ARCA	DIS Design & for natura built asset	Consultancy al and its		Well Consti	ruction Log	:	Sheet: 1 of 8		
Date Started:	06/26/2019			_Surface Elevation:	500.0 ft amsl	- Well ID: IR	Z-23		
Date Completed:	06/30/2019			_Shallow Well Elevation:	N/A				
Drilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	<u> </u>		
	Dual Rotary			_Northing (NAD83):	2102535.3	Project: Final GW Remedy Phase 1			
Driller Name:	Jon Martinez			_Easting (NAD83):	7615825.8	Location: PG&E	Topock, Needles, California		
Drilling Asst:	E. Martinez /	W. Sayl	ors	_Borehole Diameter:	17.5-24 inches				
Logger:	Athony Mack			_Water Level Start:	46.85 ft bgs	Project Numbe	r: RC000753.0051		
Editor:	Sean McGrar	ne		Development End Date:					
Total Depth:	150.4 ft bgs	1		_Well Completion:			I		
Groundwat Sample IE		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed		
	Topock - Fluvial Deposits	SP-SM		(0.0 - 92.1') 10" — % % Suregrip 17 Casing					
3 4	Topock - Fluvial Deposits	GM		(0.0 - 6.0') #0/30 — sand		(0.0 - 6.0') 31.1 bags	(0.0 - 6.0') 35 bags (13%) Note: Lapis Lustre Sand		
_ 5 _	Topock - Fluvial Deposits	SW-SM		\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\					
_ 6 _	Topock - Fluvial	GM		\$\frac{\dagger}}}}}}}}}}}\dagger{\dagger{\dagger{\dagger{\dagg					
	Deposits	Oivi							
7 8 9 10 11 12 13 14 15 16 17 18 19 19 19 19 19 10 17 18 19 19 10 10 11 12 12 13 14 15 16 17 18 19 19 19 10 10 10 11 12 13 14 15 16 17 18 19 19 19 10 10 10 11 12 13 14 15 16 17 18 19 19 19 10 10 10 11 12 13 14 15 16 17 18 19 19 19 10 10 10 10 11 12 13 14 15 17 18 19 19 19 19 10 10 10 10 10 11 11 12 13 14 15 16 17 18 19 19 19 10	Topock - Fluvial Deposits Topock - Fluvial Deposits	SP-SM SM	<u> </u>	(6.0 - 66.5') Portland Cement 3% Bentonite	(0.0 - 21.5') 24.0" Borehole	(6.0 - 66.5') 737.1 gallons	(6.0 - 66.5') 1060 gallons (44%) Note: Type I, II and V and Benseal, used >20% of the calculated volume due to potential grout migration and voids forming during drilling		
20) <u>V</u>		1		

ARC ⁴	DIS Design & for natura built asse	Consultancy al and its		Well Const	ruction Log	5	Sheet: 2 of 8
Date Started:	06/26/2019			_Surface Elevation:	500.0 ft amsl	Well ID: IR	Z-23
Date Completed				_Shallow Well Elevation:	N/A		
Drilling Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	
Drilling Method:	<u>Dual Rotary</u>			_Northing (NAD83):	2102535.3	•	GW Remedy Phase 1
Driller Name:	Jon Martinez			_Easting (NAD83):	7615825.8	Location: <u>PG&E</u>	Topock, Needles, California
Drilling Asst:	E. Martinez / \	-	ors	_Borehole Diameter: _Water Level Start:	17.5-24 inches 46.85 ft bgs	— — — — — — — — — — — — — — — — — — —	r: RC000753.0051
Logger: Editor:	Athony Mack Sean McGrar			_vvaler Lever Start. _Development End Date:	•	Project Number	1. KC000753.0051
Total Depth:	150.4 ft bgs	ie		_Development End Date. _Well Completion:		<u> </u>	
Total Beptili.				_ vvcii Compiction.	7 I Idon Cuok-up		
Groundwa Sample II		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed
21	Topock - Fluvial Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits	SM :		(27.5 - 28.5') Centralizer (6.0 - 66.5') Portland Cement 3% Bentonite	(21.5 - 39.2') 18.0" Borehole	(6.0 - 66.5') 737.1 gallons	(6.0 - 66.5') 1060 gallons (44%) Note: Type I, II and V and Benseal, used >20% of the calculated volume due to potential grout migration and voids forming during drilling
40					(39.2 - 59.0') 18.0" Borehole		
1							

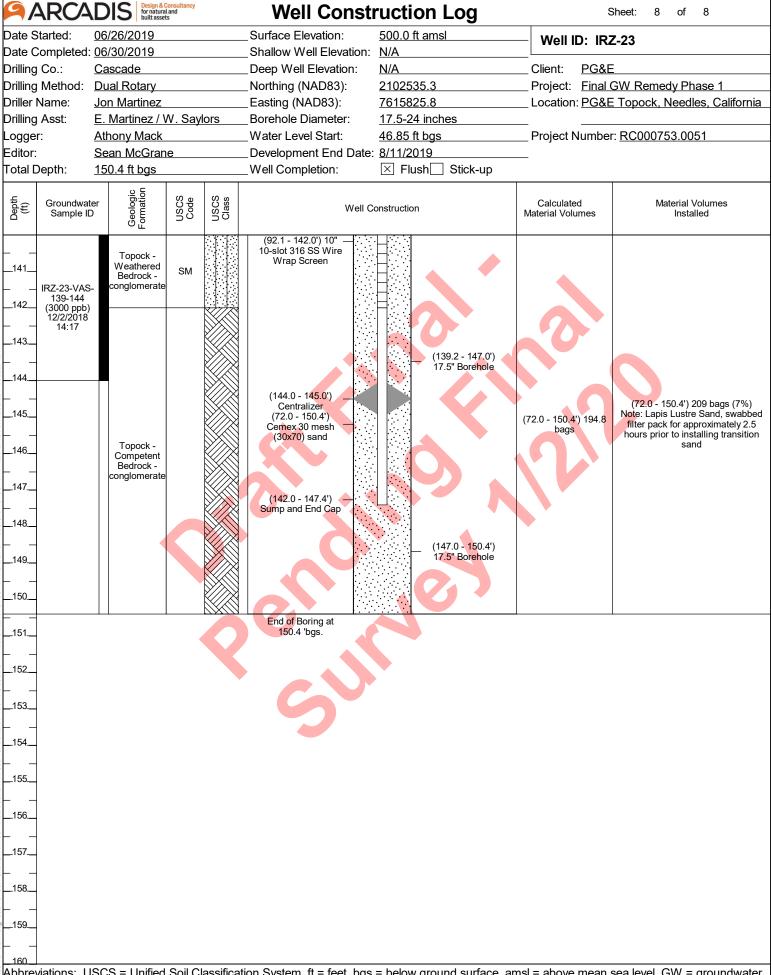
9/	ARCA	DIS Design & for natura built asse	Consultancy al and ts		Well Const	ruction Log	\$	Sheet: 3 of 8				
	Started:	06/26/2019			Surface Elevation:	500.0 ft amsl	Well ID: IR	Z-23				
	-	06/30/2019			Shallow Well Elevation:	N/A		_				
Drilling		<u>Cascade</u>			Deep Well Elevation:	N/A	Client: PG&E					
_	Method: Name:	Dual Rotary Jon Martinez			Northing (NAD83): Easting (NAD83):	2102535.3 7615825.8	•	GW Remedy Phase 1 Topock, Needles, California				
Drilling		E. Martinez / \	W Sav	lors	Borehole Diameter:	17.5-24 inches	Location. <u>F Gxt</u>	Topock, Needles, Calliottia				
Logge		Athony Mack	-	1010	Water Level Start:	46.85 ft bgs	Proiect Numbe	r: RC000753.0051				
Editor:		Sean McGrar			Development End Date:							
Total D		150.4 ft bgs			Well Completion:		_					
_		.≌ 5		(0								
Depth (ft)	Groundwat Sample ID		Code	USCS		onstruction	Calculated Material Volumes	Material Volumes Installed				
41	IRZ-23-VAS 57-62 (5.3 ppb) 11/30/2018	Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits	SM SM		(6.0 - 66.5') Portland Cement 3% Bentonite	(39.2 - 59.0') 18.0" Borehole	(6.0 - 66.5') 737.1 gallons	(6.0 - 66.5') 1060 gallons (44%) Note: Type I, II and V and Benseal, used >20% of the calculated volume due to potential grout migration and voids forming during drilling				
59	12:46					(59.0 - 79.0') 18.0"						
			SM			Borehole						
60		CCC - 11=:fi-a		<u> [] </u>	**************************************	4 V/Al		and level CW = groundwater				

9/	ARCA	DIS Design 8 for natur built ass	al and ets		Well Const	ruction Log	\$	Sheet: 4 of 8		
		06/26/2019			_Surface Elevation:	500.0 ft amsl	Well ID: IR	Z-23		
	=	06/30/2019			_Shallow Well Elevation:	N/A				
Drilling		Cascade			_ Deep Well Elevation:	N/A	Client: PG&E			
_		Dual Rotary			_Northing (NAD83):	2102535.3		GW Remedy Phase 1		
Driller		Jon Martinez		loro	_Easting (NAD83): Borehole Diameter:	7615825.8	Location: PG&E	Topock, Needles, California		
Drilling		E. Martinez / Athony Mack		iors	Borenole Diameter. Water Level Start:	17.5-24 inches 46.85 ft bgs	— Project Numbe	per: RC000753.0051		
Logge Editor:		Sean McGrai			_ vv ater Lever Start. _Development End Date:	_	Floject Nullibe	1. NC000733.0031		
Total D		150.4 ft bgs	10		Well Completion:					
							1			
Depth (ft)	Groundwate Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed		
61 62 63 64 65 66 67	IRZ-23-VAS 57-62 (5.3 ppb) 11/30/2018 12:46	Topock -	SM		(6.0 - 66.5') Portland Cement 3% Bentonite (63.6 - 64.6') Centralizer		(6.0 - 66.5') 737.1 gallons	(6.0 - 66.5') 1060 gallons (44%) Note: Type I, II and V and Benseal, used >20% of the calculated volume due to potential grout migration and voids forming during drilling (66.5 - 68.6') 4 bags (12%)		
68 69 70	IRZ-23-VAS- 67-72 (85 ppb) 12/1/2018	-			(66.5 - 68.6') Bentonite seal chips	(59.0 - 79.0') 18.0" Borehole	(66.5 - 68.6') 3.56 bags	Note: Puregold Medium Chips, installed bentonite seal at the request of the drillers to prevent grout migration (68.6 - 72.0') 11 bags (51%)		
71	08:50	Topock - Alluvium Deposits	SM		(68.6 - 72.0') Cemex— #60 (40x70 mesh)		(68.6 - 72.0') 7.3 bags	Note: Lapis Lustre Sand, used >20% of the calculated volume due to potential voids forming during drilling		
		Topock - Alluvium Deposits	ML		(72.0 - 150.4') Cemex 30 mesh (30x70) sand	(79.0 - 94.0') 18.0" Borehole	(72.0 - 150.4') 194.8 bags	(72.0 - 150.4') 209 bags (7%) Note: Lapis Lustre Sand, swabbed filter pack for approximately 2.5 hours prior to installing transition sand		
	viations: II	SCS = Unified	l Soil C	lassifica	tion System ft = feet has	= below ground surface a	msl = ahove mean	sea level. GW = groundwater.		

9/-	ARCA	DIS Design & for natura built asse	al and ets		Well Const	ruction Log	Sheet: 5 of 8				
Date S		06/26/2019			_Surface Elevation:	500.0 ft amsl	Well ID: IR	Well ID: IRZ-23			
	-	06/30/2019			_Shallow Well Elevation:	N/A					
Drilling		Cascade			_ Deep Well Elevation:	N/A	Client: PG&E				
Drilling Driller 1		Dual Rotary Jon Martinez			_Northing (NAD83): _Easting (NAD83):	2102535.3 7615825.8		GW Remedy Phase 1 Topock, Needles, California			
Drilling		E. Martinez / \		lors	Borehole Diameter:	17.5-24 inches	Location. 1 Gal	_ TOPOCK, Necules, Calliottila			
Logger		Athony Mack	-		Water Level Start:	46.85 ft bgs	Project Numbe	r: RC000753.0051			
Editor:		Sean McGrar			 _Development End Date:	_	<i>,</i>				
Total D	epth:	150.4 ft bgs			_Well Completion:	⊠ Flush⊡ Stick-up					
Depth (ft)	Groundwat Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed			
 81 82		Topock - Alluvium Deposits	ML		(0.0 - 92.1') 10" —						
83 84		Topock - Alluvium Deposits	SM					0			
85 86 87		Topock - Alluvium Deposits	ML			(79.0 - 94.0') 18.0"	2				
		Topock - Alluvium Deposits	SM		(72.0 - 150.4') Cemex 30 mesh (30x70) sand (92.1 - 142.0') 10" 10-slot 316 SS Wire Wrap Screen	Borehole	(72.0 - 150.4') 194.8 bags	(72.0 - 150.4') 209 bags (7%) Note: Lapis Lustre Sand, swabbed filter pack for approximately 2.5 hours prior to installing transition sand			
94 95	IRZ-23-VAS- 92-97 (<0.033 U ppb) 12/3/2018										
 96 97	11:47	Topock - Alluvium Deposits	SM			(94.0 - 98.6') 18.0" Borehole					
98 99 		Topock - Alluvium Deposits	SM			(98.6 - 118.3') 18.0" Borehole		aca lovel CW = groundwater			

9/-	ARCA	DIS for nat built a	ural and ssets		Well Const	ruction Log	\$	Sheet: 6 of 8		
Date S		06/26/2019			_Surface Elevation:	500.0 ft amsl	Well ID: IR	Z-23		
	-	06/30/2019			_Shallow Well Elevation:					
Drilling		Cascade			Deep Well Elevation:	N/A	Client: PG&E			
_		Dual Rotary			Northing (NAD83):	2102535.3	•	GW Remedy Phase 1		
Driller I Drilling		Jon Martine: E. Martinez		lore	Easting (NAD83): Borehole Diameter:	7615825.8 17.5-24 inches	Location: PG&E	Topock, Needles, California		
Logger		Athony Mac	-	1013	Water Level Start:	46.85 ft bgs	Project Number: <u>RC000753.0051</u>			
Editor:		Sean McGra			Development End Date:	_				
Total D		150.4 ft bgs			Well Completion:					
_		in F								
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed		
	•	9 6		٠٠٠		1 1				
					(92.1 - 142.0') 10" — 10-slot 316 SS Wire					
101		Topock - Alluvium	SM		Wrap Screen					
		Deposits				Hail N				
102		Tanash				H				
		Topock -	GM	600						
103		Deposits		0 0						
104										
⊢		Topock -								
105		Alluvium Deposits	SM							
_						H				
100										
 107										
				647						
108				200						
				640						
109				200		(98.6 - 118.3') 18.0"				
						(98.6 - 118.3') 18.0" Borehole		(72.0 - 150.4') 209 bags (7%)		
110				P	(72.0 - 150.4') Cemex 30 mesh		(72.0 - 150.4') 194.8	Note: Lapis Lustre Sand, swabbed filter pack for approximately 2.5		
<u> </u>				640	Cemex 30 mesh (30x70) sand	H	bags	hours prior to installing transition sand		
111				Pala						
		Topock -								
112		Alluvium Deposits	GM	Polo						
H		Doposits								
113						Fixed and the second se				
 114										
114						First I				
115						Hiil				
116										
				[g]						
117										
						H: A				
118										
-		Topock -	SM			H: A				
119		Deposits				(118.3 - 139.2') 18.0" Borehole				
-						10.0 Bulefiole				
120_	:	000 - 11-:5	-1 0 - 11 0	<u> [:: :: : </u>	# O # . f			acc lovel CW = groundwater		

ARCADIS Design & Consultancy for natural and built assets					Well Const	ruction Log	Sheet: 7 of 8			
Date S		06/26/2019			_Surface Elevation:	500.0 ft amsl	Well ID: IR	Z-23		
	-	06/30/2019			_Shallow Well Elevation:	•				
Drilling		<u>Cascade</u>			_Deep Well Elevation:	N/A	Client: PG&E			
_		Dual Rotary			_Northing (NAD83):	2102535.3		GW Remedy Phase 1		
Driller I		Jon Martinez	AL Cov		_Easting (NAD83):	7615825.8	Location: <u>PG&E</u>	Topock, Needles, California		
Drilling		E. Martinez / \ Athony Mack	-	iors	_Borehole Diameter: _Water Level Start:	17.5-24 inches 46.85 ft bgs	Project Number: <u>RC000753.0051</u>			
Loggeı Editor:		Sean McGrar			vvaler Level Start. Development End Date:	_	Project Number	. KC000755.0051		
Total D		150.4 ft bgs	ic		Bevelopment End Bate. Well Completion:					
1										
Depth (ft)	Groundwate Sample ID		USCS	USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed		
 121 		Topock - Alluvium Deposits	SM		(92.1 - 142.0') 10" — 10-slot 316 SS Wire Wrap Screen					
	IRZ-23-VAS- 122-127 (2000 ppb) 12/2/2018 09:24	Topock - Alluvium Deposits	ML							
		Topock - Alluvium Deposits	SM		(72.0 - 150.4') Cemex 30 mesh (30x70) sand	(118.3 - 139.2') 18.0" Borehole	(72.0 - 150.4') 194.8 bags	(72.0 - 150.4') 209 bags (7%) Note: Lapis Lustre Sand, swabbed filter pack for approximately 2.5 hours prior to installing transition sand		
134 135 136		Topock - Alluvium Deposits	ML							
		Topock -	GM	HH						
137		Alluvium Deposits		dyg		HXX				
138 139		Topock - Alluvium Deposits	GM							
\vdash \dashv			CN4			(139.2 - 147.0') 17.5" Borehole				
140_			SM			J [::::]	1	oog lovel CW = groundwater		



ARCADIS Design & Consultancy for natural and built assets				Drilling Log			Sheet: 1 of 8			
Date Started:	06/17/201	19	S	urface Elevation:	500.01	ft amsl	Boring No.: IRZ-23			
Date Completed:	06/25/201	19		orthing (NAD83):	21025				<u> </u>	
Drilling Co.:	Cascade			asting (NAD83):	<u>76158</u> 2		Client:	PG&E		
Drilling Method:	Dual Rota	-		otal Depth:	<u>150.4</u> 1	-	Project: Final GW Remedy Phase 1			
Drill Rig Type:	Foremost			onductor Casing Diameter:			Location:	PG&E Topoc	k, Needles, California	
Driller Name:	Jon Marti			rill Casing Diameter:	18 inch					
Drilling Asst:			<u>Saylors</u> D		17 Tric		Project N	umber: RC00	0753.0051	
Tool-Pusher:	Arnold La			epth to First Water: onverted to Well:	49.49	<u> </u>	-			
Rig Geologist:	E. Redne	I / A. IVI	ack C		× Yes	S No			T	
Depth Drilling Ru		USCS	Casing	Description		D. 181	. N. d		D.1111 - Electric	
(ft) and Averag	le Codo	Class	Diameter	(See Pilot boring log for full geologic descriptions)		Drilling	y Notes		Drilling Fluid	
			1	(0.0 - 2.0') Topock - Fluvial	(0.0	- 21.5') Loss of drilling fl	uid.		(0.0 - 21.5') 24.4 gallons	
			1	Deposits; Poorly graded sand with silt and gravel (SP-SM); brown		2 7 2000 or ag			of water used; 0 gallons of water recovered; 24.4	
_ 1 _	SP-SM		1	(7.5YR 5/3)					gallons of water lost	
			1							
_ 2	-		1	(2.0 - 4.5') Topock - Fluvial	\dashv					
		60%		Deposits; Silty gravel with sand						
_ 3		190	-	(GM); brown (7.5YR 5/3)						
	GM		9							
_ 4		Polo								
		12P.								
_ 5	SW-SM		>	(4.5 - 5.0') Topock - Fluvial Deposits: Well graded sand with						
				Deposits; Well graded sand with silt (SW-SM); very pale brown / grayish orange (10YR 7/4)		Observed trace amoun Lustre Sand and some				
[_ 6 _]	ll ou	200		(5.0 - 7.0') Topock - Fluvial	MĖS	H (30/50) Lapis Lustre S				
	GM	19 P.		Deposits; Silty gravel with sand (GM); brown (7.5YR 5/3)	FIIO	o Log).				
		SYK		(-1.1), -1.1 (1.10.1.1.1)						
']	(7.0 - 17.0') Topock - Fluvial	7					
				Deposits; Poorly graded sand with silt and gravel (SP-SM)	'					
- 8 -]							
<u> </u>			}							
- 9 -			}	A 4()						
 			(0.0 - 21.5')							
10 (0.0 - 21.5) 4.24 mins/ft			24.0" Steel Casing		(10.0)') Observed trace amou	ints of Cemex	(#3 MESH (8x10)		
			Casing		Lapi	s Lustre Sand in drill cut	tings (see Ph	oto Log).		
11			}							
			1	*						
12	SP-SM		1							
			1							
13										
			}							
_14						45.00 B				
			1		(14.0) - 15.0') Rough drilling.				
15			1							
					(15.0 amo) - 17.0') Normal drilling, unts of Cemex #3 MESH	observed tra	ce to little Lustre Sand in		
16			}			cuttings (See Photo Log)				
			1							
17]							
⊢ '' ⊣			1	(17.0 - 19.5') Topock - Fluvial	(17.0) - 18.0') Rough drilling.				
10			1	Deposits; Silty sand (SM); reddish brown (5YR 5/3) with brownish	'					
18	SM		1	yellow / dark yellowish orange (10YR 6/6)						
├ <u>.</u>			}							
19			}							
<u> </u>	SM		1	(19.5 - 23.0') Topock - Fluvial	+					
L_20_J Abbreviations: U\$		<u>ı∷i∷i∴.</u> fied Soil	Classificati	ion System, ft = feet, bgs = l	below a	round surface ams	sl = above i	mean sea level	. GW = aroundwater	

ARC4	DIS for buil	sign & Consultan natural and It assets	су	Drilling Log					Sheet:	2 of 8	
Date Started:	06/17/201			urface Elevation:	500.0 ft	am	sl	Borir	ng No.: IRZ	Z-23	
Date Completed:		19		orthing (NAD83):	210253			_		<u></u>	
Drilling Co.:	Cascade			asting (NAD83):	761582			_ Client:	PG&E		
Drilling Method:	Dual Rota	•		otal Depth:		_	3	•	medy Phase 1		
Drill Rig Type:	Foremost			onductor Casing Diameter:				_ Location	: PG&E Topod	k, Needles, California	
Driller Name: Drilling Asst:	Jon Martin		Di <u>Saylors</u> Di	rill Casing Diameter:	18 inche			- Droiget N	Project Number: <u>RC000753.0051</u>		
Tool-Pusher:	Arnold La		•	epth to First Water:	49.49 ft			_ Project i	iumber. <u>KC00</u>	0733.0031	
Rig Geologist:	E. Redne			onverted to Well:	× Yes		No	_			
				Description	100] 110				
Depth (ft) Drilling Ri and Avera Penetration	ge Codo	USCS Class	Casing Diameter	(See Pilot boring log for full geologic descriptions)			Drillin	g Notes		Drilling Fluid	
	ML GW-GM		(21.5 - 39.2) 18.0" Steel Casing	(23.0 - 23.5') Topock - Fluvial Deposits; Silt with sand (ML); gra (10YR 5/1) (23.5 - 27.0') Topock - Fluvial Deposits; Well graded gravel wit silt and sand (GW-GM); light brown (7.5YR 6/3) (27.0 - 30.5') Topock - Fluvial Deposits; Silty gravel (GM); brown (10YR 5/3) (30.5 - 31.5') Topock - Fluvial Deposits; Silty gravel (GM); brown (10YR 5/3) (31.5 - 32.0') Topock - Fluvial Deposits; Silt with sand (ML); gra (10YR 5/1) (32.0 - 35.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML); brown (7.5YR 5/3)	(21.5 d) (21.5 d) (25.0) (25.0) (26.0 d) (28.0 d) (28.0 d) (28.1 d) (28.0 d) (35.0)	- 39.2 - 39.2 - 38.0 - 38.0	served trace amoure Sand in drill cu 2') Loss of drilling served trace amoure Sand in drill cu 0') Rough drilling. 0') Slow drilling, e ift. bgs.	fluid. Introduction of Ceme titings (See Planta of Ceme variety) Introduction of Ceme variety (See Planta of Ceme variety)	x #3 MESH (8x10) hoto Log). ery hard boulder x #3 MESH (8x10)	(21.5 - 39.2') 30.5 gallons of water used; 0 gallons of water recovered; 30.5 gallons of water lost	
36 37 38 39	ML			(ML); brown (7.5YR 5/3) (37.0 - 47.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML)							
(39.2 - 59.0 2.02 mins/			(39.2 - 59.0') 18.0" Steel		(39.2	- 59.0	0') Loss of drilling	fluid.		(39.2 - 59.0') 6.1 gallons of water used; 0 gallons of	
40		iied Soil	Classificati	on System, ft = feet, bgs =	below are		d surface am	sl = above	mean sea leve		
		5011	J.5.55IOUL		2.2 910		, all,	42010		., z groundwator	

9/	ARCA	DIS	5 Des for i	ign & Consult natural and t assets	ancy	Drillin	g Log				She	et: :	3 of 8
	Started:		7/201			Surface Elevation			0.0 ft amsl	Borin	g No.:	IRZ	'-23
	Completed:			9		Northing (NAD83)	•		02535.3				
Drilling		Case				Easting (NAD83):			15825.8	Client:	PG&E		
_	g Method:		Rota	-		Total Depth:	.		0.4 ft bgs				nedy Phase 1
	ig Type:			DR-24		Conductor Casing	•			Location:	PG&E I	opoci	k, Needles, California
	Name:		<u>Martir</u>			Drill Casing Diame	eter:		inches	Drainat N		2000	752 0051
_	g Asst: Pusher:		old La		<u>Saylors</u>	Depth to First Wa	tor:		Tricone .49 ft bgs	Projectiv	umber. <u>r</u>	<u> </u>	0753.0051
	eologist:			· / A. M		Converted to Wel		×					
9	T T				I				10310				
Depth (ft)	Drilling Ru and Averag Penetration F	ge I'	JSCS Code	USCS Class	Casing Diamete		ring log for		Drilling	Notes			Drilling Fluid
41_ 42_ 													water recovered; 6.1 gallons of water lost
44			ML					*	(45.0') Observed trace amou Lapis Lustre Sand in drill cut	nts of Cemex tings (See Ph	#3 MESH oto Log).	(8x10)	
- 48 - 48 	(39.2 - 59.0 2.02 mins/fi		SM		(39.2 - 59. 18.0" Ste		d (SM)	¥					
50	2.02 111110311		SM		Casing	Deposits; Silty sand (SM)	d with gravel						
53		l				Deposits; Silt with	sand (ML)						
56			ML						(55.0') Observed trace amou Lapis Lustre Sand in drill cut	nts of Cemex tings (See Ph	#3 MESH loto Log).	(8x10)	
58													
60	(59.0 - 79.0 1.65 mins/fi		SM		(59.0 - 79. 18.0" Ster Casing	el (59.5 - 62.0') Topo			(59.0 - 79.0') Loss of drilling				(59.0 - 79.0') 6.1 gallons of water used; 0 gallons of water recovered; 6.1
<u> </u>						•			ow ground surface, ams	l = above r	mean sea	a level	, GW = groundwater
Rema	rks: blue w	ater t	able s	ymbol	represent	s depth to water m	neasured du	ırinç	g the first VAS interval				

AF	RCAI	DIS	Design & C for natural built asset	Consultar Land es	псу	Drilling Log					Sheet:	4 of 8
Date Start Date Com		06/17/2				urface Elevation:		00.0 ft amsl 102535.3	Boring No.: IRZ-23			
	-					orthing (NAD83):			Client		PG&E	
Drilling Co		Cascad				asting (NAD83):		615825.8				mady Dhana 1
Drilling Me		Dual Ro Foremo	•	2.4		otal Depth: onductor Casing Diameter:		50.4 ft bgs	Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles, California			
Drill Rig Ty Driller Nan		Jon Ma				rill Casing Diameter:		8 inches	Location: I Gat Topock, Needles, California			ck, Needles, Calliornia
Drilling As					Saylors D	_		7 Tricone	Droio	ot NI	umber: RC00	0.752.0051
Tool-Push		Arnold			-				umber. <u>RC00</u>	0733.0031		
Rig Geolo		E. Redi				epth to First Water: onverted to Well:		9.49 ft bgs				
Ng Geolo	yısı.	L. Neul	ICI / F	1. IVI	ack C			Yes No				T
Depth C	Orilling Run	usc	25 119	scs	Casing	Description						
/fi\ al	nd Average netration Ra	9 000		lass	Diameter	(See Pilot boring log for full geologic descriptions)		Drilling	ng Notes			Drilling Fluid
						Deposits; Silty sand with gravel (SM); brown (7.5YR 5/3)						gallons of water lost
61						(SW), DIOWIT (7.51 K 5/5)						
61		SM	1									
					}							
62				#	1	(62.0 - 69.5') Topock - Alluvium						
					-	Deposits; Silty sand with gravel (SM); brown (7.5YR 5/3)						
63					1	(OM), Brown (1.0110 Gro)						
					1							
64												
					}							
65					1			(CE 01) Ob 1:M1	.tt O		#2 MECH (0-40)	
					1			(65.0') Observed little amoun Lapis Lustre Sand in drill cutt				
66		SM	1		1							
					.]		4					
67					}		ľ					
					}							
68					1							
60												
69	9.0 - 79.0)] (59.0 - 79.0')							
「	65 mins/ft				18.0" Steel Casing	(69.5 - 72.0') Topock - Alluvium						
70					. J Gasg	Deposits; Silty sand with gravel (SM); brown (7.5YR 5/3)						
		SM	, 🔛									
71			' :		1							
<u> </u>						·						
72			_ <u> </u>	1	1	(72.0 - 82.0') Topock - Alluvium	-	(72.0 - 73.0') Drill rods chatte	ering rou	ıah d	rilling potential	-
<u> </u>						Deposits; Silt with sand (ML); reddish brown (5YR 5/3)		hard rock	,,,,g,,,e,	-g u	g poterida	
73						readish brown (5YR 5/3)						
74												
75												
								(75.0') Observed little amoun Lapis Lustre Sand in drill cutt	its of Cei	mex a	#3 MESH (8x10)	
76								Lapio Labiio Gaira III aliii Gai	90 (00		2097.	
<u> </u>		ML	.									
₇₇												
77												
t <u> </u>												
78												
 												
79					(79.0 - 94.0')	-		(79.0 - 98.6') Drilled with wat	er.			(79.0 - 98.6') 24.4 gallons
	9.0 - 94.0) 53 mins/ft				18.0" Steel			, , , , , , , , , , , , , , , , , , , ,				of water used; 157 gallons of water recovered; 132.6
80		200 - 11	lnifi!	C-:	Classificati	on Custom ft = fact h == =	<u> </u>	low ground confess	J		maan ass ls:	
Municipal (uns: US	00 = U	nined	30II	Ciassificati	on System, ft = feet, bgs =	υel	iow ground surface, ams	ı – abo	ve r	nean sea leve	i, Gvv – groundwater

9/	ARCA	DIS	Desi for n built	ign & Consult natural and t assets	tancy	Drilling Log						Sheet:	5 of 8
	Started:	06/17				Surface Elevation:		0.0 ft			Borir	ıg No.: <u>I</u>	RZ-23
	Completed:			9		Northing (NAD83):		10253					
Drilling	g Co.: g Method:	Casc:		m /		Easting (NAD83): Total Depth:		51582 50.4 ft			Client: Project:	PG&E	Remedy Phase 1
1	ig Type:			DR-24		างเลเ Deptri. Conductor Casing Diameter:			•		•		ock, Needles, California
	Name:	Jon N				Drill Casing Diameter:		3 inche			Location	· · · · · · · · · · · · · · · · · · ·	rook, recedes, Gamorna
	g Asst:				Saylors	_		7 Tricc			Project N	lumber: RC	000753.0051
Tool-F	Pusher:	Arnol	d Laı	mon		Depth to First Water:	49	9.49 ft	bgs				
Rig G	eologist:	E. Re	dner	/ A. N	lack	Converted to Well:	×	Yes	No				
Danath	Drilling Ru	n	000	LICOS	0	Description							
Depth (ft)	and Average Penetration F	le l C	SCS ode	USCS Class		(See Pilot boring log for full geologic descriptions)				Drilling	Notes		Drilling Fluid
						· · · · · · · · · · · · · · · · · · ·							gallons of water gained
81	-												
01	-		ML										
82													
						(82.0 - 84.5') Topock - Alluvium Deposits; Silty sand (SM); brown							
83					퇇	(7.5YR 4/4)							
-		:	SM										
84	-				실								
20 15:43	-				극	(84.5 - 87.0') Topock - Alluvium							
85	-					Deposits; Sandy silt (ML); reddis brown (5YR 5/4)	۱	(85.0')) Observed li	ttle amoun	ts of Cemex	#3 MESH (8x1)	0)
	_		ML			Sistem (6 111 6) 1			Lustre Sand				
일 86	-				. :								
발 실87	(79.0 - 94.0)				. (79.0 - 94.0								
	3.53 mins/ft				: 18.0" Stee Casing	(87.0 - 94.5') Topock - Alluvium Deposits; Silty sand (SM); brown		Ĭ					
X88						(7.5YR 4/4)							
10P00													
89	-							(00.0	00.01\ D	.L. J.::::			
OR PLC	-							(89.0	- 90.0') Roug	gn arilling.			
90	-												
A DATA			SM		A .								
[91	-	III '	JIVI		젊								
02.19	-												
92	-												
93					설								
SPOTO													
94								(2.1.2					
- PRAFT	-				쐮	(04.5. 07.01) T-11-11. All 11 in in-11-		(94.0	- 96.0') Slow	drilling.			
<u>95_</u>	-					(94.5 - 97.0') Topock - Alluvium Deposits; Silty sand (SM); reddis	h						
SE TO	-		214			brown (5YR 5/4)							
96	(94.0 - 98.6)		SM		(94.0 - 98.0 18.0" Stee	5')							
- OCCUME	4.18 mins/ft				Casing	51 							
<u>-</u> 97_	-				ä	(97.0 - 102.0') Topock - Alluvium							
SMCGF	-					Deposits; Silty sand (SM); dark yellowish brown (10YR 4/4)							
98	1		214		3								
ਰੋ <u> </u>			SM		· (08 6 110	3'\		(98.6	- 118.3') Drill	led with wa	iter.		(98.6 - 118.3') 2403.4 gallons of water used;
DAD -	(98.6 - 118.3 4.41 mins/ft				18.0" Stee								4200 gallons of water recovered; 1796.6 gallons
100					Casing								of water gained
						ation System, ft = feet, bgs =					I = above	mean sea le	evel, GW = groundwater
≝ <mark>kema</mark>	rks: Diue W	aler ta	nie s	yrnbol	represents	depth to water measured d	urin	ig the	IIISL VAS I	nterval			

9/	ARCA	DIS	for n built	gn & Consultan atural and assets	су	Drilling Log				Shee	et: 6	6 of 8
Date S	Started:	06/17	/201	9	S	urface Elevation:	<u>50</u>	00.0 ft amsl	Borin	g No.:	IRZ	'-23
	Completed:			9		orthing (NAD83):	<u>2</u> 1	102535.3				
Drilling		Casca				asting (NAD83):		615825.8	Client:	PG&E		
_	Method:	<u>Dual I</u>		•		otal Depth:		50.4 ft bgs	Project:			nedy Phase 1
	ig Type: Name:	Jon M		DR-24		onductor Casing Diameter: rill Casing Diameter:		inches :	Location:	PG&E I	ороск	k, Needles, California
	g Asst:				Saylors D			7 Tricone	Project N	umber R	SCUUC	753.0051
_	usher:	Arnole			-	epth to First Water:		9.49 ft bgs	1 10,00011	umbor. <u>1-</u>	10000	77 00.000 1
	eologist:			/ A. Ma		onverted to Well:		Yes No				
						Description	Ŧ					
Depth (ft)	Drilling Ru and Averag Penetration F	je 0,	SCS ode	USCS Class	Casing Diameter	(See Pilot boring log for full geologic descriptions)		Drilling	Notes			Drilling Fluid
101		\$	SM					(101.0') Rough drilling.				
102			3M			(102.0 - 103.0') Topock - Alluviun Deposits; Silty gravel (GM); brow (7.5YR 4/4)	n					
103	-			00		(103.0 - 107.0') Topock - Alluviun Deposits; Silty sand with gravel			V			
104						(SM); dark yellowish brown (10YF 4/4)	3					
105			SM					(105.0') Observed trace amou (8x10) Lapis Lustre Sand in o				
106	1							(0x10) Lapis Lustre Sand in C	ariii cuttirigs (See Filoto L	-og).	
107	-	н		3 4 1 3		(107.0 - 117.0') Topock - Alluviun	1					
						Deposits; Silty gravel (GM); brow (10YR 4/3)	à					
109_	(98.6 - 118.3 4.41 mins/ft				(98.6 - 118.3' 18.0" Steel Casing							
110												
111												
112			GM -									
113												
114												
115								(115.0') Observed trace amou (8x10) Lapis Lustre Sand in c	drill cuttings (ex #3 MESH See Photo L	_og).	
116								(115.1 - 118.3') Slow drilling/l				
117						(117.0 - 122.0') Topock - Alluviun Deposits; Silty sand with gravel	1					
118	-					(SM); brown (7.5YR 4/4)						
	(118.3 - 139.: 4.30 mins/ff	2)	SM		(118.3 - 139.2') 18.0" Steel Casing			(118.3 - 147.0') Drilled with w	ater.			(118.3 - 147.0') 608.48 gallons of water used; 6040 gallons of water recovered; 5431.52 gallons of water gained
120_ Abbre	uiations: Us	SCS =	Unifi	ed Soil	L Classificati	ion System, ft = feet, bgs =	 bel	 ow ground surface. ams	l = above i	mean sea	level	GW = groundwater
2						depth to water measured du		<u> </u>	3,23,31			J. 2 3.14 (140)

9/	ARCA	DIS	for r built	ign & Consultan natural and t assets	су	Drilling Log					She	et: 7	of 8
	Started:	06/17				urface Elevation:		00.0 ft		Borin	g No.:	IRZ	-23
	Completed:			9		orthing (NAD83):		10253		_			
Drilling		Casca				asting (NAD83):		61582		_ Client:	PG&E	N D = ==	and Dhana 4
_	g Method: ig Type:	<u>Dual F</u>		ry DR-24		otal Depth: onductor Casing Diameter:		<u>50.4 ft</u> 4 inch <i>e</i>	-	_ Project:			nedy Phase 1 x, Needles, California
	Name:	Jon M				rill Casing Diameter:		8 inche		_ Location.	1 OUL 1	ороск	, recaics, Camorria
Drilling				z/W. S		rill Bit:		7 Trico		_ _ Project N	umber: <u>F</u>	RC000	753.0051
	Pusher:	Arnolo				epth to First Water:	4	9.49 ft	bgs	_			
Rig G	eologist:	E. Re	dner	/ A. Ma	ack C	onverted to Well:	×	Yes	☐ No				
Depth	Drilling Ru		SCS	USCS	Casing	Description							
(ft)	and Average Penetration F	ge C	ode	Class	Diameter	(See Pilot boring log for full geologic descriptions)			Drillir 	ng Notes			Drilling Fluid
121	-	S	SM										
122	_					(122.0 - 127.0') Topock - Alluviun Deposits; Sandy silt with gravel	 1						
123		ш				(ML); yellowish red (5YR 4/6)							
124	_	ш											
125		N	ИL										
									0') Observed trace to I I (8x10) Lapis Lustre S				
126	-	ш						Log).					
127	_												
		ш				(127.0 - 133.0') Topock - Alluviun Deposits; Silty sand (SM); (5YR 4/8)	ו						
128	-	ш				70-							
129	- - (118.3 - 139.:	2)			(118.3 -								
130	4.30 mins/ft	: []	SM		139.2') 18.0" Steel Casing								
131	-	ш											
132		ш				•							
		ш											
133	-	-				(133.0 - 136.5') Topock - Alluviun	1						
134]					Deposits; Sandy silt (ML); reddish brown (5YR 4/3)	1						
: 	1	Ш.	_										
135	1		ИL					(135.0	0') Observed trace am	ounts of Ceme	ex #3 MESH	ı	
	+) Lapis Lustre Sand in				
136	†							(136.0	0 - 139.0') Rough drilli	ng.			
127	-		SM	474		(136.5 - 137.0') Topock - Alluviun	ı						
137	1					Deposits; Silty gravel (GM); dark gray (7.5YR 4/1)							
138]					(137.0 - 139.5') Topock - Alluviun Deposits; Silty gravel with sand (GM); reddish brown / moderate	ו ו						
]		ΘM			(GM); reddish brown / moderate brown (5YR 4/4)							
139	1			PJOS									
-	(139.2 - 147.0	0)				(139.5 - 142.0') Topock -							
140 Abbre	2.57 mins/ft		SM Llnif	ied Soil	Classificati	on System, ft = feet, bgs =	he	low ar	ound surface am	isl = ahove i	mean sea	ו ופעפו	GW = aroundwater
Long	viauoris. U	- 200	UIII	icu OUII	Jiassiillali	on Oysichi, it - ieet, bys -	26	JOW GIL	Juliu Juliace, alli		ilicali SC	a icvei,	OVV - groundwater

9/	ARCA	DIS	S Desi	ign & Consultant natural and t assets	cy	Drilling Log				She	et: 8	3 of	8
	Started:		7/201			urface Elevation:		00.0 ft amsl	Bor	ing No.:	IRZ	-23	
	•		<u>:5/201</u>	9		orthing (NAD83):		02535.3					
Drilling			cade_			asting (NAD83):		315825.8	Client:	PG&E			
_	Method:		l Rota	ry DR-24		otal Depth: onductor Casing Diameter:		50.4 ft bgs	Project				nase 1 dles, California
	ig Type: Name:		<u>Martir</u>			rill Casing Diameter:		inches Binches	Locatio	II. <u>FG&E I</u>	Opocr	<u>, iveec</u>	iles, California
Drilling					Saylors Di	-		' Tricone	Project	Number: <u>I</u>	RC000	753 0	051
	usher:		old La		-	epth to First Water:		0.49 ft bgs	. 1 10,000	140111501. <u>1</u>	10000	77 00.0	001
	eologist:			r / A. Ma		onverted to Well:		Yes No	-				
						Description	Ī						
Depth (ft)	Drilling Ru and Averag	је '	USCS Code	USCS Class	Casing Diameter	(See Pilot boring log for		Drilling	y Notes				Orilling Fluid
(11)	Penetration F	Rate	Code	Class	Diameter	full geologic descriptions)							
	400.0 4174		SM		(139.2 -	Weathered Bedrock - conglomerate; Silty sand (SM); yellowish red (5YR 4/6) (142.0 - 150.4') Topock - Competent Bedrock - conglomerate; yellowish red (5YR 4/6); No Recovery overdrilled with DR rig for well installation	R	(142.0') Observed trace amo cuttings (See Photo Log).	ounts of Pla	stering Sand	in drill		
144	(139.2 - 147.0 2.57 mins/ft				147.0') 17.5" Open Hole								
- 15:43		н											
145													
146													
							7						
147								(147.0 - 150.4') Drilled with v	vater.				
148													
	(147.0 - 150.4 20.59 mins/f				(147.0 - 150.4') 17.5" Open Hole								
		н			орон г.о.о								
150		н											
= - 5151						End of Boring at 150.4 'bgs.							
5													
152													
	-												
153													
) 	-												
154													
5155													
- - -													
156	-												
	-												
157													
150													
158	1												
ਰੀ– - ਤ੍ਰਿ159													
5139_	1												
# 160	1												
Abbre						on System, ft = feet, bgs =		-	sl = abov	e mean sea	a level,	GW =	groundwater
Rema	rks: blue w	ater ta	able s	ymbol re	epresents o	depth to water measured du	ırin	g the first VAS interval	-				· · · · · · · · · · · · · · · · · · ·

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Lo	g		Sh	eet: 1 of	8
Date S	tarted	: <u>11/28/2</u>	2018		Surface	Eleva	tion:	500.0 ft amsl	Borin	a No.:	: <u>IRZ-23 P</u>	ilot
		ted: <u>12/03/2</u>	2018		Northing	g (NAE	083):	2102535.3	_			
Drilling	Co.:	<u>Cascac</u>	de		Easting	(NAD	83):	7615825.8	_ Client:	PG&E		
Drilling	Meth		<u> Drilling</u>			-		147 ft bgs	-		<u>Froundwater Re</u>	emedy Phase
Drill Ri	д Туре	e: <u>Proson</u>	ic Truck Mou	unt	Borehol	e Diar	neter:	6-12 inches	_ Location:	1		
Driller					-			: <u>47 ft bgs</u>	_		<u>Topock, Needl</u>	
Drilling	Asst:		ninguez/C. A		-	-		4 inch x 10 ft Core Barrel	_ Project N	lumber:	RC000753.00	51
Logge		Connoi			Samplin	-		Continuous	_			
Editor:		<u>Sean N</u>	<u>//cGrane</u>		Convert	ed to	Well:	☐ Yes ⊠ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
 _ 1 _ 				Topock - Fluvial Deposits	SP-SM		gravel grained	2.0') Topock - Fluvial Deposits; Poorly g (SP-SM); brown (7.5YR 5/3); very fine ; d, angular to subround; little granule to v gular to round; little silt; trace cobbles, su	grained to medi ery large pebbl	um es,		(0.0 - 147.0') No water used
2 3 4	84			Topock - Fluvial Deposits	GM		brown some v silt; tra	4.5') Topock - Fluvial Deposits; Silty grav (7.5YR 5/3); granules to large pebbles, very fine to medium grained sand, angul ce cobbles, angular to subangular; dry; sh silt is through out the core	angular to subrear to subrear to subround;	ound;		
				Topock -	SW-SM			5.0') Topock - Fluvial Deposits; Well gra				
_ 5 _				Fluvial Deposits		M		iM); very pale brow <mark>n / grayi</mark> sh or <mark>an</mark> ge(10 d to coarse grained, angular to round; lit		ine		
				Topock -			(5.0 - 7	7.0') Topock - Fluvial Deposits; Silty grav (7.5YR 5/3); granules to large pebbles,	vel with sand (C	iM);		
6				Fluvial Deposits	GM	36	some \	very fine to medium grained sand, angul				
				Ворозна			cobble	s, ang <mark>ular to subangula</mark> r; dry				
7 8 9 10 11 12 13 14 15 16 16	120			Topock - Fluvial Deposits	SP-SM		and gra to subr	17.0') Topock - Fluvial Deposits; Poorly avel (SP-SM); very fine grained to medicound; some granule to very large pebble, trace cobbles, angular to subround; di	um grained, sub es, angular to ro	angular		
17 18 19 20	60			Topock - Fluvial Deposits	SM		brown 6/6); vo trace b (18') vo boulde	19.5') Topock - Fluvial Deposits; Silty s (5YR 5/3) with brownish yellow / dark ye ery fine grained to fine grained, angular oulders; dry ery dark grayish brown (10YR 3/2); 1.5 r with a frothy texture, basalt 23.0') Topock - Fluvial Deposits; Silty s	ellowish orange to subround; litt ft solid core fror and with gravel	doyR le silt; n a (SM);		

Date Star Date Con Drilling Con		11/28/2	2018		<u> </u>						
Orilling C	npleted:				Surface	e Eleva	tion: <u>500.0 ft amsl</u>	- Rorin	a No .	<u>IRZ-23 P</u>	ilot
-					Northin		·	_		<u> </u>	<u></u>
Arillina NA		Cascac			Easting	•	•		PG&E		
	1ethod:	Sonic D	•		Total D		<u>147 ft bgs</u>	-		<u>oundwater R</u>	<u>emedy Pha</u>
Orill Rig T	• •		<u>ic Truck Mou</u>		Boreho						
oriller Na			/asquez		=		Water: 47 ft bgs			opock, Need	
ogger:	SSI:	N. Dom	ninguez/C. A		-	-		_ Project N	umber: <u>I</u>	<u> </u>	51
.ogger: Editor:			//////////////////////////////////////		Samplii Conver	-		_			
Depth (ft) ecovery		Sieve mple ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description			Drilling Notes	Drilling Flui
	2			9 P	150		brown (10YR 5/3); very fine grained to coarse	arained angular	- to	Ι	(0.0 - 147.0')
_216	60			Topock - Fluvial Deposits	SM		subround; some granule to very large pebbles, some silt; trace cobbles, angular to subangular	angular to subre			water used
_23				Topock -			(23.0 - 23.5') Topock - Fluvial Deposits; Silt wi	th cond (MII); gr	21/		
_24				Fluvial Deposits	ML		(10YR 5/1); no plasticity; little very fine to coar angular to subround; trace granule to medium subround; dry; soft	se gr <mark>ained</mark> sand, pebbles, angular	rto		
	50			Topock - Fluvial	GW-GM		(23.5 - 27.0') Topock - Fluvial Deposits; Well of and sand (GW-GM); light brown (7.5YR 6/3); pebbles; some very fine to coarse grained san little silt; dry	granules to very	large		
_26				Deposits			6				
_27							(27.0 - 30.5') Topock - Fluvial Deposits; Silty g (10YR 5/3); granules to very large pebbles, an	gular to subroun	id; and		
_28				Topock - Fluvial	GM		silt; little fine to medium grained sand, angular cobbles, angular; dry; large pebbles and cobble metadiorite, cobbles were pulverized into a silty	es composed of			
_29 1030	08			Deposits							
_31				Topock - Fluvial	SM	• Q C	(30.5 - 31.5') Topock - Fluvial Deposits; Silty s light yellowish brown (10YR 6/4); very fine gra	ned to coarse gr	rained,		
32				Deposits Topock - Fluvial Deposits	ML		subangular to subround; and granule to large p subround; some silt; dry (31.5 - 32.0') Topock - Fluvial Deposits; Silt wi (10YR 5/1); no plasticity; little very fine to coar	th sand (ML); grase grained sand,	ay		
_33				Topock - Alluvium Deposits	ML		angular to subround; trace granule to medium subround; dry; soft; 4.5 inch boulder of basalt. (32.0 - 35.0') Topock - Alluvium Deposits; Sar brown (7.5YR 5/3); no plasticity; some very fin sand, angular to subround; little granule to larg subangular; dry	at end of core dy silt with grave e to coarse grair	el (ML); ned		
_35							(05.0. 07.0) Transle Albuma Dansite Cor				
_36 ₁₂	20			Topock - Alluvium Deposits	ML		(35.0 - 37.0') Topock - Alluvium Deposits; Gra brown (7.5YR 5/3); no plasticity; some granule angular to subangular; little very fine to coarse to subangular; dry	to very large pe	bbles,		
_37				Topock - Alluvium	ML		(37.0 - 47.0') Topock - Alluvium Deposits; San no plasticity; some very fine to coarse grained subangular; little small to medium pebbles, and soft	sand, angular to)		
_39				Deposits							
40 L Abbrevia	tions: U	SCS = I	Jnified Soil (L Classificati	on Svst	<u> </u>	l = feet, bgs = below ground surface,	amsl = abo	ve mear	ı sea level. G	iW =
							he laboratory reporting limit, blue w				

9/	4R (CADIS	Design & Consultancy for natural and built assets		Bo	ring	Log	S	heet: 3 of	8
Date S					Surface			Boring No	.: <u>IRZ-23 Pi</u>	ilot
1	-	eted: <u>12/03/</u>			Northin		•	_		
Drilling	-	<u>Casca</u>			Easting	•	•	_ Client: PG&E		
Drilling	-		Drilling		Total D	-	147 ft bgs	•	Groundwater Re	emedy Phase
Drill R			nic Truck Mo		Boreho			_ Location: 1	Tanasir Nasali	aa Califarnia
Driller Drilling			Vasquez ninguez/C. A		Samplin		Water: <u>47 ft bgs</u> nod: <u>4 inch x 10 ft Core Barrel</u>		Topock, Needl	
Logge	•	Conno	-	iiverez	Samplin	-			. 10000733.000	J I
Editor			McGrane		Conver	-		_		
	1				T					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
41 42	120									(0.0 - 147.0') No water used
43				Topock - Alluvium	ML			9)		
44				Deposits	IVIL				(44.047.01)	
									(44.0 - 47.0') Moist Sediments	
45										
46										
47	108	IRZ-23-SS-					(47.0 - 49.5') Topock - Alluvium Deposits; Silty	sand (SM); fine	(47.0')	
		45-50 12/4/2018					grained to very coarse grained, subangular to s little granule to large pebbles, angular to subang	subround; some silt;	Approximate depth of water	
48		09:00		Topock - Alluvium	SM		wet state of the s	g, p	table	
	-			Deposits	"					
49					•.					
 50	-						(49.5 - 52.0') Topock - Alluvium Deposits; Silty very fine grained to coarse grained, angular to	sand with gravel (SM);	- - 	
30				Tanada			little granule to very large pebbles, angular to si			
 51				Topock - Alluvium	SM		cobbles, angular to subangular; wet			
				Deposits						
52										
		IRZ-23-SS- 50-55					(52.0 - 59.5') Topock - Alluvium Deposits; Silt v plasticity; little fine to coarse grained sand, ang		(52.0 - 57.0') Tight formation	
53		12/4/2018 09:05					medium to very large pebble, angular to subano	gular; wet		
54										
-										
55										
-				Topock - Alluvium	ML					
56	120			Deposits	IVIL					
57		IRZ-23-SS-								
F0	-	55-60 12/4/2018 09:15	JB7 00 :							
58		09.10	IRZ-23-VAS- 57-62							
59	1		(5.3 ppb) 11/30/2018							
			12:46							
60					SM		(59.5 - 62.0') Topock - Alluvium Deposits; Silty	sand with gravel (SM);		
				a		•				

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	J Log	S	heet: 4 of	8
Date S					Surface			Boring No	.: <u>IRZ-23 Pi</u>	lot
		eted: <u>12/03/</u>			Northin		•			
Drilling		<u>Casca</u>			Easting	•	•	Client: PG&E		
Drilling					Total D	•	147 ft bgs	•	Groundwater Re	emedy Phase
Drill Ri Driller			nic Truck Mou		Borehol		meter: <u>6-12 inches</u> : Water: <u>47 ft bgs</u>		Topock, Needl	oo California
Drilling			Vasquez ninguez/C. A		Samplin		G		•	
Logge			ninguezio. A or Mills		Samplir	•		i roject Number	. <u>1.C000733.00.</u>	<i>)</i>
Editor:			McGrane		Convert	-				
		<u>'</u>			1					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	nscs Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
 61 62	120		IRZ-23-VAS- 57-62 (5.3 ppb) 11/30/2018 12:46	Topock - Alluvium Deposits	SM		brown (7.5YR 5/3); very fine grained to very to subround; some silt; little granule to mediu subround; wet		(57.0 - 62.0') Sample screen had ~4 ft of water and did not produce well, driller thought 6-inch casing to	(0.0 - 147.0') No water used
63 64 65		IRZ-23-SS- 60-65 12/4/2018 09:15					(62.0 - 69.5') Topock - Alluvium Deposits; Si brown (7.5YR 5/3); fine grained to very coars subround; some granule to very large pebble subround; little silt; trace cobbles, subangula	se grained, angular to es, subangular to	be broken down hole, pulled 6-inch casing from borehole it was plugged with sediment, issues with the casing resulted in the sample being collected greater than 5 ft below first water	
66 67 68	120	IRZ-23-SS- 65-70 12/4/2018 09:20		Topock - Alluvium Deposits	SM				(62.0 - 72.0') Sediments were very saturated, driller indicated that there was cave in of the borehole	
69 70 71 			IRZ-23-VAS- 67-72 (85 ppb) 12/1/2018 08:50	Topock - Alluvium Deposits	SM		(69.5 - 72.0') Topock - Alluvium Deposits; Si brown (7.5YR 5/3); fine grained to very coars subround; little granules to very large pebble subround; little silt; trace cobbles, subangula	se grained, angular to s, subangular to		
72 73 74 75		IRZ-23-SS- 70-75 12/4/2018 09:25					(72.0 - 82.0') Topock - Alluvium Deposits; Si brown (5YR 5/3); no plasticity; little very fine angular to subround; trace granule to small p subangular; dry; potential contact of older an	to medium grained sand, bebbles, angular to	(72.0 - 82.0') Drilling was tough, core came out hot and steaming	
	120	IRZ-23-SS- 75-80 12/4/2018 09:30		Topock - Alluvium Deposits	ML					
	viation	s: LISCS =	Linified Soil (lassificati	ion Syste	m ft :	= feet has = helow around surface	a amel = ahove me	an sea level G	\\/ =

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 5 of	8
Date S	tarted	: <u>11/28</u>	/2018		Surface	Eleva	tion: <u>500.0 ft amsl</u>	Boring No.	· IR7-23 Pi	ilot
Date C	omple	eted: <u>12/03</u>	/2018		Northing	JAN) g	983): <u>2102535.3</u>	_ Borning No.	. <u>IIXZ-201</u>	1101
Drilling	Co.:	Casca	ade		Easting	(NAD	33): <u>7615825.8</u>	Client: PG&E		
Drilling	Meth	od: <u>Sonic</u>	Drilling		Total D	epth:	<u>147 ft bgs</u>	Project: Final G	<u> Froundwater Re</u>	emedy Phase
Drill Ri	д Тур	e: <u>Proso</u>	nic Truck Mou	unt	Borehol	e Diar	neter: 6-12 inches	Location: 1		
Driller I	Name	: <u>Steve</u>	· Vasquez		Depth to	o First	Water: <u>47 ft bgs</u>	PG&E	Topock, Needl	es, California
Drilling	Asst:	N. Do	minguez/C. A	lverez	Samplin	ng Met	hod: 4 inch x 10 ft Core Barrel	Project Number:	RC000753.00	51
Logger	-:	Conn	or Mills		Samplin	ıg Inte	rval: <u>Continuous</u>	<u>-</u>		
Editor:		<u>Sean</u>	McGrane		Conver	ed to	Well: ☐ Yes ⊠ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
81	120			Topock - Alluvium Deposits	ML				(72.0 - 82.0') Drilling was tough, core came out hot and steaming	(0.0 - 147.0') No water used
82 83 84		IRZ-23-SS- 80-85 12/4/2018 09:35		Topock - Alluvium Deposits	SM		(82.0 - 84.5') Topock - Alluvium Deposits; Silty (7.5YR 4/4); very fine grained to coarse grained subangular; and silt; little granule to large pebble subangular; wet	l, angular to as, angular to		
85 86 87	108			Topock - Alluvium Deposits	ML		(84.5 - 87.0") Topock - Alluvium Deposits; Sand brown (5YR 5/4); no plasticity; little granule to m angular to subangular; little very fine to coarse on to subangular; moist; medium stiff	nedium pebbles,		
88 89 90	106	IRZ-23-SS- 85-90 12/4/2018 09:40		Topock -			(87.0 - 94.5') Topock - Alluvium Deposits; Silty (7.5YR 4/4); very fine grained to coarse grained subangular; some silt, little granule to large pebl subangular; little clay; wet	l, angular to		
91 92 93 		IRZ-23-SS- 90-95 12/4/2018 09:45		Alluvium Deposits	SM					
94 95 96	54		IRZ-23-VAS- 92-97 (<0.033 U ppb) 12/3/2018 11:47	Topock - Alluvium Deposits	SM		(94.5 - 97.0') Topock - Alluvium Deposits; Silty brown (5YR 5/4); fine grained to very coarse graubround; some silt; little granule to medium pel subround; wet	ained, angular to		
 97 98		IRZ-23-SS- 95-100 12/4/2018 09:50		Topock -			(97.0 - 102.0') Topock - Alluvium Deposits; Silty yellowish brown (10YR 4/4); fine grained to very angular to subround; some silt; trace granule to to subangular; wet	/ coarse grained,		
 99 _100	120			Alluvium Deposits	SM					

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 6 of	8
Date S					Surface	Eleva	ion: <u>500.0 ft amsl</u>	Boring No.	IR7-23 P	ilot
		eted: <u>12/03/</u> 2	2018		Northing	g (NAC	83): <u>2102535.3</u>	_	IIVE EU I	<u></u>
Drilling	g Co.:	<u>Casca</u>	de		Easting	(NAD	33): <u>7615825.8</u>	Client: PG&E		
Drilling	g Meth	od: <u>Sonic I</u>	Drilling		Total De	epth:	147 ft bgs	_ Project: Final G	<u>roundwater R</u>	<u>emedy Phase</u>
Drill Ri			<u>nic Truck Μοι</u>	unt	Borehol	e Dian	eter: <u>6-12 inches</u>			
Driller			Vasquez		-		Water: <u>47 ft bgs</u>		Topock, Need	
Drilling			ninguez/C. A		Samplin	-		Project Number:	RC000753.00	51
Logge		<u>Conno</u>			Samplin	-		-		
Editor:		<u>Sean N</u>	<u>/////////////////////////////////////</u>		Convert	ted to \	Vell: ☐ Yes ☒ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
101				Topock - Alluvium Deposits	SM					(0.0 - 147.0') No water used
102 103		IRZ-23-SS- 100-105 12/4/2018 09:55		Topock - Alluvium Deposits	GM		(102.0 - 103.0') Topock - Alluvium Deposits; Sil (7.5YR 4/4); granules to very large pebbles, and some silt; little very fine to medium grained sand trace cobbles, angular to subangular; dry	gular to subangular;		
 104 105	120			Topock - Alluvium	SM		(103.0 - 107.0") Topock - Alluvium Deposits; Sil (SM); dark yellowish brown (10YR 4/4); fine gra grained, subangular to subround; some silt; little pebbles, angular to subangular; wet	ined to very coarse		
106 107				Deposits	CIVI		6			
		IRZ-23-SS- 105-110 12/4/2018 10:00					(107.0 - 117.0') Topock - Alluvium Deposits; Sil (10YR 4/3); granules to large pebbles, subangu fine to very coarse grained sand, angular to sub clay; dry; potential contact of older and younger	lar to subround; little bround; little silt; little		
 111 _112_ _113_ _114_ 	120	IRZ-23-SS- 110-115 12/4/2018 10:05		Topock - Alluvium Deposits	GM					
115 116 117		IRZ-23-SS-					(117.0 - 122.0') Topock - Alluvium Deposits; Sil		(117.0 - 127.0')	
 118 _119_ 	120	115-120 12/4/2018 10:10		Topock - Alluvium Deposits	SM		(SM); brown (7.5YR 4/4); very fine grained to co to subround; and silt; little granule to medium pe subangular; wet; tight formation, potential contact bedrock.	ebbles, angular to	Hard driling, dry	
	viation	e: 118CS = 1	Unified Soil C	laccificati	ion Systa	m ft =	feet has = helow around surface	amsl = ahove mea	n sea level G	\\/ =

-	4K(CADIS	Design & Consultancy for natural and built assets		Во	rıng	Log	S	Sheet: 7 of	8
	Started				Surface			Boring No	.: <u>IRZ-23 P</u>	ilot
		eted: <u>12/03/</u>			Northin		· ·	_		
Orilling	g Co.: g Meth	Casca	age Drilling		Easting Total D	•	3): <u>7615825.8</u> <u>147 ft bgs</u>	_ Client: <u>PG&E</u> _ Project: <u>Final</u>	<u>=</u> Groundwater Re	amody Phas
_	ig Typ		nic Truck Moi			•	eter: 6-12 inches	_ Location: <u>1</u>	Groundwater in	emeuy Frias
	Name		Vasquez				Vater: <u>47 ft bgs</u>		E Topock, Needl	es, Californ
Prilling	g Asst:	N. Do	minguez/C. A	lverez	Samplii	ng Metl	od: 4 inch x 10 ft Core Barrel	_ Project Numbe	r: RC000753.00	51
ogge			or Mills		Samplii	-		_		
ditor:		<u>Sean</u>	McGrane	_	Conver	ted to \	/ell: ☐ Yes ⊠ No		T	T
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
121				Topock - Alluvium Deposits	SM				(117.0 - 127.0') Hard driling, dry	(0.0 - 147.0') N water used
122_		IRZ-23-SS-			L					
123		120-125 12/4/2018 10:15					(122.0 - 127.0') Topock - Alluvium Deposits; S (ML); yellowish red (5YR 4/6); no plasticity; litt pebbles, angular to subangular; little fine to me angular to subangular; wet	le granule to medium		
- 124_	120		IRZ-23-VAS- 122-127 (2000 ppb)	Topock - Alluvium	ML					
125_			12/2/2018 09:24	Deposits	IVIL					
126 - 127_										
.121		IRZ-23-SS- 125-130					(127.0 - 133.0') Topock - Alluvium Deposits; S 4/8); fine grained to coarse grained, angular to			-
		12/4/2018 10:20					little granule to medium pebbles, angular to su and pebbles composed of trace pieces of meta	bangular; wet; granules		
							and peoples composed of trace pieces of meta	aulonie 1-4 in. dia.		
129_										
-				Topode						
130_				Topock - Alluvium	SM					
404				Deposits						
131_										
_ 132_	111									
	114	IRZ-23-SS- 130-135								
133_		12/4/2018 10:25					(400 0 400 FI) T			
_							(133.0 - 136.5') Topock - Alluvium Deposits; S brown (5YR 4/3); no plasticity; some very fine	to medium grained		
134_							sand, angular to subround; trace granule to moto subround; wet	edium pebbles, angular		
				Topock - Alluvium	ML					
135				Deposits	"""					
- _136										
-100_					<u></u>					
137_		ID7 00 00		Topock - Alluvium	GM		(136.5 - 137.0') Topock - Alluvium Deposits; S gray (7.5YR 4/1); granules to very large pebble			
_		IRZ-23-SS- 135-140 12/4/2018		Deposits	4		subangular; some silt; little very fine to mediun to subangular; dry		1	
_138 - _139	120	10:30		Topock - Alluvium Deposits	GM	2000	(137.0 - 139.5') Topock - Alluvium Deposits; S (GM); reddish brown / moderate brown(5YR 4, pebbles, angular to subangular; some silt; little sand, angular to subround; trace clay; wet; tra metadiorite 20-70 mm	(4); granules to large fine to coarse grained		
446						+	(139.5 - 142.0') Topock - Weathered Bedrock	- conglomerate; Silty	1	
_ <u>140_l</u> \bbre\	viation	s: USCS =	Unified Soil (Classification		em, ft =	feet, bgs = below ground surface	amsl = above me	ean sea level, G	W =
							e laboratory reporting limit, blue w			
	ىلم لم مىر	ring the fire	st VAS interva	J						

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 8 of	8
Date S					Surface			Borin	a No.:	IRZ-23 Pi	lot
	-	eted: <u>12/03/</u> 2			Northin		•				<u></u>
Drilling	-	<u>Casca</u>			Easting	•	•	Client:	PG&E		
Drilling	-		-		Total Do	•	147 ft bgs	Project:		<u>oundwater Re</u>	medy Phase
Drill R			nic Truck Mou		Borehol			Location:			0-1:4:-
Driller Drilling			Vasquez ninguez/C. A		Samplir		Water: <u>47 ft bgs</u> od: <u>4 inch x 10 ft Core Barrel</u>	Project N		opock, Needl	
Logge	-	Conno			Samplir	•		Fiojectiv	iuiiibei. <u>I</u>	<u>\C000733.00\</u>) I
Editor			//cGrane		Convert	-					
		`		_	1						
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
141			IRZ-23-VAS- 139-144	Topock - Weathered Bedrock - conglomerate	SM		sand (SM); yellowish red (5YR 4/6); very fine gra grained, angular to subround; and silt; trace gran pebbles, angular to subround; wet; trace pieces of mm	ule to mediun	n		(0.0 - 147.0') No water used
142			(3000 ppb) 12/2/2018 14:17				(142.0 - 147.0') Topock - Competent Bedrock - cyellowish red (5YR 4/6); little very fine to coarse subangular to round; dry; hard; strong cementation	grained sand,		(142.0 - 147.0') Drill was tough with rig	
143	120	IRZ-23-SS- 140-147 12/4/2018 10:35								chattering.	
['- 		10.00		Topock - Competent							
145				Bedrock - conglomerate							
146											
147			<u>i</u>			X //X	End of Boring at 147.0 'bgs	<u> </u>			
148											
149_							O				
151											
152											
153											
151											
154											
155											
5											
156											
157											
158											
-											
159											
160											
160 Abbre	viation	s: USCS = I	Unified Soil C	Classification	on Syste	em, ft =	feet, bgs = below ground surface, a	amsl = abo	ove mear	n sea level, G\	N =

Temporary Backfill Log Sheet: Surface Elevation: 500.0 ft amsl 11/28/2018 Well ID: IRZ-23 Pilot Date Completed: <u>12/03/2018</u> Northing (NAD83): 2102535.3 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615825.8 Client: PG&E Drilling Method: Project: Final Groundwater Remedy Phase Sonic Drilling Total Depth: 147 ft bgs Driller Name: Steve Vasquez Borehole Diameter: 6-12 inches Location: 1 Drilling Asst: N. Dominguez/C. Alverez Depth to First Water: 47 ft bgs PG&E Topock, Needles, California Project Number: RC000753.0051 Logger: Connor Mills Editor: Sean McGrane Geologic Formation USCS Class USCS Code Depth (ft) Calculated Material Volumes Groundwater Well Construction Sample ID Material Volumes Installed (0.0 - 0.5') Temporary (0.0 - 0.5') 1 plate (0.0 - 0.5') 1 plate (0%) Steel Plate with BMF Topock -Fluvial SP-SM Deposits (0.0 - 4.0') 12"Borehole (0.5 - 5.0') Cemex (0.5 - 5.0') 6 bags (-24%) (0.5 - 5.0') 7.9 bags #0/30 MESH (30x50) Note: Lapis Lustre Sand Topock -Fluvial Deposits Topock -SW-SM Fluvial Deposits Topock -Fluvial Deposits Topock -(4.0 - 147.0') 6" Fluvial SP-SM Borehole Deposits (5.0 - 137.0') Cemex (5.0 - 137.0') 55.3 (5.0 - 137.0') 68 bags (23%) #3 MESH (8x10) Note: Lapis Lustre Sand bags Topock -Fluvial SM Deposits Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =

groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the

ARCADIS Design & Consumor for natural and hullt assets **Temporary Backfill Log** Sheet: Surface Elevation: 500.0 ft amsl 11/28/2018 Well ID: IRZ-23 Pilot Date Completed: <u>12/03/2018</u> Northing (NAD83): 2102535.3 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615825.8 Client: PG&E Drilling Method: Sonic Drilling Total Depth: Project: Final Groundwater Remedy Phase 147 ft bgs Driller Name: Steve Vasquez Borehole Diameter: 6-12 inches Location: 1 N. Dominguez/C. Alverez Drilling Asst: Depth to First Water: 47 ft bgs PG&E Topock, Needles, California Project Number: RC000753.0051 Logger: Connor Mills Editor: Sean McGrane Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed .21 Topock -Fluvial SM Deposits 22 23 Topock -Fluvial Deposits 25 Topock -Deposits 26 28 Topock -Fluvial 29 Deposits (5.0 - 137.0') Cemex (4.0 - 147.0') 6" (5.0 - 137.0') 55.3 (5.0 - 137.0') 68 bags (23%) 30 #3 MESH (8x10) Borehole Note: Lapis Lustre Sand Topock -31 Fluvial Deposits Topock -ML 32 Fluvial Deposits 33 Topock -ML Alluvium Deposits 35 Topock -36 MI Alluvium Deposits 37 38 Topock -MI Alluvium Deposits 39 Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, blue water table symbol represents depth to water

measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

ARCADIS Design & Consumor for natural and built assets **Temporary Backfill Log** Sheet: Surface Elevation: 500.0 ft amsl 11/28/2018 Well ID: IRZ-23 Pilot Date Completed: <u>12/03/2018</u> Northing (NAD83): 2102535.3 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615825.8 Client: PG&E Drilling Method: Sonic Drilling Total Depth: Project: Final Groundwater Remedy Phase 147 ft bgs Driller Name: Steve Vasquez Borehole Diameter: 6-12 inches Location: 1 N. Dominguez/C. Alverez Drilling Asst: Depth to First Water: 47 ft bgs PG&E Topock, Needles, California Project Number: RC000753.0051 Logger: Connor Mills Editor: Sean McGrane Geologic Formation USCS Class USCS Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed 42 43 Topock -Alluvium MLDeposits 45 46 Topock -SM Alluvium Deposits 49 (5.0 - 137.0') Cemex (4.0 - 147.0') 6" (5.0 - 137.0') 55.3 (5.0 - 137.0') 68 bags (23%) 50 #3 MESH (8x10) Borehole Note: Lapis Lustre Sand Topock -Alluvium SM 51 Deposits 52 53 55 Topock -Alluvium ML 56 Deposits 57 IRZ-23-VAS-57-62 (5.3 ppb) 11/30/2018 12:46 Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =

groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

ARCA	DIS Design & for natura built asse	Consultancy al and ets		Temporary Backfill Log	Sh	eet: 4 of 8
Date Started:	11/28/2018			Surface Elevation: 500.0 ft amsl	Well ID: IRZ	7-23 Pilot
Date Completed:	12/03/2018			_ Northing (NAD83): 2102535.3		
Drilling Co.:	<u>Cascade</u>			_ Easting (NAD83): <u>7615825.8</u>	Client: PG&E	
Orilling Method:	Sonic Drilling	g		_ Total Depth: <u>147 ft bgs</u>	Project: <u>Final G</u>	roundwater Remedy Phas
Oriller Name:	Steve Vasqu	uez		Borehole Diameter: 6-12 inches	Location: <u>1</u>	
Orilling Asst:	N. Domingu		lverez	_ Depth to First Water: <u>47 ft bgs</u>		Topock, Needles, Californ
_ogger:	Connor Mills	3		_ Editor: <u>Sean McGrane</u>	Project Number:	RC000753.0051
Groundwate Sample ID		USCS	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
- IRZ-23-VAS- 57-62 (5.3 ppb) 11/30/2018 - 12:46	- Topock -	SM				
	Topock - Alluvium Deposits	SM				
70 12/1/2018 71 71 72	Topock - Alluvium Deposits	SM		(5.0 - 137.0') Cemex #3 MESH (8x10) (4.0 - 147.0') 6" Borehole	(5.0 - 137.0') 55.3 bags	(5.0 - 137.0') 68 bags (23%) Note: Lapis Lustre Sand
	Topock - Alluvium Deposits	ML				
	JSCS = Unifie	d Soil (Classifica	ation System, ft = feet, bgs = below ground surf	ace, amsl = above mea	n sea level, GW =
ا Abbreviations: ا				detected above the laboratory reporting limit, blu		
	b = parts ner l	billion I	J = not (refected above the laboratory reporting intri- this		
groundwater, ppl				Granule backfill material will be excavated from		

ARCADIS Design & Consumor for natural and hullt assets **Temporary Backfill Log** Sheet: Surface Elevation: 500.0 ft amsl 11/28/2018 Well ID: IRZ-23 Pilot Date Completed: <u>12/03/2018</u> Northing (NAD83): 2102535.3 Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615825.8 Client: PG&E Drilling Method: Sonic Drilling Total Depth: Project: Final Groundwater Remedy Phase 147 ft bgs Driller Name: Steve Vasquez Borehole Diameter: 6-12 inches Location: 1 N. Dominguez/C. Alverez Drilling Asst: Depth to First Water: 47 ft bgs PG&E Topock, Needles, California Project Number: RC000753.0051 Logger: Connor Mills Editor: Sean McGrane Geologic Formation USCS Class USCS Code Depth (ft) Groundwater Calculated Material Volumes Well Construction Sample ID Material Volumes Installed Topock -.81. Alluvium ML Deposits 82 83 Topock -Alluvium Deposits 84 85 Topock -Alluvium ML .86 Deposits 87 88 89 (5.0 - 137.0') Cemex (4.0 - 147.0') 6" (5.0 - 137.0') 55.3 (5.0 - 137.0') 68 bags (23%) 90 #3 MESH (8x10) Borehole Note: Lapis Lustre Sand Topock -Alluvium SM Deposits 92 93 IRZ-23-VAS-(<0.033 U ppb) 12/3/2018 .95 11:47 Topock -Alluvium SM 96 Deposits 97 98 Topock -SM Alluvium Deposits Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, blue water table symbol represents depth to water

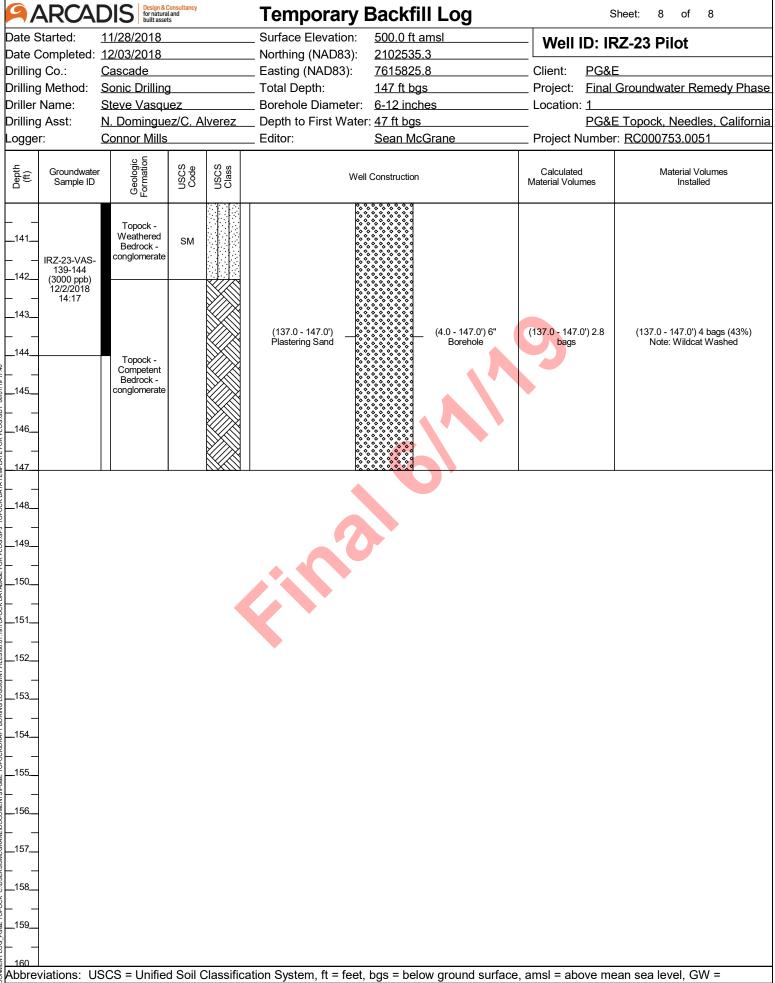
measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

Date Started: 11/28/2018	ARCADIS Design & Consultancy for natural and built assets					Temporary Backfill Log		Sheet: 6 of 8		
Date Completed: 1/20/20/18 Sonit Drilling Care Service Servi	Date Completed:		12/03/2018			-		Well ID: IR	- Well ID: IR7-23 Pilot	
Drilling Mothod: Sonic Prilling Project Rian Groundwater Remody Phase Drilling Asst: N Dominjuez/C. Averez Doppin Steve Wasquez Depth to First Water 47ft bgs Occordant Steve Wasquez Depth to First Water 47ft bgs PGSE Topolos. Needles. California Project Number: RC000753.0051 Editor: Sean McGrano Project Number: RC000753.0051 Project Nu						Northing (NAD83):	2102535.3		(2 20 1 110t	
Drilling Asstr. Commonwealth Co						Easting (NAD83):	7615825.8	Client: PG&E	3&E	
Definition First Water 47.ft bgs. Connor Mills Connor Mills Editor: Sean McGrane. Project Number: RC200753.0051 Figure 10 Fi	Drilling	Method:	Sonic Drilling			Total Depth:	<u>147 ft bgs</u>	Project: <u>Final</u>	Groundwater Remedy Phase	
Definition First Water 47.ft bgs. Connor Mills Connor Mills Editor: Sean McGrane. Project Number: RC200753.0051 Figure 10 Fi	_							Location: 1		
Control Mills Editor: Sean McGrane Project Number: RC000753.0051						Depth to First Water: <u>47 ft bgs</u>		PG&E Topock, Needles, California		
Corondodor Section S	_		_			· · · · · · · · · · · · · · · · · · ·				
Topochs SM Topoch Topoch Advours Deposits SM Topoch Advours Deposits Topoch Advours Deposits SM Topoch Advours Deposits Topoch Ad			0 5					<u> </u>		
Toposa- 102 103 104 105 106 107 108 109 109 109 109 109 109 109	Depth (ft)		Geologi Formatic	USCS	USCS	Wel	l Construction			
Toposition of Aduluum Disposition of Aduluum SM Disposition of SM	-		Alluvium	SM						
Topock Albutum Deposits SM 100 100 100 100 100 100 100 1	-		Alluvium	GM			4. 4. 4 4. 4.4. 7. 7. 1. 1.			
110	104 		Alluvium	SM						
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, blue water table symbol represents depth to water			Alluvium	GM	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	(5.0 - 137.0') Cemex				
groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, blue water table symbol represents depth to water			Alluvium Deposits							

measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

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groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the



groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the