ARCADIS	
Conductor casing Dia:	

TWB-01 Temporay Final Well Design 3/31/22 Well Casing Outer Diameter:

Well Casing Inner Diameter:

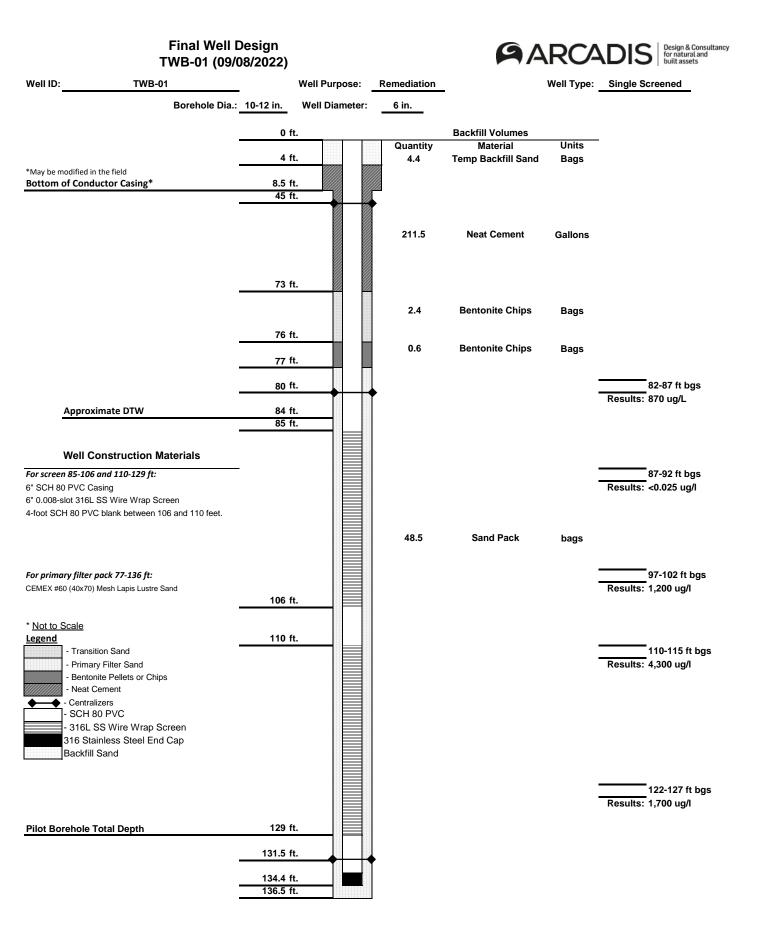


Drill casing Dia: Rathole Dia:

7

6

						Surface Completio	n: TBD	
		Ground surface	0.0	ft.			Annular Materials	
			0.0			Quantity	Material Type	Units
			2.0	ft.		0.0	Native Material	Bags
		Conductor Casing	8.0	ft.				
	Well Materials			6				
	Sch 80 PVC 0.0 Sch 80 PVC Bla		20.0	ft.	< ┼ ┝			
	► Centralizer							
	Transition San							
	Bentonite Chip Cemex #3	os or Pellets						
	Cernex no							
Well Materials	Length	10 ft Sections						
sing	77	7.7						
per Screen	50.0	5						
			43.0	ft.				
					• •			
						24.4	Comou #CD	Dama
						24.4	Cemex #60	Bags
			72.0					
			73.0	ft.	┝┼┼┝			
			74.5	ft.				
						0.1	Bentonite Chips	Buckets
			75.0	ft.				
			77.0	ft.				
	۸	proximate DTW	83.5	ft.				
	A		03.5	16				
						17.3	Comov #2	Page
						17.3	Cemex #3	Bags
			127.0	ft.				
			127.3	ft.	∙∐•			
					$\neg \vdash$			
			129.0	ft.				



MARC	ADIS		Well Const	TUCTION LOG	`	Sheet: 1 of 7
ate Started:	03/31/2022		_Surface Elevation:	<u>538.84 ft amsl</u>		VB-01 Temp
ate Completed:	03/31/2022		_Shallow Well Elevation:	538.34 ft amsl		
Drilling Co.:	Cascade		Deep Well Elevation:	<u>N/A</u>	Client: <u>PG&E</u>	
-	Sonic Drilling		Northing (NAD83):	2100941.12		GW Remedy Phase 2A
oriller Name:	Matt Arnold		Easting (NAD83):	7615929.94	Location: <u>PG&E</u>	<u>E Topock, Needles Californi</u>
Drilling Asst:	D Hoeppner		Borehole Diameter:	4-7 inches		
ogger:	Ellen Redner		_Static Water Level:	See Log for Depths	Project Numbe	r: <u>30126255</u>
ditor:	Sean McGra	ne	Development End Date:			
otal Depth:	<u>129.5 ft bgs</u>		Well Completion:	Flush Stick-up	To Be Completed	in Well Vault
Groundwat		USCS Code USCS Class	Constru	ction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actua volume vs the calculated volume
	Fill	N/A	(0.0 - 1.0') Temporary well	► (0.0 - 8.0') 7" Diameter		Note: 12-inch diameter vault
- 1 - 2 - 3	Alluvium Deposits	SM	vault (0.3 - 76.7') 2" Sch. 80 PVC Casing	Borehole		
4 	Alluvium Deposits	SW-SM				
6 7	Alluvium Deposits	SW-SM				
- 8	Alluvium Deposits	SM	(1.0 - 70.5') Cemex #60 (40x70) Lapis Lustre Sand	(8.0 - 127.0') 6" Diameter Borehole	(1.0 - 70.5') 23.5 bags	(1.0 - 70.5') 27 bags (115%) Note: Temporary sand seal
 _13 _14	Alluvium Deposits	GW-GM				
 _15	Alluvium Deposits	ML		• •		
_ 16 _ 17	Alluvium Deposits	SW-SM		> >		
 .18 .19	Alluvium Deposits	SW-SM				
20	Alluvium	SM	××××××××××××××××××××××××××××××××××××××			
			ation System, ft = feet, bgs			
						table marks represent dep
		st developmen				

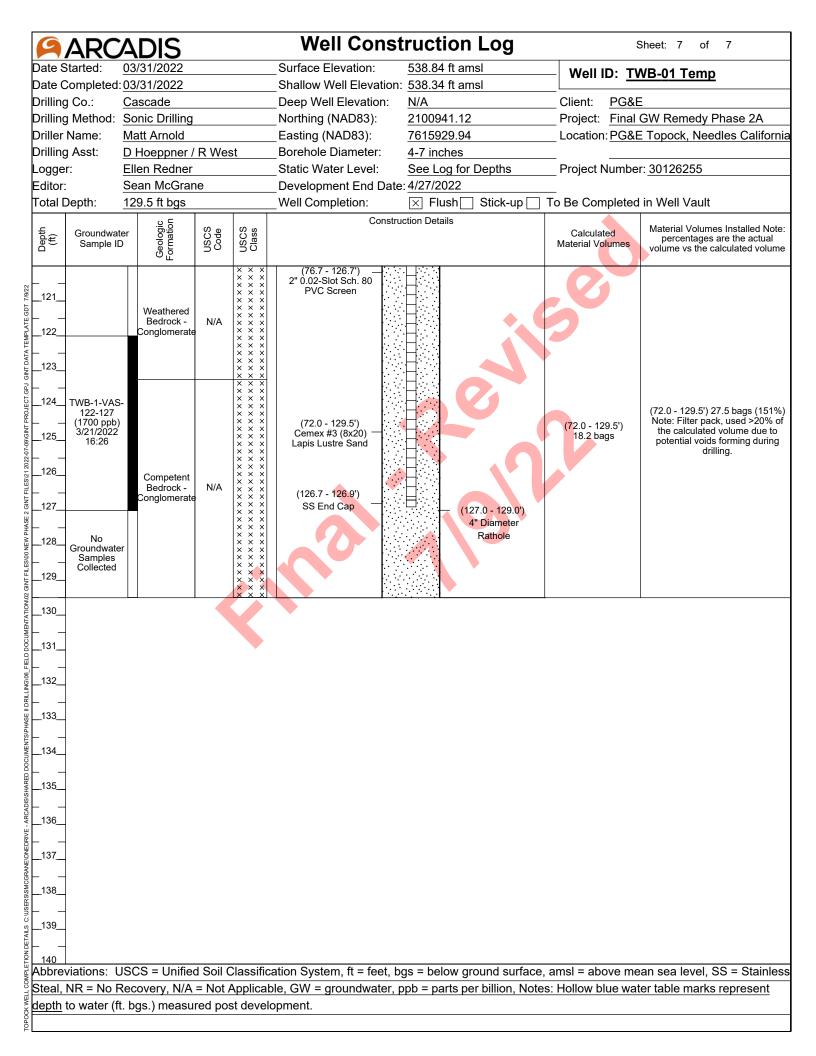
ARC	<u>ADIS</u>			nstruction Log		Sheet: 2 of 7
	03/31/2022		Surface Elevation:	538.84 ft amsl	Well ID: T	VB-01 Temp
ate Completed:			Shallow Well Eleva	tion: <u>538.34 ft amsl</u>		
•	Cascade		Deep Well Elevatio		Client: PG&E	
-	Sonic Drilling		Northing (NAD83):			GW Remedy Phase 2A
	Matt Arnold		Easting (NAD83):	<u>7615929.94</u>	Location: PG&	<u>E Topock, Needles Californi</u>
	<u>D Hoeppner /</u>	R West	Borehole Diameter			
00	Ellen Redner		Static Water Level:		Project Numbe	r: <u>30126255</u>
	Sean McGrar	le	Development End			
otal Depth:	129.5 ft bgs		Well Completion:	Flush Stick-up	To Be Completed	in Well Vault
Groundwate Groundwate Sample ID	Geol	USCS Code USCS	Class	onstruction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actua volume vs the calculated volume
21	Alluvium Deposits	SM	(0.3 - 76.7') – 2" Sch. 80 PVC Casing		60	
 _23 _24 _25 _26 	Alluvium Deposits	SM				
28	Alluvium Deposits	SM				
No Groundwater Samples Collected	Alluvium Deposits	SM	(1.0 - 70.5') Cemex #60 (40x70) [–] Lapis Lustre Sand		(1.0 - 70.5') 23.5 bags	(1.0 - 70.5') 27 bags (115%) Note: Temporary sand seal
	Alluvium Deposits	SM				
	Alluvium Deposits	SM				
			•	bgs = below ground surface,		
	A A A A A A A A A A A A A A A A A A A		icable GW - groundwat	er, ppb = parts per billion, Note	s. Hollow blue water	table marks represent der

ARC/	<u>ADIS</u>		Well Const	ruction Log		Sheet: 3 of 7
Date Started: <u>(</u>	3/31/2022		Surface Elevation:	538.84 ft amsl	Well ID: T	NB-01 Temp
ate Completed: <u>C</u>			Shallow Well Elevation:			<u> </u>
Prilling Co.: <u>(</u>	Cascade		Deep Well Elevation:	<u>N/A</u>	Client: <u>PG&I</u>	
Drilling Method: S	Sonic Drilling		Northing (NAD83):	2100941.12	Project: <u>Final</u>	GW Remedy Phase 2A
riller Name: <u>N</u>	/latt Arnold		Easting (NAD83):	7615929.94	Location: PG&	<u> E Topock, Needles Californi</u>
)rilling Asst: <u>[</u>	Hoeppner	R West	Borehole Diameter:	4-7 inches		
.ogger: <u>E</u>	Ellen Redner		Static Water Level:	See Log for Depths	Project Numbe	r: <u>30126255</u>
Editor:	Sean McGra	ne	Development End Date:	4/27/2022	-	
otal Depth: <u>1</u>	29.5 ft bgs		Well Completion:	⊠ Flush Stick-up	To Be Completed	in Well Vault
Groundwater	Geologic Formation	USCS Code USCS Class	Constru	ction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actua volume vs the calculated volume
		SM	(0.3 - 76.7') (0.3 - 76.7') (0.3 - 76.7')			
_41			Casing	> 6%% > 6%%		
	Alluvium Deposits	SM .				
42	Deposito					
_42						
· _						
_43						
· _						
_44			·			
_						
_45						
	Alluvium	SM				
	Deposits					
.46						
_						
.47						
_48						
10						
_49	Alluvium					
No	Deposits	SW				
_50 Groundwater			(1.0 - 70.5') Cemex #60 (40x70)		(1.0 - 70.5') 23.5 bags	(1.0 - 70.5') 27 bags (115%) Note: Temporary sand seal
Samples Collected			Lapis Lustre Sand		20.0 bago	noto: romporary dana ddar
_51	Alluvium	SM				
	Deposits					
_52						
_ 52						
-						
_ 53	Alluvium	SM .				
_	Deposits	SM				
_54						
_55			ब •			
			•			
· -	Alluvium	SW-SM	• လိုလိုလ် •			
_ 56	Deposits		•			
_			•			
.57			4			
_58						
	Alluvium					
	Deposits	SW-SM				
_ 59						
60 bbreviations: LIS	CS = Unifier	Soil Classific	گُنْهُمْ اللَّهُ اللَّهُ اللَّهُ اللَّهُ ation System, ft = feet, bgs	្យ <u>ែនន័ង</u> = below ground surface	amsl = above mean	sea level SS = Stainless
			ble, GW = groundwater, pp	•		
	÷	st developmer	÷	per samon, non		
water nr. bos m						

<u> ARC</u>	ADIS		Well Const	ruction Log		Sheet: 4 of 7
Date Started:	03/31/2022		_Surface Elevation:	<u>538.84 ft amsl</u>		NB-01 Temp
Date Completed:	03/31/2022		_Shallow Well Elevation:	<u>538.34 ft amsl</u>		<u> </u>
Drilling Co.:	Cascade		Deep Well Elevation:	<u>N/A</u>	Client: <u>PG&I</u>	
-	Sonic Drilling		Northing (NAD83):	2100941.12	-	GW Remedy Phase 2A
Driller Name:	Matt Arnold		Easting (NAD83):	7615929.94	Location: PG&	<u>E Topock, Needles Californi</u>
Drilling Asst:	<u>D Hoeppner</u>		Borehole Diameter:	4-7 inches		
ogger:	Ellen Redner		_Static Water Level:	See Log for Depths	Project Numbe	r: <u>30126255</u>
ditor:	Sean McGra	ne	Development End Date:			
otal Depth:	<u>129.5 ft bgs</u>		Well Completion:	Flush Stick-up	To Be Completed	in Well Vault
Groundwat		USCS Code USCS Class	Constru	ction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actua volume vs the calculated volume
	Alluvium Deposits	SW-SM	(0.3 - 76.7')		60	
 _63	Alluvium Deposits	SM				
64	Alluvium Deposits	SW				
65 66 	Alluvium Deposits	SM	(1.0 - 70.5') Cemex #60 (40x70) Lapis Lustre Sand		(1.0 - 70.5') 23.5 bags	(1.0 - 70.5') 27 bags (115%) Note: Temporary sand seal
_67 68 69 No	Alluvium Deposits	SM				
_70 Groundwate Samples Collected	r Alluvium Deposits	SW-SM				
_71	Alluvium Deposits	SC	(70.5 - 72.0') Holeplug 3/8" — Bentonite Chips		(70.5 - 72.0') 0.4 bags	(70.5 - 72.0') 0.5 bags (125%) Note: Benotnite seal
_ 72 _ 73 74	Alluvium Deposits	SM				
	Alluvium Deposits	SW-SM	(72.0 - 129.5') Cemex #3 (8x20) Lapis Lustre Sand (76.7 - 126.7')		(72.0 - 129.5') 18.2 bags	(72.0 - 129.5') 27.5 bags (151% Note: Filter pack, used >20% of the calculated volume due to potential voids forming during drilling.
-77 -78 -79	Alluvium Deposits	SM	(76.7 - 126.7') 2" 0.02-Slot Sch. 80 PVC Screen			
			ation System, ft = feet, bgs O(0) = G(0) = coundwater, pr			sea level, SS = Stainless table marks represent dept
	-		÷	ou – parts per billion, Note		table marks represent dep
o water (ft. bgs.)	measureu po	si uevelopmen	ı.			

ARC	ADIS			well Const	ruction Log	Ś	Sheet: 5 of 7
ate Started:	03/31/2022			Surface Elevation:	538.84 ft amsl		VB-01 Temp
ate Completed:	03/31/2022			Shallow Well Elevation:	538.34 ft amsl		
rilling Co.:	Cascade			Deep Well Elevation:	<u>N/A</u>	Client: <u>PG&</u>	
rilling Method:	Sonic Drilling			Northing (NAD83):	2100941.12	-	GW Remedy Phase 2A
riller Name:	Matt Arnold			Easting (NAD83):	7615929.94	Location: <u>PG&</u>	<u>E Topock, Needles Californ</u>
rilling Asst:	D Hoeppner /	R West		Borehole Diameter:	4-7 inches		
ogger: ditor:	Ellen Redner Sean McGrar			Static Water Level: Development End Date:	See Log for Depths	Project Numbe	r. <u>30126255</u>
otal Depth:	<u>129.5 ft bgs</u>			Well Completion:	× Flush Stick-up	 To Be Completed	in Well Vault
Groundwat (#) Sample II		USCS Code	USCS Class	Constru	ction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actu volume vs the calculated volum
81 No Groundwate Samples Collected 82 83		SM		(76.7 - 126.7') 2" 0.02-Slot Sch. 80 PVC Screen		60	
.84 — TWB-1-VAS 82-87 — (870 ppb) 2(19)2022	Alluvium J- Deposits	SM					
.85 10:51 	Alluvium Deposits	SM					
90 (<0.025 ppb 3/20/2022 08:50			× × × × × × × ×	(72.0 - 129.5') Cemex #3 (8x20) Lapis Lustre Sand		(72.0 - 129.5') 18.2 bags	(72.0 - 129.5') 27.5 bags (1519 Note: Filter pack, used >20% the calculated volume due to potential voids forming during drilling.
91 92							anning.
93 94	Competent Bedrock - Conglomerate	N/A					
95 96							
~		×					
97	Alluvium		Ĭ				
98 TWB-1-VAS	Deposits	SP-SM					
98 TWB-1-VAS 97-102 (1200 ppb) 3/20/2022 99 16:26		SM					
-		N/A					
100 bbreviations: U	SCS = Unified			<u>l l∵∵</u> on System ft = feet bas	」 <u>⊡⊡d</u> = below around surface	amsl = above mean	sea level, SS = Stainless
							table marks represent de
		· · • • • • • •		,	r r		

ARC	ADIS			Well Const	uction Log		Sheet: 6 of 7
Date Started:	03/31/2022			Surface Elevation:	538.84 ft amsl	Well ID: TV	VB-01 Temp
ate Completed:	03/31/2022			Shallow Well Elevation:	538.34 ft amsl		
Prilling Co.:	Cascade			Deep Well Elevation:	<u>N/A</u>	Client: <u>PG&E</u>	
Prilling Method:	Sonic Drilling			Northing (NAD83):	2100941.12	•	GW Remedy Phase 2A
oriller Name:	Matt Arnold			Easting (NAD83):	7615929.94	Location: <u>PG&E</u>	<u>E Topock, Needles Californi</u>
Prilling Asst:	D Hoeppner /	R West		Borehole Diameter:	4-7 inches		
ogger:	Ellen Redner			Static Water Level:	See Log for Depths	Project Numbe	r: <u>30126255</u>
Editor: Total Depth:	Sean McGran 129.5 ft bgs	е		Development End Date: Well Completion:	<u>4/27/2022</u> ⊠ Flush Stick-up [To Be Completed	in Mall Vault
					tion Details		
Groundwat Ge Sample II			USCS Class	(76.7 - 126.7')	1.1.1.1.1	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actua volume vs the calculated volume
	Weathered Bedrock - Conglomerate	N/A		2" 0.02-Slot Sch. 80 PVC Screen			
	Weathered Bedrock - Conglomerate	N/A	<pre>x x x x x x x x</pre>	(72.0 - 129.5') Cemex #3 (8x20)		(72.0 - 129.5')	(72.0 - 129.5') 27.5 bags (151% Note: Filter pack, used >20% o the calculated volume due to
	Competent Bedrock - Conglomerate	N/A		Lapis Lustre Sand		18.2 bags	potential voids forming during drilling.
	Weathered Bedrock - Conglomerate	N/A ××××××××××××××××××××××××××××××××××××					
bbreviations: U							sea level, SS = Stainless
	N · · · · · · · · · · · · · · · ·		nlicable	CM = aroundwater pr	h — manta man hillian Nlat	o Hollow blue water	table marks represent dep



ARC	ADIS		Well Const	ruction Log	S	Sheet: 1 of 7
Date Started:	09/09/2022		Surface Elevation:	538.84 ft amsl	Well ID: TV	VB-01
Date Completed:	09/12/2022		Shallow Well Elevation:			
Drilling Co.:	Cascade		Deep Well Elevation:	<u>N/A</u>	Client: <u>PG&E</u>	
•	Sonic Drilling		Northing (NAD83):	2100941.12	•	GW Remedy Phase 2A
Driller Name:	Matt Arnold		Easting (NAD83):	7615929.94	Location: <u>PG&E</u>	<u>E Topock, Needles Californi</u>
Drilling Asst:	L.A. / I.S. / D		Borehole Diameter:	10.5-12 inches		
₋ogger: Editor:	Kim Lapszyn Sean McGra		Static Water Level: Development End Date:	See Log for Depths	Project Number	1. 30120200
Lonor. Fotal Depth:	<u>137 ft bgs</u>		Well Completion:		Well Vault	
Groundwat	logic ation	USCS Code USCS Class	-	ction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actua volume vs the calculated volume
	Fill	N/A				
_ 1 _ 2 _ 3	Alluvium Deposits	SM	(0.0 - 4.0') Well Vault			Note: Well vault dimensions 4x feet by 4 feet deep.
 4 5	Alluvium Deposits	SW-SM	(3.5 - 85.0') 6" Sch. 80 PVC Casing	(4.0 - 8.5') 12" Diameter Borehole		3
	Alluvium Deposits	SW-SM	(4.0 - 11.0')		0	(4.0 - 11.0') 6 bags (80%) Note: Grout seal third lift. Six bag of portland cement were added directly into the annular space ar
	Alluvium Deposits r	SM	Type I, II, and V Portland Cement with up to 6% Quik-Gel bentonite	(8.5 - 137.0') 10.5" Diameter Borehole	(4.0 - 11.0') 7.48 bags	hydrated with water to top of the grout seal. The extraction well sanitary seal also serves as the sanitary seal for decommissionir of TWB-01 Temp Well from approximately 4 to 11 ft. bgs.
	Alluvium Deposits	GW-GM	(13.0 - 14.0') Kwik-Zip Centralizer			Note: Kwik-Zip Centralizer had i be trimmed down to fit inside th sonic drill casing. (11.0 - 32.0') 100 gallons (159%
	Alluvium Deposits	ML	(11.0 - 32.0') Type I, II, and V		(11.0 - 32.0')	 Note: Grout seal second lift, use 20% of the calculated volume di to potential voids that formed during drilling and grout migratic into the formation. The extractio
_ 16 _ 17	Alluvium Deposits	SW-SM	Portland Cement with up to 6% Quik-Gel bentonite		62.8 gallons	well sanitary seal also serves as the sanitary seal for decommissioning of TWB-01 Temp Well from approximately 1 to 32 ft. bgs.
	Alluvium Deposits	SW-SM				
 bbreviations: U	 SCS = Unifie	d Soil Classific	ation System, ft = feet, bgs	∃ ⊻∕∕∕ = below ground surface. a	 amsl = above mean :	 sea level, SS = Stainless
			able, GW = groundwater, j			
	-	ured post dev				

ARC	ADIS		Well Const	truction Log	:	Sheet: 2 of 7
ite Started:	09/09/2022		Surface Elevation:	538.84 ft amsl	Well ID: TV	VB-01
te Completed			Shallow Well Elevation			
illing Co.:	Cascade		Deep Well Elevation:	<u>N/A</u>	Client: PG&I	
illing Method:	Sonic Drilling		Northing (NAD83):	2100941.12	-	GW Remedy Phase 2A
iller Name:	Matt Arnold		Easting (NAD83):	<u>7615929.94</u>	Location: <u>PG&I</u>	<u>E Topock, Needles Califorr</u>
illing Asst:	L.A. / I.S. / D.		Borehole Diameter: Static Water Level:	<u>10.5-12 inches</u>	Project Numbe	r: 20126255
gger: litor:	Kim Lapszyns Sean McGrar		Development End Date	See Log for Depths	Project Numbe	1. <u>30120233</u>
tal Depth:	<u>137 ft bgs</u>		Well Completion:		✓ Well Vault	
	÷		Constr	uction Details		
Groundwa Sample I				(), () () ()	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actuvely volume vs the calculated volume
21	Alluvium Deposits	SM	(3.5 - 85.0') 6" Sch. 80 PVC Casing			
 23 24 25 26 27	Alluvium Deposits	SM	(11.0 - 32.0') Type I, II, and V Portland Cement with up to 6% Quik-Gel bentonite		(11.0 - 32.0') 62.8 gallons	(11.0 - 32.0') 100 gallons (159 Note: Grout seal second lift, us >20% of the calculated volume to potential voids that formed during drilling and grout migrat into the formation. The extract well sanitary seal also serves the sanitary seal for decommissioning of TWB-0
28	Alluvium Deposits	SM				Temp Well from approximately to 32 ft. bgs.
- No Groundwate Samples Collected 31 _ - 32 _	Alluvium Deposits	SM				
	Alluvium Deposits	SM	(32.0 - 73.0') Type I, II, and V Portland Cement with up to 6% Quik-Gel bentonite		(32.0 - 73.0') 122.6 gallons	(32.0 - 73.0') 200 gallons (163' Note: Grout seal first lift, use >20% of the calculated volume - to potential voids that formed during drilling and grout migrat into the formation. The extracti well sanitary seal also serves : the sanitary seal for decommissioning of TWB-0'
27 38 39	Alluvium Deposits	SM				Temp Well from approximately to 73 ft. bgs.
			ication System, ft = feet, bg: cable, GW = groundwater,			
1 1 1 2 2 2 2			copio (=)// - groupdwator	nnn = narte ner hillion No	ntes: Solid blue wate	r tahla marke rannasant

ARC	ADIS		Well Const	ruction Log		Sheet: 3 of 7
ate Started:	09/09/2022		Surface Elevation:	538.84 ft amsl	Well ID: TV	VB-01
ate Completed:			Shallow Well Elevation:			
•	Cascade		Deep Well Elevation:	<u>N/A</u>	Client: PG&I	
•	Sonic Drilling		Northing (NAD83):	2100941.12	-	GW Remedy Phase 2A
	Matt Arnold		Easting (NAD83):	<u>7615929.94</u>	Location: <u>PG&I</u>	<u>E Topock, Needles Californi</u>
•	L.A. / I.S. / D. Kim Lapszyn:		Borehole Diameter:	10.5-12 inches	 Draigat Numba	m 20126255
	Sean McGrai		Static Water Level: Development End Date:	See Log for Depths	Project Numbe	1. <u>30120233</u>
	<u>137 ft bgs</u>		Well Completion:		Well Vault	
	-			ction Details		Material Valumes Installed
Groundwate Sample ID		USCS Code USCS Class			Calculated Material Volumes	Material Volumes Installed Note: percentages are the actua volume vs the calculated volume
_			(3.5 - 85.0') 6" Sch. 80 PVC			
_41	Alluvium		Casing			
	Deposits	SM				
_42						
_						
_43						
_						
_44						
_						
. 45	Alluvium					
_	Deposits	SM				
.46						
_						
_47						
_						
_48						Note: Kwik-Zip Centralizer had
_			(48.0 - 49.0')			be trimmed down to fit inside th
_49	All		Kwik-Zip Centralizer			sonic drill casing. (32.0 - 73.0') 200 gallons (163%
— No	Alluvium Deposits	SW	(32.0 - 73.0')			Note: Grout seal first lift, used
50 Groundwate Samples	r		Type I, II, and V Portland Cement		(32.0 - 73.0') 122.6 gallons	to potential voids that formed
_ Collected			with up to 6% Quik-Gel bentonite		122.0 gallolis	during drilling and grout migration into the formation. The extraction
.51	Alluvium Deposits	SM				well sanitary seal also serves a the sanitary seal for
_						decommissioning of TWB-01
.52						Temp Well from approximately to 73 ft. bgs.
_						_
_53	Alluvium					
_	Deposits	SM				
_54						
_						
_ 55						
_	Alluvium					
. 56	Deposits	SW-SM				
_						
.57						
_			:			
. 58			1 🕅			
	Alluvium	SW-SM	1 🔣			
. 59	Deposits]			
60						
			ation System, ft = feet, bgs	*		
	-		able, GW = groundwater, j	opb = parts per billion, No	otes: Solid blue wate	er table marks represent
oth to water (fl	. bgs.) measi	ired post deve	elopment.			

ARC	ADIS		Well Const	ruction Log	\$	Sheet: 4 of 7
Date Started:	09/09/2022		_Surface Elevation:	538.84 ft amsl	Well ID: TV	VB-01
Date Completed:	09/12/2022		_Shallow Well Elevation:	N/A		
Drilling Co.:	Cascade		_Deep Well Elevation:	<u>N/A</u>	Client: PG&E	<u> </u>
Drilling Method:	Sonic Drilling		_Northing (NAD83):	2100941.12	Project: <u>Final</u>	GW Remedy Phase 2A
riller Name:	Matt Arnold		_Easting (NAD83):	7615929.94	Location: PG&E	<u> E Topock, Needles Californ</u>
Drilling Asst:	<u>L.A. / I.S. / D</u>	.Н.	Borehole Diameter:	10.5-12 inches		
ogger:	Kim Lapszynski		_Static Water Level:	See Log for Depths	Project Numbe	r: <u>30126255</u>
Editor:	Sean McGra	ne	_Development End Date:			
Total Depth:	<u>137 ft bgs</u>		_Well Completion:		⊠ Well Vault	1
Groundwat		USCS Code USCS Class	Constru	ction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actu- volume vs the calculated volum
	Alluvium Deposits	SW-SM	(3.5 - 85.0') 6" Sch. 80 PVC Casing			
63	Alluvium Deposits	SM				0
64	Alluvium Deposits	SW				
65 66 67	Alluvium Deposits	SM	(32.0 - 73.0') Type I, II, and V Portland Cement with up to 6%		(32.0 - 73.0') 122.6 gallons	(32.0 - 73.0') 200 gallons (163% Note: Grout seal first lift, used >20% of the calculated volume d to potential voids that formed during drilling and grout migratic into the formation. The extractic well sanitary seal also serves a
68 69 69	Alluvium Deposits	SM	Quik-Gel bentonite			the sanitary seal for decommissioning of TWB-01 Temp Well from approximately 3 to 73 ft. bgs.
70 Groundwate Samples Collected	r Alluvium Deposits	SW-SM				
	Alluvium Deposits	sc				
	Alluvium Deposits	SM	(73.0 - 76.0')			(73.0 - 76.0') 4 bags (167%) Note: Transition sand, used >20
	Alluvium Deposits	SW-SM	Cemex #60 Mésh`` (40x70) Lapis Lustre Sand	• •	(73.0 - 76.0') 2.4 bags	of the calculated volume due to potential voids forming during drilling.
			(76.0 - 77.0') Pel-Plug Bentonite — Pellets 3/8" (TR30)		(76.0 - 77.0') 0.6 buckets	(76.0 - 77.0') 0.5 buckets (83% Note: Bentonite seal
 .78 .79	Alluvium Deposits	SM	(77.0 - 136.5') Cemex #60 Mesh (40x70) Lapis Lustre Sand		(77.0 - 136.5') 48.5 bags	(77.0 - 136.5') 58 bags (120% Note: Filter pack, used >20% the calculated volume due to potential voids forming during drilling or filter pack filling voi space in the remaining tempora well screen. Swabbed the filte pack for approximately 60 minu prior to the installation of the bentonite seal.
₈₀ l \bbreviations: U	SCS = Unified	d Soil Classifica	ition System, ft = feet, bgs	= below ground surface,	amsl = above mean	
			ble, GW = groundwater, j	• • •		
epth to water (f				,		
pth to water (f	t. bgs.) measi	ured post deve	lopment.			

ARC	ADIS			Well Const	ruction Log	S	Sheet: 5 of 7
ate Started:	09/09/2022			_Surface Elevation:	538.84 ft amsl	Well ID: TV	VB-01
ate Completed:	09/12/2022			_Shallow Well Elevation:	<u>N/A</u>		
rilling Co.:	Cascade			_Deep Well Elevation:	<u>N/A</u>	Client: <u>PG&E</u>	
rilling Method:	Sonic Drilling			_Northing (NAD83):	2100941.12	Project: <u>Final</u>	GW Remedy Phase 2A
riller Name:	Matt Arnold			_Easting (NAD83):	7615929.94	Location: <u>PG&E</u>	<u>E Topock, Needles Californ</u>
rilling Asst:	L.A. / I.S. / D.			_Borehole Diameter:	<u>10.5-12 inches</u>		
ogger:	Kim Lapszyns			Static Water Level:	See Log for Depths	Project Number	r: <u>30126255</u>
ditor:	Sean McGran	e		_Development End Date:			
otal Depth:	<u>137 ft bgs</u>			_Well Completion:		To Be Completed	in Well Vault
Groundwat Groundwat Sample I		USCS Code	USCS Class	Constru	ction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actu volume vs the calculated volum
- No 81 _ Groundwate Samples _ Collected 82 83 _	r Alluvium Deposits	SM		(80.0 - 81.0') Kwik-Zip Centralizer (3.5 - 85.0') 6" Sch. 80 PVC Casing		2	Note: Kwik-Zip Centralizer had be trimmed down to fit inside th sonic drill casing.
84	Alluvium 5- Deposits	SM					3
85		SM		(85.0 - 106.0') 6" 8-Slot 316L SS Wire Wrap Screen		3	(77.0 - 136.5') 58 bags (120% Note: Filter pack, used >20% the calculated volume due to
)		× × × × × × × × × × × × × × × × × × ×	(77.0 - 136.5') Cemex #60 Mesh (40x70) Lapis Lustre Sand		(77.0 - 136.5') 48.5 bags	potential voids forming during drilling or filter pack filling voi space in the remaining tempor well screen. Swabbed the filt pack for approximately 60 minu prior to the installation of the bentonite seal.
	Competent Bedrock - Conglomerate	N/A	· × × × × × × × × × × × × × × × × × × ×				
 98 TWB-1-VAS	Alluvium Deposits	SP-SM					
97-102 (1200 ppb) 3/20/2022 16:26	Alluvium Deposits	SM	× × ×				
100 hreviations: U	SCS = Unified		× × ×	│	H	amsl = above mean	sea level SS = Stainless
				ble, GW = groundwater, p			
	COUVERY, IN/A		rpiical	so, or - groundwald,	-parts per billion, NC	stoo. Conta blue wale	abie marks represent

ARC	ADIS			Well Const	ruction Log	5	Sheet: 6 of 7
ate Started:	09/09/2022			_Surface Elevation:	538.84 ft amsl	Well ID: TV	VB-01
ate Completed	09/12/2022			_Shallow Well Elevation:	<u>N/A</u>		
Drilling Co.:	Cascade			_Deep Well Elevation:	<u>N/A</u>	Client: PG&E	<u></u>
Prilling Method:	Sonic Drilling			_Northing (NAD83):	2100941.12	Project: Final	GW Remedy Phase 2A
oriller Name:	Matt Arnold			_Easting (NAD83):	7615929.94	Location: PG&E	<u>E Topock, Needles Californi</u>
Prilling Asst:	<u>L.A. / I.S. / D.I</u>			Borehole Diameter:	10.5-12 inches		
ogger:	<u>Kim Lapszyns</u>			Static Water Level:	See Log for Depths	Project Numbe	r: <u>30126255</u>
ditor:	Sean McGran	е		_Development End Date:			
otal Depth:	<u>137 ft bgs</u>			_Well Completion:		To Be Completed	in Well Vault
Groundwa Geb Sample II		USCS Code	USCS Class	Constru	ction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actua volume vs the calculated volum
TWB-1-VAS 97-102 (1200 ppb) 3/20/2022 16:26 102 102 103 103 103 104 104 105 105		N/A	x x x x x x x x x x x x x x x x x x x	(85.0 - 106.0') 6" 8-Slot 316L SS Wire Wrap Screen			
_106	Weathered Bedrock - Conglomerate		xx x x x x x x x x x x x x x x x x x x	(77.0 - 136.5') Cemex #60 Mesh	(106.0 - 110.0') 6" Sch. 80 PVC Casing	(77.0 - 136.5') 48.5 bags	(77.0 - 136.5') 58 bags (120%) Note: Filter pack, used >20% of the calculated volume due to potential voids forming during drilling or filter pack filling void
		NVA	****	(40x70) Lapis Lustre Sand	6" 8-Stot 316L SS Wire Wrap Screen		space in the remaining tempora well screen. Swabbed the filte pack for approximately 60 minut prior to the installation of the bentonite seal.
	Weathered Bedrock - Conglomerate		× × × × × × × × × × × × × × × × × × ×				
	Ţ	Soil Cla	assificat	ion System, ft = feet, bgs	= below ground surface, a	amsl = above mean	sea level, SS = Stainless
					opb = parts per billion, No		
teel, NR = No I epth to water (f			• •		ppb = parts per billion, No	ies: Solia diue Wate	er table marks represent

ARC	ADIS		Well Const	ruction Log	5	Sheet: 7 of 7
ate Started: ate Completed	09/09/2022		_Surface Elevation: _Shallow Well Elevation:	538.84 ft amsl	Well ID: TV	VB-01
rilling Co.:	. <u>09/12/2022</u> Cascade		_ Deep Well Elevation:	N/A	Client: <u>PG&E</u>	=
rilling Method:	Sonic Drilling		Northing (NAD83):	2100941.12		- GW Remedy Phase 2A
riller Name:	Matt Arnold		_Easting (NAD83):	7615929.94	•	E Topock, Needles Californi
rilling Asst:	L.A. / I.S. / D.H		Borehole Diameter:	10.5-12 inches		
ogger:	Kim Lapszynsk		Static Water Level:	See Log for Depths	Project Number	r: 30126255
ditor:	Sean McGrane		Development End Date:	÷ .		1. 00120200
otal Depth:	<u>137 ft bgs</u>	, 	_Well Completion:] To Be Completed	in Well Vault
Groundwa (11) Groundwa Sample		USCS Code USCS Class	Constru	ction Details	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actua volume vs the calculated volume
	Weathered Bedrock - Conglomerate	N/A × × × × × × × × × × × × × × × × × × ×		(110.0 - 129.0') 6" 8-Slot 316L SS Wire Wrap Screen		
124TWB-1-VA 122-127 (1700 ppb 3/21/2022 16:26 126 127 128		N/A	(77.0 - 136.5') Cemex #60 Mesh		(77.0 - 136.5')	(77.0 - 136.5') 58 bags (120%) Note: Filter pack, used >20% of the calculated volume due to potential voids forming during drilling or filter pack filling void
	Competent Bedrock - Conglomerate	N/A	(40x70) Lapis Lustre Sand	(129.0 - 134.0') 6" Sch. 80 PVC Sump	48.5 bags	space in the remaining temporal well screen. Swabbed the filter pack for approximately 60 minute prior to the installation of the bentonite seal.
- Groundwat Samples Collected - 133_ 134_ - 135_ - 136_	competent Bedrock - Conglomerate	N/A	(131.0 - 132.0') Kwik-Zip Centralizer	(134.0 - 134.4') 6" 316L SS End Cap		Note: Kwik-Zip Centralizer had t be trimmed down to fit inside the sonic drill casing.
137			(136.5 - 137.0') · Slough			Note: Formation not removed during borehole clean-out or material that settled in drill casing.
140 bbreviations: teel, NR = No F		Not Applicable	e, GW = groundwater,			bgs = below ground surface, amsl = above mean ppb = parts per billion, Notes: Solid blue water table

<u> </u>	CAD	IS		Bo	pring	Log	Sheet: 1 of 7			
ate Started:		/2022		Surface			Boring No	.: TWB-01	Pilot	
ate Complet				Northir			-			
vrilling Co.: vrilling Metho	<u>Casc</u> d: Sonic			Easting		33): <u>7615929.94</u> <u>129.5 ft bgs</u>	Client: <u>PG&E</u> Project: <u>Final G</u>	W Remedy Pl	2250.24	
rill Rig Type:		Longyear drill		Boreho	•	C C	Location: PG&E	•		
vriller Name:		Arnold				Water: <u>82.0 ft bgs</u>				
rilling Asst:	<u>D Ho</u>	eppner / R We	est	Sampli	ng Met	nod: <u>4 inch x 10 ft. Core Barrel</u>	Project Number:	30126255		
ogger:		<u> Grane / G Will</u>		Sampli	•		-			
ditor:	<u>Sean</u>	McGrane	-	Conve	ted to	Vell: 🛛 Yes 🗌 No				
Depth (ft) Recovery (ft)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid	
			Fill	N/A		(0-0.5 ft) Grading for the drill pad.		(0.0 - 5.2') Air knifed for	(0.0 - 5.2') No drilling flu	
_ 1 			Alluvium Deposits	SM		(0.5-3 ft) Silty sand with gravel (SM); brown (7 very coarse grained, angular to subround; little pebbles, angular to subangular; little silt; little subround; trace clay; dry; NOTE: Logged from	small to very large granules, angular to	utility clearance. Logged soils disturbed.	used	
_ 4 _ 4 _ 5			Alluvium Deposits	SW-SM		(3-5 ft) Well-graded sand with silt and gravel ((7.5YR 5/3); very fine to very coarse grained, a little small to very large pebbles, angular to su granules, angular to subround; little silt; trace Logged from air-knife cuttings. (5-7 ft) Well-graded sand with silt and gravel (ngular tó subround; bround; little clay; dry; NOTE:			
2 2 7			Alluvium Deposits	SW-SM		(7-11.75 ft) Silty sand with gravel (SM); brown	ngular to subround; bround; little			
- 8 - 9 - 10 -11 7.8	No Sieve Samples Collected	No Groundwater Samples Collected	Alluvium Deposits	SM		(i The origonal sector of the	ome small to very nules, angular to			
_12 _13			Alluvium Deposits	GW-GN		(11.75-14 ft) Well-graded gravel with silt and s brown (7.5YR 4/3); small to very large pebbles angular to subangular; and very fine to very co angular to subround; little silt; dry.	, little granules,			
_14			Alluvium Deposits	ML		(14-15.5 ft) Sandy silt with gravel (ML); brown plasticity, no dilatancy; and very fine to very co angular to subround; little small to large pebbl subangular; little granules, angular to subroun	arse grained sand, es, angular to	(15.0') Hard drilling	(15.0') No drilling flu	
_161.5 			Alluvium Deposits	SW-SM		(15.5-17 ft) Well-graded sand with silt and gra (10YR 5/3); very fine to very coarse grained, a little small to very large pebbles, angular; little subround; little silt; trace clay; dry.	ngular to subround; granules, angular to	had to trip back in to collect 15 to 17 ft. bgs.	used	
 _18 8.8 _19			Alluvium Deposits	SW-SM		(17-19.5 ft) Well-graded sand with silt and gra (10YR 5/3); very fine to very coarse grained, a some small to very large pebbles, angular to s granules, angular to subangular; trace small c little silt; trace clay; dry.	ngular to subround; ubangular; little	(17.0 - 27.0') Hard drilling	(17.0 - 27.0 No drilling flu used	
20			Alluvium	SM						
bbreviations	: USCS =	Unified Soil Cl	lassification	n Syster	m, ft = f	eet, bgs = below ground surface, am	sl = above mean se	ea level, NR =	No Recove	
						n, Notes: Solid blue and hollow blue				
gs.) first enc	ountered f	rom logging ar	nd depth to	water	measur	ed during the first VAS interval, respe	ctively. Apparent p	artial recoverie	s can be th	
		action of sedim				, · · · · ·	, <u>, ,</u>			

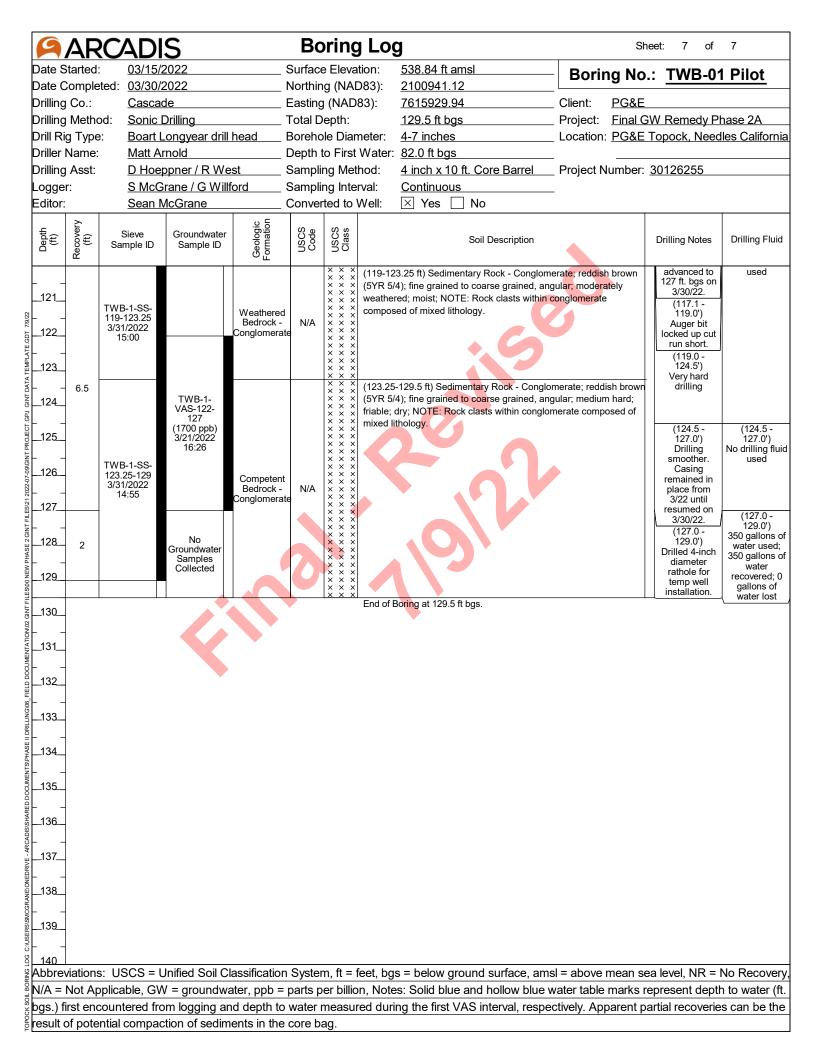
e Completed: 0 ing Co.: 0 ing Method: <u>S</u> Rig Type: <u>B</u> er Name: <u>M</u> ing Asst: <u>D</u> ger: <u>S</u>	Matt Arnc D Hoeppr 6 McGrar Sean Mc eve	22 Iling ngyear drill I old ner / R Wes ne / G Willfo	head [st 5]	Surface Northin Easting Fotal D Boreho Depth t Samplin Samplin Conver	g (NAI epth: le Diar lo First ng Met ng Inte	2100941.12 83): 7615929.94 129.5 ft bgs neter: 4-7 inches Water: 82.0 ft bgs hod: 4 inch x 10 ft rval: Continuous Well: X Yes (19.5-22 ft) Silty sand with to subangular; little silt; dt (22-27 ft) Silty sand with to subangular; little silt; dt	t. Core Barrel No Soil Description th gravel (SM); yellowis gular to subangular; lit iry. gravel (SM); brown (7. ngular to subround; so ome small to very large	Client: Project: Location: Project N sh brown (10 round; some tle granules, 5YR 5/3); ve me granules	PG&E Final GV PG&E T Jumber: 3 Jumber: 3 Small angular	TWB-01	ase 2A
ing Co.: <u>C</u> ing Method: <u>S</u> Rig Type: <u>B</u> er Name: <u>M</u> ing Asst: <u>D</u> ger: <u>S</u> $(E) \xrightarrow{1}{2} (E) Sie Samp 1$	Cascade Sonic Dril Boart Lor Matt Arno D Hoeppi S McGran Sean McG	lling ngyear drill I old ner / R Wes ne / G Willfo Grane Groundwater	Alluvium	Easting Fotal D Boreho Depth t Samplir Conver	(NAD epth: le Diar o First ng Met ng Inte ted to	83): 7615929.94 129.5 ft bgs neter: 4-7 inches Water: 82.0 ft bgs hod: 4 inch x 10 f rval: Continuous Well: X Yes (19.5-22 ft) Silty sand with very fine to very coarse of to very large pebbles, an to subangular; little silt; of (22-27 ft) Silty sand with to very coarse grained, a angular to subangular; subangular; s	t. Core Barrel No Soil Description th gravel (SM); yellowis gular to subangular; lit fry. gravel (SM); brown (7. ngular to subround; so ome small to very large	Client: Project: Location: Project N sh brown (10 round; some tle granules, 5YR 5/3); ve me granules	PG&E Final GV PG&E T Jumber: 3 Jumber: 3 Small angular	V Remedy Ph opock, Needl	ase 2A es Californi
ing Method: S Rig Type: B er Name: M ing Asst: D ger: S for: S f	Sonic Dril Boart Lor Matt Arnc D Hoeppi S McGrar Sean McC eve	ngyear drill <u> </u> ner / R Wes ne / G Willfo Grane Groundwater	Alluvium	Fotal D Boreho Depth t Samplir Conver	epth: le Diar o First ng Met ng Inte ted to	129.5 ft bgs neter: 4-7 inches Water: 82.0 ft bgs hod: 4 inch x 10 ft rval: Continuous Well: X Yes (19.5-22 ft) Silty sand with very fine to very coarse of to very large pebbles, and to subangular; little silt; of (22-27 ft) Silty sand with to subangular; little silt; dry	t. Core Barrel No Soil Description th gravel (SM); yellowis gular to subangular to sub gular to subangular; lit fry. gravel (SM); brown (7. ngular to subround; so ome small to very large	Project: Location: Project N sh brown (10' round; some tle granules, 5YR 5/3); ve me granules	YR 5/4); small angular	opock, Needl	es Californ
Rig Type: B er Name: M ing Asst: D ger: Sie cor: Sie Sie Sie Samp Sie - 8.8 4 8.8 - 8.8 - 8.8 - 8.8 - 8.8 - Samp - 8.8 - 8.8 - 8.8 - 8.8 - 8.8 - 9 No Sie - No Sie	Boart Lor Matt Arno D Hoeppi S McGrar Sean McC eve	ngyear drill <u> </u> ner / R Wes ne / G Willfo Grane Groundwater	Alluvium	Soreho Depth t Samplir Samplir Conver	le Diar o First ng Met ng Inte ted to	neter: 4-7 inches Water: 82.0 ft bgs hod: 4 inch x 10 ft trval: Continuous Well: X Yes (19.5-22 ft) Silty sand wit very fine to very coarse gt to subangular; little silt; dt (22-27 ft) Silty sand with to subangular; little silt; dt	t. Core Barrel No Soil Description th gravel (SM); yellowis gular to subangular; lit try. gravel (SM); brown (7. ngular to subround; so ome small to very large	Location: Project N sh brown (10 round; some tle granules, 5YR 5/3); ve me granules	YR 5/4); small angular	opock, Needl	es Californ
er Name: \underline{M} ing Asst: \underline{D} ger: \underline{S} for: \underline{S} $(\underline{E} \overset{\lambda_{D}}{OO} \underbrace{E} \overset{Sie}{Samp}$ $1 \vdots \vdots \overset{\lambda_{D}}{OO} \underbrace{E} \overset{Sie}{Samp}$ $1 \vdots \vdots \vdots \vdots \vdots \vdots \vdots \vdots \vdots $	Matt Arnc D Hoeppr 6 McGrar Sean Mc eve	ner / R Wes ne / G Willfo Grane Groundwater	Alluvium	Depth t Samplir Samplir Conver SM SM	o First ng Met ng Inte ted to	Water: 82.0 ft bgs hod: 4 inch x 10 f rval: Continuous Well: Yes (19.5-22 ft) Silty sand wi very fine to very coarse g to very large pebbles, an to subangular; little silt; d (22-27 ft) Silty sand with to very coarse grained, a angular to subangular; s	t. Core Barrel No Soil Description th gravel (SM); yellowis gular to subangular; lit lry. gravel (SM); brown (7. ngular to subround; so ome small to very large	Project N sh brown (10 round; some tle granules, 5YR 5/3); ve me granules	YR 5/4); small angular	30126255	
ing Asst: ger: <u>S</u> for: <u>S</u> E $\frac{1}{200}$ E Sie Samp - 8.8 - 9.8 -	D Hoeppi S McGrar Sean McC eve	ner / R Wes ne / G Willfo Grane Groundwater	St Stand	Samplir Samplir Conver System SM	ng Met ng Inte ted to	hod: <u>4 inch x 10 f</u> rval: <u>Continuous</u> Well: X Yes ((19.5-22 ft) Silty sand wit very fine to very coarse of to very large pebbles, an to subangular; little silt; of (22-27 ft) Silty sand with to very coarse grained, a angular to subangular; subangular; s	No Soil Description th gravel (SM); yellowis rained, angular to sub gular to subangular; lit try. gravel (SM); brown (7. ngular to subround; so ome small to very large	sh brown (10 round; some tle granules, 5YR 5/3); ve me granules	YR 5/4); small angular ry fine		Drilling Flui
ger: <u>S</u> cor: <u>S</u> (E) ^{\$20} (E) ^{\$20} (E	S McGrar Sean McGrar	ne / G Willfo Grane Groundwater	Alluvium	Samplir Conver	ng Inte	Continuous Well: Yes (19.5-22 ft) Silty sand with very fine to very coarse (to very large pebbles, and to subangular; little silt; of (22-27 ft) Silty sand with to very coarse grained, a angular to subangular; little silt; dry	No Soil Description th gravel (SM); yellowis rained, angular to sub gular to subangular; lit try. gravel (SM); brown (7. ngular to subround; so ome small to very large	sh brown (10 round; some tle granules, 5YR 5/3); ve me granules	YR 5/4); small angular ry fine		Drilling Flui
Or: Sie E: ¹ / ₂ , (£) ² / ₂ , (£) ² / ₂ , (£) ¹ / ₂ , (E) ¹ / ₂ , (E)	Sean Mc eve C	Grane Groundwater	Alluvium	SM	ted to	Well: X Yes (19.5-22 ft) Silty sand wi very fine to very coarse g to very large pebbles, an to subangular; little silt; d (22-27 ft) Silty sand with to very coarse grained, a angular to subangular; s subangular; little silt; dry	Soil Description th gravel (SM); yellowis rained, angular to sub gular to subangular; lit try. gravel (SM); brown (7. ngular to subround; so ome small to very large	round; some tle granules, 5YR 5/3); ve ome granules	small angular ry fine	Drilling Notes	Drilling Flui
E Sie Samp	eve C	Groundwater	Deposits	Code		(19.5-22 ft) Silty sand wi very fine to very coarse g to very large pebbles, an to subangular; little silt; d (22-27 ft) Silty sand with to very coarse grained, a angular to subangular; s subangular; little silt; dry	Soil Description th gravel (SM); yellowis rained, angular to sub gular to subangular; lit try. gravel (SM); brown (7. ngular to subround; so ome small to very large	round; some tle granules, 5YR 5/3); ve ome granules	small angular ry fine	Drilling Notes	Drilling Flui
- 8.8 - 8.8 4			Deposits Alluvium Deposits Alluvium	SM	Class	very fine to very coarse of to very large pebbles, an to subangular; little silt; of (22-27 ft) Silty sand with to very coarse grained, a angular to subangular; s subangular; little silt; dry	th gravel (SM); yellowis rained, angular to sub gular to subangular; lit ry. gravel (SM); brown (7. ngular to subround; so ome small to very large	round; some tle granules, 5YR 5/3); ve ome granules	small angular ry fine	Drilling Notes	Drilling Flui
2			Alluvium Deposits Alluvium			very fine to very coarse of to very large pebbles, an to subangular; little silt; of (22-27 ft) Silty sand with to very coarse grained, a angular to subangular; s subangular; little silt; dry	rained, angular to subi gular to subangular; lit iry. gravel (SM); brown (7. ngular to subround; so ome small to very large	round; some tle granules, 5YR 5/3); ve ome granules	small angular ry fine		
- 8.8 4 - 8.8 4				SM		to very coarse grained, a angular to subangular; s subangular; little silt; dry	ngular to subround; so ome small to very large	me granules	ry fine		
- - - D Sampl						potentially caliche. (25 ft) Trace small cobbl	; NOTE: Cementation i	with white m	ngular to		
		No roundwater	Alluvium Deposits	SM		(27-29 ft) Silty sand with to very coarse grained, a angular to subround; sor subangular, little silt; dry cemented with white ma (29-33 ft) Silty sand with to very coarse grained, a angular to subround; littl to subround; little silt; dr	ngular to subround; so ne small to very large p NOTE: Some sedime trix, potentially caliche. gravel (SM); brown (7. ngular to subround; so e small to very large pe	5YR 4/3); ve bbles, ang 5YR 4/3); ve me granules	ry fine		
2 7	ctod	Samples Collected	Alluvium Deposits	SM		matrix, potentially calich	, No FL. Come center 3.			(32.0 - 37.0') hard drilling	(32.0 - 37.0 No drilling flu used
3 4						(33-37 ft) Silty sand with to medium grained, som angular to subround; sor subangular to subround;	e coarse to very coarse ne silt; some small to l	e grained sar arge pebbles	nd, s,		
5			Alluvium Deposits	SM		(34.5 ft) Trace very large					
7						(36 ft) Rip up clasts of w potentially caliche. (37-40.5 ft) Silty sand wi	th gravel (SM): brown (7.5YR 4/4): \	verv fine		
- 3 - 2.9 9 -			Alluvium Deposits	SM		to very coarse grained, a angular to subround; littl subround; little silt; dry; l matrix, potentially calich	ngular to subround; so e small to very large pe NOTE: Some weak cer	ome granules ebbles, angul	s, lar to		
						eet, bgs = below gro					
= Not Applicabl	le, GW =	groundwa	ter, ppb =	parts p	er billic	n, Notes: Solid blue	and hollow blue w	ater table	marks re	present depth	to water (
.) first encounter	red from	logging and	d depth to	water r	neasu	ed during the first V	AS interval, respec	tively. App	parent par	rtial recoveries	can be th

9	AR		D	S		Bo	oring	<mark>g Lo</mark> g	g				Sh	eet: 3 of	7
Date S	started:	03	/15/2	2022		Surface			<u>538.84 ft a</u>			Borin	na No.	: TWB-01	Pilot
		ted: <u>03</u>				Northir			<u>2100941.</u>				-	<u></u>	
Drilling			ISCad			Easting		83):	7615929.9			Client:	PG&E		
-	Metho			Drilling		Total D	•		<u>129.5 ft be</u>	-		Project:		W Remedy Pl	
	g Type Name:			<u>ongyear drill</u> mold		Boreho Depth			4-7 inches 82.0 ft bgs			Location	PG&E	Topock, Need	les Californi
	Asst:			opner / R We		Sampli) ft. Core Ba	rrel	Project N	lumber [.]	30126255	
_ogge				rane / G Will		Sampli	-		Continuou			Појсогн	umber.	00120200	
Editor:				/IcGrane		Conve	-		X Yes	No					
Depth (ft)	Recovery (ft)	Sieve Sample		Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class			Soil Descrip	tion			Drilling Notes	Drilling Fluid
						SM									
_4142	2.9				Alluvium Deposits	SM		to medi angular to subro	um grained, ar to subround; a ound; little grar	with gravel (SM) nd very fine to ve and silt; little sm nules, angular to ed with white ma	ery coarse all to larg subroun	e grained sai e pebbles, a d; dry; NOTE	nd, ingular E: Some		
43 44 45 46 46 47 48 49	5.5				Alluvium Deposits	SM		some g pebbles Some w	ranúles, angula , angular to su reak cementat	to very coarse g ar to subround; i ibround; little sill ion with white m	some sm ;; trace cl atrix, pote	all to very la ay; dry; NOT entially calic	rge E: he.	(47.0 - 50.0') Soft drilling	(47.0 - 50.0') No drilling flui used
_ _50 _ _51		No Siev Sample Collecte	s	No Groundwater Samples Collected	Alluvium Deposits Alluvium Deposits	SW SM		4/3); ver granules angular (50-52 f to medi subangu subrour	y fine to very o s, angular to s to subangular t) Silty sand w um grained, so ular to subrour id; little small TE: Some wea	coarse grained, i ubround; some i ; trace silt; trace ith gravel (SM); l me coarse to w nd; and silt; little pebbles, subang ak cementation v	angular to small to la clay; dry brown (7. ery coarse granules jular to su	o subround; arge pebbles 5YR 4/3); ve grained sa , subangulai bround; trac	some s, ery fine nd, to ce clay;		
_52 _53 _54	6.2				Alluvium Deposits	SM		to medi subangi angular clay; dry	um grained, so ular to subrour to subround; t	with gravel (SM) ome coarse to ve nd; and silt; little race granules, a e weak cementa	ery coarse small to angular to	e grained sa medium peb subround; t	nd, bles, race	(53.0 - 57.0') Hard drilling	(53.0 - 57.0') No drilling flu used
_55 _56 _56					Alluvium Deposits	SW-SM		(7.5YR some si granule cobbles	5/3́); very fine mall to very lar s, angular to s	ed sand with silt to very coarse g ge pebbles, ang ubround; little si NOTE: Trace w che.	rained, ar jular to su lt; trace c	ngular to sub bangular; lit lay; trace sn	oround; tle nall		
_57 _58 _59 _	7.7				Alluvium Deposits	SW-SM		(7.5YR some si granule	4/4); very fine mall to very lar	l sand with silt a to very coarse g ge pebbles, ang ubround; little si	rained, ar Jular to su	igular to sub bround; little	pround;	(57.0 - 77.0') Normal drilling	(57.0 - 77.0' No drilling flu used
\bbre	viations	USCS	S = ι	Jnified Soil C	lassificatior	n Syster	n, ft = 1	feet, bg	s = below <u>c</u>	round surfac	e, ams	l = above	mean se	a level, NR = l	No Recover
														epresent depth	
		•	-											artial recoverie	
• /				tion of sedim	•				-				•		

9	<u> </u>	<u> CADI</u>	S		Bo	oring	Log	S	heet: 4 of	7
	tarted:				Surface			Boring No	.: TWB-01	l Pilot
	•	eted: <u>03/30//</u>			Northin			-		
)rilling		Casca			Easting			Client: <u>PG&E</u>		-
-	Metho		•		Total D	•	<u>129.5 ft bgs</u>	Project: Final (•	
	g Type Name:		<u>_ongyear drill</u>		Boreho Donth t		neter: <u>4-7 inches</u> Water: 82.0 ft bgs	Location: <u>PG&E</u>	<u>TOPOCK, Need</u>	les Callom
	Asst:		ppner / R We		Sampli			- Project Number	30126255	
.oggei			Grane / G Willf		Sampli	-			. <u>30120233</u>	
Editor:			McGrane		Conver	-		-		
		<u></u>								
Depth (ft)	Recovery (ft)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
_61 _62				Alluvium Deposits	SW-SM		(57-62 ft) Well-graded sand with silt and grave (7.5YR 4/4); very fine to very coarse grained, a some small to very large pebbles, angular to s granules, angular to subround; little silt; trace cobbles, angular; dry.	ingular to subround; ubround; little		
_02 _63	7.7			Alluvium Deposits	SM		(62-63.5 ft) Silty sand with gravel (SM); brown to very coarse grained, angular to subround; s angular to subround; little small to very large p subround; little silt; trace clay; dry; NOTE: Sor with white matrix, potentially caliche.	ome granules, ebbles, angular to ne weak cementation		
.64				Alluvium Deposits	SW		(63.5-64.5 ft) Well-graded sand with gravel (S (5/R 4/4); very fine to very coarse grained, an some granules, angular to subround; some sn trace very large pebbles, angular angular to su	gular to subround; nall to large pebbles,		
_65 _66 _67				Alluvium Deposits	SM		trace clay; dry. (64.5-67 ft) Silty sand with gravel (SM); reddisi very fine to very coarse grained, angular to sub to very large pebbles, angular to subround; littl to subround; little silt; trace clay; dry; NOTE: T cementation with white matrix, potentially callo	n yellow (5YR 6/6); pround; some small e granules, angular race weak		
-68 -68 -69 -70		No Sieve Samples Collected	No Groundwater	Alluvium Deposits	SM		(67-70.5 ft) Silty sand with gravel (SM); brown to very coarse grained, angular to subround; li very large pebbles, angular to subround; little subround; trace clay; trace small cobbles, ang	ttle silt; littlé smáll to granules, angular to ular; dry.		
			Samples Collected	Alluvium Deposits	SW-SM		(70-72 ft) Well-graded sand with silt and grave brown (5YR 4/4); very fine to very coarse grain subround; some granules, angular to subround; large pebbles, angular to subround; little silt, ti	ed, angular to d; some small to		
- .72_	7			Alluvium Deposits	SC		Some moderate cementation with white matrix (71-72 ft) Clayey sand with gravel (SC); reddis very fine to very coarse grained, angular to sub	k, potentially caliche. h brown (5YR 4/3); pround; little		
- .73 _ .74				Alluvium Deposits	SM		granules, angular to subround; little small to la to subround; little clay; trace silt; dry. (72-74.5 ft) Silty sand with gravel (SM); reddisi very fine to very coarse grained, angular to sub to very large pebbles, angular to subround; littl to subround; little silt; trace clay; trace small c	n brown (5YR 4/4); pround; some small e granules, angular		
- 75_ - 76_ -				Alluvium Deposits	SW-SM		(74.5-77 ft) Well-graded sand with silt and gra brown (5YR 4/4); very fine to very coarse grain subround; some granules, angular to subround large pebbles, angular to subround; trace silt; small cobbles, subangular; dry.	ed, angular to d; some small to very	-	
.77 .78 .79 .80	6.3	TWB-1-SS- 77-83 3/31/2022 15:45		Alluvium Deposits	SM		(77-83 ft) Silty sand with gravel (SM); dark red very fine to very coarse grained, angular to sub very large pebbles, angular to subround; little subround; little silt; little clay; trace small cobb	pround; some large to granules, angular to	(77.0') Driller stated he things they drilled trough a boulder.	(77.0') No drilling flu used
bbre	/iations	s: USCS = l	Jnified Soil Cl	assification	Syster	n, ft =	eet, bgs = below ground surface, am	sl = above mean s	ea level, NR = l	No Recove
/A =	Not Ap	plicable, GV	V = groundwa	ater, ppb =	parts p	er billic	n, Notes: Solid blue and hollow blue v	vater table marks	represent depth	n to water (
		•					ed during the first VAS interval, respe		· · ·	
- /			ction of sedim							

2	<u> </u>	<u>RCA</u>	DIS			DU	pring		1				eet: 5 of	7
	tarted		/15/2022				e Eleva		<u>538.84 ft amsl</u>		Borin	g No.	: TWB-01	Pilot
	omple		/30/2022				g (NAI		2100941.12			-		
	Co.:		ascade			•) (NAD	83):	7615929.94		Client:	PG&E		
	Metho		nic Drilling			Fotal D	•		<u>129.5 ft bgs</u>		-		<u>W Remedy Ph</u>	
	д Туре Магара		oart Longy	ear drill			le Diar		4-7 inches		Location:	PG&E	Fopock, Need	les Califorr
	Name:		att Arnold	/ D \\/o		•			82.0 ft bgs	Parrol	Draigat N	umbor: '	30126255	
•	Asst: 		<u>Hoeppner</u> McGrane /			-	ng Met ng Inte		4 inch x 10 ft. Core E Continuous	Darrei	Projectin		30120233	
oggeı ditor:	•		an McGra			-	ted to		$\overline{\times}$ Yes \Box No					
	~													
(ft) (ft)	Recovery (ft)	Siev Sample		ndwater nple ID	Geologic Formation	USCS Code	USCS Class		Soil Desc	·			Drilling Notes	Drilling Flui
_ _81 _82			Groun Sam	lo dwater pples ected	Alluvium Deposits	SM		very fine very larg subrour	t) Silty sand with gravel (SM to very coarse grained, an ge pebbles, angular to subr d; little silt; little clay; trace	igular to subr ound; little gr	ound; some anules, ang	large to lar to	2	
.83 .84	6.3	TWB-1-5 83-84. 3/31/202 15:40	5 22 TW	B-1- 82-87	Alluvium Deposits	SM		very fine granule pebbles	ift) Silty sand with gravel (to very coarse grained, an s, angular to subround; little , angular to subround; mois tion white matrix, potential	ngular to subr e silt; little sm st to wet; NO	ound; some all to very la	rge 🛛	2	
 .85 .86		TWB-1-5	—— (870 3/18, 10	ppb) /2022 :51				(84.5-89 very fine granule	1.5 ft) Silty sand with gravel to very coarse grained, an s, angular to subangular; lit to subangular; little silt; tra	(SM); reddis Igular to suba Ittle small to v	ingular; little ery large pel			
87 88 89		84.5-89 3/31/20: 15:35	.5 22 TW VAS-	B-1- 87-92	Alluvium Deposits	SM		(87 ft) N	loist to wet.				(87.0 - 97.0') Hard drilling	(87.0 - 97.0 30 gallons water used gallons o water recovered; gallons o water los
90_ _ 91_ _ 92_ _	7.3		` 3/20/	25 ppb) (2022 :50				(5YR 5/	ft) Sedimentary Rock - C 4); fine grained to coarse <u>c</u> Rock pulverized into mostl blogy.	grained; angu	ılar; friable; o	dry.		
93 94 95 96		TWB-1-5 89.5-9 3/31/20 15:30	7 22		Competent Bedrock - Conglomerate	N/A								
.97		TWB-1-5 97-98 3/31/202 15:25	22	B-1-	Alluvium Deposits	SP-SM	×××	(5YR 5/ silt; trac	t) Poorly graded sand with 4); very fine to medium gra e clay; wet.	ained, angula	r to subroun	d; little	(97.0 - 102.0') Core barrel got stuck had to	(97.0 - 102. 50 gallons water used
.99	8	TWB-1-5 98-99.5 3/31/202 15:20	SS- (1200 3/20/ 16	97-102 97-102 9pb) 2022 :26	Alluvium Deposits	SM		(98-99. very fine granule	ft) Silty sand with gravel (to very coarse grained, an s, angular to subangular; lit to subangular; little silt; we	ngular to suba ttle small to v	ingular; little		use water and run casing over core barrel. Lost core sample	gallons of water recovered; gallons of water lost
100						N/A	$\times \times \times$						down hole, tripped back in	
	/iation	s: USCS	S = Unified	Soil Cl	assification				s = below ground sur	face, amsl	= above r	nean sea		No Recove
									s: Solid blue and hole					
									ng the first VAS interv					
, J. J. II			npaction o	ອະເອ al				Ja aun		a, icopee	ποιλ. Ψh	a on po		

	CAD				oring	-			7
Date Started:	<u>03/15/</u>			Surface			Boring	No.: TWB-01	Pilot
ate Complete				Northin			_		
Drilling Co.:	<u>Casca</u>			Easting		,		G&E	
Drilling Method		Drilling		Total D	-	<u>129.5 ft bgs</u>	•	inal GW Remedy Pl	
Drill Rig Type:		Longyear drill		Boreho Donth (_ Location: <u>P</u>	G&E Topock, Need	les Californ
Driller Name: Drilling Asst:	Matt A	eppner / R We		•		Vater: <u>82.0 ft bgs</u> od: <u>4 inch x 10 ft. Core Barrel</u>	– – – Droiget Num	abor: 20126255	
•		Grane / G Will		Sampli Sampli	-			ibel. <u>30120233</u>	
Logger: Editor:		McGrane		Convei	-		_		
Depth (ft) Recovery (ft)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description		Drilling Notes	Drilling Flui
					× × × × × × × × ×	99.5-106 ft) Sedimentary Rock - Conglomer 5YR 5/4); fine grained to coarse grained, ar		n to recover, core disturbed.	
_101						veathered; moist; NOTE: Very dark gray to			
_									
_102								(102.0 -	(102.0 -
	WB-1-SS-		Weathered					106.0')	106.0')
103 . 9	99.5–106 3/31/2022		Weathered Bedrock -	N/A				Drilled to 106 ft bgs to plug	No drilling flue
-	15:15		Conglomerat	e	$\left \begin{array}{c} \times \times \times \\ \times \times \end{array} \right $			the core barrel and retrieve	
_104								the 97 to 102 sample.	
_105					× × × × × × × × ×				
_106					× × ×	106-110 ft) Sedimentary Rock - Conglomera	ate; reddish brow	n (106.0 -	(106.0 -
					$\begin{vmatrix} \times & \times & \times \\ \times & \times & \times \\ \times & \times & \times \end{vmatrix}$	5YR 5/4); fine grained to coarse grained, ar	•	/ 110.0') Very hard	110.0') No drilling flu
_107						veathered; moist; NOTE: Rock clasts within composed of mixed lithology.	conglomerate	drilling could not advance a	used
	WB-1-SS-		Weathered		\times \times \times \times	composed of mixed inhology.		full 10 ft.	
	106-110 3/31/2022		Bedrock - Conglomerat	N/A					
	15:10		Congiomerat						
_109					$ \times \times$				
· _		. •							
_110					× × × × × ×	110-119 ft) Sedimentary Rock - Conglomera	ate; reddish brow	n	
· _					$ \times \times$	5YR 5/4); fine grained to coarse grained, ar		;	
_111						NOTE: Rock clasts within conglomerate con ithology.	iposed of mixed		
112		TWB-1-			× × × × × × × × ×	65			
		VAS-110- 115			$ \times \times$				
113		(4300 ppb) 3/21/2022			$\begin{vmatrix} \times & \times & \times \\ \times & \times & \times \\ \times & \times & \times \end{vmatrix}$				
		11:16							
- 5 _114_ 5									
	WB-1-SS- 110-119		Competent Bedrock -	N/A	× × × × × × × × ×				
	3/31/2022 15:05		Conglomerat						
					× × × × × × × × ×				
_116									
.									
_117									
.					$ \times \times$			(117.0') Depth 6-inch	(117.0') No drilling flu
_1181.5								diameter casing was	used (117.1 -
					$\begin{vmatrix} \times & \times & \times \\ \times & \times & \times \\ \times & \times & \times \end{vmatrix}$			drilled 4-inch	`119.0')
_119					$ \times \times \times$			diamter rathole to 127	No drilling flu used
6.5			Weathered Bedrock -	N/A				ft bgs. 6-inch diameter	(119.0 - 124.5')
120			Conglomerat	е				casing	No drilling flu
						et, bgs = below ground surface, am			
I/A = Not Appl		÷				, Notes: Solid blue and hollow blue d during the first VAS interval, respo			
									a con ha th



		<u>ADIS</u>		Drilling Log		Sheet:	1 of 7
Date Start	-	08/16/202		Surface Elevation:	538.84 ft amsl	Boring No.: TV	VB-01
	npleted: (22	Northing (NAD83):	2100941.12	_	<u> </u>
Drilling Co		Cascade		Easting (NAD83):	7615929.94	_ Client: <u>PG&E</u>	
Drilling Me		Sonic Dril	•	Total Depth:	<u>137.0 ft bgs</u>	_ ,	emedy Phase 2A
Drill Rig T	• •	Boart Lon	•••	•		_ Location: <u>PG&E Topo</u>	ock, Needles
Driller Nar	-	Matt Arno		Drill Casing Diameter:	<u>10.5 inches</u>	<u>California</u>	
Drilling As		<u></u>		Drill Bit:	v	e_Project Number: 30126	0255
Fool-Push	-	Arnold La J.A. / K.L.	mon	Depth to First Water: Converted to Well:	82.0 ft bgs	_	
Rig Geolo	•				Yes No		
(ff) a	illing Run (f ind Average netration Ra	Code	USCS Class	Description (See Pilot boring log for full geologic descriptions)	decommissioning of TWB-01	ations during overdrilling for the Temp Well and borehole reamin f TWB-01 extraction well.	ng Drilling Fluid
		N/A		(0-0.5 ft) Grading for the drill pad.		sing so that the TWB-01 Temp on DR drill casing. Observed	(0.0 - 7.0') No drilling fluid used
1				(0.5-3 ft) Silty sand with gravel (SM); brown (7.5YR 5/4).	Cemex #60 (40x70) Lapis	Lustre Sand and formation	
				(1.511(0,-)).		coarse grained sand with trace approximately 7 ft of 2-inch	
_ 2		SM			Schedule 80 PVC well cas		
3							
	0.0 - 7.0)			(3-5 ft) Well-graded sand with silt and gravel (SW-SM).			
	43 mins/ft						
		SW-SM					
_ 5							
_ o				(5-7 ft) Well-graded sand with silt and gravel			
				(SW-ŚM); brown (7.5YR 5/3).			
_ 6		SW-SM					
_ +							
_ 7				(7-11.75 ft) Silty sand with gravel (SM); brown		nex #60 (40x70) Lapis Lustre	(7.0 - 17.0')
_				(7.5YR 5/4).	Sand, and formation sedin grained sand with trace sn	nent including very fine to coarse nall pebbles. Removed	No drilling fluid use
_ 8						-inch Schedule 80 PVC well	
· _					casing.		
_ 9							
-		SM					
_10							
11							
_12 (7	7.0 - 17.0) .80 mins/ft			(11.75-14 ft) Well-graded gravel with silt and	1		
				sand (GW-ĠM); brown (7.5YR 4/3).			
_13		GW-GM					
_14				(44.45.5.4) Conductive and (44.)	_		
				(14-15.5 ft) Sandy silt with gravel (ML); brown (10YR 5/3).			
_15		ML					
16				(15.5-17 ft) Well-graded sand with silt and grav (SW-SM); brown (10YR 5/3).			
		SW-SM					
_17							
				(17-19.5 ft) Well-graded sand with silt and grav (SW-SM); brown (10YR 5/3).		emex #60 (40x70) Lapis Lustre nent including very fine to coarse	(17.0 - 27.0') No drilling fluid use
_18					grained sand with trace sn	nall pebbles. Removed	
(1)	7.0 - 27.0)	SW-SM			approximately 10 feet of 2 casing.	e-inch Schedule 80 PVC well	
	.70 mins/ft						
20		SM			71		
bbreviati	ions: US	CS = Uni	fied Soil	Classification System, ft = feet, bgs =	below ground surface, an	nsl = above mean sea leve	l, GW =
				er table marks represent depth to wa			
				materials not removed by overdrilling b	alour approximatoly 75 ft		

	ARC	ADIS	5	Drilling Log		Sheet: 2	2 of 7
	started:	08/16/20		Surface Elevation:	538.84 ft amsl	Boring No.: TW	B-01
	completed:	09/08/20)22	Northing (NAD83):	2100941.12		
Drilling		Cascade		Easting (NAD83):	7615929.94	Client: <u>PG&E</u>	
	Method:	Sonic Dr	•	Total Depth:	<u>137.0 ft bgs</u>		medy Phase 2A
	g Туре:	Boart Lo	•••	•		Location: <u>PG&E Topoc</u>	k, Needles
	Name:	Matt Arn		Drill Casing Diameter:	10.5 inches	<u>California</u>	
Drilling		L.A. / I.S		Drill Bit:	8 & 10-inch Cutting Shoe	Project Number: 301262	255
	usher:	Arnold L		Depth to First Water: Converted to Well:	82.0 ft bgs	-	
	eologist:	<u>J.A. / K.I</u>					
Depth (ft)	Drilling Run and Averag Penetration R			Description (See Pilot boring log for full geologic descriptions)	decommissioning of TWB-01 T	ons during overdrilling for the Femp Well and borehole reaming FWB-01 extraction well.	Drilling Fluid
				(19.5-22 ft) Silty sand with gravel (SM); yellowis	h		
21				brown (10YR 5/4).			
_21		SM		-			
~_ [_]				}			
_22				(22-27 ft) Silty sand with gravel (SM); brown			
				(7.5YR 5/3).			
_23	(17.0 - 27.0)						
<u> </u>	(17.0 - 27.0) 0.70 mins/ft			}			
_24						▼	
-		SM		1			
_25				(25 ft) Trace small cobble; subangular.			
-							
_26				}			
-				-			
_27		-		(27-29 ft) Silty sand with gravel (SM); brown	(27.0 - 34.0') Observed Cem	nex #60 (40x70) Lapis Lustre	(27.0 - 34.0')
-				(7.5YR 4/4).	Sand, and formation sedime grained sand with trace sma	ent including very fine to coarse	No drilling fluid used
_28		SM			approximately 7 feet of 2-in	•	
-					casing.		
_29				(29-33 ft) Silty sand with gravel (SM); brown			
				(7.5YR 4/3).			
_30							
-	(27.0 - 34.0) 0.29 mins/ft						
_31		SM					
-							
_32							
-							
_33				(33-37 ft) Silty sand with gravel (SM); brown			
-				(7.5YR 4/3).			
.34				1	(34.0 - 44.0') Observed Cerr	nex #60 (40x70) Lapis Lustre	(34.0 - 44.0')
_				{(34.5 ft) Trace very large pebble; angular.	Sand, and formation sedime	ent including fine to coarse	No drilling fluid used
_35		SM			schedule 80 PVC was not o	all to medium pebbles. 2-inch bserved when the core barrel	
_				}	was retrieved. The core bar emoved approximately 7 fee	rrel was tripped back in andr et of 2-inch Schedule 80	
_36				(36 ft) Rip up clasts of weakly cemented sand	PVC well casing.		
_				with white matrix, potentially caliche.			
_37	(34.0 - 44.0) 0.50 mins/ft			(37-40.5 ft) Silty sand with gravel (SM); brown			
4	0.00 mm8/1			(37-40.5 ft) Sifty sand with gravel (Sivi); brown $(7.5 YR 4/4)$.			
_38				1			
4		SM		·}			
_39							
_				1			
40							
hhro				Classification System, ft = feet, bgs =	-		
				tor table marks represent depth to wat	ter (tt. has) denth to water	r moneurod during the fire	t VAS intorval of
ound				ter table marks represent depth to wat materials not removed by overdrilling b			

9	ARC	٩D	S		Drilling Log				Sheet	: 3	of 7
Date S	Started:	08/16/	202	2	Surface Elevation:	<u>53</u>	8.84 ft amsl	Boring	y No.:	TWF	3-01
Date C	Completed:	09/08/	202	2	Northing (NAD83):	<u>21</u>	00941.12	Douni	J 110		<u>5-01</u>
Drilling	J Co.:	<u>Casca</u>	de		Easting (NAD83):	<u>76</u>	15929.94	Client:	PG&E		
Drilling	Method:	<u>Sonic</u>	Drilli	ing	Total Depth:	<u>13</u>	7.0 ft bgs	Project:			nedy Phase 2A
Drill Ri	g Type:	<u>Boart I</u>	ong	gyear S	Conductor Casing Diameter:	<u>12</u>	inches	Location:			k, Needles
	Name:	<u>Matt A</u>	rnol	d	Drill Casing Diameter:		.5 inches		<u>California</u>		
Drilling	Asst:	<u>L.A. / I</u>	.S. /	′ D.H.	Drill Bit:	<u>8 8</u>	<u>& 10-inch Cutting Shoe</u>	Project Nu	ımber: <u>30</u>	1262	55
	Pusher:	<u>Arnold</u>	Lar	non	Depth to First Water:	<u>82</u>	.0 ft bgs				
Rig Ge	eologist:	<u>J.A. / ł</u>	<.L.		Converted to Well:	$\left \times\right $	Yes 🗌 No				
Depth (ft)	Drilling Run (and Average	e 03	CS	USCS Class	Description (See Pilot boring log for	de	Drilling notes and observatio ecommissioning of TWB-01 T	emp Well and	borehole re		Drilling Fluid
(11)	Penetration Ř	ate			full geologic descriptions)		for the installation of T	WB-01 extrac	tion well.		
		S	М		(40.5-42 ft) Silty sand with gravel (SM); brown						
41 。		s	м		(7.5YR 4/4).						
42	(34.0 - 44.0) 0.50 mins/ft				(42-48.75 ft) Well-graded sand with silt and	_					
					gravel (SW-SM); brown (7.5YR 4/4).						
43											
44											
45											
		S	м								
46											
47											
							(47.0 - 54.0') Observed Cem			re	(47.0 - 54.0')
48_							Sand, and formation sedime grained sand with trace sma	II pebbles. Re	moved		No drilling fluid used
40							approximately 7 feet of 2-inc	ch Schedule 8	0 PVC well		
	(440 540)						casing.				
49	(44.0 - 54.0) 0.80 mins/ft				(48.75-50 ft) Well-graded sand with gravel (SW brown (7.5YR 4/3).);					
		S	w								
50					(50-52 ft) Silty sand with gravel (SM); brown	_					
					(7.5YR 4/3).						
51		S	м								
52					(52-54.5 ft) Silty sand with gravel (SM); brown	\neg					
					(52-54.5 ft) Silty sand with gravel (SM); brown $(7.5YR 4/4)$.						
53											
		S	М								
54											
							(54.0 - 57.0') Observed Cem Sand, and formation sedime			re	(54.0 - 57.0') No drilling fluid used
					(54.5-57 ft) Well-graded sand with silt and grave (SW-SM); brown (7.5YR 5/3).	el	grained sand with trace sma	Il to medium p	ebbles.		
	(54.0 - 57.0)						Removed broken fragments	of 2-inch Sch	edule 80 PV	C w	
	4.33 mins/ft	SW	-SM		·		casing.				
57		+			(57-62 ft) Well-graded sand with silt and gravel	\neg	(57.0 - 67.0') Observed Cem				(57.0 - 67.0')
					(SW-SM); brown (7.5YR 4/4).		Sand, and formation sedime with trace small to medium p	nt including fir	ne grained sa		No drilling fluid úsed
58							fragments of 2-inch Schedul				
<u>-</u>	(57.0 - 67.0) 2.10 mins/ft	SW	-SM								
59	2.10 mm5/ll										
60					s						
					Classification System, ft = feet, bgs =						
					er table marks represent depth to wat				•		
- <u>-</u>					materials not removed by overdrilling b	elov	v approximately 75 ft. bo	gs will be de	ecommiss	ioned	in place when the
TIMD	01 outroation	المبيد		aammi	scioned by pressure arouting						

E completel: 08/08/2022 Northing (NAD83): 210984112 ED010 (PC: 17/05/0) ing Co.: Cascada gestada Sonic Drilling Total Depth: 137.0.1 bg. Project: Enal GW Remedy Phase 2A. Rg Type: Boat Longyear Sonic Conductor Casing Diameter: 12 Inches Location: Ed28E TopoCK. Needles enal Armoid Lamon Depth to First Water: 82.0.1 bgs. Project: Location: Ed28E TopoCK. Needles Control Lamon Depth to First Water: 82.0.1 bgs. Project: Location: Ed28E TopoCK. Needles Control Lamon Depth to First Water: 82.0.1 bgs. Georgist: JA./KL Converted to Well: Yes No Description Well: Yes No Sw SM (100, 70, 64); Silly and with gravel (SM); Incom SW (20,	ARC	ADIS		Drilling Log		Sheet:	4 of 7
E competent: 09/08/2022 Northing (NAU83): 210094:112 Client: FG&E Tig Method: Sonic Drilling. Total Depth: 137.0 Hbgs. Project: FG&E Ramedy Phase 2A. Reg Type: Back Conductor Casing Diameter: 12 Inches Location: PG&E Topock, Needles. Reg Type: Back Conductor Casing Diameter: 12 Inches Location: PG&E Topock, Needles. Reg Type: Back Conductor Casing Diameter: 12 Inches Location: PG&E Topock, Needles. Reg Authors and Author Authors and Authors and Authors and Authors	ate Started:	08/16/2022	2	Surface Elevation:	538.84 ft amsl	Boring No · T	WB-01
ing Method: Sonie Drilling Total Depth: 13.0.0.10gs Project: Enal W Remedy Phase 2A. Rig Type: Beart Longysar Sonic Conductor Casing Diameter: 12.Inches Location: EG8E Types, Needles Ing Assi: LA./LS./D.H. Drill Casing Diameter: 12.Inches California California Ing Assi: LA./LS./D.H. Drill Bit: 82.01.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0		09/08/2022	2		2100941.12		
Pig Type: Bast Longuear Sonic Conductor Casing Diameter: La A.18. Conductor Casing Diameter: Conductor Casing Diameter: <td colspan="2">Prilling Co.: <u>Cascade</u></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Prilling Co.: <u>Cascade</u>						
er Namer ing Asst: LA./LS./D.H. Prolie Drill Bit: Drill Bit:	Drill Rig Type: <u>Boart Long</u>		•	•	•	- ,	
ing Asst: LA./LS./D.H. Drill Bit: 8 & 10-inch Cutting Shoe Project Number: 30126255 eBoolgist: JA./KL. Converted to Welt: 8 & 10-inch Cutting Shoe Project Number: 30126255 igh Drilling Run (N) execution First Water: 8 & 10-inch Cutting Shoe Project Number: 30126255 Description igh Drilling Run (N) execution First Water: 8 & 10-inch Cutting Shoe Project Number: 30126255 Description igh Drilling Run (N) execution First Water: 8 & 10-inch Cutting Shoe Project Number: 30126255 Drilling First Water: 8 & 10-inch Cutting Shoe Project Number: 30126255 igh Drilling Run (N) execution First Water: Stree First Water:				•		-	oock, Needles
H-Pursher: Armold Lemon Depth to First Water: 82.0 ft bgs Geologist: J.A. / K.L. Converted to Well: X Yes No minimative mark versage USCS USCS Description description generation Rate USCS USCS Description description generation Rate USCS USCS Description description generation Rate USCS USCS USCS USCS Description generation Rate USCS USCS USCS USCS USCS USCS Description generation Rate SW USCS USCSS USCS USCSS U	riller Name:			C C			
Geologist J.A. / K.L. Converted to Well: Yes No min Diffing Run (ft) and Average Penetration Run USCS Coses USCS Cos USCS Cos USCS	rilling Asst:				•	Project Number: 301	26255
in boling Run (t) protection USCS Code USCS (See Pito boring log for full grades and with silt and grave (SM); Protection Description	ool-Pusher:		non	•		-	
Image:	ig Geologist:	<u>J.A. / K.L.</u>					
1 SW-SM SW-SM, brown (7.5 YR 44). 2 SW SW (62-63.5 ft) Silly sand with gravel (SM); brown (7.5 YR 44). 3 (62-63.5 ft) Silly sand with gravel (SM); reddish SW 3 (64.5 67 ft) Silly sand with gravel (SM); reddish (67.0 - 72.0) 3 (64.5 67 ft) Silly sand with gravel (SM); reddish (67.0 - 72.0) 3 (64.5 67 ft) Silly sand with gravel (SM); reddish (67.0 - 72.0) 3 (67.0 - 72.0) Served cemex #00 (d0x70) Lapis Lustre Sand and formation sediment fullung fine to coarse doweabered beatrock. Removed approximately 7 feet of 2-inch schedule (67.0 - 72.0) 3 (7.7 - 72.0) SM (7.7 - 72.0) 3 (7.7 - 72.0) Served cemex #00 (d0x70) Lapis Lustre Sand and formation sediment fulling fluid use obacrock. Removed approximately 7 feet of 2-inch schedule No drilling fluid use obacrock. Removed approximately 7 feet of 2-inch schedule 3 SM (7.7 - 72.0) No drilling fluid use obacrock. Removed approximately 7 feet of 2-inch schedule No drilling fluid use obacrock. Removed approximately 7 feet of 2-inch schedule 4 SM (7.4 - 77.0) KM - gravel (SM); reddish (72.0 - 85.0) Observed Cemex #0 (bbacroc demover #0 (bbacroc demov	(ff) and Averag			(See Pilot boring log for	decommissioning of TWB-01 T	emp Well and borehole rear	
3 (57.0 - 67.0) 4 (57.0 - 67.0) 5 (57.0 - 67.0) 5 (57.0 - 67.0) 5 (57.0 - 72.0) 5 (57.0 - 72.0) 5 (57.0 - 72.0) 5 (57.0 - 72.0) 5 (57.0 - 72.0) 5 (57.0 - 72.0) 5 (57.0 - 72.0) 5 (57.0 - 72.0) 5 (57.0 - 72.0) 5 (57.0 - 72.0) 5 (57.0 - 72.0) 6 (57.0 - 72.0) 5 (57.0 - 72.0) 6 (57.0 - 72.0) 5 (57.0 - 72.0) 5 (57.0 - 72.0) 5 (57.0 - 72.0) 6 (57.0 - 72.0) 5 (57.0 - 72.0) 5 (57.0 - 72.0) 5 (57.0 - 72.0) 5 (57.0 - 72.0) 5 (57.0 - 72.0) 5 (57.0 - 72.0) 5 (57.0 - 72.0) 5 (57.0 - 72.0) 6 (57.0 - 72.0)	.61	SW-SM				0	
SW SW (SW): reddish brown (SYR 4/4). SM (64.5-67 ft) Silty sand with gravel (SM); reddish velow (SYR 6/6). SM (67.70.5 ft) Silty sand with gravel (SM); reddish sand to median pebbles of weathered grained sand with small to median pebbles of weathered grained sand with small to median pebbles of weathered grained sand with small to median pebbles of weathered grained sand with small to median pebbles of weathered grained sand with small to median pebbles of weathered grained sand with small to median pebbles. (67.0 - 72.0) No drilling fluid use SM SW-SM (7.72.7) I) Garge sand with gravel (SM); reddish forwn (SYR 4/4). (7.2.0 - 85.0) No drilling fluid use SW-SM (7.2.7.7 ft) Clarge sand with gravel (SM); reddish forwn (SYR 4/4). (7.2.0 - 85.0) No drilling fluid use SM (7.2.7.7 ft) Clarge sand with gravel (SM); reddish forwn (SYR 4/4). (7.2.0 - 85.0) No drilling fluid use SM (7.2.0 - 85.0) No drilling fluid use (7.2.0 - 85.0) No drilling fluid use SM (7.2.0 - 85.0) No drilling fluid use (7.2.0 - 85.0) No drilling fluid use SM (7.2.7 ft) Weil-graded sand with gravel (SM); reddish (7.2.0 - 85.0) No drilling fluid use SM (7.2.7 ft) Weil-graded sand with gravel (SM); reddish No drilling fluid use No drilling fluid use	.62 .63(57.0 - 67.0)	SM				3	
5 SM yellow (5YR 6/6). (67.0 - 72.0) Observed Cemex #60 (40x70) Lapis Lustre Sand, and formation sediment including fine to coarse grained sand with silt and gravel (SM); brown (7.5YR 5/4). (67.0 - 72.0) Observed Cemex #60 (40x70) Lapis Lustre Sand, and formation sediment including fine to coarse grained sand with silt and gravel (SM); brown (7.5YR 5/4). (67.0 - 72.0) Observed Cemex #60 (40x70) Lapis Lustre Sand, and formation sediment including fine to coarse grained sand with silt and gravel (SM); reddish brown (5YR 4/4). (67.0 - 72.0) Observed Cemex #60 (40x70) Lapis Lustre Sand, and formation sediment including fine to very coarse grained sand with gravel (SC); reddish forwn (5YR 4/4). (67.0 - 72.0) Observed Cemex #3 (8x20) Lapis Lustre Sand, and formation sediment including fine to very coarse grained sand, granules and small to medium pebbles. (72.0 - 85.0) Observed Cemex #3 (8x20) Lapis Lustre Sand, and formation sediment including fine to very coarse grained sand, granules and small to medium pebbles. (72.0 - 85.0) Observed Cemex #3 (8x20) Lapis Lustre Sand, and formation sediment including fine to very coarse grained sand, granules and small to medium pebbles. No drilling fluid use 0.2 inch schedule 80 PVC well casing materials was not aligned with the TWB-01-Temp well blow approximately 75 feet bys. Well casing materials observed in the drill cuttings suggest the overd full casing materials observed in the drill cutting are well on the TWB-01-Temp well blow approximately 75 feet bys. Well casing materials observed in the drill cutting are granted and yranules well to be decommissioned in place well in the TWB-01-Temp well blow approximately 75 feet bys. Well casing materials observed in the drill cutting are yrange yranger yrange		sw		(SW); reddish brown (5YR 4/4).			
3 (67.0 - 72.0) (67.70.5 ft) Silty sand with gravel (SN); brown (57.0 - 72.0) (67.0 - 72.0) (70.0 - 72.0)	.65 .66	SM			3		
SW-SM SW-SM, reddish brown (5YR 4/4). SC (71-72 ft) Clayey sand with gravel (SC); reddish brown (5YR 4/4). SC (71-72 ft) Clayey sand with gravel (SC); reddish brown (5YR 4/4). SC (71-72 ft) Clayey sand with gravel (SC); reddish brown (5YR 4/4). SC (72.0 - 85.0) SM (72.0 - 85.0)					Sand, and formation sedime grained sand with small to n bedrock. Removed approxin	ent including fine to coarse nedium pebbles of weathered	No drilling fluid úse
SM SM SM SM SM SM SM SM SM SM SM SM SM S	.71			(SW-SM); reddish brown (5YR 4/4). (71-72 ft) Clayey sand with gravel (SC); reddish			
6 (72.0 - 85.0) 1.00 mins/ft SW-SM 7 (77-83 ft) Silty sand with gravel (SM); dark reddish gravel (SM); dark reddish gravel (SYR 4/2).	72 73	SM			and formation sediment incl grained sand, granules and 2-inch schedule 80 PVC we observed. The lack of well c drill cuttings suggest the over	uding fine to very coarse small to medium pebbles. Il casing material was not asing materials observed in erdrill casing was not aligned	No drilling fluid úse
_ (77-83 ft) Silty sand with gravel (SM); dark _ reddish gray (5YR 4/2).	1.00 mins/ft	SW-SM			bgs. Well casing materials not removed durin is planned to be decommissioned in place w 01 extraction well is decommissioned by pre- grouting.	not removed during overdrilli sioned in place when the TW	ng
	.77 .78 .79 .80	SM					
previations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW =	bbreviations: US	SCS = Unifi	ed Soil	Classification System, ft = feet, bgs =	below ground surface, ams	sl = above mean sea le	vel, GW =
undwater, Notes: Solid blue water table marks represent depth to water (ft. bgs.) depth to water measured during the first VAS interval of				·			
t borehole. TWB-01 Temp Well materials not removed by overdrilling below approximately 75 ft. bgs will be decommissioned in place when t				<u> </u>		•	

9	ARC	4	DIS	5	Drilling Log			Sheet: 5	of 7
Date S			Surface Elevation:	538.84 ft amsl	Borin	g No.: <u>TW</u>	R_01		
Date C	Completed:	09	/08/202	22	Northing (NAD83):	2100941.12	DOLIN	g 140 <u>1 44</u>	<u>5-01</u>
Drilling	•		ascade			7615929.94	Client:	PG&E	
-	, Method:		nic Dril	llina	- , ,	137.0 ft bgs	Project:		nedy Phase 2A
-	g Type:			ngyear S	•	U	Location:	PG&E Topoc	-
Driller			att Arno	•••	-	10.5 inches	Loodion.	California	(, 11000100
Drilling				/ D.H.	C C	8 & 10-inch Cutting Shoe	Project Nu		55
-	usher:		nold La			82.0 ft bgs	појесни	111ber. <u>501202</u>	.55
	eologist:		4. / K.L.		•	× Yes No			
i tig Ot		0.7	<u>., , ,</u>	•					
Depth (ft)	Drilling Run and Averag Penetration R	e	USCS Code	USCS Class	Description (See Pilot boring log for full geologic descriptions)	Drilling notes and observation decommissioning of TWB-01 T for the installation of T	emp Well and	l borehole reaming	Drilling Fluid
					(77-83 ft) Silty sand with gravel (SM); dark reddish gray (5YR 4/2).				
81									
82			SM						
02	(72.0 - 85.0)				(82 ft) Wet to moist				
i	1.00 mins/ft								
83					(83-84.5 ft) Silty sand with gravel (SM); dark				
					reddish gray (5YR 4/2).	¥			
84			SM						
					.) (84.5-89.5 ft) Silty sand with gravel (SM); reddish				
85					J(64.5-69.5 ft) Sitty sand with gravel (Sivi), reddisr Jbrown (5YR 4/3).		<u> </u>		(05.007.0))
						(85.0 - 87.0') Observed Cem and moist formation sedime			(85.0 - 87.0') No drilling fluid used
86	(85.0 - 87.0)					coarse grained sand, granul			5
	8.00 mins/ft					pebbles.			
					······································				
0/			SM		(87 ft) Moist to wet.	(87.0 - 95.0') Observed Cem			(87.0 - 95.0')
						and moist formation sedimer			No drilling fluid used
88						pebbles.	,		
89									
					(89.5-97 ft) Sedimentary Rock; reddish brown				
90				$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	(5YR 5/4).				
				× × × × × × × × ×					
91	(87.0 - 95.0)			$\begin{array}{c} \times \times \times \\ \times \times \times \\ \times \times \times \end{array}$					
	1.13 mins/ft								
92				$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	*				
				$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	2 2				
	1		N/A	× × × × × × × × ×					
94	1								
- 94				$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	*				
				$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	2				
95		\neg				(95.0 - 100.0') Observed Cer			(95.0 - 100.0')
				$\begin{array}{ c c c c c c c c c c c c c c c c c c c$		Sand and moist formation se very coarse grained sand, sr	ediment includ	ling medium to	No drilling fluid used
96						moist.		, granuics,	
;				$\times \times $					
97				XXX	(07.00 ft) Depring grand and a read in the in (00.01 th	41			
	(95.0 - 100.0		SP-SM		97-98 ft) Poorly graded sand with silt (SP-SM); reddish brown (5YR 5/4).				
98	1.80 mins/ft								
					(98-99.5 ft) Silty sand with gravel (SM); reddish brown (5YR 5/4).				
99]		SM						
			N/A			11			
Abbre	viations: 119	50.5		<u> </u>	L Classification System ft = feet has = h	elow ground surface ams	l = above n	iean sea level	GW =
1	Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, Notes: Solid blue water table marks represent depth to water (ft, bgs,) depth to water measured during the first VAS interval of the								
	groundwater, Notes: Solid blue water table marks represent depth to water (ft. bgs.) depth to water measured during the first VAS interval of the prevention								
	bilot borehole. TWB-01 Temp Well materials not removed by overdrilling below approximately 75 ft. bgs will be decommissioned in place when the								

9	ARC	ADIS		Drilling Log	Sheet: 6 of 7		
Date S	Started:	08/16/202	22	Surface Elevation:	538.84 ft amsl Boring No.: <u>TWB-01</u>		
	Completed:		22	Northing (NAD83):	2100941.12		
Drilling		<u>Cascade</u>		Easting (NAD83):	<u>7615929.94</u> Client: <u>PG&E</u>		
	Method:	<u>Sonic Dri</u>	•	Total Depth:	137.0 ft bgs Project: Final GW Remedy Phase 2A		
	д Туре:	Boart Lor	<u>igyear S</u>	•			
	Name:	Matt Arno		Drill Casing Diameter:	10.5 inches California		
Drilling		<u>L.A. / I.S.</u>			8 & 10-inch Cutting Shoe Project Number: 30126255		
	usher:	Arnold La	mon	Depth to First Water:	82.0 ft bgs		
Rig Ge	eologist:	<u>J.A. / K.L</u>		Converted to Well:			
Depth	Drilling Run	(ft) USCS	USCS	Description	Drilling notes and observations during overdrilling for the		
(ft)	and Averag Penetration R	e Codo	Class	(See Pilot boring log for full geologic descriptions)	decommissioning of TWB-01 Temp Well and borehole rearning Drilling Fluid for the installation of TWB-01 extraction well.		
 	(100.0 - 107.0 0.57 mins/ft		× × × × × × × × × × × × × × × × × × ×	(199.5-106 ft) Sedimentary Rock - Conglomerate; reddish brown (5YR 5/4).	(100.0 - 107.0') Observed Cemex #3 (8x20) Lapis Lustre Sand and moist formation sediment including medium to coarse grained sand, silt, granules, and small to medium pebbles.		
		_	× × × × × × × × × × × × × × × × × × ×	reddish brown (5YR 5/4).	(107.0 - 112.0') Observed moist formation sediment (107.0 - 112.0')		
108 108 109 110	(107.0 - 112.0 2.40 mins/ft		× × × × × × × × × × × × × × × × × × ×		including medium to very coarse grained sand, silt, granules and small pebbles. Cemex #3 (8x20) Lapis Lustre Sand was not observed. The lack of Cemex #3 (8x20) Lapis Lustre Sand in the drill cutting suggests that the overdrill casing was not aligned with the TWB-01 Pilot borehole used to install the TWB-01-Temp well below approximately 107 feet bgs.		
 111 112			× × × × × × × × × × × × × × × × × × ×	(110-119 ft) Sedimentary Rock - Conglomerate; reddish brown (5YR 5/4).	(110.0') After reaching total depth PG&E requested the drill casi ng remain in the borehole during discussions with stakeholders to discuss options to determine a path forward for the decommis oning of TWB-01 Temp Well materials left in place below approx imately 75 ft. bgs. Cascade had concerns that the 10-inch drill c asing would lock up in the formation. To prevent the casing from becoming locked up the 10-inch casing was retracted to (112.0 - 120.0')		
 113 			× × × × × × × × × × × × × × ×		approximately 110 ft. bgs and the borehole below temporarily backfilled with Cemex #1/20 (20x40) Lapis Lustre Sand to support the casing and allow the rig to be moved to and alternate location until a path forward could be determined.		
114 115		N/A	× × × × × × × × × × × ×		(112.0 - 120.0') Observed formation sediment including very fine to coarse grained sand, granules, and trace small pebbles.		
116	(112.0 - 120.0		<pre></pre>		(115.0') Observed temporary backfill Cemex #1/20 (20x40) Lapis lustre sand in drill cuttings.		
	2.13 mins/ft		× × × × × × × × × × × × × × ×				
			× × × × × × × × × × × × × × × × × × ×				
119 _ 120		N/A	× × × × × × × × × × × ×	(119-123.25 ft) Sedimentary Rock - Conglomerate; reddish brown (5YR 5/4).			
J					pelow ground surface, amsl = above mean sea level, GW =		
groun	dwater, Not	es: Solid b	olue wat	ter table marks represent depth to wat	er (ft. bgs.) depth to water measured during the first VAS interval of the		
pilot b	pilot borehole. TWB-01 Temp Well materials not removed by overdrilling below approximately 75 ft. bgs will be decommissioned in place when the						

AR	<u>SC</u>	DIS		Drilling Log	Sheet: 7 of 7	
Date Started		8/16/202		Surface Elevation:	538.84 ft amsl Boring No.: <u>TWB-01</u>	
Date Comple		9/08/202	22	Northing (NAD83):	2100941.12	
Drilling Co.:		Cascade		Easting (NAD83):	7615929.94 Client: PG&E	
Drilling Meth		<u>Sonic Dril</u>	-	Total Depth:	137.0 ft bgs Project: Final GW Remedy Phase 2A	
Drill Rig Type		Boart Lon	•••	C C		
Driller Name: Drilling Asst:		<u>/latt Arno</u> A. / I.S.		Drill Casing Diameter: Drill Bit:	10.5 inchesCalifornia8 & 10-inch Cutting ShoeProject Number: 30126255	
Tool-Pusher:		Arnold La		Depth to First Water:	82.0 ft bgs	
Rig Geologis		<u>.A. / K.L</u>		Converted to Well:		
				Description		
(ff) and	g Run (ft Average	Code	USCS Class	(See Pilot boring log for	Drilling notes and observations during overdrilling for the decommissioning of TWB-01 Temp Well and borehole reaming Drilling Fluid	
Penetra	ation Rat	e		full geologic descriptions)	for the installation of TWB-01 extraction well. (120.0 - 125.0') Observed moist formation sediment (120.0 - 125.0')	
			× × × × × × × × ×	(119-123.25 ft) Sedimentary Rock - Conglomerate; reddish brown (5YR 5/4).	(120.0 - 125.0') Observed moist formation sediment including medium to very coarse grained sand, silt, granules, small pebbles. (120.0 - 125.0') No drilling fluid used	
			× × × × × × × × ×		granules, small peoples.	
		N/A	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$			
<u>_122_</u>			× × × × × × × × ×			
ו1.80 ¶	- 125.0) mins/ft		× × × × × × × × ×			
123			$\times \times \times$			
			× × × × × × × × ×	(123.25-129 ft) Sedimentary Rock - Conglomerate; reddish brown (5YR 5/4).		
j124			$\begin{array}{ c c c c c c c c c c c c c c c c c c c$			
105			$\begin{array}{ c c c c c c c c c c c c c c c c c c c$			
2125			$\begin{array}{ c c c c c c c c c c c c c c c c c c c$		(125.0 - 131.0') Collect and logged from 129-131 feet bgs (125.0 - 131.0')	
			× × × × × × × × ×		(see Description) to supplement TWB-01 Pilot Borehole Log drilled to approximately 129.5 bgs. The 8-inch diamter pard house the pard house in the formation flushed the volumes used and	
		N/A	$\times \times \times$		core barrel became stuck in the formation, flushed the 10-inch diameter drill casing over the core barrel to free it.	
127			× × × × × × × × ×		The 10-inch diameter drill casing almost became stuck. documented (126.0') Observed temporary backfill Cemex #1/20 (20x40)	
			$ \times \times \times \\ \times \times \times$		Lapis lustre sand in drill cuttings.	
2 128 (125.0	- 131.0)		× × × × × × × × ×			
1.50 r	mins/ft		$ \times \times \times \\ \times \times \times$			
<u></u> 129			$\begin{array}{c} \times \times \times \\ \times \times \times \end{array}$			
				(129-131 ft) Sedimentary Rock - Conglomerate reddish brown (7.5YR 5/4); fine grained to		
130		N/A		coarse grained, subangular; weathering fresh; medium hard; rock clasts within conglomerate		
			× × × × × × × × ×	composed of mixed lithology; NOTE: Competer bedrock pulverized by drilling process.	nt l	
<u> 131 </u>			$\begin{array}{c c} \times \times \times \\ \overline{\times \times \times} \end{array}$	(131-136 ft) Sedimentary Rock - Conglomerate	(131.0 - 136.0') Collect and logged from 129-131 feet bgs (131.0 - 136.0')	
			× × × × × ×	reddish brown (7.5YR 5/4); fine grained to coarse grained, subangular; weathering fresh;	(see Description) to supplement TWB-01 Pilot Borehole Water used for drilling	
≝132 s'				medium hard; moderately fractured; massive; NOTE: Majority of larger clasts within matrix	volumes used and recovered not	
			× × × × × × × × ×	composed of metadiorite. From 131-132' the bedrock is fractured into 2-4 inch thick pieces	documented	
z 133 (131 0	- 136.0)		$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	(131-131.3 ft) Fracture, 90 degree vertical,		
	mins/ft			smooth, fracture surface covered with silt. (132-133 ft) Mechanical fracture, horizontal,		
		N/A		rough surface on fracture face. (133-134.16 ft) Mechanical fracture, horizontal,		
			× × × × × × × × ×	rough surface on fracture face. (134.2-135.08 ft) Mechanical fracture, horizonta	u,	
				rough surface on fracture face. (135.08-136 ft) Mechanical fracture, horizontal,		
136				rough surface on fracture face.		
			× × × × × × × × × × × ×		(136.0') A preliminary alignment test was conducted by running 40 feet of 8-inch outer diameter core barrel within	
137					the 9.5-inch inner diameter of the drill casing to a depth of (136.5') approximately 136 ft bgs. During the test Cascade did not 900 gallons of water	
				End of Boring at 137 ft bgs.	encounter any resistance indicating that drill casing is likely plumb.	
<u>5</u> 138					(136.5') Flushed casing in preparation for well installation. gallons of water lost	
<u></u>						
 Abbreviation	s. 1160	S = Uni	fied Sail	Classification System $ff = feet hes -$	below ground surface, amsl = above mean sea level, GW =	
1				· · · ·		
	groundwater, Notes: Solid blue water table marks represent depth to water (ft. bgs.) depth to water measured during the first VAS interval of th pilot borehole. TWB-01 Temp Well materials not removed by overdrilling below approximately 75 ft. bgs will be decommissioned in place when the					

TWB-01 extraction well is decommissioned by pressure grouting.