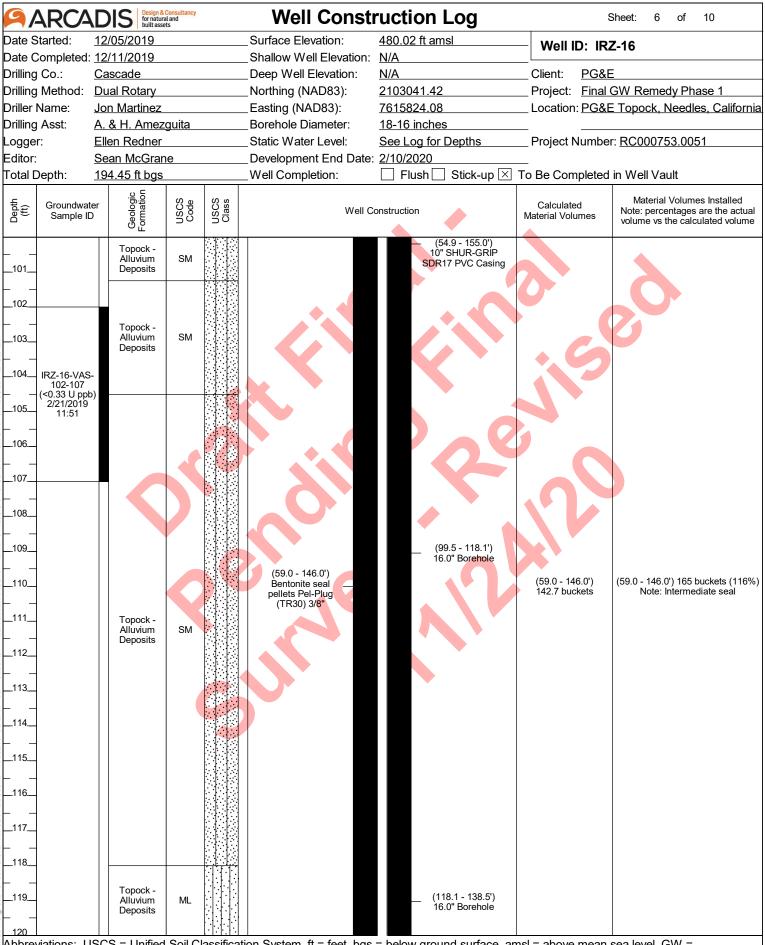
9/	ARC4	DIS Design & for natura built asser	Consultancy I and ts		Well Const	ruction Log	5	Sheet: 1 of 10
Date S		12/05/2019			_Surface Elevation:	480.02 ft amsl	Well ID: IRZ	Z-16
	•	12/11/2019				N/A		
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
_		<u>Dual Rotary</u>			_Northing (NAD83):	2103041.42	•	GW Remedy Phase 1
Driller I		Jon Martinez	.,		_Easting (NAD83):	7615824.08	Location: <u>PG&amp;E</u>	Topock, Needles, California
Drilling		A. & H. Amez	guita		_Borehole Diameter:	18-16 inches	— — — — — — — — — — — — — — — — — — —	DC0007E2 00E4
Logge Editor:		Ellen Redner Sean McGran			_Static Water Level: _Development End Date:	See Log for Depths	Project Number	:: RC000753.0051
Total D		194.45 ft bgs	E		_Development End Date. _Well Completion:		— To Be Completed	in Well Vault
Depth (ft)	Groundwat Sample II		Code	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
1 1 		Topock - Fill	NR		(0.0 - 27.0') 10" SHUR-GRIP SDR17 PVC Casing (0.0 - 4.0') Cemex #0/30 Mesh		(0.0 - 4.0')	(0.0 - 4.0') 12 bags (122%) Note: Temporary backfill sand to fill annular space prior to vault
_ 3 _		Topock - Fill	SP :		(30x50) Lapis Lustre Sand		9.8 bags	installation. Used >20% of the calculated volume due to potential voids forming during drilling .
4 5 6 7		Topock - Fill	NR					
_ 8 _ _ 9 _ _ 10 _ _ 11 _			<b>?</b>		(4.0 - 15.9') Portland Cement 3% Bentonite Type I, II and V with Hydrogel	(0.0 - 20.3') 18.0" Borehole	(4.0 - 15.9') 108.7 gallons	(4.0 - 15.9') 110 gallons (101%) Note: Grout seal
12		Topock - Fill	NR					
16 17 18		Topody 5:11	NIP		(15.9 - 18.7') Cemex #0/30 Mesh — (30x50) Lapis Lustre Sand		(15.9 - 18.7') 6.7 bags	(15.9 - 18.7') 7 bags (104%) Note: Transition sand
19		Topock - Fill	NR /		(18.7 - 58.1') Cemex # 1 C (16x40) Lapis Lustre Sand		(18.7 - 58.1') 96.2 bags	Note: Note: The downhole video camera survey identified a crack in the SHUR-GRIP SDR17 PVC casing at 18.4 to 20.4 ft below top of casing.
Abbre	<i>r</i> iations: U	SCS = Unified	Soil Clas	ssificati	ion System, ft = feet, bgs	= below ground surface, ar	nsl = above mean :	sea level, GW =

9/	ARCA	DIS Design & for natura built asset	Consultancy all and ts		Well Const	truction Log	Sheet: 2 of 10		
Date S	tarted:	12/05/2019			_Surface Elevation:	480.02 ft amsl	Well ID: IRZ	<u></u>	
l .	•	12/11/2019			_Shallow Well Elevation	· ·			
Drilling		Cascade			_Deep Well Elevation:	N/A	_ Client: <u>PG&amp;E</u>		
_		Dual Rotary			_Northing (NAD83):	2103041.42	-	GW Remedy Phase 1	
Driller I		Jon Martinez			_Easting (NAD83):	7615824.08	_ Location: <u>PG&amp;E</u>	Topock, Needles, California	
Drilling		A. & H. Amez	guita		_Borehole Diameter:	<u>18-16 inches</u>	<del>-</del> <del></del>		
Logge		Ellen Redner			_Static Water Level:	See Log for Depths	_ Project Number	: RC000753.0051	
Editor: Total D		Sean McGran 194.45 ft bgs	ie		_Development End Date _Well Completion:		– Го Be Completed	in Well Vault	
Depth (ft)	Groundwate Sample ID	logic ation	USCS Code	USCS Class	•	Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume	
21		Topock - Fill	NR		(19.5 - 20.5') Centralizer  (0.0 - 27.0') 10" SHUR-GRIP SDR17 PVC Casing			, <b>ò</b>	
23 24 25 		Topock - Fill	SP						
26		Topock - Alluvium Deposits	SM						
27 28 29 30	IRZ-16-VAS- 27.0-32.0 (480 ppb) 2/20/2019 09:46	Topock -			(27.0 - 54.9') — 10" 20-Slot 316L SS Wire Wrap Screen (18.7 - 58.1') — Cemex # 1 C — (16x40) Lapis Lustre Sand	(20.3 - 41.2') 18.0" Borehole	(18.7 - 58.1') 96.2 bags	(18.7 - 58.1') 149 bags (155%) Note: Filter pack, swabbed for 60 minutes prior to installation of additional annular materials. Used >20% of the calculated volume due to potential voids forming during	
31  32		Topock - Alluvium Deposits	sc					drilling.	
33		Topock - Alluvium Deposits	GW-GM						
34 35 36 37		Topock - Alluvium Deposits	SM						
38		Topock - Alluvium Deposits	ML						
		Topock - Alluvium	SM						
40			GW-GM			a = bolow ground ourfood am		1 1 0 1 1	

9/	ARC4	DIS Design & for natu	& Consultancy ral and		Well Con	struct	ion Loa		Sheet: 3 of 10
Date S		12/05/2019	sets		Surface Elevation:		2 ft amsl	Mall ID. IF	7.40
		12/11/2019			_Shallow Well Elevati			Well ID: IF	<b>₹</b> Z-16
Drilling	•	Cascade			 _Deep Well Elevation			Client: PG8	ιE
Drilling	Method:	Dual Rotary			_Northing (NAD83):	<u>2103</u>	041.42	Project: Fina	I GW Remedy Phase 1
Driller I		Jon Martinez			_Easting (NAD83):	<u>7615</u>	824.08	Location: <u>PG8</u>	E Topock, Needles, California
Drilling	Asst:	A. & H. Amez	zguita		_Borehole Diameter:		inches		
Loggei		Ellen Redner			_Static Water Level:		og for Depths	Project Numb	er: RC000753.0051
Editor:		Sean McGra			_Development End D				
Total D	epth:	194.45 ft bgs	<u> </u>		_Well Completion:	F	lush	To Be Complete	d in Well Vault
Depth (ft)	Groundwat Sample II		USCS	USCS Class		ell Construct	ion	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
 41		Topock - Alluvium Deposits	GW-GM		(27.0 - 54.9') — 10" 20-Slot 316L SS Wire Wrap Screen		(20.3 - 41.2') 18.0" Borehole		
 42		Topock - Alluvium	SW-SM				, .	0	0
43		Deposits							6
44							<b>X</b>		
 45									
						$\mathbb{L}\mathbb{H}^{\infty}$			
46									
- <sub>-</sub> -									
47									
48						:::     :::			(18.7 - 58.1') 149 bags (155%)
 49		Topock - Alluvium	SM		(18.7 - 58.1') Cemex # 1 C			(18.7 - 58.1')	Note: Filter pack, swabbed for 60 minutes prior to installation of
45		Deposits			(16x40) Lapis Lustre			96.2 bags	additional annular materials. Used >20% of the calculated volume due
 50					Sand				to potential voids forming during drilling.
00							(41.2 - 60.4')		<u>g</u> .
51							18.0" Borehole		
						$::: \exists :::$			
52						$\cdots$			
						$::: \exists :$			
53						:::: <u> </u>			
						:::	:		
54						::: <b> </b>	;		
55							(54.9 - 155.0')		
		Topock - Alluvium	SM				. 10" SHUR-GRIP SDR17 PVC Casing		
56		Deposits							
							;		
57									
 5Ω	ID7 40 V/40	T							
58	IRZ-16-VAS 57.0-62.0	Alluvium	SW-SM		(58.1 - 59.0') Cemex #0/30 Mesh —		- ठं		Note: Filter pack, used >20% of
 59	(<0.33 U ppb 2/20/2019	Deposits			(30x50) Lapis Lustre	%%% %%% %%%	o o		the calculated volume due to potential voids forming during
_ 55 _	14:36				Sand			(59.0 - 146.0')	drilling. (59.0 - 146.0') 165 buckets (116%)
60			SM					142.7 buckets	Note: Intermediate seal
Abbrev	<i>r</i> iations: U	SCS = Unified	d Soil C	lassifica	tion System, ft = feet, l	bas = bela	w ground surface, ar	msl = above mear	n sea level, GW =

9/	ARCA	DIS Design & for natura built asse	Consultancy Il and ts	Well Const	ruction Log	5	Sheet: 4 of 10
	Started:	12/05/2019		Surface Elevation:	480.02 ft amsl	Well ID: IR	Z-16
	-	12/11/2019		Shallow Well Elevation:			
Drilling		Cascade		Deep Well Elevation:	N/A	Client: PG&E	
_		Dual Rotary		Northing (NAD83):	2103041.42		GW Remedy Phase 1
Driller Drilling		Jon Martinez A. & H. Amez	quito	Easting (NAD83): Borehole Diameter:	7615824.08 18-16 inches	Location: PG&E	Topock, Needles, California
Logge		Ellen Redner	yulla	Static Water Level:	See Log for Depths	Project Number: <u>RC000753.0051</u>	
Editor:		Sean McGran	e	Development End Date:	<del>-</del>	r roject rvaribei	1. 1100007 00.0001
Total D		194.45 ft bgs		Well Completion:		To Be Completed	in Well Vault
Depth (ft)	Groundwat Sample ID		USCS Code USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
61 62 63 64	IRZ-16-VAS 57.0-62.0 (<0.33 U ppb 2/20/2019 14:36		SM		(54.9 - 155.0') 10" SHUR-GRIP SDR17 PVC Casing	15	30
65 66 67		Topock - Alluvium Deposits	SM		00		
68 69 70 71		Topock - Alluvium Deposits	SM	(59.0 - 146.0') Bentonite seal pellets Pel-Plug (TR30) 38" (69.5 - 70.5') Centralizer	(60.4 - 79.8') 18.0" Borehole	(59.0 - 146.0') 142.7 buckets	(59.0 - 146.0') 165 buckets (116%) Note: Intermediate seal
72		Topock -					
		Alluvium Deposits	ML .				
74		Topock - Alluvium Deposits	SM				
_		Alluvium Deposits	SM				

9/	ARC4	DIS Design & for nature built asso	Consultancy al and ets		Well Const	ruction	Log		Sheet: 5 of 10
Date S		12/05/2019			_Surface Elevation:	480.02 ft ar	nsl	Well ID:	IRZ-16
1	-	12/11/2019			_Shallow Well Elevation:				
Drilling		Cascade			_Deep Well Elevation:	N/A			G&E
_		Dual Rotary			_Northing (NAD83):	2103041.42			inal GW Remedy Phase 1
Driller I		Jon Martinez			_Easting (NAD83):	7615824.08		Location: <u>P</u>	G&E Topock, Needles, California
Drilling		A. & H. Amez	_		_Borehole Diameter:	18-16 inche			
Logge		Ellen Redner			_Static Water Level:	See Log for	Depths	_ Project Nur	mber: RC000753.0051
Editor: Total D		Sean McGrar 194.45 ft bgs			_Development End Date: _Well Completion:	☐ Flush ☐	Stick-up 🗵	— To Be Comple	eted in Well Vault
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well C	onstruction		Calculated Material Volume	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
			SM :			10	54.9 - 155.0') " SHUR-GRIP		
81 82		Topock - Alluvium Deposits	SW-SM			SDF	17 PVC Casing	3	6
		Topock - Alluvium	ML :						
83		Deposits / Topock -	SW-SM :						
 84		Alluvium Deposits							
04									
85							*		
		Topock - Alluvium	SM :						
86		Deposits							
87									
88		Topock - Alluvium	ML .				•		
		Deposits							
89		Topock -	1				\ \		
		Alluvium Deposits	ML				79.8 - 99.5')	<b>*</b>	
90		Берозіта			(59.0 - 146.0') Bentonite seal		8.0" Borehole	(59.0 - 146.0)	
					pellets Pel-Plug (TR30) 3/8"			142.7 buckets	Note: Intermediate seal
91					(11100) 0,0				
92			]						
		Topock -	:						
93		Alluvium	ML						
		Deposits							
94									
			[:						
95			:						
			:						
96		Topock -	014						
		Alluvium Deposits	SM :						
97		Deposits /							
98		Topock - Alluvium	ML :						
-		Deposits	IVIL .						
99									
-			:				99.5 - 118.1')		
100		000 11 :6	<u> </u>	<u> 1111</u>		1	6.0" Borehole		1 1 0)4/



9/	ARC4	DIS Design & for nature built asso	Consultancy al and ets		Well Const	ruction Log		Sheet: 7 of 10
Date S	Started:	12/05/2019			_Surface Elevation:	480.02 ft amsl	Well ID: IR	Z-16
	-	12/11/2019			_Shallow Well Elevation:			
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&	
1		Dual Rotary			_Northing (NAD83):	2103041.42		GW Remedy Phase 1
Driller I		Jon Martinez			_Easting (NAD83):	7615824.08	Location: <u>PG&amp;</u>	E Topock, Needles, California
Drilling		A. & H. Amez			_Borehole Diameter:	<u>18-16 inches</u>		
Logge		Ellen Redner			_Static Water Level:	See Log for Depths	Project Numbe	er: RC000753.0051
Editor: Total D		Sean McGrar 194.45 ft bgs			_Development End Date: _Well Completion:		 up ⊠ To Be Completed	l in Well Vault
	, opui.				_ Troil Completion.			
Depth (ft)	Groundwat Sample II		Code	USCS	Well C	construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
 121		Topock - Alluvium Deposits	ML			(54.9 - 155.0 10" SHUR-GI SDR17 PVC Ca	RÍP	<b>A</b>
122					•. •			
123								
125								
126								
		Topock -						
127		Alluvium Deposits	SM					
128								
<u> </u>								
129						(118.1 - 138. 16.0" Boreho	.5')	
					(59.0 - 146.0')	16.0 Boreno		(59.0 - 146.0') 165 buckets (116%)
130					Bentonite seal pellets Pel-Plug		(59.0 - 146.0') 142.7 buckets	Note: Intermediate seal
 131					(TR30) 3/8" (129.5 - 130.5')			
_131_					Centralizer			
132								
		Topock - Alluvium	ML					
133		Deposits Topock -	IVIL					
		Alluvium	GM	600				
134	IRZ-16-VAS 132-137-EB			00				
 135	(<0.17 U ppt 2/26/2019	<b>)</b>						
135	13:38							
136								
_100_								
137		Topock -	ÇM.					
		Alluvium Deposits	SM					
138								
139						(138.5 - 158.	2')	
<u> </u>						16.0" Boreho	ole	
140		1 i.e.				1	and - above mean	1 1 0 1 1

ARC	ADIS Design & for natura built asset	Consultancy al and ets		Well Const	ruction	Log	S	Sheet: 8 of 10
Date Started:	12/05/2019			_Surface Elevation:	480.02 ft ar	msl	Well ID: IRZ	Z-16
Date Completed					•			
Drilling Co.:	Cascade			_Deep Well Elevation:	N/A		Client: <u>PG&amp;E</u>	
Drilling Method:	-			_Northing (NAD83):	2103041.42		•	GW Remedy Phase 1
Driller Name:	Jon Martinez			_Easting (NAD83):	7615824.08		Location: <u>PG&amp;E</u>	Topock, Needles, California
Drilling Asst:	A. & H. Amez	-		_Borehole Diameter:	18-16 inche			D0000750 0054
Logger:	Ellen Redner			_Static Water Level:	See Log for	r Deptns	Project Number	r: RC000753.0051
Editor: Total Depth:	Sean McGrar 194.45 ft bgs			_Development End Date: _Well Completion:	. <u>2/10/2020</u> ☐ Flush ☐	☐ Stick-up 区	— To Be Completed	in Well Vault
Groundw Sample		USCS	USCS Class	Well C	Construction		Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
	Topock - Alluvium Deposits	SM		(59.0 - 146.0') Bentonite seal	1Ò	54.9 - 155.0') " SHUR-GRIP R17 PVC Casing	(59.0 - 146.0')	(59.0 - 146.0') 165 buckets (116%)
144	Topock - Alluvium Deposits	ML		pe <mark>llets Pel-P</mark> lug (TR30) 3/8"			142.7 buckets	Note: Intermediate seal
145	Topock - Alluvium Deposits	SM						
146  147	Topock - Alluvium Deposits	ML		(146.0 - 147.6') Cemex #60 Mesh (40x60) Lapis Lustre Sand	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	6	(146.0 - 147.6') 2.8 bags	(146.0 - 147.6') 3 bags (107%) Note: Transition sand
	.0 ob)	SM		(147.6 - 194.5') Cemex #1/20 Mesh — (20x40) Lapis Lustre Sand	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	138.5 - 158.2') 6.0" Borehole 155.0 - 186.8') 15-Slot 316L SS re Wrap Screen	(147.6 - 194.5') 79.3 bags	(147.6 - 194.5') 82.3 bags (104%) Note: Filter pack, swabbed lower screen for approximately 90 minutes prior to the installation of additional annular materials.
157 158 159 160	Topock - Alluvium Deposits	ML Soil CI	assifica	tion System, ft = feet, bgs		158.2 - 177.7') 6.0" Borehole	nsl = above mean	sea level. GW =

9/	ARC4	DIS Design of for natural built ass	Consultancy ral and ets		Well Con	str	ucti	on Log		Sheet: 9 of 10	
Date S	started:	12/05/2019			_Surface Elevation:			2 ft amsl	Well ID:	IRZ-16	
	-	12/11/2019			_Shallow Well Elevati		N/A				
Drilling		Cascade			_Deep Well Elevation		N/A	44.40		G&E	
		Dual Rotary			_Northing (NAD83):		21030			inal GW Remedy Phase 1	
Driller Drilling		Jon Martinez			_Easting (NAD83): _Borehole Diameter:		76158 18-16	inches	Location. <u>Pr</u>	G&E Topock, Needles, California	
Logge		Ellen Redner	-		_Static Water Level:			og for Depths	— Project Nur	nber: <u>RC000753.0051</u>	
Editor:		Sean McGra			_Development End D				1 10,00011401	_ Floject Nulliber. NC000733.0031	
Total D		194.45 ft bgs			Well Completion:				To Be Comple	eted in Well Vault	
Depth (ft)	Groundwat Sample II		USCS	USCS Class	W	ell Co	nstructio	n	Calculated Material Volume	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume	
161 162		Topock - Alluvium Deposits	ML					(155.0 - 186.8') 10" 15-Slot 316L SS Wire Wrap Screen	2	6	
163 164 165									jig		
166 167 		Topock - Alluvium Deposits	SM					6			
169 170		Topock - Alluvium	ML		(147.6 - 194.5') Cemex #1/20 Mesh —			(158.2 - 177.7') 16.0" Borehole	(147.6 - 194.5	(147.6 - 194.5') 82.3 bags (104%) Note: Filter pack, swabbed lower screen for approximately 90	
 171  172		Deposits			(20x40) Lapis Lustre Sand			VIL	79.3 bags	minutes prior to the installation of additional annular materials.	
173  174	IRZ-16-VAS										
175 176 177	172.0-177.0 (110 ppb) 2/27/2019 16:26	Topock - Alluvium Deposits	SW-SM								
178 179								(177.7 - 179.0') 16.0" Borehole			
 180			ML					(179.0 - 194.5') 15.5" Borehole			
Ahhra	intione: II	SCS - Unifica	N SAIL CL	accificat	ion System ft = feet	hac -	- holov	around curface or	nel – abovo me	can coa loval GW -	

9/	ARC4	DIS	Design & for nature built asset	Consultancy al and ets		Well Constr	ruction Log	(	Sheet: 10 of 10
	Started:		/2019			_Surface Elevation:	480.02 ft amsl	Well ID: IR	Z-16
Date C	Completed:	<u>12/11</u>	/2019			_Shallow Well Elevation:	<u>N/A</u>		
Drilling		<u>Casc</u>				_Deep Well Elevation:	N/A	Client: PG&E	
_	Method:		Rotary			_Northing (NAD83):	2103041.42	•	GW Remedy Phase 1
Driller			/lartinez			_Easting (NAD83):	7615824.08	Location: <u>PG&amp;E</u>	E Topock, Needles, California
Drilling			H. Amez	guita		_Borehole Diameter:	<u>18-16 inches</u>		
Logge			Redner			_Static Water Level:	See Log for Depths	Project Numbe	r: RC000753.0051
Editor:			McGrar			_Development End Date:			: \\\ -    \\ /  4
Total D	Deptn:	194.4	5 ft bgs			_Well Completion:	☐ Flush ☐ Stick-up 区	To Be Completed	in vveii vauit
Depth (ft)	Groundwat Sample II		Geologic Formation	Code	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
 181  182			Fopock - Alluvium Deposits	ML			(155.0 - 186.8') 10" 15-Slot 316L SS Wire Wrap Screen		8
			Гороск - Alluvium	SM				:5	3
			Deposits	OW				7	
187187		/	Topock - Al <mark>luvi</mark> um Deposits	ML		(147.6 - 194.5') Cemex #1/20 Mesh (20x40) Lapis Lustre Sand	(179.0 - 194.5') 15.5" Borehole	(147.6 - 194.5') 79.3 bags	(147.6 - 194.5') 82.3 bags (104%) Note: Filter pack, swabbed lower screen for approximately 90 minutes prior to the installation of additional annular materials.
189						(189.0 - 190.0') ————————————————————————————————————			
191 191 192			Fopock - Alluvium Deposits	SM			(186.8 - 192.5') Sump and PVC End		
	IRZ-16-VAS 192.0-197.0 (<0.17 U ppb 2/28/2019 13:41						Cap		
195						End of Boring at 194.5 ft bgs.			
196									
197 197									
198									
199 199									
200 2 <b>1 2 1 2 1 1 1 1 1 1 1 1 1 1</b>	datie	000	- 119"	0-11-01	:e: ·	ion Overton # - 5 ( )	_ b alass are		and level OW =
. — —						ion System, ft = feet, bgs	-		
7						etected above the laborate bgs.) measured pre-spec	<u> </u>	•	
ನ <b>water t</b>	anie IIIai K	o rebit	sociii ue	ριπιο ۷	rat <del>e</del> i (II.	bys.) measured pre-spec	ino capacity for the shallot	wanu ueep screens	respectively

	DIC Des	sign & Consultancy natural and ilt assets		Drilling Log			Sheet:	1 of 10
ARCA Date Started:	<u> 11/21/201</u>		Surf	ace Elevation:	480.02 ft amsl	Τ		
Date Completed:				hing (NAD83):	2103041.42	- Borin	g No.: <u>IR</u>	<u>Z-16</u>
Drilling Co.:	Cascade			ing (NAD83):	7615824.08	_ Client:	PG&E	
Drilling Method:	Dual Rota	ıry		l Depth:	194.5 ft bgs	_ Project:		emedy Phase 1
Drill Rig Type:	Foremost	-		ductor Casing Diameter:	_	_ Location:	PG&E Topo	ck, Needles,
Driller Name:	Jon Martir	nez	Drill (	Casing Diameter:	16 inches	_	California	
Drilling Asst:	A. & H. Ar	-	Drill B		17 5/8" & 15 5/8" Tricone	Project Nu	ımber: RC00	0753.0051
Tool-Pusher:	Arnold La		•	th to First Water:	26.3 ft bgs	_		
Rig Geologist:	Ellen Red	ner	Con\	verted to Well:	× Yes No			1
Depth (ft) Drilling Run and Average Penetration F	je Codo	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling notes and observa temporary backfill n	ations confirming naterial in drill o	g presence of cuttings	Drilling Fluid
_ 1 _	NR			(0.0 - 2.0') Topock - Fill; No recovery (NR)	(0.0 - 0.5') Confirmed drill oborehole.	casing was lined	l up on pilot	(0.0 - 20.3') 591.4 gallons of water used; 0 gallons of water recovered; 591.4 gallons of water lost
2  _ 3	SP			(2.0 - 3.2') Topock - Fill; Poorl graded sand (SP); brown (10YR 5/3)	y			
4 5 6 7	NR			(3.2 - 7.0') Topock - Fill; (NR)				
	NR NR		(0.0 - 20.3') 18.0" Steel Casing	(17.0 - 22.57) Topock - Fill; No recovery (NR)  (17.0 - 22.57) Topock - Fill; No recovery (NR)	(10.0') Observed trace amo Plastering Sand and Cal-Si cuttings.	lica 1/4"-3/8" Pe	Washed ea Gravel in drill	

9/	ARCA	DIS for bui	sign & Consultancy natural and ilt assets	1	<b>Drilling Log</b>		Sheet:	2 of 10
Date S	tarted:	11/21/201	19	Surfa	ace Elevation:	480.02 ft amsl	Boring No.: IRZ	Z-16
	completed:		9		ning (NAD83):	2103041.42	_	<del></del>
Drilling Drilling	Method:	Cascade Dual Rota	arv		ing (NAD83): Depth:	7615824.08 194.5 ft bgs	_	emedy Phase 1
	g Type:	Foremost	•		ductor Casing Diameter:	_	Location: PG&E Topo	
Driller I		Jon Martii			Casing Diameter:	16 inches	<u>California</u>	
Drilling		A. & H. A	•			17 5/8" & 15 5/8" Tricone	Project Number: RC00	0753.0051
Tool-P		Arnold La		=	h to First Water:	26.3 ft bgs	-	
Rig Ge	ologist:	Ellen Red	ner T	Con\	verted to Well:	× Yes No		
Depth (ft)	Drilling Run and Averag Penetration R	e Codo	USCS Class	Casing Diameter	Description  (See Pilot boring log for full geologic descriptions)	temporary backfill m	ions confirming presence of aterial in drill cuttings	Drilling Fluid
21 21 22		NR				(20.0') Observed some Cal-3 drill cuttings. (20.3 - 20.8') Very hard/roug	Silica 1/4"-3/8" Pea Gravel in h drilling	(20.3 - 60.4') 1182.7 gallons of water used; 3018 gallons of water recovered; 1835.3 gallons of water gained
 23  24		SP			(22.5 - 26.0') Topock - Fill; Poorly graded sand (SP); brown (10YR 5/3)			
25  26					(26.0 - 27.0") Topock - Alluviui Deposits; Silty sand with grave			
27  28					(SM); brown (7.5YR 5/3) (27.0 - 30.5') Topock - Alluviui Deposits; Silty sand with grave brown (7.5YR 4/4)	n		
29 30 	(20.3 - 41.2) 3.44 mins/ft	L		(20.3 - 41.2') 18.0" Steel Casing	(30.5 - 32.0') Topock - Alluviui	Gravel in drill cuttings.	unts of Cal-Silica 1/4"-3/8" Pea	
31  32		sc		•	Deposits; Clayey sand with gravel (SC); brown (7.5YR 4/3			
 33		GW-GM			Deposits; Well graded gravel with silt and sand (GW-GM)  (33.3 - 37.0') Topock - Alluviui	<u></u>		
34 35 36 37		SM			Deposits; Silty sand with grave (SM); brown (7.5YR 4/3)			
38 		ML SM			(37.0 - 39.0') Topock - Alluviui Deposits; Sandy silt (ML); brown (7.5YR 4/2) (39.0 - 39.5') Topock - Alluviui Deposits; Silty sand (SM);			
40	:-4: 1.1 <b>c</b>	GW-GM		DI:E:+;	brown (7.5YR 4/2)	oolow ground gurfage, ame		LOW

9/	ARCA	DIS	Des for buil	sign & Consultan natural and It assets	су	<b>Drilling Log</b>			Sheet: 3	3 of 10
Date S		<u>11/21</u>				ace Elevation:	480.02 ft amsl	Boring N	lo.: IRZ	<b>'</b> -16
	ompleted:			9		ning (NAD83):	2103041.42	. —		
Drilling		Casca				ing (NAD83):	7615824.08	='	3 <u>&amp;E</u>	1 DI 4
_	Method:	<u>Dual</u>		•		Depth:	194.5 ft bgs	•		medy Phase 1
	g Type:			DR-241		ductor Casing Diameter:			-	ck, Needles,
Driller I		Jon N				Casing Diameter:	16 inches California			
Drilling				<u>nezguit</u>			17 5/8" & 15 5/8" Tricone Project Number: RC000753.0051			
Tool-P Rig Ge	usner: eologist:	Arnole Ellen			•	h to First Water: verted to Well:	26.3 ft bgs			
Depth	Drilling Run and Averag	ا ا	scs	USCS	Casing	Description	Drilling notes and observati			Drilling Fluid
(ft)	Penetration F		ode	Class	Diameter	(See Pilot boring log for full geologic descriptions)	temporary backfill ma			J
41	(20.3 - 41.2) 3.44 mins/ft		V-GM		(20.3 - 41.2') 18.0" Steel Casing	(39.5 - 41.3') Topock - Alluviui Deposits; Well graded gravel with silt and sand (GW-GM); brown (10YR 5/3)	Gravel in drill cuttings.		4"-3/8" Pea	
 _42_  _43_		sv	V-SM			(41.3 - 43.3') Topock - Alluviui Deposits; Well graded sand with silt and gravel (SW-SM); brown (7.5YR 4/4)	(41.2 - 60.4') Smooth drilling			
43  44		ŀ				(43.3 - 54.5') Topock - Alluviu Deposits; Silty sand with graw (SM); brown (7.5YR 5/3)				
 _45_ 		ı				0		3		
46  47		ı					Del la			
 48										
49 			SM			0, 1				
50  51	(41.2 - 60.4) 2.98 mins/ft				(41.2 - 60.4') 18.0" Steel Casing		(50.0') Observed trace amou Gravel in drill cuttings.	nts of Cal-Silica 1/4	4"-3/8" Pea	
51  52					Casing					
 53										
 54										
55 56 56		\$	SM			(54.5 - 57.0') Topock - Alluviui Deposits; Silty sand with grave (SM); reddish brown / modera brown (5YR 4/4)	el			
57  58  59		sv	V-SM			(57.0 - 59.5') Topock - Alluviui Deposits; Well graded sand with silt and gravel (SW-SM); reddish brown (5YR 4/3)	n			
59  60			SM			(59.5 - 64.8') Topock - Alluviui	n			

Date Started: 11/21/2019 Surface Elevation: 480.02 ft amsl Date Completed: 12/04/2019 Northing (NAD83): 2103041.42  Drilling Co.: Cascade Easting (NAD83): 7615824.08 Client: PG&E  Drilling Method: Dual Rotary Total Depth: 194.5 ft bgs Project: Final GW Remedy Phase 1  Drill Rig Type: Foremost DR-24HD Conductor Casing Diameter: 18 inches Location: PG&E Topock, Needles,	6 A D C		I A Doc	ian & Consults	nev	Duilling Lag				
Date   Completed: 120/42019	ARO	7D				Drilling Log			Sheet:	4 of 10
Drilling Co. Gascade Easting (NADBS): 715824.08 Client PG& Project Pinal GW Remody Phase 1 Drill Roll Right Project Project Post Period Casing Diameter 1 194.5 hbgs Project Pinal GW Remody Phase 1 Drill Right Project Proje								Boring	No.: <u>IR</u> Z	<u> </u>
Dalling Method:   Dall Rotary				9		- '		_		
Differ Name				rı,		<del>-</del> '		<del>_</del>		medy Phase 1
Driller Asset:  A 8.4 A. H. Amerguita  Drill Bit.  Amod Lamon  Depth to First Water:  Rig Geologist  Ellen Rednar  Converted to Well:  See The boring log for percentation Rate  The percentation Rate  See The boring log for percentation Rate  The boring log for percentation Rate  See The boring log for percentation Rate  See The boring log for percentage and the service of the service seed that percentage gradient of water garden  See The boring log for percentage and the service of the service seed that percentage gradient of water garden  See The boring log for percentage and the service seed that percentage gradient per	_			•			_	•		•
Deling   A. & H. Amezguta   Drill Bit   17.68° & 15.58° Tricone. Project Number: RC000753.0051									-	
Depth   Continue   Converted to Well:   Yes   No.										0753.0051
Depth prilling Run (ft) (ISCS Code Code Code Code Code Code Code Code	Tool-Pusher:	<u>Ar</u>	nold La	mon	Dept	h to First Water:	26.3 ft bgs	_		
Degrit of an Account of Code State of Code S	Rig Geologist:	Ell	en Redi	ner	Con	verted to Well:	× Yes No			
Deposite, Silly sand with growt   (60,07) Observed frace amounts of Cal-Silica 14"-38" Pau   (60,4 - 78,8)   (64.8 - 67.8") Topock Allowum   (66.4 - 78,8")   (66.4 -	and Aver	and Average   USCS   USCS   Casing		(See Pilot boring log for				Drilling Fluid		
(SM): brown (7.5YR 4/4)	61	.8)	SM SM		`18.0" Steel	Deposits; Silty sand with grave (SM); brown (7.5YR 4/4) and reddish brown / moderate brown (5YR 4/4)  (64.8 - 67.0') Topock - Alluviu Deposits; Silty sand with grave (SM); brown (10YR 5/3)  (67.0 - 72.0') Topock - Alluviu Deposits; Silty sand with grave (SM); brown (7.5YR 4/4)  (73.0 - 79.0') Topock - Alluviu Deposits; Silty sand with grave (ML); strong brown (7.5YR 4/4) with reddish brown / moderate brown (5YR 4/4)  (79.0 - 80.5') Topock - Alluviu Cybosits; Silty sand with grave (SM); brown (7.5YR 4/4) with reddish brown / moderate brown (5YR 4/4)	(63.0 - 75.0') Smooth but slo	ow drilling		gallons of water used; 4347 gallons of water recovered; 3488.8
<u> </u>			SM			Deposits; Silty sand with grave				

9/	ARCA	DIS for bui	sign & Consultancy natural and ilt assets		<b>Drilling Log</b>		Sheet:	5 of 10
Date S	tarted:	11/21/201	19		ace Elevation:	480.02 ft amsl	Boring No.: IRZ	Z-16
	completed:		19		ning (NAD83):	2103041.42		<u></u>
Drilling		Cascade			ing (NAD83):	7615824.08	Client: PG&E	emedy Phase 1
	Method: g Type:	Dual Rota Foremost	•		Depth: ductor Casing Diameter:	194.5 ft bgs	Project: Final GW Re Location: PG&E Topol	•
Driller I		Jon Martii			Casing Diameter:	16 inches	<u>California</u>	5K, 1400a100,
Drilling		A. & H. A.				17 5/8" & 15 5/8" Tricone		0753.0051
Tool-P		Arnold La	<u>mon</u>	Dept	h to First Water:	26.3 ft bgs	<u> </u>	
Rig Ge	eologist:	Ellen Red	ner	Con	verted to Well:	× Yes No		
Depth (ft)	Drilling Run and Averag Penetration R	e Codo	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	temporary backfill ma	ions confirming presence of aterial in drill cuttings	Drilling Fluid
		SM				Gravel in drill cuttings	ints of Cal-Silica 1/4"-3/8" Pea	
81  82		SW-SM			(80.5 - 82.3') Topock - Alluviui Deposits; Well graded sand with silt and gravel (SW-SM); brown (7.5YR 4/4)			
		ML			(82.3 - 82.8') Topock - Alluviui			
83					Deposits; Sandy silt with grave (ML); brown (7.5YR 4/3)red			
 84		SW-SM			(2.5YR 4/6) (82.8 - 83.8') Topock - Alluviun Deposits; Well graded sand with silt and gravel (SW-SM);	n		
 85					brown (7.5YR 4/4) (83.8 - 87.0') Topock - Alluvius Deposits; Silty sand with grave	m el		
 86		SM			(SM); brown (7.5YR 4/4)			
 87								
 88		ML			(87.0 - 88.8') Topock - Alluviui Deposits; Sandy silt with grave (ML); brown (7.5YR 4/4)			
 89					(88.8 - 89.8') Topock - Alluviui	n		
90_	(79.8 - 99.5) 3.41 mins/ft			(79.8 - 99.5') 18.0" Steel	Deposits; Sandy silt (ML); brown (7.5YR 4/4) (89.8 - 96.0') Topock - Alluviui			
	0. 11 mmo/re			Casing	Deposits; Sandy silt with grave (ML); brown (7.5YR 4/4)	(90.0') Observed trace amou Gravel in drill cuttings.	ints of Cal-Silica 1/4"-3/8" Pea	
91								
92								
93		ML						
 94								
 95								
96		SM			(96.0 - 96.5') Topock - Alluviui			
 97					Deposits; Silty sand with grave (SM); brown (7.5YR 4/3)			
[ ]					(96.5 - 100.0') Topock - Alluvium Deposits; Sandy silt			
98					with gravel (ML); brown (7.5YF 4/4)	₹		
		ML						
99								
-	(99.5 - 118.1						ints of Cal-Silica 1/4"-3/8" Pea	(99.5 - 158.2') 6570
_100_	2.94 mins/ft		1 . 1 . 1 . 1 . 1		L	Gravel in drill cuttings.		gallons of water used;

9/	ARCA	DI	S Desi	ign & Cr natural It asset:	onsultan and	су	<b>Drilling Log</b>				Sheet:	6 of 10
Date S	Started:	<u>11/</u>	21/201	19		Surfa	ace Elevation:		30.02 ft amsl	Boring	g No.: <u>IR</u> Z	<u></u>
	Completed:			9			ning (NAD83):		03041.42			<del></del>
Drilling Drilling	Method:		scade al Rota				ng (NAD83): Depth:		315824.08 34.5 ft bgs	Client: Project:	PG&E Final GW Re	emedy Phase 1
	g Type:		remost	-	-24ŀ		ductor Casing Diameter:		-	Location:	PG&E Topo	
Driller I			n Martin				Casing Diameter:		inches		California	,
Drilling	Asst:	<u>A. 8</u>	<u>&amp; H. An</u>	nez	guit	aDrill I	Bit:	<u>17</u>	7 5/8" & 15 5/8" Tricone	Project Nu	ımber: RC00	0753.0051
Tool-P			old Lar			=	h to First Water:		6.3 ft bgs			
Rig Ge	eologist:	Elle	n Redr	<u>ner</u>		Con\	verted to Well:	X	Yes No			Г
Depth (ft)	Drilling Run and Averag Penetration R	e	USCS Code		SCS ass	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)		Drilling notes and observation temporary backfill ma	iterial in drill c	uttings	Drilling Fluid
			SM				(100.0 - 101.3') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5Yf 4/4)	₹	(100.0') Observed trace amou	unts of Cal-Sil	ica 1/4"-3/8" Pea	12498 gallons of water recovered; 5928 gallons of water gained
 _102_							(101.3 - 104.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YF 4/4)	2	+.62			
_103			SM									
104  105		-					(104.5 - 118.0') Topock - Alluvium Deposits; Silty sand	(	3 (			
							with gravel (SM); reddish brow / moderate brown (5YR 4/4)	n	(105.0 - 111.0') Rough drilling			
106												
107												
 108												
								V				
_109_	(99.5 - 118.1)					(99.5 - 118.1') 16.0" Steel	O. V					
	2.94 mins/ft					Casing						
110				4					(110.0') Observed trace amou	unts of Cal-Sil	ica 1/4"-3/8" Pea	
 _111_									Gravel in drill cuttings.			
_'''-			SM									
112												
113												
114												
115												
 _116_												
117												
118							(118.0 - 121.5') Topock -	+				
	(118.1 - 138.5 1.75 mins/ft		ML			(118.1 - 138.5') 16.0" Steel Casing	Alluvium Deposits; Sandy silt with gravel (ML); reddish brow (2.5YR 4/4)	n				
_120_				Ш.	<u>1: [::</u>							

9/	ARCA	DIS	Desig for na built	in & Consulta atural and assets	ancy	<b>Drilling Log</b>				Sheet:	7 of 10
Date S	Started:	11/21/	2019	9	Surfa	ace Elevation:		0.02 ft amsl	Borine	g No.: <u>IRZ</u>	<u> </u>
	Completed:			}		hing (NAD83):		03041.42	Client:	PG&E	<del></del>
Drilling Drilling	Method:	Casca Dual R				ing (NAD83): I Depth:		15824.08 4.5 ft bgs	Project:		emedy Phase 1
	g Type:	Forem		•		ductor Casing Diameter:		-	Location:	PG&E Topo	
Driller l		Jon Ma				Casing Diameter:		inches		<u>California</u>	
Drilling		<u>A. &amp; H</u>		•				5/8" & 15 5/8" Tricone	Project Nu	ımber: RC00	0753.0051
Tool-P		Arnold				th to First Water:		.3 ft bgs			
Rig Ge	eologist:	Ellen F	<u>edn</u>	er	Con\	verted to Well:	<u> ×</u>	Yes No			Γ
Depth (ft)	Drilling Run of and Averag Penetration R	9 03		USCS Class		Description (See Pilot boring log for full geologic descriptions)		Drilling notes and observation temporary backfill ma	iterial in drill d	cuttings	Drilling Fluid
 _121		M						(120.0') Observed trace amou Gravel in drill cuttings.	unts of Cal-Sil	lica 1/4"-3/8" Pea ▶	
						(121.5 - 132.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brow (2.5YR 4/4)	'n				
125	(118.1 - 138.5 1.75 mins/ft	)	Л		(118.1 - 138.5') 16.0" Steel Casing			(130.0') Observed trace amou Gravel in drill cuttings.	unts of Cal-Sil	lica 1/4"-3/8" Pea	
132 		M	L			(132.0 - 133.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML); brown (7.5YF	-				
133				<del>,\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</del>	; ]	(4/3) (133.0 - 134.0') Topock -	_				
13/		GI			)	Alluvium Deposits; Silty gravel					
134 135 136 137 138		SI		<u>о</u> U		with sand (GM); reddish brown (2.5YR 4/4) (134.0 - 143.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brow (2.5YR 4/4)	-				
139 140	(138.5 - 158.2 1.89 mins/ft	)			(138.5 - 158.2') 16.0" Steel Casing			(139.0 - 142.0') Rough drilling	9		

9/	ARCA	DI:	S Des	ign & Consulta natural and t assets	псу	<b>Drilling Log</b>		Sheet:	8 of 10
Date S	tarted:	11/2	1/201	9	Surfa	ace Elevation:	480.02 ft amsl	Boring No.: IRZ	Z-16
Date C Drilling	Control Control			9		ning (NAD83):	2103041.42	 _ Client: <u>PG&amp;E</u>	
_	Method:		<u>cade</u> l Rota	rv/		ng (NAD83): Depth:	7615824.08 194.5 ft bgs		emedy Phase 1
	g Type:			DR-24		ductor Casing Diameter:	_	_ Location: <u>PG&amp;E Topo</u>	-
Driller I			Martir			Casing Diameter:	16 inches	California	,
Drilling	Asst:	<u>A. &amp;</u>	H. Ar	nezgui		-	17 5/8" & 15 5/8" Tricone	e Project Number: RC00	0753.0051
Tool-P			old La		Dept	h to First Water:	26.3 ft bgs	_	
Rig Ge	eologist:	Eller	Red	ner	Conv	verted to Well:	× Yes No		T
Depth (ft)	Drilling Run and Averag Penetration R	e   '	USCS Code	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	temporary backfill m	ations confirming presence of naterial in drill cuttings	Drilling Fluid
141 142 143			SM				(140.0') Observed trace ame Gravel in drill cuttings.	ounts of Cal-Silica 1/4"-3/8" Pea	
 144			ML			(143.0 - 144.3') Topock - Alluvium Deposits; Sandy silt (ML); reddish brown (2.5YR 4/4) (144.3 - 145.5') Topock -			
 145			SM			Alluvium Deposits; Silty sand with gravel (SM); olive brown (2.5Y 4/4)		3	
146  147 			ML			(145.5 - 147.8') Topock - Alluvium Deposits; Sandy silt (ML); reddish brown (2.5YR 4/4)	O WILL		
	(138.5 - 158.2 1.89 mins/ft	2)	SM		(138.5 - 158.2') 16.0" Steel Casing	(147.8 - 155,5') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brow (2.5YR 4/4)		ounts of Cal-Silica 1/4"-3/8" Pea	
154 155 156 157 158			ML			(155.5 - 162.8') Topock - Alluvium Deposits; Sandy silt with gravel (ML); reddish brow (2.5YR 4/4)		ounts of Cal-Silica 1/4"-3/8" Pea	(158.2 - 194.5') 2760
159	(158.2 - 177.7 1.81 mins/ft		11. **		(158.2 - 177.7') 16.0" Steel Casing			al = above mean and leve	gallons of water used; 12440 gallons of water recovered; 9680 gallons of water gained

9/	ARCA	DI	S Desi	i <mark>gn &amp; Consultan</mark> natural and It assets	су	<b>Drilling Log</b>			Sheet: 9	9 of 10
	Started:		21/201			ace Elevation:	480.02 ft amsl	Borina	No.: <u>IRZ</u>	<u>-</u> -16
	Completed:			9		ning (NAD83):	2103041.42			<u> </u>
Drilling			cade			ing (NAD83):	7615824.08		<u>G&amp;E</u>	
_	Method:		al Rota	•		Depth:	<u>194.5 ft bgs</u>	,		medy Phase 1
	g Type:			DR-24H		ductor Casing Diameter:			G&E Topod	ck, Needles,
	Name:		Martin			Casing Diameter:	16 inches		California	
Drilling				<u>nezguita</u>			17 5/8" & 15 5/8" Tricone	Project Num	ber: <u>RC000</u>	)753.0051
	usher:		old Lar			h to First Water:	26.3 ft bgs			
Rig Ge	eologist:	<u>Elle</u>	n Redr	<u>ner</u>	Con\	/erted to Well:	Yes			
Depth (ft)	Drilling Run and Averag Penetration F	je	USCS Code	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling notes and observation temporary backfill ma	iterial in drill cutt	ings	Drilling Fluid
161	(158.2 - 177.7 1.81 mins/ft		ML		(158.2 - 177.7') 16.0" Steel Casing	(162.8 - 169.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brow (2.5YR 4/4)	(160.0') Observed trace amou Gravel in drill cuttings.		a 1/4"-3/8" Pea	
_170_		ı	ML			(169.5 - 170.5') Topock - Alluvium Deposits; Sandy silt (ML); olive brown (2.5Y 4/4)	(170.0') Observed trace amou	unts of Cal-Silica	a 1/4"-3/8" Pea	
_171_  _172_						(170.5 - 179.5') Topock - Alluvium Deposits; Well grade sand with silt and gravel (SW-SM); dark reddish brown (2.5YR 3/4)	d			
 _173_										
174		ı								
_ 175			SW-SM							
			الاات- ۱۷۷							
_ 176										
177										
,,,										
178	(177.7 - 179.0 8.54 mins/ft				(177.7 - 179.0') 16.0" Steel Casing					
179	(470.0.404				(470.0 404.5)					
	(179.0 - 194.5 0.72 mins/ft		ML		(179.0 - 194.5') 15.5" Open Hole	(179.5 - 182.0') Topock -	-			
_180_	<u> </u>			<u> </u>	<u> </u>		1.1			

9/	ARCA	DIS	Design & Consulta for natural and built assets	псу	<b>Drilling Log</b>			Sheet:	10 of 10
	Started:	11/21/2			ace Elevation:	480.02 ft amsl	Borine	y No.: IRZ	 '-16
	Completed:				ning (NAD83):	2103041.42			<u> </u>
Drilling		Cascac			ing (NAD83):	7615824.08	Client:	PG&E	
1	Method:	Dual R	-		Depth:	194.5 ft bgs	Project:		medy Phase 1
	g Type:		st DR-24		ductor Casing Diameter:		Location:	PG&E Topoc	k, Needles,
Driller I		Jon Ma			Casing Diameter:	16 inches		<u>California</u>	
Drilling			Amezguit			17 5/8" & 15 5/8" Tricone	Project Nu	ımber: RC000	)753.0051
Tool-P		Arnold		•	h to First Water:	26.3 ft bgs			
Rig Ge	eologist:	Ellen R	edner	Con\	verted to Well:	× Yes No			
Depth (ft)	Drilling Run and Averag Penetration R	e Co		Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling notes and observation temporary backfill ma	iterial in drill c	uttings	Drilling Fluid
181		MI			Alluvium Deposits; Sandy silt with gravel (ML); reddish brow (2.5YR 4/4)	(180.0') Observed trace amou Gravel in drill cuttings.	unts of Cal-Sil	ica 1/4"-3/8" Pea	
182  183		l			(182.0 - 187.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brow (2.5YR 4/4)				
184		SN							
185							)		
186									
187	(179.0 - 194.5 0.72 mins/ft			(179.0 - 194.5')	(187.0 - 187.8') Topock - Alluvium Deposits; Sandy silt	D			
188	5.1.26,11			olo oponisio	with gravel (ML); reddish brow (2.5YR 4/4) (187.8 - 194.5') Topock -	n			
189					Alluvium Deposits; Silty sand with gravel (SM); reddish brow (2.5YR 4/4)	n			
190						(190.0') Observed trace amou	unts of Monter	ey #3 in drill	
191		SN	1			cuttings.			
192									
193									
194						(194.0') Observed trace amou	unts of Monter	ey #3 in drill	
195				_	End of Boring at 194.5 ft bgs.	(cuttings.		}	
196									
 197									
198									
 199									
200 Abbrev	viations: US	SCS = L	nified Soi	Classification	System, ft = feet, bgs = I	pelow ground surface, ams	I = above m	nean sea level,	, GW =

9/	٩RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	]	Sh	eet: 1 of	11
Date S					Surface			480.02 ft amsl	Boring No.	: IRZ-16 P	ilot
		ted: <u>02/28/</u>			Northing			2103041.42	-		
Drilling		<u>Casca</u>			Easting	•	3):	7615824.08	Client: PG&E		
Drilling			Drilling		Total De	•		207 ft bgs	-	W Remedy Ph	
Drill Ri			<u>nic Truck Μοι</u>		Borehol			6-12 inches	Location: PG&E	-	les,
Driller I			Vasquez		-			26.3 ft bgs	Çaliforr		
Drilling			aya / O. Flore		Samplin	_		4 inch x 10 ft. Core Barrel	Project Number:	RC000753.00	)51
Logge		·	<u>McGrane</u>		Samplin	_		Continuous	-		
Editor:		Micha	el Andrews		Convert	ed to V	Vell:				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	OSCS Code	USCS Class		Soil Description		Drilling Notes	Drilling Fluid
_				Topock - Fill	NR			.0') Topock - Fill; No recovery (NR); No sloughed in during advancement of 12		(0.0 - 7.0') Loose dredge sands falling out of core barrel causing poor recovery.	(0.0 - 217.0') No water used
_ 3 _				Topock - Fill	SP		5/3); ve	.2') Topock - Fill; Poorly graded sand ( ry fine grained to medium grained, sub lt; trace clay; dry	(SP); brown (10YR bround to round;		
 _ 4 _  _ 5 _	14.4			Topock - Fill	NR		(3.2 - 7 falling depths	.0') Topock - Fill; (NR); No recovery loout of core barrel could not provide cor	ose dredge sands e will accurate		
 _ 6 _  _ 7 _								7.0') Topock - Fill; No recovery (NR); N		(7.0 - 17.0')	
_ 8 _ _ 9 _ _ 10 _ _ 11 _					9			sands falling out of core barrel and slo ot provide core with accurate depths	oughing into hole,	Lòose dredge sands continuously fell out of core barrel.	
12 13 13	0			Topock - Fill	NR						
14  15  16											
17  18  19  20	54			Topock - Fill			at what materia represe	22.5') Topock - Fill; No recovery (NR); depth core sample was lost. Based or all at bottom of core started at approximentative	n drilling native lately 26 ft bgs and is	(17.0 - 27.0') Poor recovery maybe due to compaction of loose dredge sands, drilling change at approximately 25 ft. bgs.	

9/	\R(	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 2 of	11
Date S	started:	02/19/2	2019	;	Surface	Elevat	ion: <u>480.02 ft amsl</u>	Boring No.	: IRZ-16 P	ilot
Date C	Comple	ted: <u>02/28/</u>	2019	!	Northing	ı (NAD	983): <u>2103041.42</u>		. <u></u>	<u></u>
Drilling	Co.:	Casca	<u>de</u>	!	Easting	(NAD8	33): <u>7615824.08</u>	Client: PG&E		
Drilling	Metho	od: <u>Sonic I</u>	Drilling		Total De	epth:	207 ft bgs	Project: Final G	W Remedy Pl	nase 1
Drill Ri	д Туре	: <u>Prosor</u>	nic Truck Mou	unt l	Borehol	e Diam	neter: 6-12 inches	Location: PG&E	Topock, Need	les,
Driller I	Name:	Steve \	Vasquez	!	Depth to	First \	Water: 26.3 ft bgs	Çaliforr	nia	
Drilling	Asst:	L. Ama	aya / O. Flore	<u>s</u> ;	Samplin	g Meth	nod: <u>4 inch x 10 ft. Core Barrel</u>	Project Number:	RC000753.00	)51
Logge		Sean N	<u> McGrane</u>		Samplin	-		-		
Editor:		Michae	el Andrews		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
 21  22				Topock - Fill	NR		. 6			
23 24 25 26	54	IRZ-16-SS- 22.0-27.0 3/7/2019 14:15		Topock - Fill	SP		(22.5 - 26.0') Topock - Fill; Poorly graded san 5/3); very fine grained to medium grained, sut trace silt; trace clay; moist; contact depths un recovery, moisture due to water added during (23.5'); dry	bround to round; clear due to poor		
20  27				Topock - Alluvium Deposits	SM		(26.0 - 27.0') Topock - Alluvium Deposits; Silt (SM); brown (7.5YR 5/3); very fine grained to angular to round; little granules to large pebbl	very coarse grained, les, angular to	<b>Y</b>	
28 29 30	60	IRZ-16-SS- 22.0-27.0 3/7/2019 14:20	IRZ-16-VAS- 27.0-32.0 (480 ppb) 2/20/2019 09:46	Topock - Alluvium Deposits			subround; little silt; trace organics; moist to w lens at top  (27.0 - 30.5') Topock - Alluvium Deposits; Silt brown (7.5YR 4/4); very fine grained to very control of the subround; some granules to very late to subangular; little silt; coarser clasts composite wet  (29.5'); increase in silt content	ty sand with gravel oarse grained, arge pebbles, angular	(27.0') Approximate depth to water table.	
31  32				Topock - Alluvium Deposits	SC		(30.5 - 32.0') Topock - Alluvium Deposits; Cla (SC); brown (7.5YR 4/3); very fine grained to angular to subround; little granules to large posubangular; little clay; trace silt; coarser clast metadiorite; wet	very coarse grained, ebbles, angular to		
33				Topock - Alluvium Deposits	GW-GM		(32.0 - 33.3') Topock - Alluvium Deposits; We silt and sand (GW-GM); granules to large pet subround; some very fine to very coarse grain subround; little silt; trace clay; coarser clasts metadiorite; wet	bbles, angular to ned sand, angular to composed of		
34 35 36 37	300	IRZ-16-SS- 32.0-37.0 3/7/2019 14:25		Topock - Alluvium Deposits	SM		(33.3 - 37.0') Topock - Alluvium Deposits; Silt (SM); brown (7.5YR 4/3); very fine grained to angular to subround; some silt; little granules pebbles, angular to subround; trace clay; coal composed of metadiorite; wet	very coarse grained, to very large		
38 38 39		IRZ-16-SS- 37.0-42.0 3/7/2019 14:30		Topock - Alluvium Deposits	ML		(37.0 - 39.0') Topock - Alluvium Deposits; Sar (7.5YR 4/2); low plasticity; some very fine to v sand, angular to subround; little granules to la to subround; little clay; moist to wet	very coarse grained arge pebbles, angular		
40	.i4i	. LICCS - L	In Word Coll C	Topock - Alluvium Deposits	GW-GM		(39.0 - 39.5') Topock - Alluvium Deposits; Silt (7.5YR 4/2); very fine grained to very coarse g subround; little granules to large pebbles, and	grained, angular to gular to subround;	and CM	

9/-	۱RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	She	et: 3 of	11
Date S			2019	;	Surface	Elevati	on: 480.02 ft amsl	Boring No.:	IRZ-16 P	ilot
Date C	omple	ted: <u>02/28/</u>	2019		Northing		•		<u></u>	<u> </u>
Drilling		<u>Casca</u>			Easting	•	· ·	Client: PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total De	pth:	207 ft bgs	Project: Final G\	V Remedy Ph	ase 1
Drill Ri	д Туре	: <u>Prosor</u>	<u>nic Truck Mou</u>	<u>ınt</u> l	Borehol	e Diam	eter: <u>6-12 inches</u>	Location: PG&E 1	opock, Needl	es,
Oriller N	Name:	Steve '	√asquez	I	Depth to	First V	Vater: 26.3 ft bgs	<u>Californ</u>	ia	
Drilling	Asst:	L. Ama	aya / O. Flores	s	Samplin	g Meth	od: 4 inch x 10 ft. Core Barrel	Project Number: I	RC000753.00	51
_ogger	:	<u>Sean I</u>	<u>/////////////////////////////////////</u>	;	Samplin	g Inter	/al: <u>Continuous</u>			
Editor:		Michae	el Andrews		Convert	ed to V	/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
		IRZ-16-SS-		Topock - Alluvium	GW-GM		little silt; trace clay; wet (39.5 - 41.3') Topock - Alluvium Deposits; We	ell graded gravel with		
41		37.0-42.0 3/7/2019		Deposits	GVV-GIVI	八山	silt and sand (GW-GM); brown (10YR 5/3); gr pebbles, angular to subangular; some very fin	anules to large		
- 4		14:30					grained sand, angular to subround; little silt; tr	race very large		
_42_				Topock -			pebbles, angular; trace clay; coarser clasts co metadiorite; wet; dense	omposed of		
_				Alluvium Deposits	SW-SM		(41.3 - 43.3') Topock - Alluvium Deposits; We	Il graded sand with		
_43				Deposits			silt and gravel (SW-SM); brown (7.5YR 4/4); very coarse grained, angular to subround; little	e granules to verv		
							large pebbles, angular to subangular; little silt			
_44							(43.3 - 54.5') Topock - Alluvium Deposits; Silt (SM); brown (7.5YR 5/3); very fine grained to	very coarse grained,		
		IRZ-16-SS- 42.0-47.0					angular to subround; some granules to large subangular; little silt; coarser clasts compose			
 _45		3/7/2019 14:35					Subangular, intre sir, coarser clasts compose	d of frietadiofite, wet		
_43_		14.55								
- 40										
_46										
_47										
_48_										
- 4	300			Topock -						
49		IRZ-16-SS-		Alluvium	SM					
		47.0-52.0		Deposits						
50		3/7/2019 14:40								
						47				
_51_										
_52_	}									
- 4										
_53_										
_54_		ID7 16 CC								
		IRZ-16-SS- 52.0-57.0								
_55		3/7/2019 14:45					(54.5 - 57.0') Topock - Alluvium Deposits; Silt (SM); reddish brown / moderate brown (5YR 4			
		11.10		Tamada			to very coarse grained, angular to subround; s	some silt; little		
				Topock - Alluvium	SM		granules to very large pebbles, angular to sub angular; trace clay; coarser clasts composed			
_56_				Deposits			(55.5'); little silt; increase in sand	or motuation, not		
_57							(57.0 - 59.5') Topock - Alluvium Deposits; We	ell graded sand with	(57.0 - 62.0')	
			ID7 40 1/10				silt and gravel (SW-SM); reddish brown (5YR	4/3); very fine	Adjusted sample	
58		IRZ-16-SS-	IRZ-16-VAS- 57.0-62.0	Topock -	0/4/ 01:		grained to very coarse grained, angular to rou to very large pebbles, angular to subround; litt	le silt; coarser clasts	interval based	
	120	57.0-62.0 3/7/2019	(<0.33 U ppb)	Alluvium Deposits	SW-SM		composed of metadiorite; coarser clast composed conglomerate; wet	osed of	on geology, sandier zone	
59		14:50	2/20/2019	·			ongiomorato, wet		with less fines.	
- 4			14:36				(FO.F. CA.O.) Tanada Alla (A.D			
60					SM		(59.5 - 64.8') Topock - Alluvium Deposits; Silt			
\ hhra	iations		Initiad Cail Cl	aggification	Custom	ft - fc	ot has - bolow around ourfood amo	l = abaya maan aa	LOVAL CVV -	

9/	\R(	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	She	eet: 4 of	11
Date S		· ·			Surface			Boring No.:	IRZ-16 P	ilot
	•	ted: <u>02/28/2</u>			Northing		,	_		
Drilling Drilling		<u>Cascac</u> od: Sonic I			Easting Total De	•	33): <u>7615824.08</u> 207 ft bgs	_ Client: <u>PG&amp;E</u> _ Project: <u>Final G</u>	W Remedy Ph	
Drill Ri			nic Truck Mou		Borehol	•	<u> </u>	_ Location: <u>PG&amp;E</u>	-	
Driller I			√asquez				Water: 26.3 ft bgs	<u>Çaliforn</u>	•	100,
Drilling			aya / O. Flores		Samplin		<del>-</del>			)51
Logge	r:	Sean N	McGrane		Samplin	g Inter	val: <u>Continuous</u>	_		
Editor:		<u>Michae</u>	el Andrews		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
 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 - Alluvium Deposits	SM		(SM); brown (7.5YR 4/4) and reddish brown (5YR 4/4); very fine grained to very coarse gr dilatency; some granules to very large pebble subround; little silt; trace subangular; coarse metadiorite; coarser clast composed of	ained; rapid es, angular to r clasts composed of		
63 64 65	120	IRZ-16-SS- 62.0-67.0 3/7/2019 14:55					(64.8 - 67.0') Topock - Alluvium Deposits; Sil			
 66  67				Topock - Alluvium Deposits	SM		(SM); brown (10YR 5/3); very fine grained to angular to subround; some granules to large subangular; some silt; coarser clasts compowet	pebbles, angular to sed of metadiorite;		
		IRZ-16-SS- 67.0-72.0 3/7/2019 15:00		Topock - Alluvium Deposits	SM		(67.0 - 72.0') Topock - Alluvium Deposits; Sil (SM); brown (7.5YR 4/4); very fine grained to angular to subround; little granules to very la to subangular; little silt; coarser clasts composet wet	very coarse grained, rge pebbles, angular osed of metadiorite;		
				Topock - Alluvium Deposits	ML		(ML); strong brown (7.5YR 4/6); low plasticity coarse grained sand, angular to subround; life	y; and very fine to very		
73747576777879	240	IRZ-16-SS-72.0-77.0 3/7/2019 15:05 IRZ-16-SS-77.0-82.0 3/7/2019 15:10		Topock - Alluvium Deposits	SM		large pebbles, angular to subangular; trace a clasts composed of metadiorite; moist to wel (73.0 - 79.0') Topock - Alluvium Deposits; (SM); brown (7.5YR 4/4) with reddish brown (5YR 4/4); very fine grained to very coarse gr subround; some granules to very large pebbl subangular; little silt; trace angular; coarser of metadiorite; wet (75.5'); increase in silt, decrease in sand	Ingular; coarser Ity sand with gravel / moderate brown ained, angular to es, angular to clasts composed of		
 80				Topock - Alluvium Deposits	SM		(79.0 - 80.5') Topock - Alluvium Deposits; Sil (SM); brown (7.5YR 4/4); some silt; little gran pebbles, angular to subround; wet	ity sand with gravel nules to very large		

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Date S			2019		Surface	Elevat	ion: 480.02 ft amsl	Boring No.	IR7-16 P	ilot
	•	ted: <u>02/28/</u>			Northing		•	_	<u></u>	<u></u>
Drilling		Casca			Easting	•	•	_ Client: PG&E		
Drilling			•		Total De	•	207 ft bgs		W Remedy Ph	
Drill Ri			nic Truck Mou	nt	Borehol			Location: PG&E	•	les,
Driller I			√asquez		•		Water: 26.3 ft bgs	_ Califorr		ν <b>Γ</b> 4
Drilling			aya / O. Flores ⁄////////////////////////////////////	<u> </u>	Samplin Samplin			_ Project Number:	RC000753.00	151
Logge Editor:			el Andrews		Convert	-		-		
				gic			Voii.			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
Ļ		IRZ-16-SS-			SM					
81  82		77.0-82.0 3/7/2019 15:10		Topock - Alluvium Deposits	SW-SM		(80.5 - 82.3') Topock - Alluvium Deposits; We silt and gravel (SW-SM); brown (7.5YR 4/4); very coarse grained, angular to subround; so large pebbles, angular to subangular; little sil composed of metadiorite; wet	very fine grained to me granules to very t; coarser clasts		
83	0.40			Topock - Alluvium Deposits Topock -	ML SW-SM		(82.3 - 82.8') Topock - Alluvium Deposits; Sa (ML); brown (7.5YR 4/3)red (2.5YR 4/6); low fine to very coarse grained sand, angular to s granules to very large pebbles, angular to sub	plasticity; some very ubangular; little pround; coarser		
 84	240	IRZ-16-SS-		Alluvium Deposits	$\perp$		clasts composed of metadiorite; hard; iron ox (82.8 - 83.8') Topock - Alluvium Deposits; We	ell graded sand with		
		82.0-87.0 3/7/2019					silt and gravel (SW-SM); brown (7.5YR 4/4); very coarse grained, angular to subround; so	me granules to very		
85		15:15		Topock - Alluvium	SM		large pebbles, angular to subangular; little sil composed of metadiorite; wet (83.8 - 87.0') Topock - Alluvium Deposits; Sili			
86				Deposits	J		(SM); brown (7.5YR 4/4); very fine grained to angular to round; some granules to very large	very coarse grained,		
							subangular; some silt; coarser clasts compos wet	sed of metadiorite;		
87				Tamada			(87.0 - 88.8') Topock - Alluvium Deposits; Sa (ML); brown (7.5YR 4/4); low plasticity; some		(87.0 - 107.0') Drilling was	
88				Topock - Alluvium Deposits	ML		pebbles, ang <mark>ula</mark> r to subangular; some very fir grained s <mark>and, angular</mark> to round; trace clay; m	ne to very coarse	hard, formation tight,	
 89				·			(88.8 - 89.8') Topock - Alluvium Deposits; Sa	ndy silt (ML); brown	core came out hot and steaming	
09 90		IRZ-16-SS- 87.0-92.0 3/7/2019 15:20		Topock - Alluvium Deposits	ML		(7.5YR 4/4); low plasticity; some very fine to v sand, angular to subround; little granules to n angular to subangular; trace clay; moist; hard	very coarse grained nedium pebbles,	moist to wet.	
		10.20					(89.8 - 96.0') Topock - Alluvium Deposits; Sa (ML); brown (7.5YR 4/4); low plasticity; some pebbles, angular to subangular; some very fir	granules to large		
91 _							grained sand, angular to round; trace clay; m			
92										
 93				Topock - Alluvium	ML					
	240			Deposits						
94 _		IRZ-16-SS- 92.0-97.0								
95		3/7/2019 15:25								
 96										
30				Topock - Alluvium	SM		(96.0 - 96.5') Topock - Alluvium Deposits; Sili (SM); brown (7.5YR 4/3); very fine grained to		(96.0 - 96.5') Dry.	
97				Deposits	1		angular to subround; some silt; little granules angular to subangular; coarser clasts compo	to large pebbles,	Diy.	
				_			dry (96.5 - 100.0') Topock - Alluvium Deposits; S	andy silt with gravel		
98 _		IRZ-16-SS- 97.0-102.0		Topock - Alluvium Deposits	ML		(ML); brown (7.5YR 4/4); low plasticity; some pebbles, angular to subangular; some very fir grained sand, angular to round; trace; trace of	ne to very coarse		
99		3/7/2019 15:30		Dehosits			granicu sanu, angular to rounu, trace, trace c	ay, must, hard		
100						<u> </u>	·			

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Date S					Surface		•	Boring No.	: IRZ-16 P	ilot
	•	eted: <u>02/28/</u>			Northing	- '	•	-		
Drilling		<u>Casca</u>			Easting	•	•	Client: PG&E		
Drilling Drill Ri			<u>Drilling</u> nic Truck Mou		Total De Borehol	•	207 ft bgs leter: 6-12 inches	Project: Final G Location: PG&E	SW Remedy Ph Topock Need	
Driller			Vasquez				Water: 26.3 ft bgs	Califor	•	103,
Drilling			aya / O. Flores		Samplin		<b>G</b>			 )51
Logge			McGrane McGrane		Samplin	-				
Editor:		<u>Micha</u>	el Andrews		Convert	ed to V	Vell:			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
101		IRZ-16-SS- 97.0-102.0 3/7/2019		Topock - Alluvium Deposits	SM		(100.0 - 101.3') Topock - Alluvium Deposits; \$ (SM); brown (7.5YR 4/4); very fine grained to angular to subround; some granules to very late to subround; some silt; little clay; coarser clast metadiorite; moist to dry	very coarse grained, arge pebbles, angular		
 _102_		15:30					(101.3 - 104.5') Topock - Alluvium Deposits; S	Silty sand with gravel		
102				ĺ			(SM); brown (7.5YR 4/4); very fine grained to angular to subround; little granules to large po	very coarse grained, ebbles, angular to		
103			i	Topock - Alluvium	SM		subangular; little silt; trace clay; moist to dry			
	240			Deposits						
104		IRZ-16-SS- 102.0-107.0	IRZ-16-VAS- 102-107 (<0.33 U							
105		3/7/2019 15:35	`ppb) 2/21/2019				(104.5 - 118.0') Topock - Alluvium Deposits; (SM); reddish brown / moderate brown (5YR	4/4); very fine grained		
			11:51				to very coarse grained, angular to round; som medium pebbles, angular to subangular; som	ne granules to ne silt; coarser clasts		
106			i				composed of metadiorite; moist to wet			
407			i							
107				1			(107'); some granules to very large pebbles, a			
108							subangular; little silt; coarser clasts compose clay; wet	ed of metadiorite, no		
109		IRZ-16-SS-								
		107.0-112.0 3/7/2019					(109'); trace cobble			
110		15:37					(109.5'); no cobbles			
-										
_111_				Topock - Alluvium	SM		¥			
440				Deposits						
_112_										
 113										
	240									
_114_	2.10	IRZ-16-SS-								
		112.0-117.0 3/7/2019								
115		15:40								
 116										
_117										
-										
_118		IRZ-16-SS-					(118.0 - 121.5') Topock - Alluvium Deposits; (	Sandy silt with gravel		
		117.0-122.0 3/7/2019		Topock -			(118.0 - 121.3) Topock - Alluvium Deposits, ( (ML); reddish brown (2.5YR 4/4); low plasticit very coarse grained sand, angular to subroun	ty; some very fine to		
119		15:45		Alluvium Deposits	ML		very coarse grained sand, angular to subroun very large pebbles, angular to subangular; tra subangular; trace clay; coarser clasts compo-	ice; trace boulders,		
 120				Doposits			moist; very stiff	sed of metadiofile,		
120						1.1.1.	l .			

9/	۱RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 7 of	11
Date S	tarted:	02/19/	2019		Surface	Elevat	ion: <u>480.02 ft amsl</u>	Boring No.	IR7-16 P	ilot
	•	ted: <u>02/28/</u>			Northing		•	-	<u> </u>	<u></u>
Drilling		<u>Casca</u>			Easting	•	•	Client: PG&E		
Drilling			Drilling		Total De	•	207 ft bgs	•	W Remedy Pr	
Drill Ri			nic Truck Mou		Borehol			Location: PG&E	•	les,
Driller I			Vasquez				Water: 26.3 ft bgs	Californ		_,
Drilling			aya / O. Flores		Samplin	-		Project Number:	RC000753.00	51
Logge			McGrane		Samplin	-		-		
Editor:		iviicna	el Andrews		Convert	ea to v	Vell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description		Drilling Notes	Drilling Fluid
 _121		IRZ-16-SS- 117.0-122.0 3/7/2019 15:45		Topock - Alluvium Deposits	ML					
 _122_		10.40					(121.5 - 132.0') Topock - Alluvium Deposits; (SM); reddish brown (2.5YR 4/4); very fine gra			
							grained, angular to round; some granules to v	ery large pebbles,		
_123							angular to subangular; some silt; coarse <mark>r c</mark> las metadiorite; wet	sis composed of		
	240									
_124_		IRZ-16-SS-								
_		122.0-127.0								
_125_		3/7/2019 15:50					<b>100</b>			
_										
126										
				Topock -	SM					
127				Alluvium Deposits	SIVI		(127'); little silt; increase in sand			
							(127.5'); some silt; wet			
128							(12.10), 33.10.11, 10.1			
_129		IRZ-16-SS-					(129'); some silt; wet; increase in silt, decreas	se in sand		
		127.0-132.0 3/7/2019				1				
130		15:55								
- 404										
_131										
 132										
132	120			Topock -			(132.0 - 133.0') Topock - Alluvium Deposits; S (ML); brown (7.5YR 4/3); medium plasticity; s	Sandy silt with gravel		
 _133_				Alluvium Deposits	ML		coarse grained sand, angular to subround; litt	tle granules to large		
				Topock -	GM		pebbles, angular to subangular; little clay; coa composed of metadiorite; wet; very stiff	arser clasts		
_ 134			IRZ-16-VAS-	Alluvium Deposits	GIVI		(133.0 - 134.0') Topock - Alluvium Deposits; (GM); reddish brown (2.5YR 4/4); granules to	Silty gravel with sand		
		IRZ-16-SS- 132.0-137.0	132-137 (<0.17 U				angular; some very fine to very coarse grained	d sand, angular to		
135		3/7/2019 13:00	ppb) 2/26/2019				subround; trace angular; coarser clasts comp wet			
_ ]			13:38				(134.0 - 143.0') Topock - Alluvium Deposits; (SM); reddish brown (2.5YR 4/4); very fine gra	Silty sand with gravel		
136							grained, angular to subround; little granules to angular to subround; little silt; wet	o very large pebbles,		
_							angulai to subiodilu, iltile siit, wet			
_137				Topock - Alluvium	SM				(407.0	
_				Deposits					(137.0 - 147.0')	
_138		IRZ-16-SS-							Soils were soft to drill through,	
-	210	137.0-142.0 3/7/2019							core barrel was full, 144.5	
_139		13:05							to 147 ft. bgs sediments very	
									wet , poor	
140		11000		   <b>:c</b> : <b>-:</b> :			pot has - bolow ground ourfood amo		recovery may	

9/	AR(	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	9	Sh	neet: 8 of	11
Date S		· ·			Surface			480.02 ft amsl	Boring No.	: IRZ-16 P	ilot
		ted: <u>02/28/</u> 2			Northing	- '	,	2103041.42	_		
Drilling Drilling		<u>Casca</u>			Easting Total De		33):	7615824.08 207 ft bgs	Client: PG&E	NA/ Domody Dk	1
Drill Ri			nic Truck Mou		Borehol	•	otor:	6-12 inches	_ Project: <u>Final G</u> _ Location: <u>PG&amp;E</u>	SW Remedy Ph	
Driller I			Vasquez	II IL				26.3 ft bgs	_ Location. <u>FG&amp;E</u> 	•	165,
Drilling			<u>vasquez</u> aya / O. Flores		Samplin			4 inch x 10 ft. Core Barrel			
Logge			<del>иуи гол погос</del> ИсGrane		Samplin	•		Continuous	_ 1 Tojoot Humbon.	110000700.00	01
Editor:			el Andrews		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		IRZ-16-SS- 137.0-142.0 3/7/2019 13:05		Topock - Alluvium Deposits	SM			:5		be due to soft wet soils expanding in bags.	
144		IRZ-16-SS- 142.0-147.0		Topock - Alluvium Deposits	ML		reddish grained pebble	- 144.3') Topock - Alluvium Deposits; \$ brown (2.5YR 4/4); low plasticity; son it sand, angular to subround; trace grants, angular to subangular; moist to wettrace angular to subangular.	ne fine to very coarse nules to large		
145 1		3/7/2019 13:10		Topock - Alluvium Deposits	SM		(SM); of grained pebble	- 145.5') Topock - Alluvium Deposits; \ live brown (2.5Y 4/4); very fine grained d, angular to subround; some granules s, angular to subangular; little silt; wet	d to very coarse to very large		
146  147				Topock - Alluvium Deposits	ML		reddish very co	<ul> <li>147.8') Topock - Alluvium Deposits; brown (2.5YR 4/4); medium plasticity arse grained sand, angular to subroun ge pebbles, angular to subangular; we</li> </ul>	r; some very fine to		
148 149 150 151 151	210	IRZ-16-SS- 147.01- 152.0 3/7/2019 13:15	IRZ-16-VAS- 147.0-152.0 (<0.17 U ppb) 2/27/2019 10:45	Topock - Alluvium Deposits	SM		(SM); r grained large p	- 155.5') Topock - Alluvium Deposits; 3 eddish brown (2.5YR 4/4); very fine gra I, angular to subround; some silt; little ebbles, angular to subangular; wet  ); little silt; increase in sand  trace clay; decrease in sand	ained to very coarse		
153 154 155 		IRZ-16-SS- 152.0-157.0 3/7/2019 13:20					subang	); some granules to very large pebbles jular; decrease in sand	, 0		
156 	240	IRZ-16-SS- 157.0-162.0 3/7/2019 13:25		Topock - Alluvium Deposits	ML		(ML); rivery collising per metadi	- 162.8') Topock - Alluvium Deposits; seatish brown (2.5YR 4/4); low plasticit arse grained sand, angular to round; liebbles, angular to subangular; coarserorite; moist to wet; very stiff trace boulder ); no boulders	ty; some very fine to ittle granules to very		

9/	\R(	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	9		Sheet: 9 of	11
Date S					Surface			480.02 ft amsl	Boring N	o.: <u>IRZ-16 P</u>	ilot
		ted: 02/28/2			Northing			2103041.42	-		
Drilling		Cascad			Easting	•	33):	7615824.08	Client: PG8		
Drilling			•		Total De	•		207 ft bgs	-	I GW Remedy Ph	
Drill Ri			nic Truck Mou		Borehol			6-12 inches		<u>&amp;E Topock, Need</u>	les,
Driller I Drilling			Vasquez		•			26.3 ft bgs 4 inch x 10 ft. Core Barrel		<u>fornia</u> er: <u>RC000753.00</u>	
Logge			aya / O. Flores McGrane		Samplin Samplin	-		Continuous	Project Number	#. <u>RC000755.00</u>	<i>J</i> 3 I
Editor:			el Andrews		Convert	-		× Yes □ No	-		
				υ <u>5</u>							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS		Soil Description		Drilling Notes	Drilling Fluid
		IRZ-16-SS- 157.0-162.0 3/7/2019 13:25		Topock - Alluvium Deposits	ML			.69			
163 							(SM); r	- 169.5') Topock - Alluvium Deposits; Seddish brown (2.5YR 4/4); very fine grad, angular to subround; little granules to	ained to very coarse o very large pebbles		
164		IRZ-16-SS- 162.0-167.0						r to subangu <mark>lar; little si</mark> lt; coarser clasts orite; wet	s composed of		
165		3/7/2019 13:30							3		
166				Topock - Alluvium	SM						
407				Deposits	5						
167							(167');	increase in silt, decrease in sand			
168											
 169	240	IRZ-16-SS-									
 170		167.0-172.0 3/7/2019 13:35		Topock - Alluvium	ML		brown	- 170.5') Topock - Alluvium Deposits; \$(2.5Y 4/4); low plasticity; some very fin	e to very coarse	<del></del>	
 _171_				Deposits			pebble	l sand, angular to subround; little grant s, angular to subangular; wet; very stiff - 179.5') Topock - Alluvium Deposits; \	•	_	
-'''-							with sil	t and gravel (SW-SM); dark reddish bro nined to very coarse grained, angular to	own (2.5YR 3/4); ve o subangular; some	-	
_172_							granule	es to large pebbles, angular to subroun composed of metadiorite; wet	nd; little silt; coarser		
 _173_							, ,				
 174		IRZ-16-SS- 172.01-	IRZ-16-VAS- 172.0-177.0								
 175		177.0 3/7/2019 13:45	(110 ppb) 2/27/2019 16:26	Topock - Alluvium	SW-SM						
 _176				Deposits							
_177										(177.0 -	-
 _178_		ID7 40 60								187.0') Drilling	
	210	IRZ-16-SS- 177.0-182.0								through soils was soft,	
_179_		3/7/2019 13:50					•			softer sediments	
-					<u> </u>		(170 5	- 182.0') Topock - Alluvium Deposits; S	Sandy silt with group	compacted in core bag	
180		11000	I: #   O - :  O	:6:4:	ML	<u> Hill</u>		- 182.0 ) Topock - Alluvium Deposits; s		causing poor	

9/-	\R(	CADIS	Design & Consultancy for natural and built assets		Во	ring	g Log	Sh	eet: 10 of	11
Date S					Surface		<u>-                                    </u>	Boring No.	: IRZ-16 P	ilot
	-	ted: <u>02/28/2</u>			Northing		,	_		
Drilling Drilling		Cascad			Easting Total De	•	•	_ Client: PG&E	W Domody Dk	
Drill Ri			nic Truck Mou		Borehol	•	207 ft bgs meter: 6-12 inches	_ Project: <u>Final G</u> _ Location: <u>PG&amp;E</u>	W Remedy Ph	
Driller I			<u>√asquez</u>				: Water: 26.3 ft bgs	_ Location: <u>r O&amp;L</u> 	•	
Drilling			aya / O. Flores		Samplin		_	Project Number: RC000753.0051		
Loggei			/ //cGrane		Samplin	-		- , -		
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
 181  182		IRZ-16-SS- 177.0-182.0 3/7/2019 13:50		Topock - Alluvium Deposits	ML		(ML); reddish brown (2.5YR 4/4); low plastici very coarse grained sand, angular to subrour very large pebbles, angular to subround; coa of metadiorote; moist to wet	nd; little granules to	recovery, core barrel was full.	
182 183 184 185 186		IRZ-16-SS- 182.0-187.0 3/7/2019 16:26		Topock - Alluvium Deposits	SM		(182.0 - 187.0') Topock - Alluvium Deposits; (SM); reddish brown (2.5YR 4/4); very fine gr grained; little granules to large pebbles, angu little silt; wet	ained to very coarse		
187 188 189 190 191	210	IRZ-16-SS- 187.0-192.0 3/7/2019 13:55		Topock - Alluvium Deposits	ML		(187.0 - 187.8') Topock - Alluvium Deposits; (ML); reddish brown (2.5YR 4/4); low plasticivery coarse grained sand, angular to subround; tracclasts composed of metadiorote; moist to we pebbles highly weathered (187.8 - 197.0') Topock - Alluvium Deposits; (SM); reddish brown (2.5YR 4/4); very fine grained; little granules to very large pebbles, subangular; little silt; wet (189.5'); some silt; trace subangular; decrea	ty; and very fine to nd; little granules to ee angular; coarser et; some metadiorite  Silty sand with gravel ained to very coarse angular to	(187.0 - 197.0') Tight formation.	
			IRZ-16-VAS- 192.0-197.0 (<0.17 U ppb) 2/28/2019 13:41	Topock - Alluvium Deposits	SM		(192'); little silt; increase in sand  (196.75') black (10YR 2/1); possible organic			
	120			Topock - Alluvium Deposits	SW-SM		(197.0 - 198.3') Topock - Alluvium Deposits; with silt and gravel (SW-SM); very fine graine grained, angular to subround; little granules angular to subround; little silt; coarser clasts metadiorote; wet (198.3 - 204.5') Topock - Weathered Bedroc	ed to very coarse to large pebbles, composed of  k - conglomerate;		
200				Weathered Bedrock - conglomerat	IVIL		Sandy silt with gravel (ML); reddish brown (2 plasticity; some very fine to very coarse grain subround; little granules to large pebbles, an	ed sand, angular to		

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	9		Shee	et: 11 of	11
	Started:	02/19/2 ted: 02/28/2				Elevation: g (NAD83):	480.02 ft amsl 2103041.42	Boring	g No.:	<u>IRZ-16 P</u>	<u>ilot</u>
Drilling	•	Cascac			_	(NAD83):	7615824.08	Client:	PG&E		
Drilling					Total De	` ,	207 ft bgs			V Remedy Ph	nase 1
Drill Ri			ic Truck Mou			e Diameter:	6-12 inches	-		opock, Need	
Driller			/asquez		Depth to	First Water:			California	-	,
Drilling	Asst:	L. Ama	ya / O. Flores	S	Samplin	g Method:	4 inch x 10 ft. Core Barrel	Project Nu	umber: <u>F</u>	RC000753.00	51
Logge	r:	Sean M	<u>1cGrane</u>		Samplin	g Interval:	Continuous	_			
Editor:		<u>Michae</u>	l Andrews		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
						trace c	lay; coarser clast composed of cong	lomerate; moist	to wet;		
_202_				Topock - Weathered Bedrock - conglomerate	IVIL		4.6			(202.0 - 203.0') Rough drilling.	
_203_  _204_	120			oong.omorat						(203.0 - 207.0') Hard drilling.	
						reddish	- 207.0') Topock - Competent Bedro brown (2.5YR 4/4); moist to dry; mo				
_ 206_				Topock - Competent Bedrock - conglomerate		friable	7				
207							End of Boring at 207.0 ft	hao			
208							Elid of Boiling at 201.0 ld	uga.			
_209_  _210_			. •								
210											
212											
213											
_214											
_215_											
216											
_217 											
210											
220	doti	. 11800 - 1	Initiad C-II C	oooifia sti-	Cueter	. # _ f _ s _ t	s = helow ground surface ar	nol = -b		lovel CM	

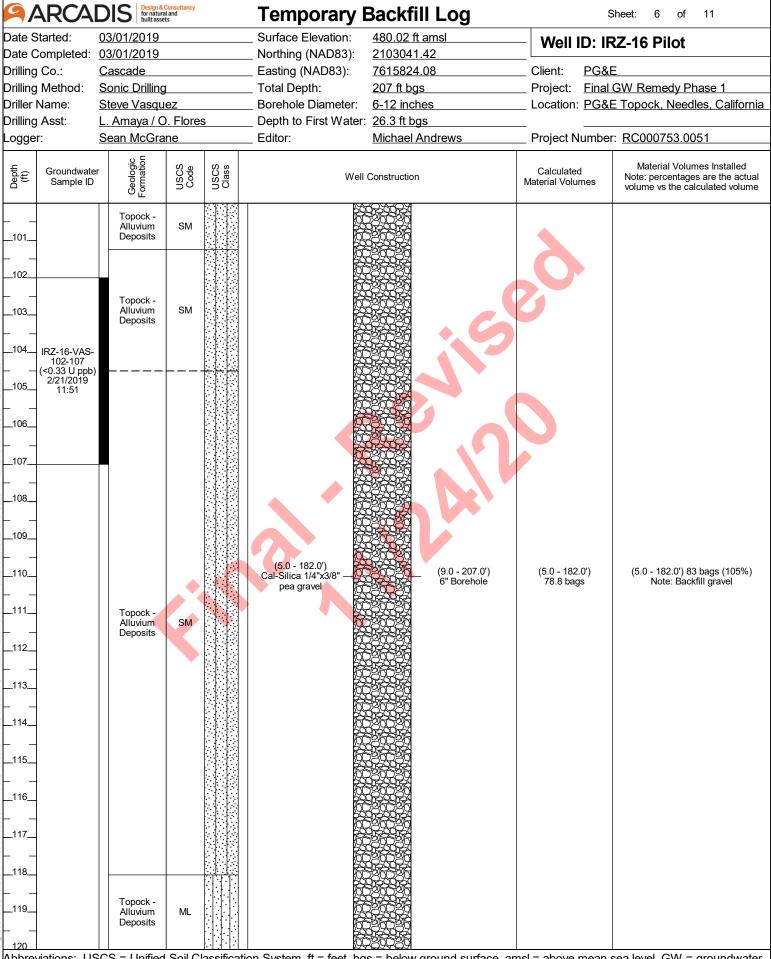
ARCADIS Design & Consult for natural and built assets **Temporary Backfill Log** Sheet: Date Started: Surface Elevation: 03/01/2019 480.02 ft amsl Well ID: IRZ-16 Pilot 03/01/2019 2103041.42 Date Completed: Northing (NAD83): Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615824.08 Client: PG&E Drilling Method: Total Depth: Project: Final GW Remedy Phase 1 Sonic Drilling 207 ft bgs Driller Name: Steve Vasquez Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California L. Amaya / O. Flores Depth to First Water: 26.3 ft bgs Drilling Asst: Sean McGrane Editor: Michael Andrews Project Number: RC000753.0051 Logger: Geologic Formation Material Volumes Installed USCS Class Depth (ft) USCS Code Groundwater Calculated Well Construction Note: percentages are the actual Sample ID Material Volumes volume vs the calculated volume (0.0 - 0.5')Steel Plate Note: Steel plate BMPs in place NR Topock - Fill (0.5 - 5.0')SP Topock - Fill (0.5 - 5.0')(0.5 - 5.0') 7 bags (89%) Wildcat Washed 7.9 bags Note: Surface seal sand 3 Plastering Sand (0.0 - 9.0')12" Borehole Topock - Fill NR 12 Topock - Fill (5.0 - 182.0') (5.0 - 182.0')(5.0 - 182.0') 83 bags (105%) Cal-Silica 1/4"x3/8" 78.8 bags Note: Backfill gravel pea gravel (9.0 - 207.0')6" Borehole Topock - Fill NR 19

PARCADIS Consultancy for natural and built assets					Temporary I	Backfill Log		Sheet: 2 of 11		
	Started:	03/01/2019			Surface Elevation:	480.02 ft amsl	Well ID: I	RZ-16 Pilot		
	•	03/01/2019			Northing (NAD83):	2103041.42				
Drilling	Co.:	Cascade			Easting (NAD83):	7615824.08	Client: PG8	ιE		
_	Method:	Sonic Drilling			Total Depth:	207 ft bgs		I GW Remedy Phase 1		
	Name:	Steve Vasqu			_ Borehole Diameter:	6-12 inches	Location: <u>PG8</u>	E Topock, Needles, California		
Drilling	Asst:	L. Amaya / C		S	_ Depth to First Water:					
Logge	r:	Sean McGra	ne		Editor:	Michael Andrews	Project Numbe	er: RC000753.0051		
Depth (ft)	Groundwate Sample ID	Geologic Formation	USCS	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume		
21		Topock - Fill	NR				6			
23 24 25		Topock - Fill	SP							
26		Topock -								
 27		Alluvium Deposits	SM							
28 29 30	IRZ-16-VAS- 27.0-32.0 (480 ppb) 2/20/2019 09:46	Topock - Alluvium Deposits	•		(5.0 - 182.0') Cal-Silica 1/4"x3/8"————————————————————————————————————	(9.0 - 207.0') 6" Borehole	(5.0 - 182.0') 78.8 bags	(5.0 - 182.0') 83 bags (105%) Note: Backfill gravel		
31  32		Topock - Alluvium Deposits	SC							
		Topock - Alluvium Deposits	GW-GM							
34 35 36 37		Topock - Alluvium Deposits	SM							
38  39		Topock - Alluvium Deposits	ML							
		Topock - Alluvium Deposits	SM GW-GM							
40 Abbrev	viationa: 119				ion System ft - feet he	KOWOY	omal = abaya maan	sea level GW = groundwater		

ARCADIS Design & Const. for natural and built assets **Temporary Backfill Log** Sheet: Date Started: Surface Elevation: 03/01/2019 480.02 ft amsl Well ID: IRZ-16 Pilot 03/01/2019 Northing (NAD83): 2103041.42 Date Completed: Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615824.08 Client: PG&E Drilling Method: Sonic Drilling Total Depth: Project: Final GW Remedy Phase 1 207 ft bgs Driller Name: Steve Vasquez Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California L. Amaya / O. Flores Depth to First Water: 26.3 ft bgs Drilling Asst: Sean McGrane Editor: Michael Andrews Project Number: RC000753.0051 Logger: Geologic Formation USCS Class Material Volumes Installed Depth (ft) Groundwater Calculated Well Construction Note: percentages are the actual Sample ID Material Volumes volume vs the calculated volume Topock -Alluvium Deposits 42 Topock -SW-SM Alluvium Deposits 43 Topock -Alluvium Deposits (5.0 - 182.0')(5.0 - 182.0') 78.8 bags (5.0 - 182.0') 83 bags (105%) Note: Backfill gravel (9.0 - 207.0') 50 Cal-Silica 1/4"x3/8 6" Borehole pea gravel 51 52 Topock -Alluvium SM 56 Deposits IRZ-16-VAS-57.0-62.0 Topock -Alluvium SW-SM (<0.33 U ppb) 2/20/2019 Deposits 59 14:36

9/	ARCA	DIS Design & for nature built asso	Consultancy ral and ets		Temporary I	Backfill Log	Sheet: 4 of 11		
Date S	Started:	03/01/2019			Surface Elevation:	480.02 ft amsl	Well ID: II	RZ-16 Pilot	
Date C	Completed:	03/01/2019			Northing (NAD83):	2103041.42		12-101 1100	
Drilling	Co.:	Cascade			Easting (NAD83):	7615824.08	Client: PG&	E	
	Method:	Sonic Drilling	g		Total Depth:	207 ft bgs	Project: <u>Final</u>	GW Remedy Phase 1	
Driller		Steve Vasqu	ıez		Borehole Diameter:	6-12 inches	Location: PG&	E Topock, Needles, California	
Drilling	Asst:	L. Amaya / C	D. Flore	s	Depth to First Water:	26.3 ft bgs		•	
Logge	r:	Sean McGra			Editor:	Michael Andrews	Project Numbe	er: RC000753.0051	
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume	
		<u>a</u> <u>a</u>			n n			volume vs the calculated volume	
61 62 63 64	IRZ-16-VAS- 57.0-62.0 (<0.33 U ppb 2/20/2019 14:36	Topock - Alluvium Deposits	SM				20		
A TEMPLATE FOR PLOG.GDT 1205/22		Topock - Alluvium Deposits	SM						
FILES111.30.20)TOPOCK DATABASE FOR PLOG.GPJ. TOPOCK DATABASE FOR P		Topock - Alluvium Deposits	SM		(5.0 - 182.0') Cal-Silica 1/4"x3/8" — pea gravel	(9.0 - 207.0') 6" Borehole	(5.0 - 182.0') 78.8 bags	(5.0 - 182.0') 83 bags (105%) Note: Backfill gravel	
72		Tamash							
		Topock - Alluvium	ML						
73		Deposits							
0010									
73									
C:USERSISMICGRANEIDOCUMENTSPG&E TOPOCKIDRAFT									
원 - 75									
- PG&		Topock -							
76		Alluvium	SM						
DC CUMI		Deposits							
CGRA									
S\SMC									
<u> </u>									
× – –									
<u>8</u> _79_						20020			
G PG&ET		Topock - Alluvium Deposits	SM						
<u>്ട് 80</u>		11 ' -				THE TOTAL PROPERTY.		L	

ARC <sup>4</sup>	Design of for nature built as:	& Consultancy rral and sets		Temporary	Backfill Log	Sheet: 5 of 11			
Date Started:	03/01/2019			Surface Elevation:	480.02 ft amsl	Well ID: II	RZ-16 Pilot		
Date Completed	: <u>03/01/2019</u>			Northing (NAD83):	2103041.42				
Drilling Co.:	Cascade			Easting (NAD83):	7615824.08	Client: <u>PG&amp;</u>	E		
Drilling Method:	Sonic Drillin	•		Total Depth:	207 ft bgs	-	GW Remedy Phase 1		
Driller Name:	Steve Vasqu			_ Borehole Diameter:	6-12 inches	Location: <u>PG&amp;</u>	E Topock, Needles, California		
Drilling Asst:	L. Amaya / 0		3	_ Depth to First Water:	_				
Logger:	Sean McGr	ane		Editor:	Michael Andrews	Project Numbe	er: RC000753.0051		
Groundwa Sample I		USCS	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume		
		SM							
81	Topock -								
	Alluvium	SW-SM							
82	Deposits								
	Topock -	ML							
83	Alluvium Deposits	IVIL							
	Topock - Alluvium	SW-SM							
84	Deposits								
_ 04 _									
85	Topock -	014							
	Alluvium Deposits	SM							
86									
87									
	Topock -								
88	Alluvium	ML							
	Deposits								
89	Topock -								
	Alluvium	ML							
90	Deposits			(5.0 - 182.0')	(9.0 - 207.0')	(5.0 - 182.0')	(5.0 - 182.0') 83 bags (105%)		
				Cal-Silica 1/4"x3/8" — Pea gravel	6" Borehole	78.8 bags	Note: Backfill gravel		
91									
92									
	Topock -								
93	Alluvium Deposits	ML			585085				
94									
<u> </u>									
95									
96									
L J	Topock - Alluvium	SM							
97	Deposits	4							
98									
	Topock - Alluvium	ML							
<b> </b>	Deposits								
99									
<del> </del>									
100	ISCS = Unific	1 	assificat	ion System ft - feet bo	AOMOM rs = helow around surface of	msl = ahove mean	sea level GW = groundwater		

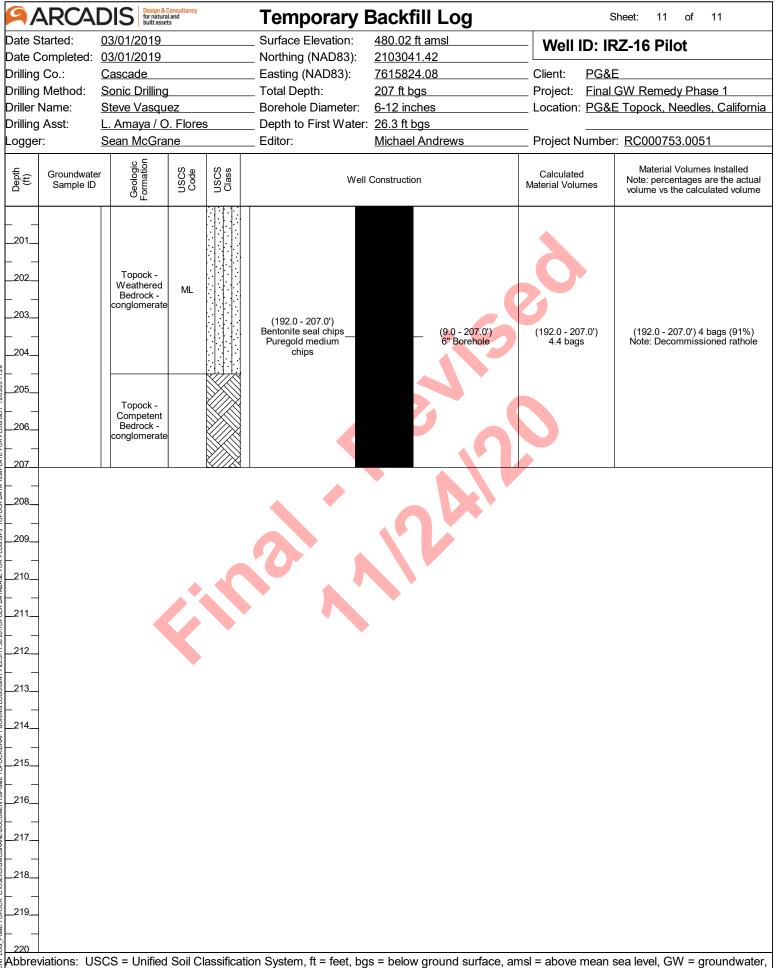


ARCA	DIS for nature built asse	ral and ets		Temporary I	Backfill Log	Sheet: 7 of 11		
Date Started:	03/01/2019			Surface Elevation:	480.02 ft amsl	Well ID: IF	RZ-16 Pilot	
Date Completed:				Northing (NAD83):	2103041.42			
Drilling Co.:	Cascade			Easting (NAD83):	7615824.08	Client: PG&		
Drilling Method:	Sonic Drilling	-		Total Depth:	207 ft bgs	•	GW Remedy Phase 1	
Driller Name:	Steve Vasqu			Borehole Diameter:	6-12 inches	Location: PG&	E Topock, Needles, California	
Drilling Asst: Logger:	L. Amaya / C Sean McGra		:5	Depth to First Water: Editor:	Michael Andrews	— Project Numbe	r: RC000753.0051	
99		1						
Groundwate Sample ID		SOSO	USCS	Well	Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume	
 121	Topock - Alluvium Deposits	ML						
		SM ML GM		(5.0 - 182.0') Cal-Silica 1/4"x3/8"— pea gravel	(9.0 - 207.0') 6" Borehole	(5.0 - 182.0') 78.8 bags	(5.0 - 182.0') 83 bags (105%) Note: Backfill gravel	

ARCADIS   Design & Consultancy   for natural and   built assets				Temporary I	Backfill Log	Sheet: 8 of 11			
Date Starte Date Comp Drilling Co. Drilling Me Driller Nam Drilling Ass Logger:	pleted: .: thod: ne: st:	Steve Vasquez  L. Amaya / O. Flores  Sean McGrane			Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter: Depth to First Water: Editor:	480.02 ft amsl 2103041.42 7615824.08 207 ft bgs 6-12 inches 26.3 ft bgs Michael Andrews	Client: PG& Project: Final Location: PG&	RZ-16 Pilot  E GW Remedy Phase 1 E Topock, Needles, California er: RC000753.0051	
	oundwatei ample ID	Geologic	USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume	
141 142 		Topock - Alluvium Deposits	SM				20		
144		Topock - Alluvium Deposits	ML						
145		Topock - Alluvium Deposits	SM						
146		Topock - Alluvium Deposits	ML						
- 147 (<0.1 2/2	-16-VAS- -0-152.0 17 U ppb) 27/2019 10:45	Topock - Alluvium Deposits	SM		(5.0 - 182.0') Cal-Silica 1/4"x3/8" — pea gravel	(9.0 - 207.0') 6" Borehole	(5.0 - 182.0') 78.8 bags	(5.0 - 182.0') 83 bags (105%) Note: Backfill gravel	
153 154 155									
156 157 158  159 160		Topock - Alluvium Deposits	ML					sea level, GW = groundwater,	

9/-	ARCA	DIS   Dest form built	gn & Consultancy atural and assets		Temporary	Backfill Log		Sheet: 9 of 11
	Started:	03/01/201			Surface Elevation:	480.02 ft amsl	Well ID: II	RZ-16 Pilot
	completed:		9		Northing (NAD83):	2103041.42		
Drilling		Cascade			Easting (NAD83):	7615824.08	Client: PG&	
Drilling Driller	Method:	Sonic Drill Steve Vas	-		Total Depth: Borehole Diameter:	207 ft bgs	•	GW Remedy Phase 1 E Topock, Needles, California
Drilling		L. Amaya	•	e	Borenole Diameter. Depth to First Water	6-12 inches	Location. PG&	E ropock, Needles, California
Logge		Sean McC			Editor:	Michael Andrews	Project Numbe	r: RC000753.0051
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Wel	l Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
161	IRZ-16-VAS- 172.0-177.0 (110 ppb) 2/27/2019 16:26	Topock Alluviun Deposit  Topock Alluviun Deposit  Topock Alluviun Deposit	SM SW-SM		(5.0 - 182.0') Cal-Silica 1/4"x3/8"—pea gravel	(9.0 - 207.0') 6" Borehole	(5.0 - 182.0') 78.8 bags	(5.0 - 182.0') 83 bags (105%) Note: Backfill gravel
00179 								
වු 180			ML			<u> </u>		

ARCADIS | Design & Const. for natural and built assets **Temporary Backfill Log** Sheet: 03/01/2019 Surface Elevation: 480.02 ft amsl Date Started: Well ID: IRZ-16 Pilot 2103041.42 Date Completed: 03/01/2019 Northing (NAD83): Drilling Co.: Cascade Easting (NAD83): 7615824.08 Client: PG&E Drilling Method: Sonic Drilling Total Depth: 207 ft bgs Project: Final GW Remedy Phase 1 Driller Name: Steve Vasquez Borehole Diameter: 6-12 inches Location: PG&E Topock, Needles, California L. Amaya / O. Flores Depth to First Water: 26.3 ft bgs Drilling Asst: Sean McGrane Editor: Project Number: RC000753.0051 Logger: Michael Andrews Geologic Formation USCS Class Material Volumes Installed Depth (ft) USCS Code Groundwater Calculated Well Construction Note: percentages are the actual Sample ID Material Volumes volume vs the calculated volume (5.0 - 182.0')Topock -(5.0 - 182.0') (5.0 - 182.0') 83 bags (105%) \_181. М Alluvium Cal-Silica 1/4"x3/8" 78.8 bags Note: Backfill gravel Deposits pea gravel 182 183\_ 184 Topock -Alluvium SM Deposits 185 186 (182.0 - 192.0')Cemex #3 MESH (182.0 - 192.0') (182.0 - 192.0') 4 bags (95%) 187 Topock -(8x10) Lapis Lustre 4.2 bags Note: Indicator sand Alluvium Sand Deposits 188\_ 189 (9.0 - 207.0') \_190\_ 6" Borehole \_191 192 Topock -Alluvium SM Deposits \_193 IRZ-16-VAS-192.0-197.0 (<0.17 U ppb) 2/28/2019 195 (192.0 - 207.0')Bentonite seal chips (192.0 - 207.0')(192.0 - 207.0') 4 bags (91%) 196 Puregold medium 4.4 bags Note: Decommissioned rathole 197 Topock -Alluvium SW-SM \_198. Deposits Topock -199 Weathered ML Bedrock -



ppb = parts per billion, BMP = Best Management Practices for stormwater, U = not detected above the laboratory reporting limit, NR = no recovery;

Notes: blue water table symbol represents depth to water measured during the first VAS interval; granular backfill material was removed during overdrilling of the pilot borehole