ARC/	ADIS Design & for natura built asset	Consultancy al and ets		Well Consti	ruction Log	S	Sheet: 1 of 10
Date Started:	08/05/2020			_Surface Elevation:	494.67 ft amsl	Well ID: IRZ	7 -18
Date Completed	: <u>08/11/2020</u>			_Shallow Well Elevation:	N/A		
Drilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
Drilling Method:	Dual Rotary			_Northing (NAD83):	2102884.71	2102884.71 Project: Final GW Remedy P	
Driller Name:	Jon Martinez			_Easting (NAD83):	7615808.83	7615808.83 Location: PG&E Topock, Need	
Drilling Asst:	A. & H. Amez			_Borehole Diameter:	<u>16-18 inches</u>		
Logger:	Ellen Redner			_Static Water Level:	See Log for Depths	Project Number	r: RC000753.0051
Editor:	Sean McGran			_Development End Date:			
Total Depth:	193.93 ft bgs	I		_Well Completion:	☐ Flush ☐ Stick-up 🗵	To Be Completed	in Well Vault
Groundwa Sample	Geol	USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
	Topock - Fill	GW		(0.0 - 41.7') — 505 10" SHUR-GRIP			
1	Topock - Fluvial Deposits	SW		SDR17 PVC Casing (0.0 - 4.5') Cemex #60 Mesh (40x70) Lapis Lustre Sand		(0.0 - 4.5') 10.3 bags	(0.0 - 4.5') 11 bags (107%) Note: Temporary Backfill
	Topock - Fluvial Deposits Topock - Fluvial	SW				18	
10 11	Deposits / Topock - Fluvial Deposits	SW			(0.0 - 20.9') 18.0" Borehole		
12 13 14	Topock - Fluvial Deposits	SW		(4.5 - 31.0') Portland Cement 3% Bentonite Type I, II, and V with Hydrogel		(4.5 - 31.0') 226.9 gallons	(4.5 - 31.0') 235 gallons (104%) Note: Grout seal
15 16	Topock - Fluvial Deposits	SW					
17	Topock - Fluvial	GW					
18 19 20	Topock - Fluvial Deposits	SW-SM			- below ground surface or		

/2020 /2020 ade Rotary lartinez I. Amezguita Redner McGrane 3 ft bgs SSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSSS	USCS Class	_ Deep Well Elevation: _ Northing (NAD83): _ Easting (NAD83): _ Borehole Diameter: _ Static Water Level: _ Development End Date: _ Well Completion:	☐ Flush ☐ Stick-up ⊠	Location: <u>PG&E</u> 	: GW Remedy Phase 1 : Topock, Needles, California :: RC000753.0051
Adde Rotary lartinez H. Amezguita Redner McGrane 3 ft bgs Dibologo SOSO Opock - Fluvial SW-SM	USCS Class	_ Deep Well Elevation: _ Northing (NAD83): _ Easting (NAD83): _ Borehole Diameter: _ Static Water Level: _ Development End Date: _ Well Completion:	N/A 2102884.71 7615808.83 16-18 inches See Log for Depths 8/27/2020 Flush Stick-up X	Client: PG&E Project: Final C Location: PG&E Project Number	: GW Remedy Phase 1 : Topock, Needles, California :: RC000753.0051
Rotary lartinez I. Amezguita Redner McGrane 3 ft bgs SUN	USCS Class	_ Northing (NAD83): _ Easting (NAD83): _ Borehole Diameter: _ Static Water Level: _ Development End Date: _ Well Completion:	2102884.71 7615808.83 16-18 inches See Log for Depths 8/27/2020 Flush Stick-up	Project: Final (Location: PG&E Project Number	GW Remedy Phase 1 Topock, Needles, Californi RC000753.0051
lartinez 1. Amezguita Redner McGrane 3 ft bgs Solution	USCS	_ Easting (NAD83): _ Borehole Diameter: _ Static Water Level: _ Development End Date: _ Well Completion:	7615808.83 16-18 inches See Log for Depths 8/27/2020 Flush Stick-up ×	Location: <u>PG&E</u> Project Number 	Topock, Needles, Californi
H. Amezguita Redner McGrane 3 ft bgs Signature Signatur	USCS	_Borehole Diameter: _Static Water Level: _Development End Date: _Well Completion:	16-18 inches See Log for Depths 8/27/2020 Flush Stick-up	 Project Number 	: RC000753.0051
Redner McGrane 3 ft bgs SUSSION Oppock - Fluvial SW-SM	USCS (1888)	_Static Water Level: _Development End Date: _Well Completion:	See Log for Depths 8/27/2020 Flush Stick-up	_	
McGrane 3 ft bgs County of the state of the	USCS (Jass Class	Development End Date: _Well Completion:	8/27/2020 Flush Stick-up ×	_	
3 ft bgs Open open open open open open open open o	USCS Class	_Well Completion:	☐ Flush ☐ Stick-up ⊠	To Be Completed	. 14/ 111/
Geologic Copock - Fluvial SW-SM	USCS Class	·	·	TO Be Completed	ID ANAGER VALUE
opock - Fluvial SW-SN	USCS Class	Well Co			in vveii vauit
Fluvial SW-SN			onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
opock - Illuvium leposits		(24.5 - 25.5') Centralizer (4.5 - 31.0') Portland Cement 3% Bentonite Type I, II, and V with Hydrogel	(20.9 - 25.0') 18.0" Borehole	(4.5 - 31.0') 226.9 gallons	(4.5 - 31.0') 235 gallons (104%) Note: Grout seal
anal.		(31.0 - 34.0') Cemex #60 Mesh (40x70) Lapis Lustre Sand	(25.0 - 40.7') 18.0" Borehole	(31.0 - 34.0') 6.8 bags	(31.0 - 34.0') 7 bags (103%) Note: Transition sand
opock - ulluvium peposits		(34.0 - 62.6') Cemex #0/30 Mesh (30x50) Lapis Lustre Sand		(34.0 - 62.6') 64.7 bags	(34.0 - 62.6') 77 bags (119%) Note: Filter pack, ran dummy tool and swabbed for approximately 120 minutes.
opock -	land if	tion Custom # = 5 - 4			one level CW =
Miluvium SM Deposits		•	Ţ .		
alluvium SM leposits			· · ·	•	
Unified Soil C	water (ft.	bgs.) measured pre-spec	ific capacity for the shallow	and deep screens	respectively
Unified Soil C	,				
c	Unified Soil Cosper billion, L	Unified Soil Classificates per billion, U = not described to the control of the c	Sand Sand Spoots - Sulvium Spoosits Unified Soil Classification System, ft = feet, bgs s per billion, U = not detected above the laborator	Sand Spootk - Iuvium Sposits Unified Soil Classification System, ft = feet, bgs = below ground surface, and sper billion, U = not detected above the laboratory reporting limit, NR = no	ppock - luvium SM

9/	ARCA	DIS Design & for natural built ass	& Consultancy ral and sets		Well Con	struc	ction	Log	S	Sheet: 3 of 10
Date S	started:	08/05/2020			_Surface Elevation:	494	4.67 ft ar	nsl	Well ID: IRZ	Z-18
	-	08/11/2020			_Shallow Well Elevati					
Drilling		Cascade			_Deep Well Elevation: <u>N</u>				Client: PG&E	
		Dual Rotary			_Northing (NAD83):		02884.7		Project: Final GW Remedy Phase 1	
Driller I		Jon Martinez			Easting (NAD83): 7615808.83			Location: PG&E Topock, Needles, California		
Drilling		A. & H. Amez	-		Borehole Diameter: 16-18 inches					
Logge		Ellen Redner			_Static Water Level:		_	Depths	Project Number	r: RC000753.0051
Editor:		Sean McGrai			_ Development End D	oate: <u>8/2</u>				
Total D	Deptn:	193.93 ft bgs	<u> </u>		_Well Completion:		Flush	_ Stick-up △	To Be Completed	in vveii vauit
Depth (ft)	Groundwate Sample ID		USCS	USCS Class		ell Constru			Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
 41		Topock - Alluvium Deposits	SM		(0.0 - 41.7') — 10" SHUR-GRIP SDR17 PVC Casing		((25.0 - 40.7') 8.0" Borehole		
414243444546474849515151535455	IRZ-18-VAS- 42-47 (580 ppb) 11/19/2019 09:20	Topock -	SM		(34.0 - 62.6') Cemex #0/30 Mesh (30x50) Lapis Lustre Sand			(40.7 - 61.4') 8.0" Borehole	(34.0 - 62.6') 64.7 bags	(34.0 - 62.6') 77 bags (119%) Note: Filter pack, ran dummy tool and swabbed for approximately 120 minutes.
 59 _60		Topock - Alluvium Deposits	SM							
IAhhrou	dations: 11	SCS - Unifica	4 6711 C	accifica	tion System ft = feet	hac - ha	Jow arou	und aurfage on	nel – ahovo moan (oog lovel CM -

9/	ARCA	DIS Design & for natura built asse	Consultancy I and ts		Well Consti	ruction Log	(Sheet: 4 of 10
Date S	started:	08/05/2020			_Surface Elevation:	494.67 ft amsl	Well ID: IR	7-18
Date C	completed:	08/11/2020			_Shallow Well Elevation:			
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
_		Dual Rotary			_Northing (NAD83):	2102884.71		GW Remedy Phase 1
Driller I		Jon Martinez			_Easting (NAD83):	7615808.83	Location: <u>PG&E</u>	Topock, Needles, California
Drilling		A. & H. Amez	guita		_Borehole Diameter:	<u>16-18 inches</u>		
Logge		Ellen Redner			_Static Water Level:			r: RC000753.0051
Editor: Total D		Sean McGran 193.93 ft bgs	e		_Development End Date: _Well Completion:	☐ Flush ☐ Stick-up ☒ To Be Completed in Well Vault		in Well Vault
	Groundwat		တ္တ မ	တ္က တ္က			Calculated	Material Volumes Installed
Depth (ft)	Sample ID		Code	USCS		onstruction	Material Volumes	Note: percentages are the actual volume vs the calculated volume
61 62					(59.6 - 155.0') 10" SHUR-GRIP SDR17 PVC Casing (34.0 - 62.6') Cemex #0/30 Mesh (30x50) Lapis Lustre Sand	(40.7 - 61.4') 18.0" Borehole	(34.0 - 62.6') 64.7 bags	(34.0 - 62.6') 77 bags (119%) Note: Filter pack, ran dummy tool and swabbed for approximately 120 minutes.
63 64	IRZ-18-VAS	Topock - Alluvium Deposits	SM		(62.6 - 63.9') Cemex #60 Mesh (40x70) Lapis Lustre Sand		(62.6 - 63.9') 2 bags	(62.6 - 63.9') 2 bags (100%) Note: Transition sand
65 66 67	62-67 (<0.033 U ppb) 11/19/2019 13:05						18	
68 69 70	IRZ-18-VAS 67-72 (<0.033 U ppb) 11/19/2019 16:00	Topock - Alluvium Deposits	SM			(61.4 - 78.6') 16.0" Borehole		
71 72		Tanada	4		(63.9 - 133.8') Bentonite pellets seal Pel-Plug (TR30) 3/8"		(63.9 - 133.8') 86.5	(63.9 - 133.8') 125 (145%) Note: Intermediate seal, used >20% of the calculated volume due to potential voids forming during drilling.
73747576		Topock - Alluvium Deposits	SM		5			
77 78 79 80		Topock - Alluvium Deposits	ML			(78.6 - 98.2') 16.0" Borehole		

9/	ARC4	DIS Design & for natura built asset	Consultancy al and ets		Well Const	ruction Log	;	Sheet: 5 of 10
Date S	Started:	08/05/2020			_Surface Elevation:	494.67 ft amsl	Well ID: IR	Z-18
Date C	Completed:	08/11/2020			_Shallow Well Elevation:	N/A		L-10
Drilling	Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	<u> </u>
Drilling	Method:	Dual Rotary			_Northing (NAD83):	2102884.71	Project: <u>Final</u>	GW Remedy Phase 1
Driller		Jon Martinez			_Easting (NAD83):	7615808.83	Location: <u>PG&</u> E	<u> Topock, Needles, California</u>
Drilling		A. & H. Amez	guita		_Borehole Diameter:	<u>16-18 inches</u>		
Logge		Ellen Redner			_Static Water Level:	See Log for Depths Project Number: RC000753.0051		r: RC000753.0051
Editor: Total D		Sean McGrar 193.93 ft bgs			_Development End Date: _Well Completion:	8/27/2020 ☐ Flush ☐ Stick-up ☒ To Be Completed in Well Vault		
Total					_ vvoii Compiction.	rideri Clerk up	To Bo Completed	
Depth (ft)	Groundwat Sample II		Code	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
81		Topock - Alluvium Deposits	SM		(63.9 - 133.8') Bentonite pellets seal Pel-Plug (TR30) 3/8"	— (78.6 - 98.2') 16.0" Borehole	(63.9 - 133.8') 86.5	(63.9 - 133.8') 125 (145%) Note: Intermediate seal, used >20% of the calculated volume due to potential voids forming during drilling.
93 94 95 96		Topock - Alluvium Deposits	ML		5			
97 98 99		Topock - Alluvium Deposits	SM			(98.2 - 117.8') 16.0" Borehole		

Date St	arted.		ts		11011 001101	ruction Log	·	Sheet: 6 of 10
	artcu.	08/05/2020			_Surface Elevation:	494.67 ft amsl	Well ID: IR	Z-18
	•	08/11/2020			_Shallow Well Elevation:	N/A		
Drilling (Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
_		Dual Rotary			_Northing (NAD83):	2102884.71		GW Remedy Phase 1
Driller N		Jon Martinez			_Easting (NAD83):	7615808.83	Location: <u>PG&E</u>	E Topock, Needles, California
Drilling I		A. & H. Amez	guita		_Borehole Diameter:	<u>16-18 inches</u>		
Logger:		Ellen Redner			_Static Water Level:	See Log for Depths Project Number: RC000753.005		r: <u>RC000753.0051</u>
Editor: Total De		Sean McGrar 193.93 ft bgs	ie		_Development End Date: _Well Completion:	in Well Vault		
	- P					☐ Flush ☐ Stick-up 区		
Depth (ft)	Groundwate Sample ID		Code	USCS		onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
101	IRZ-18-VAS-	Topock - Alluvium Deposits	SM		(59.6 - 155.0') — 10" SHUR-GRIP SDR17 PVC Casing			
	102-107 <0.17 U ppb 11/20/2019 11:35		ML			(98.2 - 117.8') 16.0" Borehole	18	
		Topock - Alluvium Deposits	SM		(63.9 - 133.8') Bentonite pellets seal Pel-Plug (TR30) 3/8"		(63.9 - 133.8') 86.5	(63.9 - 133.8') 125 (145%) Note: Intermediate seal, used >20% of the calculated volume due to potential voids forming during drilling.
		Topock - Alluvium	ML					
118		Deposits /						
119		Topock - Alluvium Deposits	SM			(117.8 - 138.6') 16.0" Borehole		

9/	ARC ⁴	Design & for nature built ass	Consultancy ral and ets		Well Const	ruction Log	:	Sheet: 7 of 10	
	Started:	08/05/2020	2004		_Surface Elevation:	494.67 ft amsl	Well ID: IR	7. 18	
Date C	Completed	08/11/2020			_Shallow Well Elevation:	N/A		2-10	
Drilling	Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&I	<u> </u>	
Drilling	Method:	Dual Rotary			Northing (NAD83):	2102884.71	Project: <u>Final</u>	GW Remedy Phase 1	
Driller	Name:	Jon Martinez			_Easting (NAD83):	7615808.83	Location: <u>PG&l</u>	<u>E Topock, Needles, California</u>	
Drilling	Asst:	A. & H. Amez	guita	Borehole Diameter:		<u>16-18 inches</u>	<u>16-18 inches</u>		
Logge	r:	Ellen Redner			_Static Water Level:	See Log for Depths Project Number: RC000753.0051			
Editor:		Sean McGra			_Development End Date:				
Total [Depth:	193.93 ft bgs	<u> </u>		_Well Completion:	☐ Flush ☐ Stick-up 区	To Be Completed	l in Well Vault	
Depth (ft)	Groundwa Sample II		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume	
- 121 - 122 - 123 - 123 - 124 - 125 - 125 - 126 - 127 - 128 - 129 - 130 - 131 - 132 - 132 - 132 - 133 - 133		Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits	SM ML		(59.6 - 155.0') — 10" SHUR-GRIP SDR17 PVC Casing (63.9 - 133.8') Bentonite pellets seal Pel-Plug (TR30) 3/8" (129.5 - 130.5') — Centralizer	— (117.8 - 138.6') 16.0" Borehole	(63.9 - 133.8') 86.5	(63.9 - 133.8') 125 (145%) Note: Intermediate seal, used >20% of the calculated volume due to potential voids forming during drilling.	
		Topock - Alluvium	ML .		(133.8 - 135.8') Cemex #0/30 MESH— (30x50) Lapis Lustre Sand		(133.8 - 135.8') 2 bags	(133.8 - 135.8') 3 bags (150%) Note: Sand added to try to push out potential bentonite bridge in casing. Used >20% of the calculated volume due potential bentonite swelling or formation collapse. Top depth unclear due to potential formation collapse.	
137137138139139139139139139139139	IRZ-18-VAS 137-142 (<0.17 U ppl 11/21/2019 15:31	o)			(135.8 - 146.0') Bentonite pellets seal Pel-Plug (TR30) 3/8"	(138.6 - 158.2') 16.0" Borehole	(135.8 - 146.0') 12.6 buckets	(135.8 - 146.0') 12 buckets (95%) Note: Intermediate seal, bentonite potentially bridged in casing water was used to flush it out. Actual top depth unclear due to potential formation collapse or swelling of bentonite.	
	viations: L	ISCS = Unified	Soil Cla	ssificati	ion System, ft = feet, bas	= below ground surface, ar	nsl = above mean	sea level, GW =	
``						ory reporting limit, NR = no			

water table marks represent depth to water (ft. bgs.) measured pre-specific capacity for the shallow and deep screens respectively

9/	ARCA	DIS Design & for natura built asset	Consultancy ral and ets		Well Con	stru	uction	Log		Sheet: 8 of 10
Date S	Started:	08/05/2020			_Surface Elevation:	4	194.67 ft aı	msl	Well ID: IF	RZ-18
	•	08/11/2020			_Shallow Well Elevation		N/A			
Drilling		Cascade			Deep Well Elevation	_	N/A		Client: <u>PG&</u>	
_		<u>Dual Rotary</u>			Northing (NAD83):		2102884.7			GW Remedy Phase 1
Driller		Jon Martinez			Easting (NAD83):		7615808.8		Location: <u>PG&</u>	E Topock, Needles, California
Drilling		A. & H. Amez	-		_Borehole Diameter:		16-18 inche			D0000750 0054
Logge		Ellen Redner			_Static Water Level:		See Log fo	r Depths	Project Number	er: RC000753.0051
Editor: Total [Sean McGrar 193.93 ft bgs			Development End D Well Completion:	ale: <u>c</u>	Flush [☐ Stick-up 区	— To Be Completed	d in Well Vault
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	W	ell Con	struction		Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
141 142	IRZ-18-VAS- 137-142 (<0.17 U ppb 11/21/2019 15:31	Topock -	ML		(59.6 - 155.0') — 10" SHUR-GRIP SDR17 PVC Casing					(435.9. 446.0)\ 12 huekete (059/\)
143		Topock - Alluvium Deposits	SM		(135.8 - 146.0') Bentonite pellets seal Pel-Plug (TR30) 3/8"				(135.8 - 146.0') 12.6 buckets	(135.8 - 146.0') 12 buckets (95%) Note: Intermediate seal, bentonite potentially bridged in casing water was used to flush it out. Actual top depth unclear due to potential formation collapse or swelling of bentonite.
145 146 147		Topock - Alluvium Deposits	ML		(146.0 - 147.3') Cemex #60 MESH (40x70) Lapis Lustre Sand				(146.0 - 147.3') 2 bags	(146.0 - 147.3') 2 bags (100%) Note: Transition sand
148	IRZ-18-VAS- 147-152 (<0.17 U ppb 11/21/2019 13:20	Topock -	SM					138.6 - 158.2') 16.0" Borehole		
153 154 155 156 157		Topock - Alluvium Deposits	SM		(147.3 - 193.9') Cemex #1/20 MESH_ (20x40) Lapis Lustre Sand (155.0 - 181.8') — 10" 18-Slot 316L SS Wire Wrap Screen				(147.3 - 193.9') 80.3 bags	(147.3 - 193.9') 78 bags (97%) Note: Filter pack, confirmed well was plumb with dummy tool and swabbed for approximately 60 minutes. During installation approximately 1 foot of open hole was needed because casing was difficult to remove.
158 159 160	IRZ-18-VAS- 157-162 (870 ppb) 11/22/2019 12:15 viations: U	Topock - Alluvium Deposits	SM	lassifica	ation System, ft = feet, I	bgs =		158.2 - 178.2') 16.0" Borehole und surface, ar	nsl = above mear	ı sea level, GW =
—	•				, ,		3.0	,,		, -

groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) measured pre-specific capacity for the shallow and deep screens respectively

9/	ARCA	DIS Design & for natura built asser	Consultancy I and ts		Well Cons	truction Log		Sheet: 9 of 10
Date S	started:	08/05/2020			_Surface Elevation:	494.67 ft amsl	Well ID: IR	Z-18
	•	08/11/2020			_Shallow Well Elevation			
Drilling		Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
_		Dual Rotary			_Northing (NAD83):	2102884.71	•	GW Remedy Phase 1
Driller I		Jon Martinez			_Easting (NAD83):	7615808.83	Location: <u>PG&E</u>	E Topock, Needles, California
Drilling		A. & H. Amez	guita		_Borehole Diameter:	<u>16-18 inches</u>		
Logge		Ellen Redner			_Static Water Level:	See Log for Depths	Project Numbe	r: RC000753.0051
Editor:		Sean McGran	е		_Development End Date		_	
Total D	Depth:	193.93 ft bgs			_Well Completion:	☐ Flush ☐ Stick-up ⊠	To Be Completed	in Well Vault
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
161 162 163 164	IRZ-18-VAS- 157-162 (870 ppb) 11/22/2019 12:15	Topock - — Alluvium Deposits	SM		(155.0 - 181.8') —			
165 166 167	162-167 (3300 ppb) 11/22/2019 15:00	Topock - Alluvium Deposits	SM				18	
 168								
169 170 171 171	IRZ-18-VAS- 167-172 (4700 ppb) 11/23/2019 10:00	Topock - Alluvium Deposits	SM		(147.3 - 193.9') Cemex #1/20 MESH	(158.2 - 178.2') 16.0" Borehole	(147.3 - 193.9') 80.3 bags	(147.3 - 193.9') 78 bags (97%) Note: Filter pack, confirmed well was plumb with dummy tool and swabbed for approximately 60 minutes. During installation approximately 1 foot of open hole was needed because casing was difficult to remove.
172 173		Topock - Alluvium Deposits	ML			\$ 33 \$ 33 \$ 43		
174 175 176 177	IRZ-18-VAS- 172-177 (660 ppb) 12/3/2019 10:30	Topock - Alluvium Deposits	SM					
178 179 180	IRZ-18-VAS- 177-182 (390 ppb) 12/3/2019 14:40	Topock - Alluvium Deposits	ML			(178.2 - 193.9') 16.0" Borehole		

9/	ARCA	DIS Design & Control for natural built asset	Consultancy l and		Well Consti	uction Log	S	Sheet: 10 of 10
	•	08/05/2020 08/11/2020 Cascade			Surface Elevation: Shallow Well Elevation: Deep Well Elevation:	494.67 ft amsl N/A N/A	Well ID: IRZ	
_	Method: Name:	Dual Rotary Jon Martinez A. & H. Amezo	guita		_Deep Well ElevationNorthing (NAD83): _Easting (NAD83): _Borehole Diameter:	2102884.71 7615808.83 16-18 inches	_ Project: <u>Final (</u>	GW Remedy Phase 1 Topock, Needles, California
Logge Editor:		Ellen Redner Sean McGran	e		Static Water Level: See Log for DepthsDevelopment End Date: 8/27/2020		Project Number 	r: RC000753.0051
Total D	Depth:	193.93 ft bgs			_Well Completion:	☐ Flush ☐ Stick-up 🗵	To Be Completed	in Well Vault
Depth (ft)	Groundwat Sample ID		USCS	Class		onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
 181 182	IRZ-18-VAS 177-182 (390 ppb) 12/3/2019 14:40	Topock - Alluvium Deposits	ML		(155.0 - 181.8') —			
183	IRZ-18-VAS 182-187 (<0.17 U ppt 12/4/2019 11:00 IRZ-18-VAS 187-192 (<0.17 U ppt 12/4/2019 15:35	Topock - Alluvium Deposits	SM		(147.3 - 193.9') Cemex #1/20 MESH_ (20x40) Lapis Lustre Sand (184.0 - 185.0') Centralizer (181.8 - 187.4') Sump and SS End— Cap	(178.2 - 193.9') 16.0" Borehole	(147.3 - 193.9') 80.3 bags	(147.3 - 193.9') 78 bags (97%) Note: Filter pack, confirmed well was plumb with dummy tool and swabbed for approximately 60 minutes. During installation approximately 1 foot of open hole was needed because casing was difficult to remove.
192		Topock -	NR					
193		Alluvium Deposits Topock -	SM		78			
		Weathered Bedrock - conglomerate	ML		End of Boring at			
195 196					193.9 ft bgs.			
197 198								
 199								
200 Abbrev	viations: U	SCS = Unified	Soil C	lassificat	ion System, ft = feet, bgs	= below ground surface, am	nsl = above mean s	sea level, GW =

1	9/	ARCA	DIS	lesign & Consultant or natural and uilt assets	су	Drilling Log			Sheet:	1 of 10
Drilling Co.: Cascade Easing (NAD83): 7615808.38 Client: PG&E Drilling Method: Dual Rotary Total Depth: 761808.38 Client: PG&E Drilling Name: Drilling Name: Drill Casing Diameter: Drill Casing Diameter: 18 Inches Location: PG&E Topock, Needles, 18 Inches Location: PGCA PGCA PGCA PGCA PGCA PGCA PGCA PGCA					Surfa	ace Elevation:		Boring	No.: IR	Z-18
Deling Name		•								<u> </u>
Description Property Proper	•					- '		-		
Driller Jasset: A & H. Amerguita Drill Brit: ToolF⊔short: A Lamon Depth to First Water: A Lamon Depth for First Water: A Brit Jasset: Sign Sevologist: Elen Redner Converted to Well: Converted to Well: Vesting Repetition (in penetration Rate Code Code Code Code Code Code Code Cod	•			•		-	_	•		•
Deling Asst: A Lamon Depth of First Water: Rig GevOlogist Ellen Redner Converted to Well: X yes No Description Deling Asst: Blan Redner Converted to Well: X yes No Description Description								_ Location:	-	ck, Needles,
Tool-Pusher: A Lamon Depth to First Water: X Yes No								- D!4 NI		00750 0054
Description (ii) Part (iii) Care	_			•				_ Project Nu	imber: RC00	00753.0051
Description production Rate Code Class Diameter (Casing production Rate) Description for the production Rate Code Class Diameter (Casing production Rate) Description for the production Rate Code Class Diameter (Code Casing production Rate) Description for the production Rate Code Class Diameter (Code Casing production Rate) Description for the production Rate Code Class Diameter (Code Casing production Rate) Description for the production of the production Rate Code Class Diameter (Code Casing production Rate) Description for the production of the production Rate Code Class Diameter (Code Casing production Rate) Description for the production Rate Code Class Diameter (Code Casing production Rate) Description for the production of the production of the production Rate Code Class Diameter (Code Casing Production Rate) Description for the Production Rate Code Class Diameter (Code Casing Production Rate) (Code Casing Code Class Rate) (Code Casing R								_		
Depth penetration Rate Code Casing Casing Penetration Rate Code Casing C	Tig Oc	ologiot.	<u> </u>				TC3 TV0			
1		and Averag	e Code			(See Pilot boring log for				Drilling Fluid
SW-SM		à · · · · · · ·	sw sw sw		18.0" Steel	(9.0 - 9.5') Topock - Fluvial Deposits; Well graded sand with gravel (SW); very dark gray (7.5YR 3/1) (9.0 - 9.0') Topock - Fluvial Deposits; Well graded sand with gravel (SW); brown (7.5Y 4/3) (9.0 - 9.5') Topock - Fluvial Deposits; Well graded sand with gravel (SW); brown (7.5Y 4/3) (9.5 - 11.0') Topock - Fluvial Deposits; Well graded sand with gravel (SW); brown (7.5Y 4/3) (11.0 - 14.0') Topock - Fluvial Deposits; Well graded sand with gravel (SW); brown (7.5Y 4/3) (14.0 - 16.5') Topock - Fluvial Deposits; Well graded sand with gravel (SW); brown (7.5Y 4/3) (16.5 - 17.0') Topock - Fluvial Deposits; Well graded sand with gravel (SW); brown (7.5Y 5/3)	(4.0') Observed trace amount cuttings. (10.0 - 20.0') Hard drilling (10.0') Observed trace amount Lapis Luster Sand in drill cut	nts of Plastering		gallons of water recovered; 125 gallons

9/	ARCA	DIS	lesign & Consultant or natural and uilt assets	у	Drilling Log		Sheet:	2 of 10		
Date S	started:	07/27/20	20	Surfa	ace Elevation:	494.67 ft amsl	Boring No.: IRZ	Z-18		
Date C Drilling	Control :	08/04/20 Cascade			hing (NAD83): ing (NAD83):	2102884.71 7615808.83	Client: PG&E			
_	Method:	Dual Rot			ing (NADos). I Depth:			emedy Phase 1		
	g Type:	Foremos	•		ductor Casing Diameter:	_	Location: PG&E Topo	•		
Driller		Jon Mart			Casing Diameter:	16 inches	California	,		
Drilling	Asst:	A. & H. A	mezguita	Drill	Bit:	15.5 & 17.5 inch Tricone	Project Number: RC00	0753.0051		
	usher:	A. Lamo		-	h to First Water:	41.1 ft bgs				
Rig Ge	eologist:	Ellen Re	dner	Con	verted to Well:	× Yes No		1		
Depth (ft)	Drilling Run and Averag Penetration R	e 0000		Casing Diameter	Description (See Pilot boring log for full geologic descriptions)		ions confirming presence of aterial in drill cuttings	Drilling Fluid		
	(0.0 - 20.9)			(0.0 - 20.9') 18.0" Steel		(20.0 - 25.0') Hard/rough dril	ling Ints of Cemex #3 Mesh (8x20)			
21	3.79 mins/ft (20.9 - 25.0) 4.36 mins/ft	SW-SM	A	Casing (20.9 - 25.0') 18.0" Steel Casing	(23.0 - 32.0') Topock - Alluviu Deposits; Well graded sand with silt and gravel (SW-SM); brown (7.5YR 4/2)	Lapis Luster Sand in drill cut	itings.	(20.9 - 25.0') 55 gallons of water used; 8 gallons of water recovered; 47 gallons of water lost		
26		SW-SM	A			Lapis Luster Sand in drill cut	ints of Cemex #3 Mesh (8x20) tings.	(25.0 - 40.7) 220 gallons of water used; 50 gallons of water recovered; 170 gallons of water lost		
32 33 34 35 36 37 38 39 40	(25.0 - 40.7) 2.04 mins/ft	SW-SM		(25.0 - 40.7') 18.0" Steel Casing	(32.0 - 37.0') Topock - Alluviui Deposits; Well graded sand with silt and gravel (SW-SM); brown (7.5YR 4/2) with reddis brown / moderate brown (5YR 4/4) (37.0 - 41.0') Topock - Alluviui Deposits; Silty sand with graw (SM); reddish brown / moderate brown (5YR 4/4)	n n al				

	\ DCA		Des	ign & C	onsultano	ry	Drilling Log				Sheet:	3 of 10
1	tarted: 07/27/2020 Surface Elevation: ompleted: 08/04/2020 Northing (NAD83):			Drilling Log	4.0	24.07.6		Sileet.	3 01 10			
									94.67 ft amsl 102884.71	Boring	g No.: <u>IR</u>	<u>Z-18</u>
Date C Drilling		Casca		.0			ing (NAD83):			Client:	PG&E	
	Method:	Dual F		rv			I Depth:			Project:		emedy Phase 1
_	g Type:	Foren		•	-24		ductor Casing Diameter:		_	•		ock, Needles,
Driller I		Jon M					Casing Diameter:		3 inches		California	
Drilling		A. & F	I. Ar	nez	guita	aDrill	Bit:	<u>15</u>	5.5 & 17.5 inch Tricone	Project Nu	ımber: RC00	00753.0051
Tool-P		A. Lar					h to First Water:		1.1 ft bgs			
Rig Ge	eologist:	Ellen I	Red	ner		Con	verted to Well:	×	Yes No			T
Depth (ft)	Drilling Run and Averag Penetration R	e los	SCS ode		SCS ass	Casing Diameter	Description (See Pilot boring log for		Drilling notes and observation temporary backfill materials			Drilling Fluid
	(25.0 - 40.7)		full geologic descriptions)	+	(40.0') Observed trace amoun	its of Cemey	#3 Mesh (8x20)					
-	2.04 mins/ft SM				Lapis Luster Sand in drill cutti		70 Me311 (0X20)					
41		Н					(41.0 - 47.0') Topock - Alluviu	n	<u>, </u>			(40.7 - 61.4') 358 gallons of air used; 80
							Deposits; Silty sand with grave (SM); reddish brown / modera	el				gallons of air recovered; 278 gallons of air lost
42							brown (5YR 4/4)					
 43												
43												
44			М									
			IVI									
45												
_									\cap			
46												
47		Н					(47.0 - 57.5') Topock - Alluviu	m `				
							Deposits; Silty sand with grav (SM); brown (7.5YR 4/3)					
48												
40												
49												
50						(40.7 04.40)						
	(40.7 - 61.4) 1.50 mins/ft					(40.7 - 61.4') 18.0" Steel			(50.0') Observed trace amoun Lapis Luster Sand in drill cutti		#3 Mesh (8x20)	
51	1.00 111110/10					Casing	*					
52												
		1	M									
53												
54												
 55												
55												
56												
57												
-							(57.5 - 67.0') Topock - Alluviu	_				
58							Deposits; Silty sand with grave					
-			М				(SM); brown (7.5YR 4/3)					
59			υVÍ									
-												
60				<u> !-</u>	<u> </u>	<u> </u>		<u> </u>	1			

							B '''' I					
9/	<u> ARCA</u>	DI	S for r built	ign & C natural t asset	onsulta and s	ncy	Drilling Log				Sheet:	4 of 10
	Started:		27/202				ace Elevation:		94.67 ft amsl	Borin	g No.: <u>IR</u> Z	Z-18
	Completed:			0			ning (NAD83):		102884.71			
Drilling			scade				ing (NAD83):		615808.83	Client:	PG&E	omends Dhann 1
	Method: g Type:		al Rota emost	•	24		Depth: ductor Casing Diameter:		93.9 ft bgs	Project: Location:		emedy Phase 1
Driller			<u> Martir</u>				Casing Diameter:		6 inches	Location.	<u>California</u>	or, recuics,
Drilling			<u> 8 Н. Ar</u>						5.5 & 17.5 inch Tricone	Project N		0753.0051
_	usher:		_amon				h to First Water:		1.1 ft bgs	,		
Rig Ge	eologist:	Elle	n Redi	ner		Conv	erted to Well:	×	Yes No			
Depth (ft)	Drilling Run and Averag Penetration R	è	USCS Code		SCS ass	Casing Diameter	Description (See Pilot boring log for full geologic descriptions))	Drilling notes and observation temporary backfill ma	aterial in drill o	cuttings	Drilling Fluid
 61	(40.7 - 61.4) 1.50 mins/ft					(40.7 - 61.4') 18.0" Steel Casing			(60.0') Observed trace amou Lapis Luster Sand in drill cutt		#3 Mesh (8x20)	
62636465666670717373757577677878	(61.4 - 78.6) 1.22 mins/ft		SM			(61.4 - 78.6') 16.0" Steel Casing	(76.0 - 80.0') Topock - Alluviu Deposits; Silty sand (SM); brown (7.5YR 4/3) (76.0 - 80.0') Topock - Alluviu Deposits; Silty sand with grav (SM); brown (7.5YR 4/3)	um ⁄el	(70.0') Observed trace amou Lapis Luster Sand in drill cutt		#3 Mesh (8x20)	(61.4 - 78.6') 248 gallons of water used; 80 gallons of water recovered; 168 gallons of water lost
_ 79_ _ 79_ _ 80_	(78.6 - 98.2) 0.92 mins/ft					(78.6 - 98.2') 16.0" Steel Casing						(78.6 - 98.2') 55 gallons of water used; 10 gallons of water recovered; 45 gallons of water lost
∆hhr≏	viations: 119	202	= Unif	ied	Soil	Classification	System ft = feet has =	hel	low around surface ams	I = ahove r	nean sea leve	I GW =

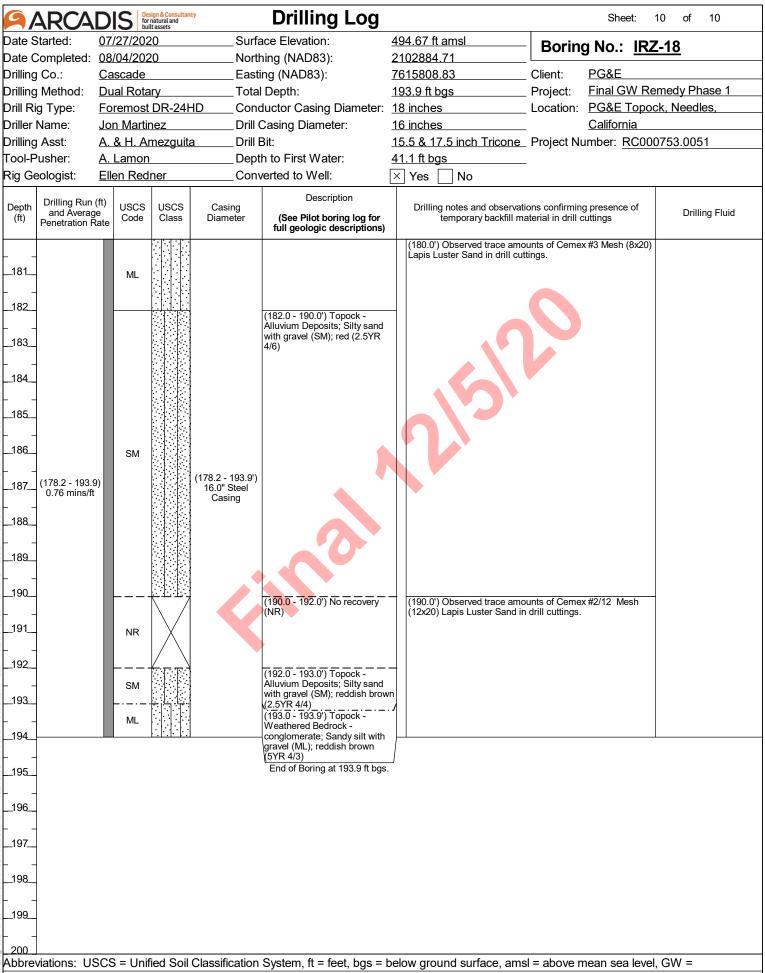
6	\DC\	וח	Des	sign & C	Consultar	ісу	Drilling Log			Sheet:	5 of 10
Date S	ARUA	Pesign & Consultancy Pesign & Consultancy			and S		ace Elevation:	494.67 ft amsl			
							ning (NAD83):	2102884.71	- Borin	g No.: <u>IRZ</u>	<u>Z-18</u>
Drilling							ing (NAD83):	7615808.83	Client:	PG&E	
Drilling	Method:	<u>Dua</u>	l Rota	ry		Tota	l Depth:	193.9 ft bgs	Project:	Final GW Re	emedy Phase 1
	g Type:		<u>most</u>				ductor Casing Diameter:		Location:	•	ck, Needles,
	Name:		<u>Martir</u>				Casing Diameter:	16 inches		California	
Drilling	ı Asst: Pusher:		<u>H. Ar</u> amon		zguit			15.5 & 17.5 inch Trico	<u>one</u> Project Ni	ımber: RC00	0753.0051
	eologist:		n Red			•	h to First Water: /erted to Well:	41.1 ft bgs			
r tig Ot	Joiogiot.		11100				Description				
Depth (ft)	Drilling Run and Averag Penetration R	e´ '	USCS Code		SCS lass	Casing Diameter	(See Pilot boring log for full geologic descriptions)		fill material in drill o	cuttings	Drilling Fluid
81	(78.6 - 98.2) 0.92 mins/ft		ML			(78.6 - 98.2') 16.0" Steel Casing	(92.0 - 96.0') Topock - Alluviur Deposits; Silty sand with grave (SM); reddish brown / moderal brown (5YR 4/4) (92.0 - 96.0') Topock - Alluviur Deposits; Sandy silt (ML); brown (7.5YR 4/4) (96.0 - 104.0') Topock - Alluviur Deposits; Silty sand with gravel (SM); reddish brow / moderate brown (5YR 4/4) with brown (7.5YR 4/4)	(90.0') Observed trace a Lapis Luster Sand in dri	amounts of Cemex		
 99 	(98.2 - 117.8 0.82 mins/ft		SM			(98.2 - 117.8') 16.0" Steel Casing		(98.0') Observed trace a Lapis Luster Sand in dri	Il cuttings.	,	(98.2 - 117.8') 110 gallons of water used; 40 gallons of water recovered; 70 gallons of water lost
Abbre	viations: US	SCS :	= Unif	ied	Soil	Classification	System, ft = feet, bgs = I	below ground surface,	amsl = above r	nean sea leve	l. GW =

9/	PARCADIS Design & Consultancy for natural and built assets Design & Consultancy for natural and built asse		су	Drilling Log		:: 6 of 10		
Date S	Started:	ed: 07/27/2020 pleted: 08/04/2020 : Cascade		Surfa	ace Elevation:	494.67 ft amsl	Boring No.:	IRZ-18
					ning (NAD83):	2102884.71	. —	
_	Method:				ng (NAD83): Depth:	7615808.83 193.9 ft bgs		V Remedy Phase 1
_	g Type:		st DR-24		ductor Casing Diameter:	_	•	opock, Needles,
	Name:	Jon Mar			Casing Diameter:	16 inches	California	3
Drilling			Amezguit			15.5 & 17.5 inch Tricone	Project Number: Ro	2000753.0051
	usher:	A. Lamo		=	h to First Water:	41.1 ft bgs	-	
Rig Ge	eologist:	Ellen Re	dner	Con\	verted to Well:	× Yes No		
Depth (ft)	Drilling Run and Averag Penetration R	e Code		Casing Diameter	Description (See Pilot boring log for full geologic descriptions)		aterial in drill cuttings	Drilling Fluid
 101 102 103		SM				(100.0') Observed trace amo Lapis Luster Sand in drill cut		x20)
104 105		r			(104.0 - 109.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML); reddish brow / moderate brown (5YR 4/4)	n		
					, (, ,			
106								
		ML						
107								
108								
				(98.2 - 117.8')				
109	(98.2 - 117.8) 0.82 mins/ft			16.0" Steel Casing	(109.0 - 117.0') Topock -	\perp		
					Alluvium Deposits; Silty sand with gravel (SM); reddish brow	/n		
110					(5YR 4/3)	(110.0') Observed trace amo Lapis Luster Sand in drill cut		x20)
 111						Lapis Luster Sand III drill cut	ungs.	
112								
113		SM						
 114								
1 14								
115								
116								
117		ML			(117.0 - 117.5') Topock -	(117.0') Observed trace amo		x20)
 118					Alluvium Deposits; Sandy silt (ML); reddish brown (5YR 4/3)	Lapis Luster Sand in drill cut	ungs.	(117.8 - 138.6') 55
				(117.0 100.61)	(117.5 - 127.0') Topock - Alluvium Deposits; Silty sand	vo l		gallons of water used; 300 gallons of water
_119	(117.8 - 138.6 0.96 mins/ft			(117.8 - 138.6') 16.0" Steel Casing	with gravel (SM); reddish brow (5YR 4/3)	/II		recovered; 245 gallons of water gained
				Jasing				
120	intiana. IIC	CC = 11	ified Call	Clossification	System ft - fact has - 1	holow ground ourfood, amo	ol = abaya maan	loval CW =

9/	ARCA	DIS	S Des	ign & Consulta natural and It assets	псу	Drilling Log			Sheet:	7 of 10
	started:		7/202			ace Elevation:	494.67 ft amsl	Boring	No.: <u>IR</u> Z	Z-18
	completed:			20		ning (NAD83):	2102884.71			
Drilling		Caso				ing (NAD83):	7615808.83	Client:	PG&E	1 DI 4
_	Method:		Rota	•		Depth:	193.9 ft bgs	Project:		emedy Phase 1
	g Type:			DR-24		ductor Casing Diameter:		Location:	PG&E Topo	CK, Needles,
Driller I			<u>Martir</u>			Casing Diameter:	16 inches	D :	California	0750 0054
Drilling				<u>nezgui</u>			15.5 & 17.5 inch Tricone	Project Nu	imber: RC00	0753.0051
	usher: eologist:		amon Red			h to First Water: verted to Well:	41.1 ft bgs			
		/ft\				Description				
Depth (ft)	Drilling Run and Averag Penetration F	je	JSCS Code	USCS Class	Casing Diameter	(See Pilot boring log for full geologic descriptions)	Drilling notes and observati temporary backfill ma	aterial in drill ci	uttings	Drilling Fluid
	(117.8 - 138.6 0.96 mins/ft		SM ML ML		(117.8 - 138.6') 16.0" Steel Casing	(127.0 - 128.5') Topock - Alluvium Deposits; Sandy silt (ML); reddish brown / moderat brown (5YR 4/4) (128.5 - 131.7') Topock - Alluvium Deposits; Sandy silt with gravel (ML); reddish brown (5YR 4/4) (129') reddish brown (5YR 5/4 (131.7 - 142.0') Topock - Alluvium Deposits; Sandy silt (ML); reddish brown / moderat brown (5YR 4/4)	n (130.0') Observed trace amo Lapis Luster Sand in drill cut	unts of Cemex		(138.6 - 158.2') 55
139 _ 140_	(138.6 - 158.2 1.02 mins/ft	2)			(138.6 - 158.2') 16.0" Steel Casing					gallons of water used; 1760 gallons of water recovered; 1705 gallons of water gained

9/	ARCA	DI	S Des	ign & Consulta natural and t assets	incy	Drilling Log		Sheet:	8 of 10
Date S	Started: 07/27/2020 Completed: 08/04/2020 g Co.: Cascade g Method: Dual Rotary			10	Surfa	ace Elevation:	494.67 ft amsl	Boring No.: IR	Z-18
	•			.0		ning (NAD83):	2102884.71		
_				m.		ing (NAD83):	7615808.83	Client: PG&E Project: Final GW Re	emedy Phase 1
	g Type:			DR-24		Depth: ductor Casing Diameter:	193.9 ft bgs	Location: PG&E Topo	•
Driller I			<u>Martir</u>			Casing Diameter:	16 inches	California	on, recaice,
Drilling				nezgui			15.5 & 17.5 inch Tricone	· · · · · · · · · · · · · · · · · · ·	0753.0051
Tool-P			.amon	-		h to First Water:	41.1 ft bgs	<u></u>	
Rig Ge	ologist:	Elle	n Red	ner	Conv	verted to Well:	X Yes ☐ No		Ţ
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 ma		Drilling Fluid
 141 			ML				(140.0') Observed trace amo Lapis Luster Sand in drill cut	unts of Cemex #3 Mesh (8x20) tings.	
142 143 144			SM			(142.0 - 145.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brow (2.5YR 4/4)	n		
145 146 		-	ML			(145.0 - 147.0') Topock - Alluvium Deposits; Sandy silt (ML); reddish brown (2.5YR 4/4)			
147 148 		ŀ				(147.0 - 152.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brow (2.5YR 4/4)	n		
149 150 151	(138.6 - 158.2 1.02 mins/ft		SM		(138.6 - 158.2') 16.0" Steel Casing		(150.0') Observed trace amo Lapis Luster Sand in drill cut (150.1 - 158.0') Soft drilling	unts of Cemex #3 Mesh (8x20) tings.	
152									
 153 154						(152.0 - 157.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brow (2.5YR 4/4)	n		
155 156			SM						
157 158						(157.0 - 164.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brow (2.5YR 4/4)	n		
 160	(158.2 - 178.2 1.20 mins/ft		SM		(158.2 - 178.2') 16.0" Steel Casing		polow ground surface, amo		(158.2 - 178.2') 110 gallons of water used; 920 gallons of water recovered; 810 gallons of water gained

9/	ARCA	DIS	Design & Consult for natural and built assets	ancy	Drilling Log			Sheet:	9 of 10
Date S	Started:	ed: 07/27/2020 pleted: 08/04/2020 :: Cascade			ace Elevation:	494.67 ft amsl	Boring	g No.: <u>IRZ</u>	Z-18
	•				hing (NAD83):	2102884.71			<u></u>
Drilling					ing (NAD83):	7615808.83	Client:	PG&E	mady Dhaga 1
_			otary ost DR-24		I Depth: ductor Casing Diameter:	193.9 ft bgs	Project: Location:	PG&E Topo	emedy Phase 1
	y rype. Name:	Jon Ma			Casing Diameter:	16 inches	Location.	<u>California</u>	or, recuics,
Drilling			Amezgui			15.5 & 17.5 inch Tricone	Project Nu	•	0753.0051
_		A. Lam	_		h to First Water:	41.1 ft bgs			
Rig Ge	eologist:	Ellen R	edner	Con	verted to Well:	× Yes No			
Depth (ft)	Drilling Run (and Average Penetration R	9 030		Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling notes and observati temporary backfill ma	aterial in drill c	uttings	Drilling Fluid
161 162 163 164		SN	1			(160.0') Observed trace amo		(#3 Mesh (8x20)	
		SM	1		(164.0 - 168.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brov (2.5YR 4/4)	m Name of the second se			
167 168		L			(168.0 - 172.0') Topock -	(167.0 - 180.0') Soft drilling			
 169 	(158.2 - 178.2 1.20 mins/ft)		(158.2 - 178.2') 16.0" Steel Casing	Alluvium Deposits; Silty sand with gravel (SM); reddish brow (2.5YR 4/4)	vn			
170 171		SM	1			(170.0') Observed trace amo Lapis Luster Sand in drill cut	ounts of Cemex ttings.	(#3 Mesh (8x20)	
 172		L			(172.0 - 173.5') Topock -				
 173		MI	- (111)		Alluvium Deposits; Sandy silt (ML); reddish brown (5YR 4/3				
174					(173.5 - 177.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brow (2.5YR 4/4)	m			
175 176		SN	1						
 177									
178					(177.5 - 182.0') Topock - Alluvium Deposits; Sandy silt (ML); reddish brown (2.5YR 4/4) to red (2.5YR 4/6)				(178.2 - 193.9') 82.5
179 180_	(178.2 - 193.9 0.76 mins/ft) MI		(178.2 - 193.9') 16.0" Steel Casing					gallons of water used; 400 gallons of water recovered; 317.5 gallons of water gained



9/	٩RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	St	neet: 1 of	11
Date S	started:	<u>11/17/2</u>	2019		Surface	Elevat	ion: <u>494.67 ft amsl</u>	Boring No.	: IRZ-18 P	ilot
Date C	Comple	ted: <u>12/05/2</u>	<u>2019</u>		Northing	g (NAD	983): <u>2102884.71</u>			<u></u>
Drilling		Cascac	le		Easting	(NAD8	33): <u>7615808.83</u>	_ Client: <u>PG&E</u>		
Drilling	Metho				Total De	•	217 ft bgs	_ Project: <u>Final C</u>	SW Remedy Pl	nase 1
Drill Ri	g Type	: <u>Proson</u>	<u>ic Truck Mou</u>	ınt	Borehol	e Diam	neter: 4-10 inches	_ Location: <u>PG&E</u>	Topock, Need	les,
Driller I		Jose H	ernandez		Depth to	First \	Water: 41.1 ft bgs	<u>Califor</u>	<u>nia</u>	
Drilling	Asst:	L. Ama	ya / P. Almar	nza	Samplin	ig Meth	nod: 4 inch x 10 ft Core Barrel	_ Project Number:	RC000753.00)51
Logge		Chris B	onessi		Samplin	ıg Inter		_		
Editor:		<u>Kendra</u>	Keon		Convert	ed to V	Vell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
				Topock - Fil	I GW		(0.0 - 0.4') Topock - Fill; Well graded gravel pebbles to very large pebbles, round; little sn			
1	36			Topock - Fluvial Deposits	sw		subround to round; trace very fine to very coasubangular to subround; trace very fine to very coasubangular to subround; trace silt; trace clay base [0.4 - 4.0') Topock - Fluvial Deposits; Well gravel (SW); very dark gray (7.5YR 3/1); very coarse grained, subangular to subround; sor large pebbles, subround to round; little small subround to round; trace silt; trace clay; dry; auger cuttings	arse grained sand, ; dry; gravel road ; aded sand with fine grained to very to large cobbles,	(3.0') Hand auger refusal	(3.0') 2 gallons of water used: 0
4 5 6 7	48			Topock - Fluvial Deposits	sw		(4.0 - 9.0') Topock - Fluvial Deposits; Well gravel (SW); brown (7.5YR 4/3); very fine gragnaned, subangular to round; little granules subround to round; little small cobbles, round coarse grained sand, subangular to round; tr	nined to medium to very large pebbles, d; little medium to very	Totaca	gallons of water recovered; 2 gallons of water lost (4.0 - 12.0') No water used
_ 8 _ _ 8 _ _ 9 _ _ 10 _ _ 11 _	60			Topock - Fluvial Deposits Topock - Fluvial Deposits	GW SW		(9.0 - 9.5') Topock - Fluvial Deposits; Well grand (GW); dark brown (7.5YR 3/2); granule subangular to round; and very fine to very cosubangular to round; trace small cobbles, round; trace small cobbles, round; (9.5 - 11.0') Topock - Fluvial Deposits; Well gravel (SW); brown (7.5YR 4/3); very fine gravel (SW); brown (7.5YR 4/3);	s to large pebbles, arse grained sand, und; trace silt; dry graded sand with ained to very coarse	(10.0 - 17.0') Formation collapse	
12 12 13 14	48			Topock - Fluvial Deposits	SW		grained, subangular to round; little granules in subround to round; little small cobbles, round grading coarser with depth (11.0 - 14.0') Topock - Fluvial Deposits; Well gravel (SW); brown (7.5YR 4/3); very fine gray grained, subangular to round; little granules; subround to round; little small cobbles, round coarse grained sand, subangular to round; trues to round; trues to subround to round; trues grained sand, subangular to round; trues to subround to sub	d; trace silt; dry; graded sand with ined to medium to very large pebbles, d; little medium to very ace silt; dry	(12.0 - 14.0') Drilled with water	(12.0 - 14.0') 10 gallons of water used; 0 gallons of water recovered; 10 gallons of
 15 16				Topock - Fluvial Deposits	SW		(14.0 - 16.5') Topock - Fluvial Deposits; Well gravel (SW); brown (7.5YR 5/3); very fine grained, subangular to round; some granules pebbles, subround to round; little small to lar trace silt; dry	ained to very coarse s to very large	(14.0 - 34.0') Rough drilling	water lost (14.0 - 207.0') No water used
	12			Topock - Fluvial	GW		(16.5 - 17.0') Topock - Fluvial Deposits; Well	graded gravel (GW);		
 18 19 	48			Deposits Topock - Fluvial Deposits	SW-SM		boulder (17.0 - 23.0') Topock - Fluvial Deposits; Wel and gravel (SW-SM); brown (7.5YR 4/3); ver coarse grained, subangular to round; and sm pebbles, subround to round; some small to la little silt; dry; many pulverized cobbles resulta concentration of silt	yfine grained to very nall to very large arge cobbles, round; ed in higher		

9/	٩RC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 2 of	11
Date S	Started	11/17/2	2019		Surface	Elevat	ion: 494.67 ft amsl	Boring No.	: IRZ-18 P	ilot
	•	ted: <u>12/05/2</u>			Northing		,	-	· <u></u>	
Drilling		Cascac			Easting	•	•	Client: PG&E		
Drilling					Total De	•	217 ft bgs		W Remedy Pr	
Drill Ri			<u>ic Truck Μοι</u>	<u>ınt</u>	Borehol		•	Location: PG&E	-	es,
Driller I			ernandez		•		Water: 41.1 ft bgs	Californ		F.4
Drilling			<u>ya / P. Almar</u>	<u>ıza</u>	Samplin	-		Project Number:	RC000753.00	51
Logge Editor:		<u>Chris B</u> <u>Kendra</u>			Samplin Converte	-		-		
Editor.		Renura	Reon		T		Veli. A les INO		1	
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
	48									
21				Topock -	SW-SM					
22				Fluvial Deposits	300-300					
							+, 69			
23				L	+		(23.0 - 32.0') Topock - Alluvium Deposits; We	aradad aand with		
	60						silt and gravel (SW-SM); brown (7.5YR 4/2); very coarse grained, angular to subround; so	very fine grained to		
24							large pebbles, <mark>angu</mark> lar to <mark>sub</mark> angular; little sil			
							AUA			
26										
27				Topock -						
				Alluvium Deposits	SW-SM					
28							(28'); increase in gravel, decrease in sand			
30	96						(00)			
							(30'); decrease in gravel, increase in sand			
31										
32							(32.0 - 37.0') Topock - Alluvium Deposits; We	ell graded sand with		
							silt and gravel (SW-SM); brown (7.5YR 4/2) w moderate brown (5YR 4/4); very fine grained	vith reddish brown /		
33							grained, angular to subround; some granules pebbles, angular to subangular; little silt; trac			
							cobbles, subangular to subround; trace clay;			
_ ′ _				Topock - Alluvium	SW-SM				(34.0 - 47.0') Rough drilling	
35				Deposits	044-0101					
36										
-										
37	72	IRZ-18-SS-			+		(37.0 - 41.0') Topock - Alluvium Deposits; Silt	ty sand with gravel		
		35-40 12/6/2019					(SM); reddish brown / moderate brown (5YR to very coarse grained, angular to subround;	4/4); very fine grained		
38		11:05		Topock -			very large pebbles, angular to subangular; litt			
 39				Alluvium Deposits	SM					
							(39'); moist			
40										
		11000			<u> </u>		act has - holow ground ourfood amo		1 1 014/	

9/-	۱RC	CADIS	Design & Consultancy for natural and built assets		Во	ring	J Log	Sho	eet: 3 of	11
Date S					Surface			Boring No.:	IRZ-18 P	ilot
	•	ted: <u>12/05/2</u>			Northing	- '	,	_		
Drilling Drilling		Cascac od: Sonic D			Easting Total De	•	•	_ Client: <u>PG&E</u> _ Project: <u>Final G</u>	W Remedy Ph	2000 1
Drill Ri			nic Truck Mou	ınt	Borehol	•	217 ft bgs neter: 4-10 inches	_ Project. <u>Final G</u> _ Location: <u>PG&E</u>	•	
Driller I			lernandez				Water: 41.1 ft bgs	<u>Californ</u>	•	100,
Drilling			aya / P. Alman	ıza	Samplin		_			51
Loggei		Chris B	<u>Sonessi</u>		Samplin	g Inter	rval: <u>Continuous</u>	-		
Editor:		<u>Kendra</u>	ı Keon		Convert	ed to \	Well: X Yes No	<u> </u>		
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description		Drilling Notes	Drilling Fluid
 41				Topock - Alluvium Deposits	SM		(40'); wet; increase in coarse sand			
42 42 43 44 45 46	84	IRZ-18-SS- 40-45 12/6/2019 11:10	IRZ-18-VAS- 42-47 (580 ppb) 11/19/2019 09:20	Topock - Alluvium Deposits	SM		(41.0 - 47.0') Topock - Alluvium Deposits; Sill (SM); reddish brown / moderate brown (5YR to very coarse grained, angular to subround; granules to very large pebbles, angular to sub moist; core was very hot upon extraction, moi biased	4/4); very fine grained some silt; little bangular; trace clay;		
47 48 49 50		IRZ-18-SS- 45-50 12/6/2019 11:15			0		(47.0 - 57.5') Topock - Alluvium Deposits; Sili (SM); brown (7.5YR 4/3); very fine grained to subangular to subround; some silit; little grant angular to subround; trace clay; moist	very coarse grained,	(47.0 - 67.0') Rough drilling	
51 52 53 54 55	120	IRZ-18-SS- 50-55 12/6/2019 11:20		Topock - Alluvium Deposits	SM		(52') brown (7.5YR 4/3) to brown (10YR 4/3);	little silt; wet		
 56 57		IRZ-18-SS- 55-60 12/6/2019					(57.5 - 67.0') Topock - Alluvium Deposits; Sili	ty sand with gravel		
58 59 60	120	11:25		Topock - Alluvium Deposits	SM		(SM); brown (7.5YR 4/3); very fine grained to angular to subround; some silt; little granules pebbles, angular to subangular; trace clay; w	very coarse grained, to very large		

9/-	\R(CADIS	Design & Consultancy for natural and built assets		Bo	ring	Log	Sh	neet: 4 of	11
Date S					Surface			Boring No.	: IRZ-18 P	ilot
		ted: <u>12/05/</u> 2			Northing		•			
Drilling		Casca			Easting	•	•	Client: PG&E		4
Drilling					Total De	-	217 ft bgs	-	SW Remedy Ph	
Drill Ri Driller I			<u>nic Truck Mou</u> Iernandez		Borehole			Location: <u>PG&E</u> Califor	-	ies,
Drilling			iemandez aya / P. Almar		Samplin		Water: <u>41.1 ft bgs</u> nod: <u>4 inch x 10 ft Core Barrel</u>	Project Number:		51
Logge			aya / F. Alillai Bonessi		Samplin	-		Floject Number.	<u>KC000733.00</u>	J I
Editor:		<u>Kendra</u>			Convert	•	· · · · · · · · · · · · · · · · · · ·	-		
		ronare	110011							
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description		Drilling Notes	Drilling Fluid
61 62 63		IRZ-18-SS- 60-65 12/6/2019 11:30		Topock -			(62'); some granules to large pe <mark>bbles, sub</mark> anç little silt	gular to subround;		
 64 65 	120		IRZ-18-VAS- 62-67 (<0.033 U ppb) 11/19/2019 13:05	Alluvium Deposits	SM		200			
66 67 68		IRZ-18-SS- 65-70 12/6/2019 11:35		Topock - Alluvium	CM		(67.0 - 70.0') Topock - Alluvium Deposits; Silt (7.5YR 4/3); very fine grained to very coarse g subround; and silt; little granules to very large subangular; trace clay; wet	rained, angular to		
69 70	60		IRZ-18-VAS- 67-72 (<0.033 U ppb) 11/19/2019 16:00	Deposits	SM		(70.0 - 76.0') Topock - Alluvium Deposits; Silt (SM); brown (7.5YR 4/3); very fine grained to	very coarse grained,		
71 72		ID7 40 CC					angular to subround; some granules to very la to subangular; little silt; trace clay; wet	arge peobles, angular	(72.0 - 86.0') Rough drilling	
73 74 75 76	180	IRZ-18-SS- 70-76 12/6/2019 11:40		Topock - Alluvium Deposits	SM		(74'); some silt; little granules to very large pe subangular; wet to moist	· ·	3 3	
77 78 79 80		IRZ-18-SS- 76-80 12/6/2019 11:45		Topock - Alluvium Deposits	ML		(76.0 - 80.0') Topock - Alluvium Deposits; Sai (7.5YR 4/3); low plasticity; some very fine to sand, subangular to subround; little granules subangular to subround; little clay; moist; very subangular to subround; little clay; moist; very (79') reddish brown / moderate brown (5YR 4.	rery coarse grained to large pebbles, / stiff		
Λhhro.	iations	·· IISCS - I	Inified Soil CI	accification	System	ft – f	eet has = helow around surface ams	sl = above mean se	aa laval CW -	

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	neet: 5 of	11
Date S	tarted:	11/17/2	2019		Surface	Elevat	ion: <u>494.67 ft amsl</u>	Boring No.	: IRZ-18 P	ilot
		ted: <u>12/05/2</u>			Northing		,	_		<u></u>
Drilling		Cascad			Easting	•	•	Client: PG&E		
Drilling			-		Total De	-	217 ft bgs	-	SW Remedy Pr	
Drill Ri			ic Truck Mou		Borehol			Location: PG&E	-	les,
Driller I			ernandez				Water: 41.1 ft bgs	Califor		ΔΕ.4
Drilling		<u>L. Ama</u> Chris B	<u>ya / P. Almar</u> opossi	<u>12a</u>	Samplin Samplin	-		Project Number:	RC000753.00	15 1
Logge Editor:		Kendra			Convert	_		-		
Luitor.	1	Ittitula	INCOM	ی د			Veii. A res into			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description		Drilling Notes	Drilling Fluid
 81 82 83 84 	180	IRZ-18-SS- 80-85 12/6/2019 11:50					(80.0 - 92.0') Topock - Alluvium Deposits; Silt (SM); reddish brown / moderate brown (5YR to very coarse grained, angular to subround; som very large pebbles, angular to subround; som	4/4); very fine grained some granules to		
86 87 88		IRZ-18-SS- 85-92		Topock - Alluvium Deposits	SM		(87') brown (7.5YR 5/3); little granules to large subround; wet	e pebbles, angular to		
89 90 91 92	120	12/6/2019 11:55		10	0				(90.0 - 102.0') Rough drilling	
93 94 95		IRZ-18-SS- 92-96 12/6/2019 12:00		Topock - Alluvium Deposits	ML		(92.0 - 96.0') Topock - Alluvium Deposits; Sai (7.5YR 4/4); low plasticity; some very fine to sand, subangular to subround; little granules subangular to subround; little clay; moist; very (95'); wet	ery coarse grained to large pebbles,		
96979899100	60	IRZ-18-SS- 96-100 12/6/2019 12:05	pified Scill Cl	Topock - Alluvium Deposits	SM		(96.0 - 104.0') Topock - Alluvium Deposits; Si (SM); reddish brown / moderate brown (5YR (7.5YR 4/4); very fine grained to very coarse gubround; some silt; little granules to very large to subround; trace clay; wet; coarseness increased to subround; trace clay;	4/4) with brown grained, angular to ge pebbles, angular eases with depth		

ARCADIS Design & Consultancy for natural and built assets					Во	ring	Log	Sh	neet: 6 of	11
Date S				_	Surface		<u>- </u>	Boring No.	: IRZ-18 P	ilot
		ted: <u>12/05/</u>			Northing		,		<u> </u>	
Drilling		<u>Casca</u>			Easting	•	•	Client: PG&E		
Drilling			•		Total De	•	217 ft bgs	•	W Remedy Pr	
Drill Ri			nic Truck Mou	<u>int</u>	Borehol		•	Location: PG&E	•	es,
Driller I			lernandez		•		Water: 41.1 ft bgs nod: 4 inch x 10 ft Core Barrel	<u>Califor</u> Project Number:		
Drilling Logge			aya / P. Almar Bonessi	<u>12a</u>	Samplin Samplin	-		Project Number.	RC000753.00	31
Editor:			a Keon		Convert	-		-		
			1	0 5						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description		Drilling Notes	Drilling Fluid
 101	60									
		IRZ-18-SS-		Tanaak						
102		100-104 12/6/2019		Topock - Alluvium	SM		(102') reddish brown / moderate brown (5YR	4/4): some granules		
-		12:10	i	Deposits			to very large pebbles, angular to subround	4/4), some granales		
103										
 104			IRZ-18-VAS- 102-107				(104.0 - 109.0') Topock - Alluvium Deposits; \$	Sandy silt with gravel		
	60		(<0.17 U				(ML); reddish brown / moderate brown (5YR 4) some granules to very large pebbles, angular	4/4); low plasticity;		
_105			ppb) 11/20/2019 11:35				very fine to very coarse grained sand, angular clay; wet; stiff			
106							day, wet, suii			
106		IRZ-18-SS- 104-109	i	Topock -						
107		12/6/2019 12:15	i	Alluvium Deposits	ML					
		12.10		1						
108										
109					10.			200	(400.0	
							(109.0 - 117.0') Topock - Alluvium Deposits; S (SM); reddish brown (5YR 4/3); medium grain	ned to very coarse	(109.0 - 122.0')	
110							grained, angular to sùbround; little granules to angular to subangular; little silt; trace clay; we		Drill rods chattering	
111				· ·						
		IRZ-18-SS-								
112	120	109-115 12/6/2019		1			(112'); some granules to very large pebbles, a	angular to		
 113		12:20	i	Topock -	.		subangular; decrease in sand, increase in silt granules and pebbles	t, increase in		
110				Alluvium Deposits	SM					
			IRZ-18-VAS-							
			112-117 (<0.17 U							
115			ppb) 11/20/2019							
<u> </u>			14:25							
116										
-										
_117		IRZ-18-SS-	-	Topock -	N 41		(117.0 - 117.5') Topock - Alluvium Deposits; S	Sandv silt (ML):		
		115-120 12/6/2019		Alluvium	ML		reddish brown (5YR 4/3); low plasticity; little g pebbles, angular to subround; little very fine to	granules to very large		
118		12:25		Doposits	7		sand, angular to subround; trace clay; dry; hai			
 	120			Topock - Alluvium	SM		cementation (117.3'); strongly cemented silt layer			
119				Deposits	Sivi		(117.5 - 127.0') Topock - Alluvium Deposits; S (SM); reddish brown (5YR 4/3); medium grain			
 							grained, angular to subround; some granules pebbles, angular to subangular; little silt; trace	to very large		
120 Abbres	iations	- LISCS - I	Inified Soil Cl	assification	System	<u>r de le:</u> v ft − f	pet has = helow around surface ams		a laval GW =	

9/	AR(CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 7 of	11
Date S	started:	11/17/2	2019		Surface	Elevat	ion: <u>494.67 ft amsl</u>	Boring No.	: IRZ-18 P	ilot
		ted: <u>12/05/</u> 2			Northing		•			
Drilling		Casca			Easting	•	•	Client: PG&E		
Drilling					Total De	-	217 ft bgs	-	W Remedy Ph	
Drill Ri			nic Truck Mou		Borehol			Location: PG&E	-	les,
Driller I			lernandez		•		Water: 41.1 ft bgs	Californ		
Drilling			aya / P. Almar		Samplin	-		Project Number:	RC000753.00)51
Logge Editor:		Chris E Kendra	Bonessi Koon		Samplin Convert	-		-		
Euitoi.		Kenura	1 Keon		Convent		Veli. A res I NO			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
121	120	IRZ-18-SS- 120-127 12/6/2019 12:30		Topock - Alluvium Deposits	SM		(120'); some granules to very large pebbles, a subangular; some silt; decrease in sand, decreand pebbles, increase in silt (123'); little granules to very large pebbles, an increase in sand, decrease in silt, decrease in pebbles	rease in granules	(126.0 - 130.0') Rough drilling	
128				Topock - Alluvium Deposits	ML		(127.0 - 128.5') Topock - Alluvium Deposits; S reddish brown / moderate brown (5YR 4/4); lo very fine to very coarse grained sand, angular granules to very large pebbles, angular to sub moist; stiff	ow plasticity; little to subround; trace pround; trace clay;		
129 130 131	84	IRZ-18-SS- 127-131.5 12/6/2019 12:35		Topock - Alluvium Deposits	ML		(128.5 - 131.7') Topock - Alluvium Deposits; S (ML); reddish brown / moderate brown (5YR 4 ittle granules to large pebbles, angular to subfine to very coarse grained grained sand, angurace clay; dry; hard; moderate cementation (129') reddish brown (5YR 5/4); dry; very stiff (129.5'); moist; hard	1/4); low plasticity; pangular; little very		
132 133 134		IRZ-18-SS- 131.5-135 12/6/2019 12:40					(131.5'); dry (131.7 - 142.0') Topock - Alluvium Deposits; S reddish brown / moderate brown (5YR 4/4); lo very fine to very coarse grained sand, angular granules to very large pebbles, angular to sub moist; very stiff	ow plasticity; some to subround; little		
 135				Tour					(134.0 - 142.0') Very hard drilling	
136				Topock - Alluvium Deposits	ML					
137	96	IRZ-18-SS- 135-140		l			(137'); wet; medium stiff			
138 139		12/6/2019 12:45	IRZ-18-VAS- 137-142 (<0.17 U ppb) 11/21/2019							
108			15:31							
140					<u> </u>					
1		11000			_				1 1 0 1 1	

9/	\R(CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	neet: 8 of	11
Date S	tarted:	11/17/2	2019		Surface	Elevat	ion: <u>494.67 ft amsl</u>	Boring No.	: IR7-18 P	ilot
		ted: <u>12/05/</u> 2			Northing		· ·			<u></u>
Drilling		Casca			Easting	•	•	Client: PG&E		
Drilling					Total De	•	217 ft bgs	-	W Remedy Ph	
Drill Ri			nic Truck Mou		Borehol			Location: PG&E	•	les,
Driller I			lernandez				Water: 41.1 ft bgs	Çalifor		
Drilling			aya / P. Almar		Samplin	-		Project Number:	RC000753.00	51
Logge			Bonessi		Samplin	_				
Editor:		Kendra	1 Keon		Convert	ea to v	Vell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
 141 _142_	96		IRZ-18-VAS- 137-142 (<0.17 U ppb) 11/21/2019 15:31	Topock - Alluvium Deposits	ML		(140'); dry; hard			
143		IRZ-18-SS- 140-145 12/6/2019 12:50		Topock - Alluvium Deposits	SM		(142.0 - 145.0') Topock - Alluvium Deposits; S (SM); reddish brown (2.5YR 4/4); very fine gra grained, angular to subangular; some silt; little large pebbles, subangular to subround; little o	nined to very coarse e granules to very		
145 146 	•			Topock - Alluvium Deposits	ML		(145.0 - 147.0') Topock - Alluvium Deposits; \$ reddish brown (2.5YR 4/4); low plasticity; som coarse grained sand, angular to subround; little clay; large pebbles, angular to subround; little clay;	ne very fine to very le granules to very		
147 148 149 150	120	IRZ-18-SS- 145-150 12/6/2019 12:55	IRZ-18-VAS- 147-152 (<0.17 U ppb) 11/21/2019 13:20	Topock - Alluvium Deposits	SM		(147.0 - 152.0') Topock - Alluvium Deposits; S (SM); reddish brown (2.5YR 4/4); very fine gra grained, angular to subangular; some silt; little large pebbles, subangular to subround; little o	nined to very coarse e granules to very		
151 152 153		IRZ-18-SS- 150-155 12/6/2019 13:00					(152.0 - 157.0') Topock - Alluvium Deposits; S (SM); reddish brown (2.5YR 4/4); medium gra grained, angular to subangular; little granules pebbles, subangular to subround; little silt; littl	lined to very coarse to very large		
154 155 156 	60		IRZ-18-VAS- 152-157 (<0.17 U ppb) 11/22/2019 09:30	Topock - Alluvium Deposits	SM					
157 158 159 160	60	IRZ-18-SS- 155-160 12/6/2019 13:05	IRZ-18-VAS- 157-162 (870 ppb) 11/22/2019 12:15	Topock - Alluvium Deposits	SM		(157.0 - 164.0') Topock - Alluvium Deposits; S (SM); reddish brown (2.5YR 4/4); medium gra grained, angular to subround; some very fine t grained sand, angular to subround; little granu pebbles, angular to subangular; little silt; trace	ined to very coarse to fine grained ules to very large	(157.0') Multiple clean out runs to set sampler due to slough in casing.	
	intions	·· IISCS - I	Inified Soil CI	accification	System	ft – f.	et has = helow around surface ams	l - abovo moan s	a lovol GW -	

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	She	eet: 9 of	11
Date S					Surface			Boring No.:	IRZ-18 P	ilot
	•	ted: <u>12/05/</u>			Northing		•	-		
Drilling		<u>Casca</u>			Easting	•	•	Client: PG&E	W.D. DI	
Drilling			Drilling	4	Total De	•	217 ft bgs	•	W Remedy Ph	
Drill Riq			nic Truck Mou	ınt	Borehol			Location: PG&E	•	ies,
Driller I Drilling			<u>lernandez</u>		•		Water: <u>41.1 ft bgs</u> nod: <u>4 inch x 10 ft Core Barrel</u>	<u>Californ</u> Project Number:		E1
Logge			aya / P. Almar Bonessi	<u>12a</u>	Samplin Samplin	-		Project Number.	KC000753.00	31
Editor:			a Keon		Convert	-		-		
		rtoriar	110011	٥٤						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
 161 _162_	60		IRZ-18-VAS- 157-162 (870 ppb) 11/22/2019 12:15	Topock -			_(0			
_102		IRZ-18-SS- 160-165		Alluvium Deposits	SM		+ 60			
163		12/6/2019 13:10								
		10.10								
_164			IRZ-18-VAS-							
	60		162-167				(164.0 - 168.0') Topock - Alluvium Deposits; S (SM); reddish brown (2.5YR 4/4); very fine gra			
165	00		(3300 ppb) 11/22/2019 15:00				grained, angular to subround; some coarse to grained sand, angular to subround; little grant	very coarse grained		
			13.00				angular to subangular; little silt; trace clay; we			
166				Topock - Alluvium	SM					
				Deposits						
167		IRZ-18-SS-							(167.0 -	
		165-170 12/6/2019							`172.0')	
168		13:15					(168.0 - 172.0') Topock - Alluvium Deposits; \$	Silty sand with gravel	Slough fell in around the	
							(SM); reddish brown (2.5YR 4/4); medium gra grained, angular to subround; some granules	ained to very coarse	sampler had to retract and	
169			IRZ-18-VAS- 167-172				pebbles, angular to subangular; some very fin	ne to fine grained	clean out casing.	
	60		(4700 ppb) 11/23/2019	Topock -			grained sand, angular to subround; little silt; t clasts composed of metadiorite; wet	race clay; coarser		
170			10:00	Alluvium Deposits	SM		(170'); little granules to very large pebbles, ar	ngular to subangular;		
				Deposits			wet; increase in sand, decrease in granules a	and pebbles		
171										
170										
172				T			(172.0 - 173.5') Topock - Alluvium Deposits; \$			
				Topock - Alluvium	ML		reddish brown (5YR 4/3); low plasticity; some coarse grained sand, angular to subround; little	tle granules to large		
		IRZ-18-SS-		Deposits			pebbles, angular to subangular; little clay, we	t; medium stiff		
174		170-177.5 12/6/2019	IRZ-18-VAS-				(173.5 - 177.5') Topock - Alluvium Deposits; (SM); reddish brown (2.5YR 4/4); medium gra			
	60	13:20	172-177 (660 ppb)				grained, angular to subround; some very fine grained sand, angular to subround; little grant	to fine grained		
175	50		12/3/2019 10:30				pebbles, angular to subround, little grant pebbles, angular to subangular; little silt; trace			
			10.30	Topock - Alluvium	SM					
176				Deposits						
<u> </u>										
177									(177.0 -	
-							(177.5 - 182.0') Topock - Alluvium Deposits; (Sandy silt (ML):	`187.0')	
178			IRZ-18-VAS- 177-182				reddish brown (2.5YR 4/4) to red (2.5YR 4/6);	; low plasticity; some	Hard drilling	
	60	IRZ-18-SS- 177.5-182	(390 ppb) 12/3/2019	Topock - Alluvium	ML		very fine to very coarse grained sand, angular granules to large pebbles, angular to subangu			
179		12/6/2019 13:25	14:40	Deposits	IVIL		medium stiff			
 										
180		11000	l-:::	·c (·	- 01	<u> </u>	oot has - below around surface amo	<u> </u>	1 1 0)4/	

ARCADIS Design & Consultancy for natural and built assets					Во	ring	Log	Sho	eet: 10 of	11
Date S	tarted:	<u>11/17/</u>	2019	_	Surface	Elevat	ion: 494.67 ft amsl	Boring No.:	: IRZ-18 P	ilot
		ted: <u>12/05/</u>			Northing	- '	•			<u></u>
Drilling		<u>Casca</u>			Easting	•	•	Client: PG&E		
Drilling			Drilling		Total De	•	217 ft bgs		W Remedy Ph	
Drill Ri		: <u>Proso</u>	<u>nic Truck Mo</u>		Borehol			Location: PG&E	•	les,
Driller I			<u>lernandez</u>				Water: 41.1 ft bgs	Californ		
Drilling			aya / P. Alma		Samplin	-		Project Number:	RC000753.00	51
Logger			Bonessi		Samplin	-				
Editor:		Kendr	a Keon		Convert	ed to V	Vell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
 181 182_	60	IRZ-18-SS- 177.5-182 12/6/2019 13:25	IRZ-18-VAS- 177-182 (390 ppb) 12/3/2019 14:40	Topock - Alluvium Deposits	ML		(181'); dry; hard; moderate cementation (181.3'); wet; medium stiff; decrease in sand,	increase in silt		
102							(182.0 - 190.0') Topock - Alluvium Deposits; \$			
183		IRZ-18-SS- 182-185					(SM); red (2.5YR 4/6); very fine grained to ver angular to subround; low plasticity; some silt; large pebbles, angular to subangular; little cla	little granules to		
184		12/6/2019 13:30	IRZ-18-VAS- 182-187							
	60		(<0.17 U							
185			ppb) 12/4/2019 11:00				(185'); dry (185.2'); moist			
186				Topock - Alluvium	SM		(186'); dry			
				Deposits			(186.1'); moist			
187		IRZ-18-SS- 185-190							(187.0 -	
 188		12/6/2019 13:35							192.0') Hard drilling,	
		.0.00							lost last 2 feet downhole	
_189			IRZ-18-VAS-	· ·					upon extraction.	
	36		187-192 (<0.17 U							
190	00		ppb) 12/4/2 <mark>01</mark> 9							
			15:35			\setminus	(190.0 - 192.0') No recovery (NR); see drilling	notes		
_191					NR	$ \vee $				
_192				L		<u> </u>			(400.0	
L 4				Topock - Alluvium	SM		(192.0 - 193.0') Topock - Alluvium Deposits; S (SM); reddish brown (2.5YR 4/4); very fine gra	ained to very coarse	(192.0 - 203.0')	
_193				Deposits .	+		grained, angular to subround; low plasticity; s granules to large pebbles, angular to subangu		Rough drilling	
							(193.0 - 198.0') Topock - Weathered Bedrock	- conglomerate;		
194							Sandy silt with gravel (ML); reddish brown (5) plasticity; some very fine to very coarse grains	ed sand, angular to		
	60						subangular; little granules to very large pebble subangular; little clay; coarser clasts compos			
195				Topock -			moist to wet; stiff (195'); moist to dry; hard			
				Weathered Bedrock -	ML		(193), moist to dry, mard			
196				conglomerat	te					
197										
 										
198							(198.0 - 204.0') Topock - Weathered Bedrock	- conglomerate:		
<u> </u>	120			Topock -			Sandy silt (ML); reddish brown (5YR 4/3); med very fine to very coarse grained sand, angular	dium plasticity; some		
199				Weathered Bedrock -	IVIL		granules to large pebbles, angular to subangu			
H +				conglomerat	te		to dry; hard			
200		. 11000 - 1	 :6:!	 :c :+:	. 0 1	<u> </u>	oot has - below ground surface, amo		1 1 0)4/	

9A	RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	9	S	heet: 11 of	11
Date Sta		11/17/2			Surface			494.67 ft amsl	Borina No	.: <u>IRZ-18 P</u>	ilot
	•	ed: <u>12/05/2</u>			Northing			2102884.71	_	<u> </u>	
Drilling C		Cascac			Easting	•	33):	7615808.83	_ Client: PG&E		
Drilling N					Total De	•		217 ft bgs	•	SW Remedy Ph	
Drill Rig			ic Truck Mou		Borehol			4-10 inches	_ Location: <u>PG&E</u>	-	les,
Driller Na			<u>ernandez</u>		•			41.1 ft bgs	_ <u>Califo</u> ı		
Drilling A	Asst:		<u>ya / P. Almar</u>					4 inch x 10 ft Core Barrel	_ Project Number:	RC000753.00)51
Logger:		Chris B			•	•		Continuous	_		
Editor:		Kendra	Keon		Convert	ed to v	/Vell:			I	
Depth (ft)	Kecovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS		Soil Description		Drilling Notes	Drilling Fluid
	120		IRZ-18-VAS- 202-207	Topock - Weathered Bedrock - conglomerat	IVIL		(204.0	- 211.0') Topock - Weathered Bedroc	k - condomerate:	(203.0 - 207.0') Soft drilling	
205			(<0.17 U ppb) 12/5/2019 13:10	Topock -			Sandy: plastici subang	silt with gravel (ML); reddish brown (5 ty; some very fine to very coarse grain jular; little granules to very large pebb jular; little clay; coarser clasts compo very stiff	YR 4/3); low ned sand, angular to les, angular to		
				Weathered Bedrock - conglomerat	IVIL					(207.0 - 214.0') Hard drilling	(207.0 - 217.0') 500 gallons of water used; 50 gallons of water recovered; 450 gallons of water lost
	120			Topock - Weathered Bedrock - conglomerat	IVIL		Sandy coarse to large	- 214.0') Topock - Weathered Bedroc silt (ML); reddish brown (5YR 4/3); so grained grained sand, angular to sub pebbles, angular to subangular; little); dry; hard	me very fine to very angular; little granules e clay; moist		
215 216 217				Topock - Weathered Bedrock - conglomerat	SIVI		Silty sa grained some s	 - 217.0') Topock - Weathered Bedroc and with gravel (SM); reddish brown (2 at to very coarse grained, angular to sub- silt; little granules to large pebbles, an ay; coarser clasts composed of metac 	2.5YR 4/4); very fine lbround; low plasticity; gular to subangular;	(214.0 - 217.0') Soft drilling, stopped drilling due to the collection of three ND samples below last detection.	
-21/-			<u> </u>	I .	1		1	End of Boring at 217.0 ft b	ogs.	1 1	
								s = below ground surface, am atory reporting limit, J = estima			

groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J = estimated value, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag

9/	ARC4	DIS Design & for nature built asso	Consultancy al and ets		Well Cor	nstru	ctic	n Log		Sheet: 1 of 11
	started:	12/06/2019			_Surface Elevation:	49	4.67 f	t amsl	Well ID: I	IRZ-18 Pilot
	•	12/06/2019			_Shallow Well Eleva					
Drilling		Cascade			_Deep Well Elevatio				Client: <u>PG</u>	
_	Method:	Sonic Drilling			_Northing (NAD83):		02884			al GW Remedy Phase 1
Driller I		Jose Hernand			_Easting (NAD83):		15808		Location: <u>PG</u>	&E Topock, Needles, California
Drilling		L. Amaya / P.		za	_Borehole Diameter		<u>10 inc</u>			
Logge		Chris Boness			_Static Water Level:		-	for Depths	Project Num	ber: RC000753.0051
Editor: Total D		Kendra Keon 217 ft bgs			_Development End _Well Completion:	Date: <u>N/</u> ┌	A] Flus	h ☐ Stick-up ⊠	 To Be Complete	ed in Well Vault
TOTAL	ериі.				_ vveii Completion.		_ rius	II ☐ Stick-up △	To be Complete	
Depth (ft)	Groundwat Sample II	Geol	Code	USCS Class		Well Const	ruction		Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
		Topock - Fill	GW		(0.0 - 0.5') _ Steel Plate					Note: Steel plates with BMPs in place
1 2 3 4		Topock - Fluvial Deposits	sw		(0.5 - 5.0') Wildcat Washed Plastering Sand		\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	(0.0 - 7.0') 10.0" Borehole	(0.5 - 5.0') 5.5 bags	(0.5 - 5.0') 10 bags (182%) Note: Wildcat Washed, used >20% of the calculated volume due to potential voids forming during drilling
_ 5		Topock - Fluvial Deposits Topock - Fluvial Deposits Topock -	SW					20		
		Topock - Fluvial Deposits	SW		(5.0 - 180.0') Cemex #3 MESH _ (8x20) Lapis Lustre Sand Lapis			(7.0 - 207.0') 6.0" Borehole	(5.0 - 180.0') 70.1 bags	(5.0 - 180.0') 92 bags (131%) Note: Backfill sand, used >20% of the calculated volume due to potential voids forming during drilling
15 16		Topock - Fluvial Deposits	SW							
17 18 19		Topock - Fluvial Deposits Topock - Fluvial Deposits	GW SW-SM							
20	:-e:- · ·	1000 - 11 :5	0-"0		<u> </u>	1	-1-			
Abbre	∕ıatıons: U	SCS = Unified	Soil C	ıassıtica	tion System, ft = feet	, bgs = b	elow (ground surface, a	msi = above mea	an sea level, GW =

groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J = estimated value, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval

ARC	Design & for nature built asso	Consultancy al and ets	Well Const	ruction Log	S	heet: 2 of 11
Date Started:	12/06/2019		Surface Elevation:	494.67 ft amsl	Well ID: IRZ	'-18 Pilot
Date Completed			Shallow Well Elevation:			
Drilling Co.:	Cascade		Deep Well Elevation:	N/A	Client: <u>PG&E</u>	
Drilling Method:	Sonic Drilling		Northing (NAD83):	2102884.71	-	SW Remedy Phase 1
Driller Name:	Jose Hernand		Easting (NAD83):	7615808.83	Location: <u>PG&E</u>	Topock, Needles, California
Drilling Asst:	L. Amaya / P.		Borehole Diameter:	4-10 inches	<u> </u>	
Logger:	Chris Boness		Static Water Level:	See Log for Depths	Project Number	: RC000753.0051
Editor: Total Depth:	Kendra Keon 217 ft bgs		Development End Date: Well Completion:		 To Be Completed i	in Well Vault
			vveii compiction.	rusii cuok-up [A]	To be completed	
Groundwa Sample I		USCS Code USCS Class	Well C	Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
21 21 22 23	Topock - Fluvial Deposits	SW-SM			9	6
	Topock - Alluvium Deposits	SW-SM	(5.0 - 180.0') Cemex #3 MESH (8x20) Lapis Lustre Sand Lapis	(7.0 - 207.0') 6.0" Borehole	(5.0 - 180.0') 70.1 bags	(5.0 - 180.0') 92 bags (131%) Note: Backfill sand, used >20% of the calculated volume due to potential voids forming during drilling
	Topock - Alluvium Deposits	SW-SM				
38	Topock - Alluvium Deposits	SM Soil Classific	ation System ft = feet has	= below ground surface, an	nel = ahove mean s	sea level GW =

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

9/	ARCA	ADIS Design & Consultancy for natural and built assets Well C				structio	on Log	S	Sheet: 3 of 11
Date S	Started:	12/06/2019			_Surface Elevation:	494.67	ft amsl	Well ID: IRZ	Z-18 Pilot
	•	12/06/2019			_Shallow Well Elevatio				
Drilling		Cascade			_Deep Well Elevation:			Client: PG&E	
_		Sonic Drilling			_Northing (NAD83):	<u>210288</u>		-	GW Remedy Phase 1
Driller		Jose Hernand			_Easting (NAD83):	<u>761580</u>		Location: <u>PG&E</u>	Topock, Needles, California
Drilling		L. Amaya / P.			_Borehole Diameter:	4-10 inc		<u> </u>	
Logge		Chris Bonessi			_Static Water Level:		g for Depths	Project Number	r: RC000753.0051
Editor: Total D		Kendra Keon 217 ft bgs			_Development End Da _Well Completion:		sh	To Be Completed	in Well Vault
Total	эорин.				_ vv oii Gompiotion.		on ottok up	To Be completed	
Depth (ft)	Groundwat Sample ID	Geol	Code	Class	We	ell Construction		Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
 41 <i>_</i> _		Topock - Alluvium Deposits	SM		:				
41	IRZ-18-VAS 42-47 (580 ppb) 11/19/2019 09:20	Topock - Alluvium	SM		(5.0 - 180.0') Cemex #3 MESH (8x20) Lapis Lustre Sand Lapis		- (7.0 - 207.0') 6.0" Borehole	(5.0 - 180.0') 70.1 bags	(5.0 - 180.0') 92 bags (131%) Note: Backfill sand, used >20% of the calculated volume due to potential voids forming during drilling
<u> </u>									
60 Abbrey	viations: II		Soil Class	ificati	ion Svstem. ft = feet. b	nas = helow	around surface ar	nsl = above mean	sea level GW =

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

9/	ARCA	DIS Design & Of for natura built asset	Consultancy Land		Well Cons	struction	Log	5	Sheet: 4 of 11
	Started:	12/06/2019			_Surface Elevation:	494.67 ft am	sl	Well ID: IRZ	7-18 Pilot
	-	12/06/2019			_Shallow Well Elevation				
Drilling		Cascade			_Deep Well Elevation:			Client: PG&E	
		Sonic Drilling			_Northing (NAD83):	2102884.71			GW Remedy Phase 1
Driller		Jose Hernand			_Easting (NAD83):	7615808.83		Location: PG&E	Topock, Needles, California
Drilling		L. Amaya / P.		za	_Borehole Diameter:	4-10 inches	D #1	Dood of November	D0000750 0054
Logge Editor:		Chris Bonessi Kendra Keon			_Static Water Level: _Development End Da	See Log for Depths		Project Number	r: RC000753.0051
Total D		217 ft bgs			_Development End Da _Well Completion:	late. <u>IN/A</u> Flush ☐	Stick-up 🗵 To	Be Completed	in Well Vault
Depth (ft)	Groundwat Sample ID		USCS	USCS	We	ell Construction	N	Calculated //aterial Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
	IRZ-18-VAS 62-67 (<0.033 U ppb) 11/19/2019 13:05 IRZ-18-VAS 67-72 (<0.033 U ppb) 11/19/2019 16:00	Topock - Alluvium Deposits	SM		(5.0 - 180.0') Cemex #3 MESH — (8x20) Lapis Lustre Sand Lapis		.0 - 207.0') " Borehole	(5.0 - 180.0') 70.1 bags	(5.0 - 180.0') 92 bags (131%) Note: Backfill sand, used >20% of the calculated volume due to potential voids forming during drilling
Abbrev	viations: U	SCS = Unified	Soil C	assificat	ion System, ft = feet, b	ogs = below grou	nd surface, amsl	l = above mean :	sea level. GW =

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

Date Started: 12/06/2019 Surface Elevation: 494.67 ft amsl Date Completed: 12/06/2019 Shallow Well Elevation: N/A Drilling Co.: Cascade Deep Well Elevation: N/A Drilling Method: Sonic Drilling Northing (NAD83): 2102884.71 Project: Final GW Remedy Phase 1 Driller Name: Jose Hernandez Easting (NAD83): 7615808.83 Location: PG&E Topock, Needles, California Drilling Asst: L. Amaya / P. Almanza Borehole Diameter: 4-10 inches Logger: Chris Bonessi Static Water Level: See Log for Depths Project Number: RC000753.0051	ARC	Design & C for natura built asset	Consultancy Land		Well Consti	ruction Log	S	Sheet: 5 of 11
Date Completed: 12/06/2019 Shallow Well Elevation: N/A Client: PG&E Dilling Method: Dilling Method: Sonic Dilling Monthing (MABS): 21/02884.71 Project: Final GW Remedy Phase 1. Olient Name: Castelleg (MABS): 21/02884.71 Project: Final GW Remedy Phase 1. Olient PG&E Dilling Asst: Lamaya (P. Almanza Estating (MABS): 76/15808.83 Localion: PG&E Topock, Needles, California Borehole Diameter: 4-10 inches. Send Lagrand (P. Almanza Estatic Water Level: 4-10 inches. Send Lagrand (P. Almanza Development End Date: N/A Well Completion: Flash Stok-up To Be Completed in Well Vault Well Completion: Well Control of Material Volumes Installed Notes percentages are he actual volume vs. the circulated volume vs. the potential vs. the circulated volume vs. the					_Surface Elevation:	494.67 ft amsl	Well ID: IRZ	7-18 Pilot
Drilling Material Drilling Assert Language Chris Bonoss Editor: Chris Bonoss Editor: Total Deptri: 217 fbgs Well Completion: 83	Date Completed:	12/06/2019			_Shallow Well Elevation:			
Deller Name: Jose Hernandez Easting (NAD33) Z615808.83 Location: PG&E Topock. Needles, California Deller Name Lamaya / P. Amanza Borehole Diameter: Safet Water Level See Log for Depths Project Number: RC000753.0051	-				_ ·			
Dilling Asst: L. Amaya / P. Almanza Borehole Diameter: 4-10 inches Carlos Boness Slatic Water Level See Log for Depths Project Number: RC000753.0051	_	_			- '		•	-
Control Cont					,		Location: <u>PG&E</u>	Topock, Needles, California
Earlior				za				
Total Depth: 217 ft bgs						- ·	Project Number	:: <u>RC000753.0051</u>
Sample D					The state of the s			in Mall Mault
					_ weii Completion.	☐ Flush ☐ Stick-up △	To be Completed	
	Groundwat Sample II	Geologi	Code	USCS	Well Co	onstruction		Note: percentages are the actual
99		Topock - Alluvium Deposits Topock - Alluvium Deposits	ML		Cemex #3 MESH (8x20) Lapis Lustre Sand Lapis	6.0" Borehole	`70.1 bags´	the calculated volume due to potential voids forming during drilling
1		ISCS = Unified	Soil Cl	assificat	tion System, ft = feet, bgs	= below ground surface, a	nsl = above mean s	sea level, GW =

groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J = estimated value, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval

9/	ARC4	DIS Design & for natura built asse	Consultancy al and ets		Well Cons	struction	Log		Sheet: 6 of 11
	Started:	12/06/2019			_Surface Elevation:	494.67 ft a	ımsl	Well ID: IR	Z-18 Pilot
	•	12/06/2019			_Shallow Well Elevatio			_	
Drilling		Cascade			_Deep Well Elevation:			_ Client: PG&	
1 -		Sonic Drilling			_Northing (NAD83):	2102884.7			GW Remedy Phase 1
	Name:	Jose Hernand			_Easting (NAD83):	7615808.8		_ Location: <u>PG&</u>	E Topock, Needles, California
Drilling		L. Amaya / P. Chris Boness		za	_Borehole Diameter: _Static Water Level:	4-10 inche		— — — — — — — — — — — — — — — — — — —	DC0007E2 00E4
Logge Editor:		Kendra Keon			_Static vvater Level. _Development End Da	See Log for Depths		_ Project Numbe	er: RC000753.0051
	Depth:	217 ft bgs			_Development End Da _Well Completion:	Flush	Stick-up 🗵	— To Be Completed	l in Well Vault
Depth (ft)	Groundwat Sample IE		USCS	USCS Class	We	II Construction		Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
101 102 103 104	IRZ-18-VAS	Topock - Alluvium Deposits	SM					4.6	8
105 105 106 107	102-107 102-107 (<0.17 U ppt 11/20/2019 11:35		ML				6-6-		
108 109 110 111 112			<u> </u>		(5.0 - 180.0') Cemex #3 MESH (8x20) Lapis Lustre Sand Lapis		(7.0 - 207.0') 6.0" Borehole	(5.0 - 180.0') 70.1 bags	(5.0 - 180.0') 92 bags (131%) Note: Backfill sand, used >20% of the calculated volume due to potential voids forming during drilling
113 114 115 116 117	IRZ-18-VAS 112-117 (<0.17 U ppt 11/20/2019 14:25)	SM						
L _		Topock - Alluvium	ML		[:				
118		Deposits /							
L _		Topock -							
119		Alluvium Deposits	SM						
_		Dehosits							
120									
Abbre	viations: U	SCS = Unified	Soil Cl	assificat	ion System, ft = feet, b	gs = below gro	ound surface, am	ısl = above mean	sea level, GW =

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

9/	ARC4	DIS Design & for natura built asse	Consultancy al and its		Well Const	ruction Log	5	Sheet: 7 of 11	
Date Started: <u>12/06/2019</u>		_Surface Elevation:	494.67 ft amsl	Well ID: IR	Well ID: IRZ-18 Pilot				
•		_Shallow Well Elevation:	•						
		_Deep Well Elevation:	N/A	Client: PG&E					
_			_Northing (NAD83):	2102884.71	•	GW Remedy Phase 1			
			_Easting (NAD83):	7615808.83	Location: <u>PG&E</u>	Topock, Needles, California			
Drilling		L. Amaya / P.		za	_Borehole Diameter:	4-10 inches			
Logger		Chris Bonessi			_Static Water Level:	See Log for Depths	Project Number	r: RC000753.0051	
Editor: Total D		Kendra Keon 217 ft bgs			_Development End Date: _Well Completion:		 To Be Completed	in Woll Vault	
	ериі.						➤ To Be Completed in Well Vault		
Depth (ft)	Groundwat Sample ID		Code	USCS	Well C	construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume	
 139 	IRZ-18-VAS 137-142 (<0.71 U ppt 11/21/2019 15:31	Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits	ML ML		(5.0 - 180.0') Cemex #3 MESH — (8x20) Lapis Lustre Sand Lapis	(7.0 - 207.0°) 6.0" Borehole	(5.0 - 180.0') 70.1 bags	(5.0 - 180.0') 92 bags (131%) Note: Backfill sand, used >20% of the calculated volume due to potential voids forming during drilling	
139	11/21/2019 15:31								
 140									
Abbrev	<i>i</i> iations: U	SCS = Unified	Soil C	assifica	tion System, ft = feet, bgs	= below ground surface, a	amsl = above mean	sea level, GW =	

groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J = estimated value, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval

9/	ARCA	DIS Design & for natura built asse	Consultancy al and ets		Well Cons	struction	Log		Sheet: 8 of 11
		12/06/2019			_Surface Elevation:	494.67 ft a		Well ID: I	RZ-18 Pilot
Date C	Completed:	12/06/2019			_Shallow Well Elevation	on: <u>N/A</u>		_ vvenib. i	
		_Deep Well Elevation:			_Client: <u>PG</u>				
-		_Northing (NAD83):	2102884.7			al GW Remedy Phase 1			
			_Easting (NAD83):	<u>7615808.8</u>		_ Location: <u>PG</u>	&E Topock, Needles, California		
Drilling		L. Amaya / P.		za	_Borehole Diameter:		<u>4-10 inches</u>		
Logge		Chris Bonessi			_Static Water Level:	See Log fo	or Depths	_ Project Numb	per: RC000753.0051
Editor: Total [Kendra Keon			_Development End Da _Well Completion:	ate: <u>N/A</u> Flush [Ctick up 🗸 T	– To Bo Complete	ed in Well Vault
Total L	лерит.	217 ft bgs			_ vveii Completion.	Flushi	Stick-up 🔼 T	o be Complete	ed in vveli vadit
Depth (ft)	Groundwate Sample ID		USCS	USCS	We	ell Construction		Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
 141 142	IRZ-18-VAS- 137-142 (<0.17 U ppb 11/21/2019 15:31	Topock -	ML						6
143 144		Topock - Alluvium Deposits	SM					is	
145 146 147		Topock - Alluvium Deposits	ML				20		
148 149 150 151 151 152	IRZ-18-VAS- 147-152 (<0.17 U ppb 11/21/2019 13:20	Topock -	SM		(5.0 - 180.0') Cemex #3 MESH (8x20) Lapis Lustre Sand Lapis		(7.0 - 207.0') 6.0" Borehole	(5.0 - 180.0') 70.1 bags	(5.0 - 180.0') 92 bags (131%) Note: Backfill sand, used >20% of the calculated volume due to potential voids forming during drilling
153 154 155 156 157	IRZ-18-VAS- 152-157 (<0.17 U ppb 11/22/2019 09:30	Topock -) Alluvium Deposits	SM						
158 159 160	IRZ-18-VAS- 157-162 (870 ppb) 11/22/2019 12:15	Topock - Alluvium Deposits	SM						
	viations: U	SCS = Unified	Soil C	assifical	ition System, ft = feet, b	ogs = below gro	ound surface, am	sl = above mea	n sea level, GW =

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

ARC	DIS Design & Of for natural built asset	Consultancy Land	Well Con	struction Log	S	Sheet: 9 of 11
Date Started:	12/06/2019	-	Surface Elevation:	494.67 ft amsl	Well ID: IRZ	7-18 Pilot
Date Completed:			Shallow Well Elevati	on: <u>N/A</u>		10 1 HOL
Drilling Co.: <u>Cascade</u>			Deep Well Elevation		Client: PG&E	
Drilling Method:	Sonic Drilling		Northing (NAD83):	2102884.71	•	GW Remedy Phase 1
	Oriller Name: <u>Jose Hernandez</u>		Easting (NAD83):	7615808.83	Location: <u>PG&E</u>	Topock, Needles, California
Drilling Asst:	L. Amaya / P.		Borehole Diameter:	4-10 inches		
Logger:	Chris Bonessi		Static Water Level:	See Log for Depths	Project Number	:: RC000753.0051
Editor: Total Depth:	Kendra Keon		Development End D Well Completion:		 To Be Completed	in Wall Vault
Тотаг Бертіі.	217 ft bgs		vveii Completion.	☐ Flush ☐ Stick-up △	To be Completed	iii vveii vauit
tt (±) Groundwar Sample II			W	ell Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
IRZ-18-VAS 157-162 (870 ppb) 11/22/2019 12:15 162 	Topock - — Alluvium Deposits	SM			1.5	
164 IRZ-18-VAS 162-167 (3300 ppb) 11/22/2019 15:00 166 		SM				
		SM	(5.0 - 180.0') Cemex #3 MESH — (8x20) Lapis Lustre Sand Lapis	(7.0 - 207.0') 6.0" Borehole	(5.0 - 180.0') 70.1 bags	(5.0 - 180.0') 92 bags (131%) Note: Backfill sand, used >20% of the calculated volume due to potential voids forming during drilling
173	Topock - Alluvium Deposits	ML				
	Topock - Alluvium Deposits	SM				
	Topock - Alluvium Deposits	ML Soil Classif	cation System # = feet	bgs = below ground surface, a	mel = above moss	cea level CW -

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

9/-	ARCA	DIS Design & for natura built asser	Consultancy all and ts		Well Consti	ruction Log	5	Sheet: 10 of 11
Date S		12/06/2019			_Surface Elevation:	494.67 ft amsl	Well ID: IR	7-18 Pilot
Date C	ompleted:	12/06/2019			_Shallow Well Elevation:	N/A		L-101 IIOt
Drilling	Drilling Co.: <u>Cascade</u>		_Deep Well Elevation:	N/A	Client: PG&E	<u> </u>		
Drilling Method: Sonic Drilling		_Northing (NAD83):	2102884.71	Project: Final	GW Remedy Phase 1			
Driller I	Driller Name: <u>Jose Hernandez</u>		_Easting (NAD83):	7615808.83	Location: PG&E	Topock, Needles, California		
Drilling	Drilling Asst: <u>L. Amaya / P. Almanza</u>		_Borehole Diameter:	4-10 inches				
Logger	" .	Chris Bonessi			_Static Water Level:	See Log for Depths Project Number: RC000753.0051		
Editor:		Kendra Keon			_Development End Date:			
Total D	epth:	217 ft bgs			_Well Completion:	☐ Flush ☐ Stick-up ▷	To Be Completed	in Well Vault
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well Co	onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
 181 182	IRZ-18-VAS- 177-182 (390 ppb) 12/3/2019 14:40	Topock - Alluvium Deposits	ML					6
185 186 187 188 189	IRZ-18-VAS- 182-187 (<0.17 U ppb 12/4/2019 11:00 IRZ-18-VAS- 187-192 (<0.17 U ppb 12/4/2019	Topock - Alluvium Deposits	SM		(180.0 - 190.0') Cemex # 2/12 MESH (12x20) Lapis Lustre Sand	(7.0 - 207.0)	(180.0 - 190.0') 3.9 bags	(180.0 - 190.0') 7 bags (179%) Note: Indicator sand, used >20% of the calculated volume due to potential voids forming during drilling
190 191 192	15:35		NR			6.0" Borehole		
 193		Topock - Alluvium Deposits	SM			•		
 194								
195 196 197 		Topock - Weathered Bedrock - conglomerate	ML		(190.0 - 217.0') Bentonite seal pellets Pel-Plug (TR30) 3/8"		(190.0 - 217.0') 6.7 buckets	(190.0 - 217.0') 8 buckets (119%) Note: Decommissioned rathole
198 199 200 Abbrev	riations: U	Topock - Weathered Bedrock - conglomerate		assifica	tion System, ft = feet, bgs	= below ground surface,	amsl = above mean	sea level, GW =

groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J = estimated value, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval

9/	4RC4	Design & C for natura built asset	Consultancy l and ts		Well Consti	ruction Log		Sheet: 11 of 11		
Date S	Started:	12/06/2019			_Surface Elevation:	494.67 ft amsl	Well ID: IR	Z-18 Pilot		
		l: <u>12/06/2019</u>			_Shallow Well Elevation:					
Drilling	-	Cascade			_Deep Well Elevation:	N/A	Client: PG&E			
_	Drilling Method: Sonic Drilling			_Northing (NAD83):	2102884.71	•	GW Remedy Phase 1			
	Driller Name: <u>Jose Hernandez</u>			_Easting (NAD83):	7615808.83	Location: PG&E	E Topock, Needles, California			
Drilling	Drilling Asst: <u>L. Amaya / P. Almanza</u>			_Borehole Diameter:	4-10 inches					
Logge		Chris Bonessi			_Static Water Level:	See Log for Depths	s Project Numbe	r: RC000753.0051		
Editor:		Kendra Keon			_Development End Date:					
Total [Depth:	217 ft bgs			_Well Completion:	☐ Flush ☐ Stick	-up ⊠ To Be Completed	in Well Vault		
Depth (ft)	Groundwat Sample ID		Code	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume		
201	IRZ-18-VAS 202-207 (<0.17 U ppt 12/5/2019 13:10	Topock - Weathered Bedrock - conglomerate	ML SM		(190.0 - 217.0') Bentonite seal pellets Pel-Plug (TR30) 3/8"	(207.0 - 21 4.0" Boreh	(190.0 - 217.0') 6.7 buckets	(190.0 - 217.0') 8 buckets (119%) Note: Decommissioned rathole		
219219										
220										
	Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =									
≧ ground	groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, J = estimated value, NR = no recovery; Notes: blue									
in	water table symbol represents depth to water measured during the first VAS interval									
MELLC	grants. 188.0 57.1.831 topi oconic depart to tracer in eastered during the mot vive interval									
>										