ARC	ADIS Design & for natura built asse	Consultancy Il and ts	Well Const	ruction Log	5	Sheet: 1 of 6
Date Started:	03/18/2020		_Surface Elevation:	502.67 ft amsl	Well ID: IR	7-33
Date Complete	ed: <u>03/22/2020</u>		_Shallow Well Elevation:	N/A		<u></u>
Drilling Co.:	Cascade		_Deep Well Elevation:	N/A	Client: PG&E	<u> </u>
Drilling Method			_Northing (NAD83):	2101792.01	Proiect: Final	GW Remedy Phase 1
Driller Name:	Jon Martinez		Easting (NAD83):	7615827.86	•	E Topock, Needles, California
Drilling Asst:	A. & H. Amez	nuita	Borehole Diameter:	16-18 inches		
Logger:	K. Keon / E. F	-	Static Water Level:	See Log for Depths	Project Numbe	r: RC000753.0051
Editor:	Sean McGran		Development End Date:	- ·	TTOJECTIVATIBE	1.10000700.0001
Total Depth:	119.53 ft bgs		Development End Date. Well Completion:		 To Be Completed	in Well Vault
Total Deptil.			_ vveii Completion.	TidsiT Otick-up _^	To be Completed	III VVCII Vault
Groundy Sample		USCS Code USCS Class		onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
1			(0.0 - 51.4') 10" SHUR-GRIP SDR17 PVC Casing (0.0 - 3.9') Cemex #60 Mesh (40x70) Lapis Lustre Sand	(0.0 - 3.1') 18.0" Borehole	(0.0 - 3.9') 9.5 bags	(0.0 - 3.9') 10 bags (105%) Note: Temporary backfill sand to fill annular space prior to vault installation
4	Topock - Fill Topock - Fill Topock - Fill	SW SW SW	(3.9 - 39.7') Portland Cement 3% Bentonite Type I, II and V with Hydrogel	(3.1 - 20.5') 18.0" Borehole	(3.9 - 39.7') 327.3 gallons	(3.9 - 39.7') 434 gallons (133%) Note: Grout seal, used >20% of the volume due potential voids forming during drilling and grout migration.
20						
<u></u>			· · · · · · · · · · · · · · · · · · ·	= below ground surface, a		
			· · · · · · · · · · · · · · · · · · ·	e water table marks repres	sent depth to water	(ft. bgs.) measured
pre-specific ca	pacity for the sha	llow and deep	screens			

WEL

Continue	ARC4	DIS for natura built asset	Consultancy Land s	weii Const	ruction Log		Sheet: 2 of 6
Date Completed: 03/22/2020 Shallow Wall Elevation: Dilling Oc. 2 Gescade Deep Well Elevation: Northing (NAD83): Dilling Astribus A. S. H. Amezguita Sorehole Diameter: Sean McGrane Development End Date: 7/13/2020 Total Depths: Dilling Astribus Development End Date: 7/13/2020 Total Depths: Dilling Astribus Dilling Astribus Sean McGrane Development End Date: 7/13/2020 Total Depths Simple Dilling Astribus Development End Date: 7/13/2020 Total Depths Simple Dilling Astribus Dilling Astribus Development End Date: 7/13/2020 Total Depths Simple Dilling Astribus Dilling Astribus Development End Date: 7/13/2020 Total Depths Simple Dilling Astribus Dilling Astribus Development End Date: 7/13/2020 Total Depths Dilling Astribus Dilling Astribus Development End Date: 7/13/2020 Total Depths Dilling Astribus Development End Date: 7/13/2020 Total Depths Dilling Astribus Dilling Astribus Development End Date: 7/13/2020 Total Depths Dilling Astribus Dil						Well ID: IR	Z-33
Drilling Method: Dual Rotary Drilling Asst: Logger: K. Keon J E. Redner Static Water Level: Sean McGrane Development End Date: 2713/2020 Well Completion: Drilling Asst: Sean McGrane Development End Date: 2713/2020 Well Completion: Drilling Asst: Sean McGrane Development End Date: 2713/2020 Well Completion: Drilling Asst: Sean McGrane Development End Date: 2713/2020 Well Completion: Drilling Asst: Sean McGrane Development End Date: 2713/2020 Well Construction Well Construction Well Construction Well Construction Well Construction Well Construction Material Volumes Installed Motioners installed Motioners in the Colorable Motioners i	Date Completed:	03/22/2020		Shallow Well Elevation:	N/A		
Onlifer Nere: Logger: Seath McGrane Development End Date: Total Depth: Topock - Fill SW Sign Sig	Drilling Co.:	Cascade		Deep Well Elevation:	N/A		
Dolling Asst: A. & H. Amezguita Boroholo Diameter: 15-18 inches Project Number: RC000753.0051 Gentler Sean.McGrane Depth: Sean.McGrane Depth: Sean.McGrane Depth: Sean.McGrane Depth: 119.53 https://doi.org/10.1016/j.cent.mcd.mcd.mcd.mcd.mcd.mcd.mcd.mcd.mcd.mcd	Drilling Method:	Dual Rotary		Northing (NAD83):	2101792.01	Project: <u>Final</u>	GW Remedy Phase 1
See Log for Depths	Driller Name:	Jon Martinez		Easting (NAD83):	7615827.86	Location: <u>PG&</u> l	E Topock, Needles, Californi
Development End Date: 7/13/2020 Total Depth: 119.53 if bgs	Drilling Asst:	A. & H. Amez	guita	Borehole Diameter:	<u>16-18 inches</u>		
Topock - Fill SW Service Sterior St	Logger:	K. Keon / E. F	<u>Redner</u>	Static Water Level:	See Log for Depths	Project Numbe	r: RC000753.0051
Sample ID Samp	Editor:	Sean McGran	e	Development End Date	7/13/2020		
Topock - Fill GW SN Column Column SN Column	Total Depth:	119.53 ft bgs		Well Completion:	☐ Flush ☐ Stick-up ▷	To Be Completed	in Well Vault
Topock - Fill GW SN Column Column SN Column	Groundwat Sample IE	Geologic Formation	USCS Code USCS	Well C	construction		Material Volumes Installed Note: percentages are the actua volume vs the calculated volume
Topock - Fill SW Topock - Fill SW Topock - Miluvium Deposits Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, NR = no recovery; Notes: solid blue water table marks represent depth to water (ft. bgs.) measured		Topock - Fill		SDR17 PVC Casing (3.9 - 39.7') Portland Cement 3% Bentonite Type I, Ill and V with		(3.9 - 39.7') 327.3 gallons	(3.9 - 39.7') 434 gallons (133%) Note: Grout seal, used >20% of the volume due potential voids forming during drilling and grout migration.
Topock - Fill SW (38.0 - 39.0') Centralizer Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, NR = no recovery; Notes: solid blue water table marks represent depth to water (ft. bgs.) measured	 34 	Topock - Fill	SW-SM				
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, NR = no recovery; Notes: solid blue water table marks represent depth to water (ft. bgs.) measured	 37 	Topock - Fill	sw				
groundwater, ppb = parts per billion, NR = no recovery; Notes: solid blue water table marks represent depth to water (ft. bgs.) measured	39 	Alluvium Deposits	SM	Centralizer			
pre-specific capacity for the shallow and deep screens				· · · · · · · · · · · · · · · · · · ·	ie water table marks repre	sent depth to water	(ft. bgs.) measured
	oro enocific cana	city for the sha	llow and dee	ep screens			

9/	ARC ⁴	DIS	Design & for natur built assi	Consultancy ral and ets		Well Cons	truction L	.og		Sheet: 3 of 6
Date S	Started:	03/18/2				_Surface Elevation:	502.67 ft amsl		Well ID:	IRZ-33
l l	Completed					_Shallow Well Elevation				
Drilling		Casca				Deep Well Elevation:	N/A			8&E
Drilling	Method:	<u>Dual R</u>	otary			Northing (NAD83):	2101792.01		Project: Fin	al GW Remedy Phase 1
Driller	Name:	Jon Ma	<u>artinez</u>			Easting (NAD83):	7615827.86		Location: PG	&E Topock, Needles, California
Drilling	Asst:	<u>A. & H</u>		-		_Borehole Diameter:	<u>16-18 inches</u>			
Logge	r:	K. Keo	<u>n / E. F</u>	<u>Redner</u>		_Static Water Level:	See Log for De	<u>epths</u>	Project Num	ber: RC000753.0051
Editor:		Sean N	<u>/lcGrar</u>	ne		Development End Dat				
Total [Depth:	119.53				Well Completion:	☐ Flush ☐ \$	Stick-up ⊠ To	Be Complet	ed in Well Vault
Depth (ft)	Groundwater Sample ID Soo O O O O O O O O O O O O O O O O O O		USCS	Well	Construction	M	Calculated laterial Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume		
41 42						(0.0 - 51.4') 10" SHUR-GRIP SDR17 PVC Casing (39.7 - 42.6') Cemex #60 Mesh (40x70) Lapis Lustre Sand		5 - 41.3') ' Borehole	(39.7 - 42.6') 6.1 bags	(39.7 - 42.6') 6 bags (98%) Note: Transition sand
43 43 44 44 45		All	pock - uvium posits	SM					S _C	
WHI — 46 — 47 — 47 — 47 — 47 — 48 — 48 — 49 — 48 — 49 — 49 — 50 — 50 — 50 — 50 — 50 — 50 — 50 — 5		All De	pock - uvium posits pock - uvium eposits	ML SM			(41.	3 - 60.7')		(40.0. 440.FL) 400 have (400W)
	IRZ-33-VAS 49-54 (2100 ppb) 1/21/2020 13:05	To All	ppock - uvium eposits	SW-SM		(42.6 - 119.5') Cemex #30 Mesh (30x70) Lapis Lustre Sand (51.4 - 77.3') 10" 10-Slot 316L SS Wire Wrap Screen		' Borehole	(42.6 - 119.5') 133.7 bags	(42.6 - 119.5') 160 bags (120%) Note: Filter pack, swabbed upper screen for approximately 127 minutes and the lower for approximately 125 minutes.
			Ç							
		Ali De	pock - uvium posits	SM						
5						ation System, ft = feet, bo				<u> </u>
0						recovery; Notes: solid b	lue water table m	arks represent	depth to wat	er (ft. bgs.) measured
g pre-sp	ecific capa	city for	the sha	allow ar	nd deep	screens				

9	ARC ⁴	DIS Design 8 for nature built ass	Consultancy al and ets		Well Cons	struc	tion Log		Sheet: 4 of 6
	Started:	03/18/2020		Sı	urface Elevation:	<u>502</u> .	67 ft amsl	Wall ID	: IRZ-33
Date 0	Completed	03/22/2020		Sr	nallow Well Elevatio			vveii iD	. IRZ-33
Drilling	Co.:	Cascade		De	eep Well Elevation:	N/A		Client: I	PG&E
Drilling	Method:	Dual Rotary		No	orthing (NAD83):	<u>210</u> ′	1792.01	Project: <u>I</u>	Final GW Remedy Phase 1
Driller	Name:	Jon Martinez		Ea	asting (NAD83):	<u>7615</u>	827.86	Location: <u>l</u>	PG&E Topock, Needles, California
Drilling	g Asst:	A. & H. Amez	guita	Bc	orehole Diameter:	<u>16-1</u>	8 inches		
Logge	er:	K. Keon / E. I		St	atic Water Level:	<u>See</u>	Log for Depths	Project Νι	ımber: RC000753.0051
Editor		Sean McGrai			evelopment End Da				
Total [Depth:	119.53 ft bgs		W	ell Completion:		Flush \square Stick-up $oxed{ imes}$	To Be Comp	leted in Well Vault
Depth (ft)	Groundwa Sample II		USCS Code USCS			I Construc	ition	Calculated Material Volum	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
61 _ 62 _ 63 _ 64 _ 65 _ 66 _ 66 _ 66 _ 66 _ 66 _ 66	IRZ-33-VAS 72-77 (1600 ppb) 1/22/2020 09:40	Topock - Alluvium Deposits Topock - Alluvium Deposits	SM		(51.4 - 77.3') ————————————————————————————————————		(60.7 - 80.5') (60.7 - 80.5') 16.0" Borehole	(42.6 - 119. 133.7 bags	(42.6 - 119.5') 160 bags (120%) Note: Filter pack, swabbed upper
78		Topock - Alluvium Deposits	SM				10" SHUR-GRIP SDR17 PVC Casing		
<u>80</u> ≤ Ahhre	viations: I	ISCS = Unified	I Soil Classi	ication	System ft = feet h	ىنا لنن as = hel	∵ı ow ground surface a	amsl = above n	nean sea level, GW =
									vater (ft. bgs.) measured
70		city for the sha				JIUO WAL	or table marks replet	Some doptil to W	ideo (it. 595.) illoadalea
2 h1c-2h	como capa	ionly for title SH	anow and de	ch anie	I3				

ME

9/	4RC4	DIS for nature built ass	Consultancy ral and ets		Well Const	ruction Log	;	Sheet: 5 of 6
	Started:	03/18/2020			_Surface Elevation:	502.67 ft amsl	Well ID: IR	7-33
Date 0	Completed:	03/22/2020			_Shallow Well Elevation:	N/A		
Drilling	g Co.:	Cascade			_Deep Well Elevation:	N/A	Client: PG&E	=
Drilling	g Method:	Dual Rotary			_Northing (NAD83):	2101792.01	Project: <u>Final</u>	GW Remedy Phase 1
Driller	Name:	Jon Martinez			_Easting (NAD83):	7615827.86	Location: PG&I	E Topock, Needles, California
Drilling	g Asst:	A. & H. Amez	guita		_Borehole Diameter:	16-18 inches		·
Logge	er:	K. Keon / E. I	Redner		_Static Water Level:	See Log for Depths	Project Numbe	r: RC000753.0051
Editor		Sean McGrai	ne		_Development End Date:	7/13/2020		
Total [Depth:	119.53 ft bgs			_Well Completion:	☐ Flush ☐ Stick-up 🗵	To Be Completed	in Well Vault
Depth (ft)	Groundwat Sample II		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
		Topock - Alluvium Deposits Topock - Alluvium Deposits	SW-SM		(81.5 - 82.5') Centralizer (42.6 - 119.5') Cemex #30 Mesh	(87.2 - 111.0') 10" 10-Slot 316L SS Wire Wrap Screen (80.5 - 100.4') 16.0" Borehole	(42.6 - 119.5') 133.7 bags	(42.6 - 119.5') 160 bags (120%) Note: Filter pack, swabbed upper screen for approximately 127 minutes and the lower for approximately 125 minutes.
#99	1							
1 400	1							
100 Abbre	viations: 11	SCS = Unified	Soil Cl	assificat	tion System. ft = feet_bas	্ৰান্ড জ = below ground surface, a	amsl = above mean	sea level. GW =
. — —					•	e water table marks repre		
0		city for the sha			<u> </u>	5 mater table mante repre-	contraopar to water	(ii. 290.) iiiododiod
2 hie-sh	come capa	only for the SH	anow all	u ucch	30100113			

WELI

9/	4RC4	DIS Design for nat built a	& Consultancy ural and ssets		Well Cons	struction Log	;	Sheet: 6 of 6
	Started:	03/18/2020	90000000		Surface Elevation:	502.67 ft amsl	Well ID: IR:	7- 33
Date 0	Completed:	03/22/2020			Shallow Well Elevation	n: <u>N/A</u>		
Drilling	-	Cascade			Deep Well Elevation:	N/A	Client: PG&E	
_	g Method:	Dual Rotary			Northing (NAD83):	2101792.01	-	GW Remedy Phase 1
	Name:	Jon Martinez			Easting (NAD83):	7615827.86	Location: <u>PG&E</u>	<u> Topock, Needles, California</u>
Drilling	g Asst:	A. & H. Ame	-		Borehole Diameter:	<u>16-18 inches</u>		
Logge		K. Keon / E.			Static Water Level:	See Log for Depths	Project Numbe	r: RC000753.0051
Editor		Sean McGra			Development End Da			
Total [Depth:	119.53 ft bg	<u>s</u>		Well Completion:	☐ Flush ☐ Stick-up 区	To Be Completed	in Well Vault
Depth (ft)	Groundwat Sample II		USCS	USCS Class	Wel	Il Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
101 102		Topock - Alluvium Deposits	SM			(87.2 - 111.0') 10" 10-Slot 316L SS Wire Wrap Screen	3	6
 103	-							3
]							
		Topock - Alluvium	SM					
		Deposits	Sivi					
106 <u></u>								
	IRZ-33-VAS	_				XHXX		
	105_110							
를 108	(1300 ppb) 1/23/2020 10:10	Topock - Alluvium	sw					
¥	10.10	Deposits		******				

A		Topock -	. _		(42.6 - 119.5')		(10.0 110.5)	(42.6 - 119.5') 160 bags (120%) Note: Filter pack, swabbed upper
3 110		Weathered Bedrock -		NN:	Cemex #30 Mesh (30x70) Lapis Lustre	(100.4 - 119.5')	(42.6 - 119.5') 133.7 bags	screen for approximately 127 minutes and the lower for
5		conglomera	te		Sand	16.0" Borehole	J	approximately 125 minutes.
301								
113 <u></u>								
울 114					(113.5 - 114.5')			
P _]	Tarrel			` Centralizer ´ :			
[115]	Topock - Competen	t			식 본제		
<u> </u>		Bedrock - conglomera						
116]							
- ANE]					(111.0 - 116.6')		
5 117						Sump and SS End		
EKS —					[:	Cap		
118								
<u> </u>								
∄119					End of Desire 1			
n					End of Boring at 119.5 ft bgs.			
120								-
-					•	gs = below ground surface, ar		
groun	dwater, ppl	o = parts per	billion, NF	R = no r	ecovery; Notes: solid b	blue water table marks represe	ent depth to water	(ft. bgs.) measured

pre-specific capacity for the shallow and deep screens

ARCA	DIS for bui	sign & Consultancy natural and It assets		Drilling Log				Sheet:	1 of 6
ate Started:	03/10/202			ace Elevation:	502.67 ft		Boring	No.: IRZ	<u></u>
ate Completed:		20		hing (NAD83):	2101792.				
rilling Co.:	Cascade			ing (NAD83):	7615827.			PG&E	mody Dhaga 1
rilling Method:	Dual Rota	•		l Depth: ductor Casing Diameter:	119.5 ft b	-	•	PG&E Topo	emedy Phase 1
rill Rig Type: riller Name:	Foremost Jon Martir			Casing Diameter:	16 inches			PG&⊑ Topoi California	ck, ineedies,
rilling Asst:	A. & H. Ar		Drill	-		7.5 Tricone		mber: RC00	0753 0051
ool-Pusher:	A. Lamon	•		th to First Water:	49.6 ft bg		1 10,000 1101	11001. <u>11000</u>	0100.0001
tig Geologist:	K. Keon /		•	verted to Well:	× Yes	No			
Depth (ft) Drilling Run and Average Penetration F	e Codo	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)		notes and observation			Drilling Fluid
- 1 _ (0.0 - 3.1) 1.64 mins/ft			(0.0 - 3.1') 18.0" Steel Casing	(0.0 - 8.0') No recovery (NR)	backfill ı	1') Confirmed presen material at ground su borehole. Stopped dr	rface and that r	ig was lined up	(0.0 - 3.1') No water used
- 3 - 4 - 5 - 6 - 7	NR					oserved some Cemes and in drill cuttings.	x#60 Mesh (40	k70) Lapis	(3.1 - 20.5') 200 gallo of water used; 25 gallons of water recovered; 175 gallon of water lost
8	sw		10	(8.0 - 10.5') Topock - Fill; We graded sand with gravel (SW) dark yellowish brown (10YR 4/4)	(10.0') C	Observed trace amountster Sand in drill cutt		3 Mesh (8x20)	
	l		(3.1 - 20.5') 18.0" Steel Casing	Well graded gravel with sand (GW); brown (10YR 5/3) (11.2 - 18.5') Topock - Fill; Poorly graded sand with grave (SW); yellowish brown / moderate yellowish brown (10YR 5/4)					
_15 _ _16 _ _17 _ _18	SW								
_19	GW			(18.5 - 21.7') Topock - Fill; Well graded gravel with sand (GW); yellowish brown / moderate yellowish brown (10YR 5/4) trace grayish gree	1				
	SCS = Unif	ied Soil C	lassification	System, ft = feet, bgs =	pelow grou	ınd surface, ams	l = above m	ean sea level	, GW =
				water measured during t		C.1. C. 13/A			

	<u>ARCA</u>		built a	3) 5.50(5.50)		Drilling Log					Sheet:	2 of 6
	tarted:	03/10/				ace Elevation:		2.67 ft a		Borin	g No.: <u>IF</u>	RZ-33
	ompleted:)		ning (NAD83):)1792.(
rilling		Casca				ing (NAD83):		15827.8		Client:	PG&E	Remedy Phase 1
•	Method: Type:	<u>Dual F</u>		y DR-24H		l Depth: ductor Casing Diameter:		9.5 ft bo	S	Project:		ock, Needles,
_	l i ype. Name:	Jon M				Casing Diameter:		inches		_ LUCALIOI1.	California	ock, Needles,
rilling				nezguita		-			5 Tricone	Proiect N		00753.0051
_	usher:	A. Lar		<u>g</u>		h to First Water:		6 ft bgs			<u></u>	
tig Ge	ologist:			E. Redn	-	verted to Well:	_	Yes	No			
Depth (ft)	Drilling Run and Averag Penetration F	e C	CS de	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)			notes and observatemporary backfill m			Drilling Fluid
21 22 23 24 25 26 27 28 29 31 	(20.5 - 41.3) 1.25 mins/ft	s	S		(20.5 - 41.3') 18.0" Steel Casing	(21.7 - 33.0') Topock - Fill; Well graded sand with gravel (SW); yellowish brown / moderate yellowish brown (10YR 5/4)		(30.0') O Lapis Lus	eserved trace amounter Sand in drill cut	unts of Cemex ttings.	· ·	(20.5 - 41.3') 200 gallons of water use 20 gallons of water recovered; 180 gallo of water lost
_ _33 _ _34		SW	-SM			(33.0 - 34.5') Topock - Fill; Well graded sand with silt an gravel (SW-SM); grayish brov	 d	(32.0 - 33	l.0') Hard noisy drill	ing		
.35						(34.5 - 39.0') Topock - Fill; Well graded sand with gravel (SW); yellowish brown / moderate yellowish brown (10YR 5/4)		(34.0 - 35	i.0') Hard noisy drill	ing		
_ _37 _ _38		s	W 9G									
_39 - 40			м - 5 м			(39.0 - 39.2') Topock - Alluvii Deposits; Silty sand with grav (SM); olive gray / light olive gr	el					
bbrev	iations: US	SCS =	Jnifie	ed Soil (Classification	System, ft = feet, bgs =	belo	w groui	nd surface, ams	sl = above r	nean sea lev	rel, GW =
	NID					water measured during	<u> </u>		C 11 C 11/A	o · ·		

9/	<u> ARCA</u>	DI	S Desi	gn & Consultan natural and t assets		Drilling Log				Sheet:	3 of 6
	started:		10/202			ace Elevation:		7 ft amsl	Borin	g No.: <u>IR</u>	Z-33
	completed:			0		ning (NAD83):	21017				
rilling			cade			ing (NAD83):	76158		Client:	PG&E	d. Dl 4
_	Method:		al Rota	•		l Depth: ductor Casing Diameter:	119.5		Project:		emedy Phase 1
	g Type: Name:		emosi Martin	DR-241		Casing Diameter:	16 incl		Location:	PG&E Topo California	ck, needles,
	Asst:			nezguita				17.5 Tricone	Project N	umber: RC00	0753 0051
_	usher:		amon	-		h to First Water:	49.6 ft		1 10,00011	111bor. 11000	0700.0001
	eologist:			E. Redr	•	verted to Well:	× Yes		•		
Depth	Drilling Run		USCS	USCS	Casing	Description	Dri	Iling notes and observati	ons confirmin	g presence of	D.III El . I
(ft)	and Averag Penetration F		Code	Class	Diameter	(See Pilot boring log for full geologic descriptions)		temporary backfill ma			Drilling Fluid
_ _41	(20.5 - 41.3) 1.25 mins/ft				(20.5 - 41.3') 18.0" Steel Casing	(5Y 5/2) (39.2 - 46.0') Topock - Alluviu Deposits; Silty sand with grav (SM); yellowish brown /	_ี่ ∣L̀api	0') Observed little amour s Luster Sand in drill cut		#3 Mesh (8x20)	
_42						moderate yellowish brown (10YR 5/4) (40.3') dark yellowish brown (10YR 4/4)		+6			(41.3 - 60.7') 267 gallons of water used; 100 gallons of water recovered; 167 gallons
_43			SM								of water lost
_44 - _45							2				
_43 _ _46								.0			
_ _47			ML — . — .			(46.0 - 46.5') Topock - Alluviu Deposits; Sandy silt (ML); dar grayish brown (2.5Y 4/2) (46.5 - 51.0') Topock - Alluviu		N			
_ _48						Deposits; Silty sand with grav (SM); yellowish brown / moderate yellowish brown (10YR 5/4)		O,			
_49			SM			O	Ţ				
_50	(41.3 - 60.7) 1.34 mins/ft				(41.3 - 60.7') 16.0" Steel			0') Observed trace to littl 0) Lapis Luster Sand in o		Cemex #3 Mesh	_
_51 _ _52					Casing	(51.0 - 56.0') Topock - Alluviu Deposits; Well graded sand with silt and gravel (SW-SM); yellowish brown / moderate	n				
_ _53						yellowish brown (10YR 5/4)					
_ _54			SW-SM								
_55											
_56 - _57						(56.0 - 67.0') Topock - Alluviu Deposits; Silty sand with grav (SM); light olive brown (2.5Y					
_57 _ _58			SM			5/3) (57') brown (7.5YR 5/4)					
_ _59											
60											
hhro	viations: US	SCS	= Unifi	ed Soil	Classification	System, ft = feet, bgs =	elow a	round surface, ams	l = above r	nean sea leve	l. GW =

9	ARCA	DIS Design for na built:	gn & Consultancy atural and assets		Drilling Log				Sheet:	4 of 6
, -	Started:	03/10/2020		Surfa	ice Elevation:	502.67	ft amsl	Boring	No.: IRZ	7 _33
Date 0	Completed:	03/17/2020	0	North	ning (NAD83):	210179	2.01	Domi	110 <u>1112</u>	<u>00</u>
Drilling	-	Cascade		Easti	ng (NAD83):	<u>761582</u>	7.86	Client:	PG&E	
	g Method:	Dual Rotar	-		Depth:	<u>119.5 f</u>	-	Project:		medy Phase 1
	ig Type:	Foremost [luctor Casing Diameter:			Location:	PG&E Topoo	ck, Needles,
	Name:	Jon Martin			Casing Diameter:	16 inch			California	
	g Asst:	A. & H. Am	nezguita	Drill E			17.5 Tricone	Project Nu	mber: RC00	0753.0051
	Pusher:	A. Lamon		-	n to First Water:	49.6 ft l	<u> </u>			
RIG G	eologist:	K. Keon / E	<u> . Reaner</u>	Conv	erted to Well:	× Yes	No			
Depth (ft)	Drilling Run and Averag Penetration F	e Codo	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drill	ing notes and observati temporary backfill ma			Drilling Fluid
	(41.3 - 60.7) 1.34 mins/ft) Observed trace amou Luster Sand in drill cut		#3 Mesh (8x20)	
61										(60.7 - 80.5') 100 gallons of water used;
62 63 		SM					15			380 gallons of water recovered; 280 gallons of water gained
64	-									
12/06/20	_									
65	1					(65.0	- 70.0') Hard drilling			
00000000000000000000000000000000000000					(65.5') yellowish brown / moderate yellowish brown (10YR 5/4)		17			
67					(67.0 - 77.0') Topock - Alluviur Deposits: Silty sand (SM):	n				
					Deposits; Silty sand (SM); brown (7.5YR 5/4)					
BASE FOR PLOG.GPJ	-				(69') yellowish brown /					
¥	(60.7 - 80.5)			(60.7 - 80.5')	moderate yellowish brown (10YR 5/4)	(70.0) Observed trace amou	nts of Cemex	#3 Mesh (8x20)	
	1.27 mins/ft			16.0" Steel Casing		Lapis	Luster Sand in drill cut	tings.		
0.20\TO										
72		SM								
73	-									
					(74') brown (7.5YR 5/4)					
**	-				, , , , , , , , , , , , , , , , , , ,					
PG&E TOP	1									
76	-									
77					(77.0 - 80.0') Topock - Alluviur					
	-				(77.0 - 80.0) Topock - Alluviur Deposits; Silty sand with grave (SM); brown (7.5YR 5/4)	el				
K C:\USI	_	SM								
ਨੂੰ <u></u> 79	1									
- PG&E	1									
ું <mark>80</mark> Abbre	viations: US	SCS = Unifie	ed Soil Cl	assification	System, ft = feet, bgs = l	pelow ar	ound surface. ams	l = above m	nean sea level	, GW =
·					water measured during the					•
RZ DR	· · · · · · · · · · · · · · · · · · ·		-	<u> </u>	<u> </u>					

9	ARCA	DIS	Design & Consultar for natural and built assets	псу	Drilling Log				Sheet:	5 of 6
Date S	Started:	03/10/2	2020		ace Elevation:	<u>502</u>	2.67 ft amsl	Borine	g No.: IRZ	Z-33
	Completed:	03/17/2			ning (NAD83):		01792.01			<u> </u>
Drilling	-	Casca			ing (NAD83):			Client:	PG&E	
_	g Method:	<u>Dual R</u>	-		I Depth:		•	Project:		emedy Phase 1
	ig Type:		ost DR-24I		ductor Casing Diameter:			Location:	PG&E Topo	ck, Needles,
	Name:	Jon Ma			Casing Diameter:		inches		<u>California</u>	
_	g Asst:		Amezguit					Project Nu	umber: RC00	0753.0051
	Pusher:	A. Lam		•	h to First Water:		6 ft bgs			
Rig G	eologist:	N. Neo	n / E. Redr	lerConv	verted to Well: Description	X	Yes No			
Depth (ft)	Drilling Run and Averag Penetration F	e 030		Casing Diameter	(See Pilot boring log for full geologic descriptions)		Drilling notes and observation temporary backfill ma			Drilling Fluid
81	(80.5 - 100.4 1.39 mins/ft	SW-		(80.5 - 100.4') 16.0" Steel Casing	(80.0 - 87.0') Topock - Alluvium with silt and gravel (SW-SM); brown (7.5YR 5/4) (87.0 - 102.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); yellowish brown / moderate yellowish brown (10YR 5/4) (91') brown (7.5YR 5/4)	m	(80.0') Observed trace amour Lapis Luster Sand in drill cutting (82.0 - 85.0') Rough drilling (90.0') Observed trace amour Lapis Luster Sand in drill cutting (98.0 - 102.0') Rough drilling	nts of Cemex		(80.5 - 100.4') 100 gallons of water used; 450 gallons of water recovered; 350 gallons of water gained
100 Abbre	ା viations: U	SCS = L	Inified Soil	Classification	System, ft = feet, bgs = I	belo	w ground surface, amsl	l = above n	nean sea level	, GW =

groundwater, NR = no recovery; Notes: depth to water measured during the collection of the first VAS interval

9	ARCA	DIS	Design & Consultar for natural and built assets	icy	Drilling Log		Sheet:	6 of 6
, , , -	Started:	03/10/2			ace Elevation:	502.67 ft amsl	Boring No.: IR	Z-33
	Completed:	03/17/2			ning (NAD83):	2101792.01		
Drilling		Cascac			ing (NAD83):	7615827.86	_ Client: <u>PG&E</u>	
_	Method:	Dual R	•		Depth:	119.5 ft bgs		emedy Phase 1
	ig Type:		ost DR-24I		ductor Casing Diameter:		· · · · · · · · · · · · · · · · · · ·	ock, Needles,
	Name:	Jon Ma			Casing Diameter:	16 inches	<u>California</u>	
Drilling			Amezguit			15.5 & 17.5 Tricone	_ Project Number: RC00	00753.0051
	Pusher:	A. Lam		-	h to First Water:	49.6 ft bgs	_	
Rig Ge	eologist:	K. Keol	n / E. Redr	<u>ner</u> Conv	verted to Well:	× Yes No		
Depth (ft)	Drilling Run and Averag Penetration F	je Coc		Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	temporary backfill ı	ations confirming presence of material in drill cuttings	Drilling Fluid
 101 _102_		SN	1		(100') brown (7.5YR 5/4)	(100.0') Observed trace an (8x20) Lapis Luster Sand ii		(100.4 - 119.5') 200 gallons of water used; 502 gallons of water recovered; 302 gallons of water gained
					(102.0 - 107.0') Topock - Alluvium Deposits; Silty sand (SM); brown (7.5YR 5/4)	119		
104								
105		SN	1			0		
106								
107					(107.0 - 109.0') Topock -			
		SV	v		Alluvium Deposits; Well grade sand (SW); dark yellowish brown (10YR 4/4)	ed		
109					(109.0 - 110.5') Topock -			
110_	(100.4 - 119.5 2.46 mins/ft	5) MI	-	(100.4 - 119.5') 16.0" Steel Casing	Weathered Bedrock - conglomerate; Sandy silt (ML) brown (7.5YR 4/4)); (110.0') Observed trace an (8x20) Lapis Luster Sand ii		
					(110.5 - 119.5') Topock - Competent Bedrock - conglomerate		rum oddings.	
112								
113								
114								
115								
116								
-								
117								
						(440.00.0)	10000000	
[- - - - 119_						(118.0') Observed trace an (16x30) Lapis Luster Sand	nounts of Cemex #2/12 Mesh in drill cuttings.	
400			<u> </u>	}	End of Boring at 119.5 ft bgs	<u> </u>		
120 Abbre	viations: U	SCS = L	Inified Soil	Classification	System, ft = feet, bgs =	below ground surface, an	nsl = above mean sea leve	el, GW =
						the collection of the first \/		

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, NR = no recovery; Notes: depth to water measured during the collection of the first VAS interval

9/-	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	et: 1 of	6
Date S					Surface			Boring	No.:	IRZ-33-P	ilot
		ted: <u>01/23/2</u>			Northing		-				
Drilling Drilling		Cascao			Easting		•		G&E	N Domody Dk	1
Drill Ri			ongyear Trad		Total De	•	116 ft bgs eter: 6-10 inches	•		V Remedy Propock, Need	
Driller I		. <u>Boart L</u> <u>Eddie F</u>	••				/ater: 49.6 ft bgs		aliforni	•	163,
Drilling			delaria / F. Sa		Samplin					RC000753.00)51
Logger		Joe La			Samplin	-					
Editor:		Grant V	Willford		Convert	•					
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil De	escription		Drilling Notes	Drilling Fluid
1	0				NR		(0.0 - 8.0') No recovery (NR); see	e drilling notes		(0.0 - 8.0') Core not collected drilled with 10-inch conductor casing to 8 ft. bgs.	(0.0 - 116.0') No water used
9 9 10				Topock - Fill			(8.0 - 10.5') Topock - Fill; Well g dark yellowish brown (10YR 4/4) grained, angular to round; little g subangular to round; trace silt; limetadiorite; moist	i; very fine grained to very coa granules to very large pebbles ttle coarser clasts composed graded grayel with sand (GW	arse , of	(8.0 - 27.0') Soft drilling	
11 12 13 14 15	108			Topock - Fill	GW		brown (10YŔ 5/3); granules to vesubround; and very fine to very c subround; trace silt; and coarser dry (11.2 - 18.5') Topock - Fill; Poorl yellowish brown / moderate yello grained to very coarse grained, a to very large pebbles, angular to clasts composed of metadiorite; (14.5'); moist; increase in granul	ery large pebbles, angular to oarse grained sand, angular clasts composed of metadic ly graded sand with gravel (S owish brown (10YR 5/4); very angular to round; some granu round; trace silt; some coars dry to moist	to vrite; W); fine lles er		
16	120			Topock - Fill	GW	•	(16.5'); dry to moist (17'); increase in sand, decrease (18.5 - 21.7') Topock - Fill; Well yellowish brown / moderate yello grayish green (GLEY1 5/5G); gra	graded gravel with sand (GW wish brown (10YR 5/4) trace			
20 Abbrev	iations	: USCS = I	Jnified Soil Cl	·		•	angular to subround; and very fin angular to subround; trace silt; a et, bgs = below ground su	ne to very coarse grained san and coarser clasts composed	of	a level. GW =	

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 2 of	6
	Started:	01/16/2			Surface			Boring No.:	: IRZ-33-P	ilot
	•	ted: <u>01/23/2</u>			Northing		•	-		
Drilling		Cascac			Easting	•	•	Client: PG&E	W/ D l Dl-	
_	Metho		ongyear Trac		Total De	•	116 ft bgs eter: 6-10 inches	Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles,		
Driller	g Type	. <u>Boart L</u> <u>Eddie F</u>	•				Vater: 49.6 ft bgs		•	C S,
Drilling			delaria / F. Sa		Samplin		•	<u>California</u> el Project Number: <u>RC000753.0051</u>		
Logge		Joe La			Samplin	•		i rojouritambor.	110000100.00	01
Editor:		Grant V			Convert	-		· 		
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
21				Topock - Fill	GW		metadiorite; trace mica; moist			
22 23	120						(21.5'); lens of pulverized grey rock and silt (21.7 - 33.0') Topock - Fill; Well graded sand yellowish brown / moderate yellowish brown (grained to very coarse grained, angular to sub to very large pebbles, angular to subround; tra clasts composed of metadiorite; trace sandsto	10YR 5/4); very fine bround; and granules ace silt; and coarser		
24 25	120						000			
 26 27							(26'); some granules to very large pebbles, ar trace quartzite; moist; increase in sand, decrepebbles			
28				Topock - Fill	SW		0/6/		(27.0 - 37.0') Rough drilling	
29 30							(29'); dry to moist (30'); moist			
31 31 32										
32	120						(33.0 - 34.5') Topock - Fill; Well graded sand			
 34 				Topock - Fill	SW-SM		(SW-SM); grayish brown (10YR 5/2); very fine coarse grained, angular to subround; and grapebbles, angular to subround; little silt; and composed of metadiorite; dry (34.5 - 39.0') Topock - Fill; Well graded sand	nules to large parser clasts with gravel (SW);		
35 36 				T			yellowish brown / moderate yellowish brown (grained to coarse grained, angular to subrour very large pebbles, angular to subangular; tra clasts composed of metadiorite; dry to moist	10YR 5/4); very fine nd; little granules to		
37 38 	120			Topock - Fill	SW				(37.0 - 57.0') Normal drilling	
39 		11000		Topock - Alluvium Deposits	SM		(39.0 - 39.2') Topock - Alluvium Deposits; Silt (SM); olive gray / light olive gray (5Y 5/2); very medium grained, subangular to subround; littl	fine grained to e granules to very		
Abbre	viations	: USCS = L	Initied Soil Cl	assification	System	ı, tt = fe	et, bgs = below ground surface, ams	si = above mean se	a level, GW =	

groundwater, ppb = parts per billion, 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

Drilling Method: Sonic Drilling Type: Boart Longyear Track Mount Driller Name: Eddie Ramos Drilling Asst: J. Candelaria / F. Sandoval Sampling Method: Sampling Method: 4. inch x 10ft Core Barrel Project Number: RC000753. Sampling Interval: Continuous Editor: Grant Willford Sample ID	of 6
Date Completed: 01/23/2020 Northing (NAD83): 2101/92.01 Drilling Co.: Cascade Easting (NAD83): 7615827.86 Client: PG&E Drilling Method: Sonic Drilling Type: Boart Longyear Track Mount. Borehole Diameter: 6-10 inches Location: PG&E Topock, Ne Driller Name: Eddie Ramos Depth to First Water: 49.6 ft bgs California Drilling Asst: J. Candelaria / F. Sandoval Sampling Method: Sampling Method: Continuous Editor: Grant Willford Converted to Well: Yes No Sieve Sample ID Sieve	3-Pilot
Drilling Method: Sonic Drilling Type: Boart Longyear Track Mount Drill Rig Type: Boart Longyear Track Mount Driller Name: Eddie Ramos Drilling Asst: J. Candelaria / F. Sandoval Joe Latham Sample ID Sample	<u> </u>
Drill Rig Type: Driller Name: Drilling Asst: Logger: Editor: Grant Willford Groundwater Sample ID Groundwat	
Driller Name: Drilling Asst: Logger: Logger: Grant Willford Groundwater Sample ID Sieve Sample ID Sieve A11 A12 A22 A43 BA3 BA3 BA3 BA3 BA3 BA3 BA3	dy Phase 1
Drilling Asst: Logger: Joe Latham Sampling Interval: Continuous Grant Willford Converted to Well: Sieve Sample ID Groundwater Sample ID Groundwater Sample ID At 1	<u>leedles,</u>
Logger: Editor: Grant Willford Converted to Well: Yes No Soil Description Drilling Notes Sample ID Original Sample ID Drilling Notes Soil Description Soil Description Drilling Notes Soil Description Soil D	
Editor: Grant Willford Converted to Well: Yes No Soil Description Drilling Notes Soil Description	3.0051
Sieve Sample ID Groundwater Sample ID Groundwater Sample ID Groundwater Sample ID Soil Description Drilling Notes Somple ID Soil Description Drilling Notes Somple ID Soil Description Drilling Notes Somposed of metadiorite; dry (39.2 - 46.0) Topock - Alluvium Deposits; Sity sand with gravel (39.2 - 46.0) Topock - Alluvium Deposits; Sity sand with gravel (39.2 - 46.0) Topock - Alluvium Deposits; Sity sand with gravel (39.2 - 46.0) Topock - Alluvium Deposits; Sity sand with gravel (39.2 - 46.0) Topock - Alluvium Deposits; Sity sand with gravel (39.2 - 46.0) Topock - Alluvium Deposits; Sity sand with gravel (39.2 - 46.0) Topock - Alluvium Deposits; Sandy silt (ML); dark	
large pebbles, angular to subangular; little silt; little coarser clasts composed of metadiorite; dry (39.2 - 46.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); yellowish brown (10YR 5/4); very fine grained to very coarse grained, angular to subround; and granules to large pebbles, angular to subround; and granules	
composed of metadiorite; dry (39.2 - 46.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); yellowish brown / moderate yellowish brown (10YR 5/4); very fine grained to very coarse grained, angular to subround; and granules to large pebbles, angular to subangular; little silt; and coarser clasts composed of metadiorite; moist (40.3') dark yellowish brown (10YR 4/4); dry; increase in sand, decrease in granules and pebbles SM IRZ-33-SS- 45-47 1/24/2020 Topock - ML (46.0 - 46.5') Topock - Alluvium Deposits; Sandy silt (ML); dark	otes Drilling Fluid
1/24/2020 Topock - ML (46.0 - 46.5') Topock - Alluvium Deposits; Sandy silt (ML); dark	
Alluvium OB:30 Alluvium Deposits Grayish brown (2.5Y 4/2); low plasticity; some very fine to fine Deposits pebbles, subangular to subround; trace granules to medium pebbles, subangular; trace coarser clasts composed of pebbles, subangular; trace coarser clasts composed of	
48	
49-54 (2100 ppb) 1/21/2020 13:05 IRZ-33-SS- 51-56 1/24/2020 08:38 (51.0 - 56.0') Topock - Alluvium Deposits; Well graded sand with silt and gravel (SW-SM); yellowish brown / moderate yellowish brown / floyr R 5/4); very fine grained to very coarse grained, angular to subangular; some granules to very large pebbles, angular to subangular; little silt; some coarser clasts composed of metadiorite; dry to moist; iron oxide staining SW-SM (54'); moist (55'); dry to moist	
57 Topock - Alluvium Deposits; Silty sand with gravel (SM); light olive brown (2.5Y 5/3); very fine grained to very coarse grained, subangular to subround; some silt; little granules to very large pebbles, angular to subangular; little coarser clasts composed of metadiorite; dry (57') brown (7.5YR 5/4); some granules to very large pebbles, angular to subangular; little coarser clasts composed of metadiorite; dry (57') brown (7.5YR 5/4); some granules to very large pebbles, angular to subangular; moist; iron oxide staining; increase in sand, decrease in silt Abbreviations: USCS = Unified Soil Classification System (ft = feet, bros = below ground surface, amsl = above mean sea level. GW	illing

9/	ARC	CADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	neet: 4 of	6
Date S					Surface		•	Boring No.	: IRZ-33-P	ilot
		ted: <u>01/23/2</u>			Northing		•	-		
Drilling		Cascad			Easting	•	•	Client: PG&E		
Drilling					Total De	•	116 ft bgs	-	SW Remedy Ph	
Drill Ri Driller I			ongyear Trac					Location: <u>PG&E</u> Califor	•	ies,
Drilling			delaria / F. Sa		Samplin		Water: <u>49.6 ft bgs</u> nod: 4 inch x 10ft Core Barrel			
Logge		Joe Lat			Samplin	-		_ FTOJECT NUTIBEL.	<u>KC000733.00</u>	<u> </u>
Editor:		Grant V			Convert	-		-		
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description		Drilling Notes	Drilling Fluid
61 62 63 64 65	120	IRZ-33-SS- 60-65 1/24/2020 08:45		Topock - Alluvium Deposits	SM		(61'); moist (62.5'); dry (63'); moist to wet (64'); dry to moist; iron oxide staining			
66 67 68		IRZ-33-SS- 65-70 1/24/2020 08:50					(65.5') yellowish brown / moderate yellowish be little silt; moist to wet; iron oxide staining; incrincrease in granules and pebbles (67.0 - 77.0') Topock - Alluvium Deposits; Silt (7.5YR 5/4); very fine grained to very coarse gubround; some silt; little granules to very lattle to subangular; little coarser clasts composed	rease in sand, ty sand (SM); brown grained, angular to ge pebbles, angular		
69 70 71				Topock -	0		(69') yellowish brown / moderate yellowish broto moist			
72 73 74 75	120	IRZ-33-SS- 70-75 1/24/2020 09:00	IRZ-33-VAS- 72-77 (1600 ppb) 1/22/2020 09:40	Alluvium Deposits	SM		(74') brown (7.5YR 5/4); moist to wet			
 76 77		IRZ-33-SS- 75-77 1/24/2020 09:04					(77.0 - 80.0') Topock - Alluvium Deposits; Silt	ty sand with gravel	(77.0 - 87.0')	
78 	120	IRZ-33-SS- 77-80 1/24/2020 09:09		Topock - Alluvium Deposits	SM		(77.0 - 80.0") Topock - Alluvium Deposits; Silt (SM); brown (7.5YR 5/4); very fine grained to angular to subround; some silt; little granules pebbles, angular to subangular; wet; iron oxid	very coarse grained, to very large	Soft drilling	
80 Abbres	viations	. LISCS - I	Inified Soil CL		Systom	<u>) 네네스</u> v ft — f	eet has = helow around surface ams	al = abovo moan s	oa lovol GW =	

9/	\R(ADIS	Design & Consultancy for natural and built assets		Bo	ring	Log	:	Sheet: 5 of	6
Date S	tarted:	01/16/2	2020		Surface	Elevat	ion: <u>502.67 ft amsl</u>	Boring No	o.: <u>IRZ-33-P</u>	ilot
		ted: <u>01/23/2</u>			Northing		•			
Drilling		Cascac			Easting	•	•	Client: PG&		
Drilling					Total De	-	116 ft bgs	Project: Final GW Remedy Phase Location: PG&E Topock, Needles,		
Drill Ri			ongyear Trac						•	les,
Driller I		Eddie F					Water: 49.6 ft bgs	Califo		ν Γ 4
Drilling			<u>delaria / F. Sa</u>		Samplin Samplin	-		Project Numbe	r: <u>RC000753.00</u>	151
Logge Editor:		<u>Joe Lat</u> <u>Grant V</u>			Converte	-		-		
Luitoi.		Gianti	Villiord				Tes INO			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
81 82 83 84 85 86	120	IRZ-33-SS- 80-84 1/24/2020 09:13 IRZ-33-SS- 84-87 1/24/2020 09:17		Topock - Alluvium Deposits	SW-SM		(80.0 - 87.0') Topock - Alluvium Deposits; We silt and gravel (SW-SM); brown (7.5YR 5/4); very coarse grained, angular to subround; sor large pebbles, angular to subangular; little silt coarser clasts composed of metadiorite; wet; (82.5'); green staining	very fine grained to me granules to very t; trace clay; some		
87 88 89 		IRZ-33-SS- 87-90 1/24/2020 09:22			0		(87.0 - 102.0') Topock - Alluvium Deposits; Si (SM); yellowish brown / moderate yellowish brown fine grained to very coarse grained, angu some granules to very large pebbles, angular silt; trace clay; some coarser clasts compose moist; iron oxide staining (88'); dry to moist (89'); moist	rown (10YR 5/4); llar to subround; to subangular; some	(87.0 - 107.0') Normal drilling	
90 91 92 93 94	120	IRZ-33-SS- 90-95 1/24/2020 09:27		Topock - Alluvium Deposits	SM		(91') brown (7.5YR 5/4); and granules to very angular to subangular; little silt; wet; decrease			
95 96 97 98 99	120	IRZ-33-SS- 95-99 1/24/2020 09:32 IRZ-33-SS- 99-102					(95.5') yellowish brown / moderate yellowish become granules to very large pebbles, angular increase in silt and sand, green staining (97'); some silt; little granules to very large pesubangular; trace clay; moist; decrease in sand, decrease pebbles (99'); dry to moist	to subangular; dry; bbles, angular to		
100 ∆hhrev	<i>i</i> iations	1/24/2020	Inified Soil Cl	assification	System	ft = f	eet has = helow around surface ame	el = ahove mean	sea level GW -	

9/	\R(CADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 6 of	6
Date S	tarted	: <u>01/16/</u>	2020		Surface	Elevati	on: <u>502.67 ft amsl</u>	Borin	a No .	IRZ-33-P	ilot
Date C	omple	eted: <u>01/23/</u>	2020		Northin	g (NAD	83): <u>2101792.01</u>	Doming	9 110	1112-00-1	1101
Drilling		<u>Casca</u>	ide		Easting	(NAD8	3): <u>7615827.86</u>	Client:	PG&E		
Drilling	Metho	od: <u>Sonic</u>	Drilling		Total D	epth:	116 ft bgs	Project:	Final G	W Remedy Pl	nase 1
Drill Ri			<u>Longyear Tra</u>							Topock, Need	les,
Driller I			Ramos		•		Vater: 49.6 ft bgs		<u>Californ</u>		
Drilling			<u>idelaria / F. S</u>		Samplir	-		Project No	umber:	RC000753.00)51
Logge		Joe La			Samplir	-					
Editor:		<u>Grant</u>	Willford		Conver	ed to V	/ell: ⊠ Yes □ No				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description			Drilling Notes	Drilling Fluid
101		09:37 IRZ-33-SS- 99-102 1/24/2020 09:37		Topock - Alluvium Deposits	SM		(100') brown (7.5YR 5/4); iron oxide staining; mottling present	red and white			
102											
103							(102.0 - 107.0') Topock - Alluvium Deposits; S brown (7.5YR 5/4); very fine grained to very co angular to subround; some silt; little granules pebbles, angular to subangular, little coarser of	parse grained, to very large	,		
-	120						metadiorite; wet; iron oxide staining				
104		IRZ-33-SS-		Topock -							
405		102-107 1/24/2020		Alluvium Deposits	SM						
105		09:42									
106_											
100							(106'); dry to moist; red and white mottling pre	sent			
			IRZ-33-VAS-								
		IRZ-33-SS- 107-109 1/24/2020 09:48	105-110 (1300 ppb) 1/23/2020 10:10	Topock - Alluvium Deposits	SW		(107.0 - 109.0') Topock - Alluvium Deposits; V (SW); dark yellowish brown (10YR 4/4); very fit coarse grained, angular to subround; trace sm pebbles, angular to subangular; trace silt; trac composed of metadiorite; wet	ine grained to nall to very lar	very ge	(107.0 - 112.0') Very rough drilling, drill rods chattering,	
109				Topock -	1.5.		(109.0 - 110.5') Topock - Weathered Bedrock			bedrock contact at	
110_	60	IRZ-33-SS- 109-111 1/24/2020 09:53		Weathered Bedrock - conglomerate	ML e		Sandy silt (ML); brown (7.5YR 4/4); no plastici very coarse grained sand, angular to subround large pebbles, angular to subangular; little coacomposed of metadiorite; moist to wet	d; little granule arser clasts	es to	110.5 ft bgs.	
111_							(110.5 - 116.0') Topock - Competent Bedrock friable, pulverized bedrock	- conglomera	ite; dry,		
5											
112										(440.0	
				Topock - Competent Bedrock -						(112.0 - 116.0') Very rough drilling, drill rods chattering, 6	
114	48			conglomerate	Э					inches of slough from 112 to 112.5 ft bgs.	
115										bys.	
5 – – 8 <u>116</u>											
6					_		End of Boring at 116.0 ft bg	ıs.			
117_											
Ne.OC											
119											
120 Abbrev	iation	e: 11808 - 1	Unified Sail C	laccification	Syston	1 ft – fc	et, bgs = below ground surface, ams	l = ahovo n	nean so	a level CW -	
D							et, bgs = below ground surface, ams blue water table symbol represents de				e first V/AS
<u> </u>			-		-		compaction of sediments in the core	•	J. 111Ca3	arca daring in	o mac vao
n itoi va	., appe	or it partial i	500 voi 103 0a	. 50 010 103	Jan OI P	COINGI	sempassion of soulments in the core	~49			

ARCADIS Design & Const. for natural and built assets **Temporary Backfill Log** Sheet: Date Started: 01/23/2020 Surface Elevation: 502.67 ft amsl Well ID: IRZ-33-Pilot 2101792.01 Date Completed: 01/23/2020 Northing (NAD83): Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615827.86 Client: PG&E Drilling Method: Project: Final GW Remedy Phase 1 Sonic Drilling Total Depth: 116 ft bgs Driller Name: **Eddie Ramos** Borehole Diameter: 6-10 inches Location: PG&E Topock, Needles, California Depth to First Water: 49.6 ft bgs J. Candelaria / F. Sandoval Drilling Asst: Editor: **Grant Willford** Project Number: RC000753.0051 Logger: Joe Latham Geologic Formation Material Volumes Installed USCS Class USCS Code Depth (ft) Groundwater Calculated Well Construction Note: percentages are the actual volume vs the calculated volume Sample ID Material Volumes (0.0 - 0.5')Steel Plate Note: Steel plates with BMPs in place (0.5 - 5.0')(0.5 - 5.0') 6 bags (109%) (0.5 - 5.0')Cemex #60 Mesh Note: Surface seal sand 5.5 bags (40x70) Lapis Lustre Sand (0.0 - 8.0')NR 10.0" Borehole Topock - Fill Topock - Fill 12 (5.0 - 106.0')Cemex #3 MESH (5.0 - 106.0')(5.0 - 106.0') 50 bags (120%) (8x20) Lapis Lustre 41.7 bags Note: Backfill sand (8.0 - 116.0')6.0" Borehole Topock - Fill SW Topock - Fill Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

ARCA	DIS Design & C for natural built assets	Consultancy Land S		Temporary I	Backfill Log	:	Sheet: 2 of 6		
Drilling Co.: Drilling Method:	te Completed: 01/23/2020 ling Co.: Cascade ling Method: Sonic Drilling ller Name: Eddie Ramos		_ Surface Elevation: _ Northing (NAD83): _ Easting (NAD83): _ Total Depth: _ Borehole Diameter:	502.67 ft amsl 2101792.01 7615827.86 116 ft bgs 6-10 inches	Client: <u>PG&</u> Project: <u>Final</u>	RZ-33-Pilot E GW Remedy Phase 1 E Topock, Needles, California			
Drilling Asst:			boreriole Diameter.		Location. <u>I Od</u>	Location: 1 Gal Topock, Needles, Galilonna			
Logger:	Joe Latham			_ Editor:	Grant Willford	Project Numbe	Project Number: RC000753.0051		
Groundwate Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume		
21 22 22 23	Topock - Fill	GW				69			
24 25 26 									
27 28 28 29 30	Topock - Fill	SW		(5.0 - 106.0') Cemex #3 MESH (8x20) Lapis Lustre	(8.0 - 116.0') 6.0" Borehole	(5.0 - 106.0') 41.7 bags	(5.0 - 106.0') 50 bags (120%) Note: Backfill sand		
31 32 		<		Sand		Till bags	Nec. Sasian cane		
34	Topock - Fill	SW-SM							
35									
37	Topock - Fill	SW							
39 40 Abbreviations: U	Topock - Alluvium Deposits SCS = Unified	SM Soil C	lassificati	on System, ft = feet, bd	s = below ground surfac	e, amsl = above mean	sea level, GW = groundwater,		

ARCADIS Design & Const for natural and built assets **Temporary Backfill Log** Sheet: Date Started: Surface Elevation: 502.67 ft amsl 01/23/2020 Well ID: IRZ-33-Pilot 2101792.01 Date Completed: 01/23/2020 Northing (NAD83): Drilling Co.: <u>Cascade</u> Easting (NAD83): 7615827.86 Client: PG&E Drilling Method: Project: Final GW Remedy Phase 1 Sonic Drilling Total Depth: 116 ft bgs Driller Name: **Eddie Ramos** Borehole Diameter: 6-10 inches Location: PG&E Topock, Needles, California Depth to First Water: 49.6 ft bgs J. Candelaria / F. Sandoval Drilling Asst: Editor: **Grant Willford** Project Number: RC000753.0051 Logger: Joe Latham Geologic Formation USCS Class Material Volumes Installed USCS Code Depth (ft) Groundwater Calculated Well Construction Note: percentages are the actual Sample ID Material Volumes volume vs the calculated volume 42 Topock -43 SM Alluvium Deposits Topock -ML Alluvium Deposits Topock -Alluvium SM Deposits (5.0 - 106.0') Cemex #3 MESH (8x20) Lapis Lustre (5.0 - 106.0') 41.7 bags (8.0 - 116.0') (5.0 - 106.0') 50 bags (120%) 50 6.0" Borehole Note: Backfill sand Sand IRZ-33-VAS-(2100 ppb) 1/21/2020 52 13:05 Topock -Alluvium SW-SM Deposits .55 56 57 Topock -58 Alluvium SM Deposits 59 Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater,

/ -	4KO4	DIS for natu built ass	ral and ets		Temporary I	Backfill Log	\$	Sheet: 4 of 6
Date S	Started:	01/23/2020			Surface Elevation:	502.67 ft amsl	Well ID: IF	RZ-33-Pilot
Date C	Completed:	01/23/2020			Northing (NAD83):	2101792.01		(Z-00-1 110t
Drilling	Co.:	Cascade			Easting (NAD83):	7615827.86	Client: PG&	<u>E</u>
Drilling	rilling Method: Sonic Drilling				Total Depth:	116 ft bgs	Project: <u>Final</u>	GW Remedy Phase 1
Driller I	Name:	Eddie Ramo	s		Borehole Diameter:	6-10 inches	Location: PG&	E Topock, Needles, California
Drilling	Asst:	J. Candelari	a / F. Sa	andoval	Depth to First Water:	49.6 ft bgs		
Logge	r:	Joe Latham			Editor:	Grant Willford	Project Numbe	r: RC000753.0051
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
61 62 63 64 65 666 67		Topock - Alluvium Deposits	SM					
68	IRZ-33-VAS- 72-77 (1600 ppb) 1/22/2020 09:40	Topock - Alluvium Deposits	SM		(5.0 - 106.0') Cemex #3 MESH (8x20) Lapis Lustre Sand	(8.0 - 116.0') 6.0" Borehole	(5.0 - 106.0') 41.7 bags	(5.0 - 106.0') 50 bags (120%) Note: Backfill sand
		Topock - Alluvium Deposits	SM					
Abbre	viations: US	SUS = Unified	Soil C	assiticat	tion System, tt = feet, bg	s = below ground surface, a	imsi = above mean	sea level, GW = groundwater,

-	4KO4	DIS for natur built ass	al and ets		i emporary i	Backfill Log		Sheet: 5 of 6	
Date S	Started:	01/23/2020			Surface Elevation:	502.67 ft amsl	Well ID: IF	RZ-33-Pilot	
	-	01/23/2020			Northing (NAD83):	2101792.01			
Drilling		<u>Cascade</u>			Easting (NAD83):	7615827.86	_ Client: <u>PG&</u>	<u> </u>	
	Method:	Sonic Drilling]		Total Depth:	116 ft bgs	Project: <u>Final</u>	GW Remedy Phase 1	
Driller I		Eddie Ramo			Borehole Diameter:	6-10 inches	Location: <u>PG&</u>	<u>E Topock, Needles, California</u>	
Drilling	Asst:	J. Candelaria		andoval		_			
Logge	r:	Joe Latham			Editor:	Grant Willford	Project Number: RC000753.0051		
Depth (ft)	Groundwate Sample ID		USCS	USCS Class	Well	Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume	
81 82 83 84 85 86 87		Topock - Alluvium Deposits	SW-SM				3		
88		Topock - Alluvium Deposits	SM		(5.0 - 106.0') Cemex #3 MESH (8x20) Lapis Lustre Sand	(8.0 - 116.0') 6.0" Borehole	(5.0 - 106.0') 41.7 bags	(5.0 - 106.0') 50 bags (120%) Note: Backfill sand	
100		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	10 " -				<u> </u>		
Abbre	viations: US	SUS = Unified	Soil C	assiticat	tion System, tt = feet, bg	s = below ground surface, an	nsi = above mean	sea level, GW = groundwater,	

9/	ARCA	DIS Design & Office for natura built asset	Consultancy Land s		Temporary I	Backfill Log	5	Sheet: 6 of 6		
Date C Drilling Drilling	•	01/23/2020 01/23/2020 Cascade Sonic Drilling Eddie Ramos			Surface Elevation: Northing (NAD83): Easting (NAD83): Total Depth: Borehole Diameter:	502.67 ft amsl 2101792.01 7615827.86 116 ft bgs 6-10 inches		RZ-33-Pilot E GW Remedy Phase 1 E Topock, Needles, California		
Drilling Logge		J. Candelaria Joe Latham	/ F. S	andoval	_ Depth to First Water: _ Editor:	: 49.6 ft bgs Grant Willford	— Proiect Numbe	Project Number: <u>RC000753.0051</u>		
Depth (ft)	Groundwate Sample ID	o die	USCS	USCS Class		Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume		
		Topock - Alluvium Deposits	SM				6			
103 104 104 105		Topock - Alluvium Deposits	SM		(5.0 - 106.0') Cemex #3 MESH (8x20) Lapis Lustre Sand		(5.0 - 106.0') 41.7 bags	(5.0 - 106.0') 50 bags (120%) Note: Backfill sand		
106	IRZ-33-VAS- 105-110 (1300 ppb) 1/23/2020 10:10	Topock - Alluvium	SW			(8.0 - 116.0')	5			
109	10.10	Deposits Topock - Weathered Bedrock - conglomerate	_ · _ · _ ML		(106.0 - 116.0')	6.0" Borehole				
		Topock - Competent Bedrock -			Cemex # 2/12 Mesh (16x30) Lapis Lustre Sand		(106.0 - 116.0') 3.9 bags	(106.0 - 116.0') 4 bags (103%) Note: Indicator sand		
114		conglomerate								
117 118 119 1										
=						-		sea level, GW = groundwater,		
	· · · · · · · · · · · · · · · · · · ·					vater, NR = no recovery; No was removed during overdri		e symbol represents depth to ehole		