051			
		.2 L	υ <u>ς</u>								
Depth (ft)	Groundwate Sample ID	Geol	USCS	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed			
 121		Topock - Alluvium Deposits	SM								
122		Topock - Alluvium Deposits	ML								
129		Topock - Alluvium Deposits	ML								
130 131 132		Topock - Alluvium Deposits	SM	0.21/ 2	(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"			
133 134 135 136	IRZ-21-VAS- 132-137 (< 0.17 U ppb) 12/17/2018 11:12	Topock - Alluvium Deposits	GC								
137 138 139 140_	viotione: L'	Topock - Alluvium Deposits	ML Soil C		tion System # = f4			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 ts		Temporary E	Backfill Log	SI	heet: 9 of 9
Date Started: Date Completed: Drilling Co.: Drilling Method: Driller Name: Drilling Asst: Logger:	12/15/2018 12/19/2018 Cascade Sonic Drilling Steve Vasquez N. Dominguez/C. Alverez Connor Mills			_ Northing (NAD83): _ Easting (NAD83): _ Total Depth: _ Borehole Diameter: _ Depth to First Water:	498.7 ft amsl 2102688.4 7615817.1 166 ft bgs 4-12 inches 44.5 ft bgs Sean McGrane	Location: PG&E	
Groundwate Sample ID		USCS	USCS Class	Well C	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