

Date Started: 10/09/2019	Surface Elevation: 520.40 ft amsl	Well ID: MW-11D
Date Completed: 10/18/2019	Shallow Well Elevation: NA	
Drilling Co.: Cascade	Deep Well Elevation: 522.59 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2101579.71	Project: Final GW Remedy Phase 1
Driller Name: Steve Vasquez	Easting (NAD83): 7614879.83	Location: PG&E Topock, Needles, California
Drilling Asst: L. Amaya / O. Floures	Borehole Diameter: 6 inches	
Logger: Chris Bonessi	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Grant Willford	Development End Date: 11/2/2019	
Total Depth: 197 ft bgs	Well Completion: <input type="checkbox"/> Flush <input checked="" type="checkbox"/> Stick-up <input type="checkbox"/> To Be Completed in Well Vault	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
0					(+2.2 - 110.0') 2" PVC Sch 80 Casing		Note: 8" diameter lockable steel stove pipe painted desert sand
0					(+2.6 - 4.0') Surface completion		(+1.0 - 4.0') 30 bags Note: 24" diameter pad Quickcrete concrete mixed with buff concrete dye
1		Topock - Fluvial Deposits	SW-SM	[Pattern]	(0.0 - 8.5') 12.0" Borehole	(2.5 - 64.5') Portland Cement 6% Bentonite Type I, II and V with Hydrogel	(2.5 - 64.5') 180 gallons (170%) Note: Grout seal. Used >20% of the calculated volume due to potential voids that formed during drilling and grout migration into the formation.
2							
3							
4							
5							
6							
7							
8			NR	[X]			
9							
10		Topock - Alluvium Deposits	GW-GM	[Pattern]			
11							
12		Topock - Alluvium Deposits	SW-SM	[Pattern]			
13							
14		Topock - Alluvium Deposits	GW	[Pattern]	(13.5 - 14.5') Centralizer		
15							
16		Topock - Alluvium Deposits	SW	[Pattern]	(8.5 - 197.0') 6.0" Borehole		
17							

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: solid blue water table marks represent depth to water (ft. bgs.) measured post development; installed in MW-11D

WELL CONSTRUCTION DETAILS_PG&E_TOPOCK C:\USERS\MCGRANE\DOCUMENTS\PG&E_TOPOCK\DRIFT BORING LOGS\GINT FILES\05.14.20\TOPOCK DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT_05/14/20 18:07

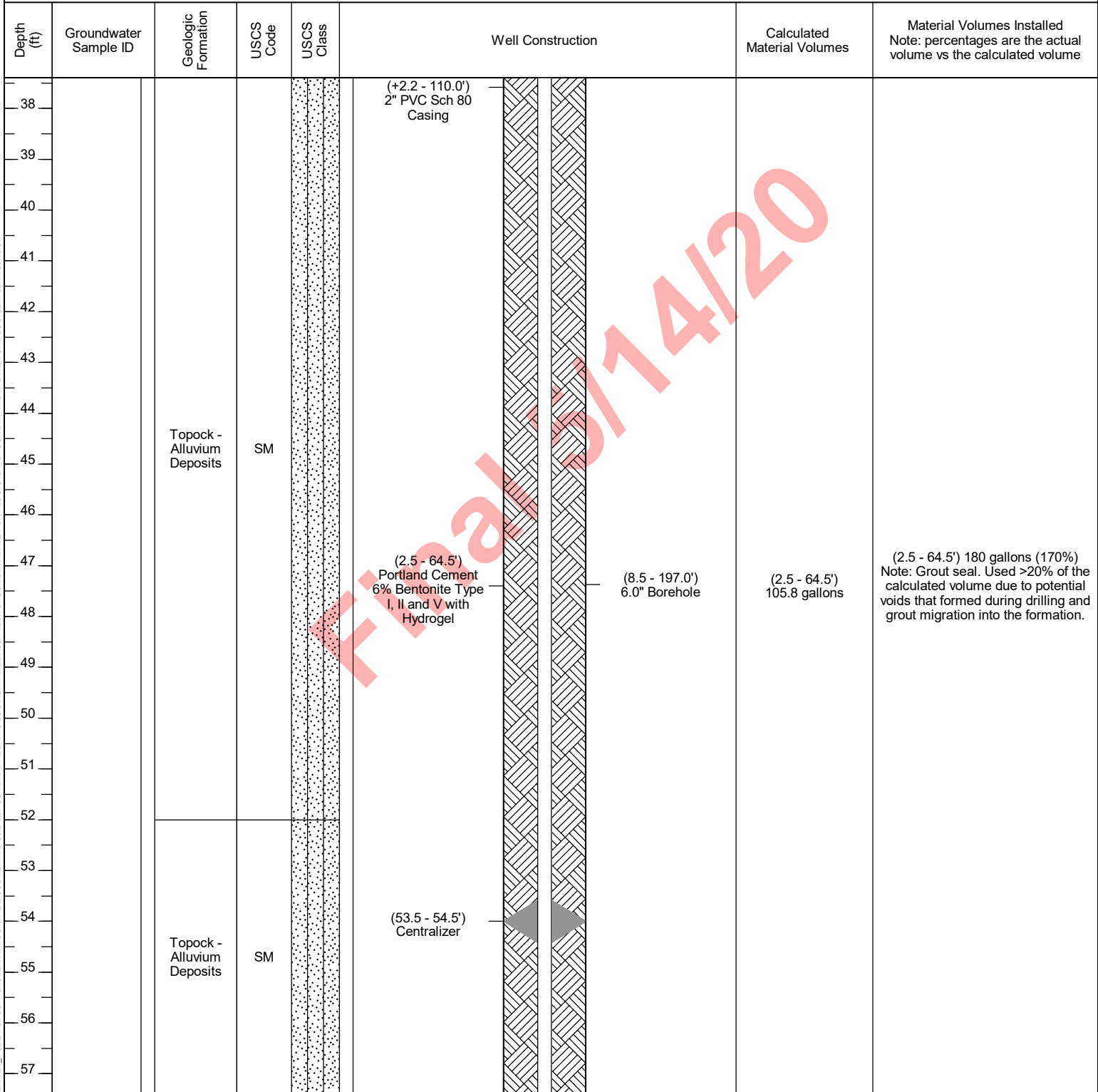
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Drilling Asst: L. Amaya / O. Floures	Borehole Diameter: 6 inches	
Logger: Chris Bonessi	Static Water Level: See Log for Depths	Project Number: RC000753.0051
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Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
18		Topock - Alluvium Deposits	SW		(+2.2 - 110.0') 2" PVC Sch 80 Casing		
19							
20		Topock - Alluvium Deposits	SM				
21							
22		Topock - Alluvium Deposits	SW-SM		(2.5 - 64.5') Portland Cement 6% Bentonite Type I, II and V with Hydrogel	(8.5 - 197.0') 6.0" Borehole	(2.5 - 64.5') 105.8 gallons
23							
24		Topock - Alluvium Deposits	SW-SM				(2.5 - 64.5') 180 gallons (170%) Note: Grout seal. Used >20% of the calculated volume due to potential voids that formed during drilling and grout migration into the formation.
25							
26		Topock - Alluvium Deposits	SW-SM				
27							
28		Topock - Alluvium Deposits	SM				
29							
30		Topock - Alluvium Deposits	SM				
31							
32		Topock - Alluvium Deposits	SM				
33							
34		Topock - Alluvium Deposits	SM				
35							
36		Topock - Alluvium Deposits	SM				
37							

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Total Depth: 197 ft bgs	Well Completion: <input type="checkbox"/> Flush <input checked="" type="checkbox"/> Stick-up <input type="checkbox"/> To Be Completed in Well Vault	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
58		Topock - Alluvium Deposits	SM		(+2.2 - 110.0') 2" PVC Sch 80 Casing		
59							
60		Topock - Alluvium Deposits	SM		(2.5 - 64.5') Portland Cement 6% Bentonite Type I, II and V with Hydrogel	(2.5 - 64.5') 105.8 gallons	(2.5 - 64.5') 180 gallons (170%) Note: Grout seal. Used >20% of the calculated volume due to potential voids that formed during drilling and grout migration into the formation.
61							
62							
63							
64		Topock - Alluvium Deposits	SM		(8.5 - 197.0') 6.0" Borehole		
65							
66							
67		Topock - Alluvium Deposits	SM		(64.5 - 102.0') Bentonite seal chips Puregold medium chips	(64.5 - 102.0') 9 bags	(64.5 - 102.0') 10.6 bags (118%) Note: Annular space seal across the screen interval of the existing adjacent monitoring well (MW-11)
68							
69	MW-11D-VAS-67-72 (370 ppb) 10/6/2019 12:00	Topock - Alluvium Deposits	SM				
70							
71		Topock - Alluvium Deposits	SM				
72							
73		Topock - Alluvium Deposits	SM				
74							
75		Topock - Alluvium Deposits	SM				
76							
77		Topock - Alluvium Deposits	SM				

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Driller Name: Steve Vasquez	Easting (NAD83): 7614879.83	Location: PG&E Topock, Needles, California
Drilling Asst: L. Amaya / O. Floures	Borehole Diameter: 6 inches	
Logger: Chris Bonessi	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Grant Willford	Development End Date: 11/2/2019	
Total Depth: 197 ft bgs	Well Completion: <input type="checkbox"/> Flush <input checked="" type="checkbox"/> Stick-up <input type="checkbox"/> To Be Completed in Well Vault	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
78					(+2.2 - 110.0') 2" PVC Sch 80 Casing		
79							
80							
81							
82		Topock - Alluvium Deposits	SM				
83							
84							
85							
86							
87					(64.5 - 102.0') Bentonite seal chips Puregold medium chips	(8.5 - 197.0') 6.0" Borehole	(64.5 - 102.0') 9 bags
88							(64.5 - 102.0') 10.6 bags (118%) Note: Annular space seal across the screen interval of the existing adjacent monitoring well (MW-11)
89							
90							
91		Topock - Alluvium Deposits	SM				
92							
93							
94	MW-11D-VAS-92-97 (72 ppb) 10/6/2019 15:50				(93.5 - 94.5') Centralizer		
95							
96		Topock - Alluvium Deposits	SM				
97							

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WELL CONSTRUCTION DETAILS_PG&E_TOPOCK_TOPOCK DRAFT BORING LOGS\GINT FILES\05.14.20\TOPOCK DATABASE FOR PLOG.GPJ_TOPOCK DATA TEMPLATE FOR PLOG.GDT_05/14/20_18/07

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Drilling Asst: L. Amaya / O. Floures	Borehole Diameter: 6 inches	
Logger: Chris Bonessi	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Grant Willford	Development End Date: 11/2/2019	
Total Depth: 197 ft bgs	Well Completion: <input type="checkbox"/> Flush <input checked="" type="checkbox"/> Stick-up <input type="checkbox"/> To Be Completed in Well Vault	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
98		Topock - Alluvium Deposits	SM		(+2.2 - 110.0') 2" PVC Sch 80 Casing		
99					(64.5 - 102.0') Bentonite seal chips Puregold medium chips	(64.5 - 102.0') 9 bags	(64.5 - 102.0') 10.6 bags (118%) Note: Annular space seal across the screen interval of the existing adjacent monitoring well (MW-11)
100		Topock - Alluvium Deposits	SM		(102.0 - 108.0') Cemex #60 MESH (40x70) Lapis Lustre Sand	(102.0 - 108.0') 1.5 bags	(102.0 - 108.0') 2.2 bags (147%) Note: Transition sand. Used >20% of the calculated volume due to potential voids that formed during drilling.
101							
102							
103		Topock - Alluvium Deposits	SM		(8.5 - 197.0') 6.0" Borehole		
104							
105		Topock - Alluvium Deposits	SM		(110.0 - 130.0') 2" Sch 80 PVC (20-slot) Screen		
106							
107		Topock - Alluvium Deposits	SM		(108.0 - 134.0') Cemex #3 MESH (8x10) Lapis Lustre Sand	(108.0 - 134.0') 9.1 bags	(108.0 - 134.0') 11.2 bags (123%) Note: Filter pack. Used >20% of the calculated volume due to potential voids that formed during drilling.
108							
109		Topock - Alluvium Deposits	SM				
110							
111		Topock - Alluvium Deposits	SM				
112							
113		Topock - Alluvium Deposits	SM				
114							
115		Topock - Alluvium Deposits	SM				
116							
117		Topock - Alluvium Deposits	SM				
117							

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Drilling Asst: L. Amaya / O. Floures	Borehole Diameter: 6 inches	
Logger: Chris Bonessi	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Grant Willford	Development End Date: 11/2/2019	
Total Depth: 197 ft bgs	Well Completion: <input type="checkbox"/> Flush <input checked="" type="checkbox"/> Stick-up <input type="checkbox"/> To Be Completed in Well Vault	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
118 - 122		Topock - Alluvium Deposits	SM		(110.0 - 130.0') 2" Sch 80 PVC (20-slot) Screen		
122 - 127	MW-11D-VAS-122-127 (92 ppb) 10/7/2019 12:15	Topock - Alluvium Deposits	SM		(108.0 - 134.0') Cemex #3 MESH (8x10) Lapis Lustre Sand	(108.0 - 134.0') 9.1 bags	(108.0 - 134.0') 11.2 bags (123%) Note: Filter pack. Used >20% of the calculated volume due to potential voids that formed during drilling.
127 - 131		Topock - Alluvium Deposits	ML		(130.8 - 131.8') Centralizer		
131 - 134		Topock - Alluvium Deposits	ML		(130.0 - 132.4') Sump and SS End Cap		
134 - 137		Topock - Alluvium Deposits	SM		(134.0 - 197.0') Bentonite seal pellets Pel-Plug (TR30) 3/8"	(134.0 - 197.0') 19.8 buckets	(134.0 - 197.0') 23 buckets (116%) Note: Decommissioned rathole

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138		Topock - Alluvium Deposits	SM	[Dotted Pattern]	[Solid Black]	(134.0 - 197.0') 19.8 buckets	(134.0 - 197.0') 23 buckets (116%) Note: Decommissioned rathole
139							
140							
141							
142							
143							
144							
145							
146							
147							
148					(134.0 - 197.0') Bentonite seal pellets Pel-Plug (TR30) 3/8"	(8.5 - 197.0') 6.0" Borehole	
149							
150		Topock - Alluvium Deposits	ML	[Vertical Lines]			
151		Topock - Alluvium Deposits	SM	[Dotted Pattern]			
152							
153		Topock - Alluvium Deposits	SM	[Dotted Pattern]			
154	MW-11D-VAS-152-157 (10 ppb) 10/7/2019 16:50						
155		Topock - Alluvium Deposits	SM	[Dotted Pattern]			
156							
157							

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158		Topock - Alluvium Deposits	SM				
159							
160		Topock - Alluvium Deposits	SM				
161							
162		Topock - Alluvium Deposits	SM				
163							
164		Topock - Alluvium Deposits	SM				
165							
166		Topock - Alluvium Deposits	SM				
167							
168		Topock - Alluvium Deposits	SM				(134.0 - 197.0') Bentonite seal pellets Pel-Plug (TR30) 3/8"
169							
170		Topock - Alluvium Deposits	SM				(8.5 - 197.0') 6.0" Borehole
171							
172		Topock - Alluvium Deposits	GM				(134.0 - 197.0') 19.8 buckets
173							
174		Topock - Alluvium Deposits	GM				(134.0 - 197.0') 23 buckets (116%) Note: Decommissioned rathole
175							
176		Topock - Alluvium Deposits	GM				
177							

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178	MW-11D-VAS-177-182 (<0.17 U ppb) 10/8/2019 12:00	Topock - Alluvium Deposits	GM					
179		Topock - Alluvium Deposits	ML					
180		Topock - Alluvium Deposits	SM					
181								
182								
183								
184								
185								
186								
187		Topock - Weathered Bedrock - conglomerate	ML		(134.0 - 197.0') Bentonite seal pellets Pel-Plug (TR30) 3/8"	(8.5 - 197.0') 6.0" Borehole	(134.0 - 197.0') 19.8 buckets	(134.0 - 197.0') 23 buckets (116%) Note: Decommissioned rathole
188								
189								
190								
191								
192								
193								
194		Topock - Competent Bedrock - conglomerate						
195								
196								
197			NR		End of Boring at 197.0 ft bgs.			



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Drilling Method:	Sonic Drilling	Total Depth:	197 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Prosonic Truck Mount	Borehole Diameter:	6 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Steve Vasquez	Depth to First Water:	66.6 ft bgs		
Drilling Asst:	L. Amaya / O. Floures	Sampling Method:	10 ft Core Barrel	Project Number:	RC000753.0051
Logger:	Chris Bonessi	Sampling Interval:	Continuous		
Editor:	Grant Willford	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
1	60			Topock - Fluvial Deposits	SW-SM		(0.0 - 7.0') Topock - Fluvial Deposits; Well graded sand with silt and gravel (SW-SM); yellowish brown / moderate yellowish brown (10YR 5/4); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, angular to subround; little silt; trace small to large cobbles, subangular to subround; dry	(0.0 - 0.5') Hand auger for utility clearance hit refusal at 0.5 ft. bgs.	(0.0 - 197.0') No water used
2									
3									
4									
5									
6									
7									
8	72	No Sieve Samples Collected			NR		(7.0 - 9.5') No recovery (NR)		
9									
10									
11									
12									
13									
14									
15									
16									
17									
18	120			Topock - Alluvium Deposits	SW		(16.0 - 23.0') Topock - Alluvium Deposits; Well graded sand with silt and gravel (SW); brown (10YR 4/3); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, angular to subround; little silt; trace small cobbles, subangular; dry		
19									
20									

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: depth to water was measured during first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; well MW-11D installed in borehole

SOIL BORING LOG: PG&E TOPOCK C:\USERS\SSM\GRANEDOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\14.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 05/14/20 17:55

Date Started: 10/05/2019	Surface Elevation: 520.40 ft amsl	Boring No.: MW-11D
Date Completed: 10/08/2019	Northing (NAD83): 2101579.71	
Drilling Co.: Cascade	Easting (NAD83): 7614879.83	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 197 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type: Prosonic Truck Mount	Borehole Diameter: 6 inches	Location: PG&E Topock, Needles, California
Driller Name: Steve Vasquez	Depth to First Water: 66.6 ft bgs	
Drilling Asst: L. Amaya / O. Floures	Sampling Method: 10 ft Core Barrel	Project Number: RC000753.0051
Logger: Chris Bonessi	Sampling Interval: Continuous	
Editor: Grant Willford	Converted to Well: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
21	120			Topock - Alluvium Deposits	SW				
22				Topock - Alluvium Deposits	SM		(23.0 - 24.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 4/3); very fine grained to coarse grained, angular to subround; little granules to medium pebbles, subangular to subround; little silt; dry		
23				Topock - Alluvium Deposits	SW-SM		(24.5 - 31.0') Topock - Alluvium Deposits; Well graded sand with silt and gravel (SW-SM); brown (7.5YR 4/3) to brown (10YR 4/3); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, subangular to subround; little small to large cobbles, subangular to subround; little silt; dry		
24	72	No Sieve Samples Collected		Topock - Alluvium Deposits	SW-SM			(27.0 - 33.0') Short 6' run due to core barrel getting plugged with rocks.	
25				Topock - Alluvium Deposits	SW-SM		(31.0 - 34.5') Topock - Alluvium Deposits; Well graded sand with silt and gravel (SW-SM); brown (7.5YR 4/3); very fine grained to very coarse grained, angular to subround; and granules to large pebbles, subangular to subround; little silt; dry		
26				Topock - Alluvium Deposits	SW-SM				
27				Topock - Alluvium Deposits	SM		(34.5 - 37.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 4/3); very fine grained to coarse grained, angular to subround; little granules to medium pebbles, subangular to subround; little silt; dry		
28	48			Topock - Alluvium Deposits	SM				
29				Topock - Alluvium Deposits	SM		(37.0 - 52.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); strong brown (7.5YR 4/6); very fine grained to coarse grained, angular to subround; some silt; little small to very large pebbles, angular to subround; trace small cobbles, subangular to subround; dry		
30				Topock - Alluvium Deposits	SM				
31	60			Topock - Alluvium Deposits	SM				
32				Topock - Alluvium Deposits	SM				
33				Topock - Alluvium Deposits	SM				
34				Topock - Alluvium Deposits	SM				

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SOIL BORING LOG: PG&E TOPOCK C:\USERS\MGR\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\05.14.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 05/14/20 17:55

Date Started: 10/05/2019	Surface Elevation: 520.40 ft amsl	Boring No.: MW-11D
Date Completed: 10/08/2019	Northing (NAD83): 2101579.71	
Drilling Co.: Cascade	Easting (NAD83): 7614879.83	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 197 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type: Prosonic Truck Mount	Borehole Diameter: 6 inches	Location: PG&E Topock, Needles, California
Driller Name: Steve Vasquez	Depth to First Water: 66.6 ft bgs	
Drilling Asst: L. Amaya / O. Floures	Sampling Method: 10 ft Core Barrel	Project Number: RC000753.0051
Logger: Chris Bonessi	Sampling Interval: Continuous	
Editor: Grant Willford	Converted to Well: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
41	60			Topock - Alluvium Deposits	SM	[Pattern]			
42									
43									
44									
45	60								
46									
47									
48									
49									
50		No Sieve Samples Collected							
51									
52	120			Topock - Alluvium Deposits	SM	[Pattern]	(52.0 - 60.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/4); very fine grained to coarse grained, angular to subround; little small to very large pebbles, angular to subround; little silt; trace small cobbles, subangular to subround; trace clay; dry to moist		
53									
54									
55									
56									
57									
58	120								
59									
60									

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SOIL BORING LOG: PG&E TOPOCK C:\USERS\MCGRANED\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\05.14.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 05/14/20 17:55

Date Started:	10/05/2019	Surface Elevation:	520.40 ft amsl	Boring No.: MW-11D	
Date Completed:	10/08/2019	Northing (NAD83):	2101579.71		
Drilling Co.:	Cascade	Easting (NAD83):	7614879.83	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	197 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Prosonic Truck Mount	Borehole Diameter:	6 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Steve Vasquez	Depth to First Water:	66.6 ft bgs		
Drilling Asst:	L. Amaya / O. Floures	Sampling Method:	10 ft Core Barrel	Project Number:	RC000753.0051
Logger:	Chris Bonessi	Sampling Interval:	Continuous		
Editor:	Grant Willford	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
61					SM		(60.5 - 67.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/4); very fine grained to coarse grained, angular to subround; little granules to very large pebbles, angular to subround; little silt; trace small cobbles, subangular to subround; trace clay; moist; weak cementation		
62									
63	120			Topock - Alluvium Deposits	SM				
64									
65									
66									
67									
68							(67.0 - 74.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); dark yellowish brown (10YR 4/4); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, angular to subround; little silt; trace small cobbles, subangular to subround; moist		
69									
70		No Sieve Samples Collected	MW-11D-VAS-67-72 (370 ppb) 10/6/2019 12:00	Topock - Alluvium Deposits	SM				
71									
72	120								
73									
74									
75							(74.5 - 87.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); dark yellowish brown (10YR 4/4); medium grained to very coarse grained, angular to subround; some granules to very large pebbles, angular to subround; little silt; trace small cobbles, subangular to subround; wet		
76									
77				Topock - Alluvium Deposits	SM				
78									
79	120								
80									

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SOIL BORING LOG: PG&E TOPOCK C:\USERS\SSM\GRAND\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\05.14.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 05/14/20 17:55

Date Started:	10/05/2019	Surface Elevation:	520.40 ft amsl	Boring No.: MW-11D	
Date Completed:	10/08/2019	Northing (NAD83):	2101579.71		
Drilling Co.:	Cascade	Easting (NAD83):	7614879.83	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	197 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Prosonic Truck Mount	Borehole Diameter:	6 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Steve Vasquez	Depth to First Water:	66.6 ft bgs		
Drilling Asst:	L. Amaya / O. Floures	Sampling Method:	10 ft Core Barrel	Project Number:	RC000753.0051
Logger:	Chris Bonessi	Sampling Interval:	Continuous		
Editor:	Grant Willford	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
81	120			Topock - Alluvium Deposits	SM	[Pattern]			
82									
83									
84									
85	No Sieve Samples Collected			Topock - Alluvium Deposits	SM	[Pattern]	(87.0 - 95.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (10YR 4/3); medium grained to very coarse grained, angular to subround; little granules to very large pebbles, angular to subround; little silt; wet		
86									
87									
88									
89									
90									
91									
92									
93	120			Topock - Alluvium Deposits	SM	[Pattern]	(95.0 - 102.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); yellowish brown / moderate yellowish brown (10YR 5/4) with reddish brown (5YR 5/4); medium grained to very coarse grained, angular to subround; some silt; little granules to large pebbles, angular to subround; wet		
94									
95									
96	120			Topock - Alluvium Deposits	SM	[Pattern]			
97									
98									
99									
100									

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SOIL BORING LOG: PG&E TOPOCK C:\USERS\SSM\GRAND\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\05.14.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 05/14/20 17:55

Date Started:	10/05/2019	Surface Elevation:	520.40 ft amsl	Boring No.: MW-11D	
Date Completed:	10/08/2019	Northing (NAD83):	2101579.71		
Drilling Co.:	Cascade	Easting (NAD83):	7614879.83	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	197 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Prosonic Truck Mount	Borehole Diameter:	6 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Steve Vasquez	Depth to First Water:	66.6 ft bgs		
Drilling Asst:	L. Amaya / O. Floures	Sampling Method:	10 ft Core Barrel	Project Number:	RC000753.0051
Logger:	Chris Bonessi	Sampling Interval:	Continuous		
Editor:	Grant Willford	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
101				Topock - Alluvium Deposits	SM				
102				Topock - Alluvium Deposits	SM		(102.0 - 109.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); yellowish brown / moderate yellowish brown (10YR 5/4) with reddish brown (5YR 5/4); medium grained to very coarse grained, angular to subround; some granules to large pebbles, angular to subround; some silt; wet		
103	120								
104									
105									
106									
107									
108								(108.0 - 110.0') Rough drilling	
109									
110		No Sieve Samples Collected		Topock - Alluvium Deposits	SM		(109.5 - 114.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (5YR 5/4) with yellowish brown / moderate yellowish brown (10YR 5/4); medium grained to very coarse grained, angular to subround; some granules to large pebbles, angular to subround; some silt; wet		
111									
112	120								
113									
114									
115				Topock - Alluvium Deposits	SM		(114.0 - 121.8') Topock - Alluvium Deposits; Silty sand with gravel (SM); grayish brown (10YR 5/2) little strong brown (7.5YR 5/6); medium grained to very coarse grained, angular to subround; some granules to very large pebbles, subangular to subround; little silt; trace small cobbles, subangular to subround; wet		
116									
117									
118	120								
119								(119.0 - 120.0') Rough drilling	
120									

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SOIL BORING LOG: PG&E-TOPOCK-C:\USERS\SSM\GRAND\DOCUMENTS\PG&E-TOPOCK\DRIFT BORING LOGS\GINT FILES\05.14.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 05/14/20 17:55

Date Started:	10/05/2019	Surface Elevation:	520.40 ft amsl	Boring No.: MW-11D	
Date Completed:	10/08/2019	Northing (NAD83):	2101579.71		
Drilling Co.:	Cascade	Easting (NAD83):	7614879.83	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	197 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Prosonic Truck Mount	Borehole Diameter:	6 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Steve Vasquez	Depth to First Water:	66.6 ft bgs		
Drilling Asst:	L. Amaya / O. Floures	Sampling Method:	10 ft Core Barrel	Project Number:	RC000753.0051
Logger:	Chris Bonessi	Sampling Interval:	Continuous		
Editor:	Grant Willford	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
121				Topock - Alluvium Deposits	SM				
122							(121.8 - 130.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (5YR 5/4) with yellowish brown / moderate yellowish brown (10YR 5/4); medium grained to very coarse grained, angular to subround; some granules to large pebbles, angular to subround; some silt; wet		
123	120								
124			MW-11D-VAS-122-127 (92 ppb) 10/7/2019 12:15	Topock - Alluvium Deposits	SM				
125									
126									
127									
128		No Sieve Samples Collected							
129									
130									
131				Topock - Alluvium Deposits	ML		(130.5 - 133.0') Topock - Alluvium Deposits; Sandy silt (ML); reddish brown (5YR 4/3); medium plasticity; some very fine to very coarse grained sand, angular to subround; little granules to medium pebbles, subangular to subround; moist; medium stiff	(131.0 - 133.0') Rough drilling	
132	120								
133									
134									
135									
136				Topock - Alluvium Deposits	SM		(133.0 - 149.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown / moderate brown (5YR 4/4) with dark reddish gray (5YR 4/2); medium grained to very coarse grained, angular to subround; some granules to large pebbles, angular to subround; little silt; trace small cobbles, subangular to subround; moist		
137									
138									
139	120								
140									

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: depth to water was measured during first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; well MW-11D installed in borehole

SOIL BORING LOG: PG&E-TOPOCK C:\USERS\SMC\GRAND\DOCUMENTS\PG&E-TOPOCK\DRIFT BORING LOGS\GINT FILES\05.14.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 05/14/20 17:55

Date Started:	10/05/2019	Surface Elevation:	520.40 ft amsl	Boring No.: MW-11D	
Date Completed:	10/08/2019	Northing (NAD83):	2101579.71		
Drilling Co.:	Cascade	Easting (NAD83):	7614879.83	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	197 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Prosonic Truck Mount	Borehole Diameter:	6 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Steve Vasquez	Depth to First Water:	66.6 ft bgs		
Drilling Asst:	L. Amaya / O. Floures	Sampling Method:	10 ft Core Barrel	Project Number:	RC000753.0051
Logger:	Chris Bonessi	Sampling Interval:	Continuous		
Editor:	Grant Willford	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
141	120			Topock - Alluvium Deposits	SM		(145'); dry; to 145.5 ft. bgs	(140.0 - 142.0')	
142								Rough drilling	
143	120	No Sieve Samples Collected		Topock - Alluvium Deposits	ML		(149.0 - 150.5') Topock - Alluvium Deposits; Sandy silt (ML); dark reddish gray (5YR 4/2); low plasticity; some very fine to very coarse grained sand, angular to subround; little granules to medium pebbles, subangular to subround; moist; medium stiff	(147.0 - 153.0')	
144								Rough drilling	
145									
146									
147	120			Topock - Alluvium Deposits	SM		(150.5 - 152.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown / moderate brown (5YR 4/4) with dark reddish gray (5YR 4/2); medium grained to very coarse grained, angular to subround; some granules to large pebbles, angular to subround; little silt; trace small cobbles, subangular to subround; moist	(153.0 - 157.0')	Soft drilling
148									
149	120			Topock - Alluvium Deposits	SM		(152.0 - 154.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown / moderate brown (5YR 4/4) with dark reddish gray (5YR 4/2); medium grained to very coarse grained, angular to subround; some granules to large pebbles, angular to subround; some silt; wet		
150									
151	120		MW-11D-VAS-152-157 (10 ppb) 10/7/2019 16:50	Topock - Alluvium Deposits	SM		(154.0 - 163.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (5YR 4/3); fine grained to very coarse grained, angular to subround; some granules to very large pebbles, subangular to subround; little silt; wet		
152									
153	120			Topock - Alluvium Deposits	SM				
154									
155	120			Topock - Alluvium Deposits	SM				
156									
157	120			Topock - Alluvium Deposits	SM				
158									
159	120			Topock - Alluvium Deposits	SM				
160									

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: depth to water was measured during first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; well MW-11D installed in borehole

SOIL BORING LOG: PG&E-TOPOCK C:\USERS\SMC\GRANDOCUMENTS\PG&E-TOPOCK\DRIFT BORING LOGS\GINT FILES\05.14.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 05/14/20 17:55

Date Started:	10/05/2019	Surface Elevation:	520.40 ft amsl	Boring No.: <u>MW-11D</u>	
Date Completed:	10/08/2019	Northing (NAD83):	2101579.71		
Drilling Co.:	Cascade	Easting (NAD83):	7614879.83	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	197 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Prosonic Truck Mount	Borehole Diameter:	6 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Steve Vasquez	Depth to First Water:	66.6 ft bgs		
Drilling Asst:	L. Amaya / O. Floures	Sampling Method:	10 ft Core Barrel	Project Number:	RC000753.0051
Logger:	Chris Bonessi	Sampling Interval:	Continuous		
Editor:	Grant Willford	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

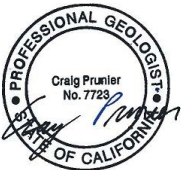
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid
161				Topock - Alluvium Deposits	SM		(163.0 - 173.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown / moderate brown (5YR 4/4) with dark reddish gray (5YR 4/2); fine grained to very coarse grained, angular to subround; some granules to large pebbles, angular to subround; little silt; trace small cobbles, subangular to subround; little coarser clasts composed of metadiorite; wet		
162									
163	120			Topock - Alluvium Deposits	SM		(163.0 - 173.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown / moderate brown (5YR 4/4) with dark reddish gray (5YR 4/2); fine grained to very coarse grained, angular to subround; some granules to large pebbles, angular to subround; little silt; trace small cobbles, subangular to subround; little coarser clasts composed of metadiorite; wet		
164									
165				Topock - Alluvium Deposits	SM		(163.0 - 173.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown / moderate brown (5YR 4/4) with dark reddish gray (5YR 4/2); fine grained to very coarse grained, angular to subround; some granules to large pebbles, angular to subround; little silt; trace small cobbles, subangular to subround; little coarser clasts composed of metadiorite; wet		
166									
167				Topock - Alluvium Deposits	SM		(163.0 - 173.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown / moderate brown (5YR 4/4) with dark reddish gray (5YR 4/2); fine grained to very coarse grained, angular to subround; some granules to large pebbles, angular to subround; little silt; trace small cobbles, subangular to subround; little coarser clasts composed of metadiorite; wet		
168									
169				Topock - Alluvium Deposits	SM		(163.0 - 173.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown / moderate brown (5YR 4/4) with dark reddish gray (5YR 4/2); fine grained to very coarse grained, angular to subround; some granules to large pebbles, angular to subround; little silt; trace small cobbles, subangular to subround; little coarser clasts composed of metadiorite; wet		
170									
171		No Sieve Samples Collected		Topock - Alluvium Deposits	SM		(163.0 - 173.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown / moderate brown (5YR 4/4) with dark reddish gray (5YR 4/2); fine grained to very coarse grained, angular to subround; some granules to large pebbles, angular to subround; little silt; trace small cobbles, subangular to subround; little coarser clasts composed of metadiorite; wet		
172	120								
173				Topock - Alluvium Deposits	GM		(173.0 - 179.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); grayish brown (10YR 5/2); granules to very large pebbles, angular to subround; some fine to very coarse grained sand, angular to subround; some silt; trace small cobbles, subangular to subround; little coarser clasts composed of metadiorite; wet		
174									
175				Topock - Alluvium Deposits	GM		(173.0 - 179.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); grayish brown (10YR 5/2); granules to very large pebbles, angular to subround; some fine to very coarse grained sand, angular to subround; some silt; trace small cobbles, subangular to subround; little coarser clasts composed of metadiorite; wet		
176									
177				Topock - Alluvium Deposits	GM		(173.0 - 179.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); grayish brown (10YR 5/2); granules to very large pebbles, angular to subround; some fine to very coarse grained sand, angular to subround; some silt; trace small cobbles, subangular to subround; little coarser clasts composed of metadiorite; wet	(177.0 - 182.0') Soft drilling	
178									
179	120	MW-11D-VAS-177-182 (<0.17 U ppb) 10/8/2019 12:00		Topock - Alluvium Deposits	ML		(179.0 - 180.0') Topock - Alluvium Deposits; Sandy silt (ML); reddish gray / pale brown (5YR 5/2); medium plasticity; some very fine to very coarse grained sand, angular to subround; little		
180									

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: depth to water was measured during first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; well MW-11D installed in borehole

SOIL BORING LOG: PG&E TOPOCK C:\USERS\SSM\GRAND\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\05.14.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 05/14/20 17:55

Date Started:	10/05/2019	Surface Elevation:	520.40 ft amsl	Boring No.: MW-11D	
Date Completed:	10/08/2019	Northing (NAD83):	2101579.71		
Drilling Co.:	Cascade	Easting (NAD83):	7614879.83	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	197 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Prosonic Truck Mount	Borehole Diameter:	6 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Steve Vasquez	Depth to First Water:	66.6 ft bgs		
Drilling Asst:	L. Amaya / O. Floures	Sampling Method:	10 ft Core Barrel	Project Number:	RC000753.0051
Logger:	Chris Bonessi	Sampling Interval:	Continuous		
Editor:	Grant Willford	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Soil Description	Drilling Notes	Drilling Fluid		
181	120		MW-11D-182 VAS-177-182 (<0.17 U ppb) 10/8/2019 12:00	Topock - Alluvium Deposits	SM		granules to medium pebbles, subangular to subround; wet; soft (180.0 - 181.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown / moderate brown (5YR 4/4) with dark reddish gray (5YR 4/2); medium grained to very coarse grained, angular to subround; some granules to large pebbles, angular to subround; some silt; little coarser clasts composed of metadiorite; wet				
182								(181.5 - 193.0') Topock - Weathered Bedrock - conglomerate; Sandy silt with gravel (ML); red (2.5YR 4/6); low plasticity; some very fine to very coarse grained sand, angular to subangular; little granules to very large pebbles, angular to subangular; little coarser clasts composed of metadiorite; wet to moist; stiff	(182.0 - 187.0') Rough drilling		
183											
184	108	No Sieve Samples Collected		Topock - Weathered Bedrock - conglomerate	ML						
185											
186											
187											(187.0 - 192.0') Rough drilling
188											
189	0			Topock - Competent Bedrock - conglomerate	NR		(193.0 - 196.0') Topock - Competent Bedrock - conglomerate; (5YR 3/6); dry; friable, pulverized	(192.0 - 196.0') Hard rough drilling. Core barrel plugged at 9' into run.			
190											
191											
192											
193											
194											
195											
196											
197								(196.0 - 197.0') Attempted to retrieve last foot of run, sample was lost down hole and was disturbed upon retrieval.			
							End of Boring at 197.0 ft bgs.				



Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: depth to water was measured during first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; well MW-11D installed in borehole

SOIL BORING LOG: PG&E TOPOCK C:\USERS\MCGRANED\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\05.14.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 05/14/20 17:55