

Date Started: 11/18/2018	Surface Elevation: 501.06 ft amsl	<b>Well ID: MW-78-070, MW-78-142</b>
Date Completed: 04/02/2019	Shallow Well Elevation: 500.99 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 500.91 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2102331.28	Project: Final GW Remedy Phase 1
Driller Name: Steve Vasquez	Easting (NAD83): 7615837.05	Location: PG&E Topock, Needles, California
Drilling Asst: N. Dominguez/C. Alvarez	Borehole Diameter: 4-12 inches	
Logger: Connor Mills	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 12/14/2018	
Total Depth: 150 ft bgs	Well Completion: <input checked="" type="checkbox"/> Flush <input 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					(+0.4 - 2.0') Concrete Pad		(+0.4 - 2.0') 20 bags Note: 3.5 x 3.5 ft concrete pad with 18" diameter lockable vault, King Kon-Crete 4000 PSI
1		Topock - Fluvial Deposits	SW-SM		(0.1 - 50.0') 2" PVC Sch 40 Casing		
2					(2.0 - 4.5') Portland Cement 5% Bentonite Type I, II and V with Hydrogel	(0.2 - 122.0') 2" PVC Sch 40 Casing	(2.0 - 4.5') 13.9 gallons
3		Topock - Fluvial Deposits	SP-SM		(0.0 - 9.0') 12" Borehole		
4							
5		Topock - Fluvial Deposits	GM		(4.5 - 46.0') Portland Cement 5% Bentonite Type I, II and V with Hydrogel		
6							
7		Topock - Fluvial Deposits	SM		(9.0 - 144.0') 10" Borehole		
8							
9		Topock - Fluvial Deposits	GP-GM				
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, Notes: solid blue and hollow blue water table marks represent depth to water (ft. bgs.) measured post development for the shallow well and deep well respectively; installed in MW-78

WELL CONSTRUCTION DETAILS\_PG&E\_TOPOCK\_C:\USERS\SMCGRANE\DOCUMENTS\PG&E\_TOPOCK\DRIFT BORING LOGS\GINT FILES\11.18.20\TOPOCK DATABASE FOR PLOG.GPJ\_TOPOCK DATA TEMPLATE FOR PLOG.GDT\_11/18/20\_22.16

Date Started: 11/18/2018	Surface Elevation: 501.06 ft amsl	<b>Well ID: MW-78-070, MW-78-142</b>
Date Completed: 04/02/2019	Shallow Well Elevation: 500.99 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 500.91 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2102331.28	Project: Final GW Remedy Phase 1
Driller Name: Steve Vasquez	Easting (NAD83): 7615837.05	Location: PG&E Topock, Needles, California
Drilling Asst: N. Dominguez/C. Alvarez	Borehole Diameter: 4-12 inches	
Logger: Connor Mills	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 12/14/2018	
Total Depth: 150 ft bgs	Well Completion: <input checked="" type="checkbox"/> Flush <input 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		
20		Topock - Fluvial Deposits	GP-GM		(0.1 - 50.0') 2" PVC Sch 40 Casing				
21							(0.2 - 122.0') 2" PVC Sch 40 Casing		
22									
23									
24									
25									
26									
27									
28									
29					(4.5 - 46.0') Portland Cement 5% Bentonite Type I, II and V with Hydrogel				
30						(9.0 - 144.0') 10" Borehole	(4.5 - 46.0') 187.3 gallons	(4.5 - 46.0') 190 gallons (101%) Note: Grout seal	
31									
32					(31.5 - 32.5') Centralizer				
33		Topock - Fluvial Deposits	SM						
34									
35		Topock - Fluvial Deposits	SM						
36									
37									
38		Topock - Fluvial Deposits	GM						
39									

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Date Completed: 04/02/2019	Shallow Well Elevation: 500.99 ft amsl	
Drilling Co.: Cascade	Deep Well Elevation: 500.91 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2102331.28	Project: Final GW Remedy Phase 1
Driller Name: Steve Vasquez	Easting (NAD83): 7615837.05	Location: PG&E Topock, Needles, California
Drilling Asst: N. Dominguez/C. Alvarez	Borehole Diameter: 4-12 inches	
Logger: Connor Mills	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 12/14/2018	
Total Depth: 150 ft bgs	Well Completion: <input checked="" type="checkbox"/> Flush <input 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
40		Topock - Fluvial Deposits	GM		(0.1 - 50.0') 2" PVC Sch 40 Casing		
41					(0.2 - 122.0') 2" PVC Sch 40 Casing		
42		Topock - Alluvium Deposits	SM		(4.5 - 46.0') Portland Cement 5% Bentonite Type I, II and V with Hydrogel	(4.5 - 46.0') 187.3 gallons	(4.5 - 46.0') 190 gallons (101%) Note: Grout seal
43							
44							
45							
46							
47					(46.0 - 48.0') Bentonite seal chips Puregold medium chips	(46.0 - 48.0') 1.63 bags	(46.0 - 48.0') 2.5 bags (153%) Note: Seal above filter pack, used >20% of the calculated volume due to potential voids forming during drilling.
48							
49		Topock - Alluvium Deposits	ML		(9.0 - 144.0') 10" Borehole		
50					(50.0 - 70.0') 2" Sch 40 PVC (20-slot) Screen		
51					(48.0 - 74.0') Cemex #3 MESH (8x20) Lapis Lustre Sand		
52	MW-E-VAS-52-57 (7000 ppb) 11/5/2018 17:40					(48.0 - 74.0') 29.7 bags	(48.0 - 74.0') 45 bags (152%) Note: Filter pack, used >20% of the calculated volume due to potential voids that formed during drilling.
53		Topock - Alluvium Deposits	GM				
54							
55							
56							
57							
58							
59							

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Date Started: 11/18/2018 Surface Elevation: 501.06 ft amsl  
 Date Completed: 04/02/2019 Shallow Well Elevation: 500.99 ft amsl  
 Drilling Co.: Cascade Deep Well Elevation: 500.91 ft amsl Client: PG&E  
 Drilling Method: Sonic Drilling Northing (NAD83): 2102331.28 Project: Final GW Remedy Phase 1  
 Driller Name: Steve Vasquez Easting (NAD83): 7615837.05 Location: PG&E Topock, Needles, California  
 Drilling Asst: N. Dominguez/C. Alvarez Borehole Diameter: 4-12 inches  
 Logger: Connor Mills Static Water Level: See Log for Depths Project Number: RC000753.0051  
 Editor: Sean McGrane Development End Date: 12/14/2018  
 Total Depth: 150 ft bgs Well Completion:  Flush  Stick-up  To Be Completed in Well Vault

**Well ID: MW-78-070, MW-78-142**

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
60		Topock - Alluvium Deposits	GM		(50.0 - 70.0') 2" Sch 40 PVC (20-slot) Screen		
61					(0.2 - 122.0') 2" PVC Sch 40 Casing		
62		Topock - Alluvium Deposits	ML				
63							
64							
65		Topock - Alluvium Deposits	SM		(48.0 - 74.0') Cemex #3 MESH (8x20) Lapis Lustre Sand	(48.0 - 74.0') 29.7 bags	(48.0 - 74.0') 45 bags (152%) Note: Filter pack, used >20% of the calculated volume due to potential voids that formed during drilling.
66							
67							
68							
69		Topock - Alluvium Deposits	SM		(9.0 - 144.0') 10" Borehole		
70							
71					(70.5 - 71.5') Centralizer		
72					(70.0 - 72.3') Sump and PVC End Cap		
73							
74		Topock - Alluvium Deposits	SM		(74.0 - 120.0') Bentonite seal pellets Pel-Plug (TR30) 3/8"	(74.0 - 120.0') 44.4 buckets	(74.0 - 120.0') 49 buckets (110%) Note: Pel Plug Pellets (TR30) 3/8"
75							
76							
77							
78							
79							

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Drilling Co.: Cascade	Deep Well Elevation: 500.91 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2102331.28	Project: Final GW Remedy Phase 1
Driller Name: Steve Vasquez	Easting (NAD83): 7615837.05	Location: PG&E Topock, Needles, California
Drilling Asst: N. Dominguez/C. Alvarez	Borehole Diameter: 4-12 inches	
Logger: Connor Mills	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 12/14/2018	
Total Depth: 150 ft bgs	Well Completion: <input checked="" type="checkbox"/> Flush <input 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	
80					(0.2 - 122.0') 2" PVC Sch 40 Casing			
81								
82								
83	MW-E-VAS-82-87.0 (200 ppb) 11/6/2018 10:12	Topock - Alluvium Deposits	SM					
84								
85								
86								
87								
88								
89								
90		Topock - Alluvium Deposits	ML		(74.0 - 120.0') Bentonite seal pellets Pel-Plug (TR30) 3/8"	(9.0 - 144.0') 10" Borehole	(74.0 - 120.0') 44.4 buckets	(74.0 - 120.0') 49 buckets (110%) Note: Pel Plug Pellets (TR30) 3/8"
91								
92								
93								
94								
95		Topock - Alluvium Deposits	SM					
96								
97								
98		Topock - Alluvium Deposits	ML					
99								

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Drilling Co.: Cascade	Deep Well Elevation: 500.91 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2102331.28	Project: Final GW Remedy Phase 1
Driller Name: Steve Vasquez	Easting (NAD83): 7615837.05	Location: PG&E Topock, Needles, California
Drilling Asst: N. Dominguez/C. Alvarez	Borehole Diameter: 4-12 inches	
Logger: Connor Mills	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		
100		Topock - Alluvium Deposits	ML		(0.2 - 122.0') 2" PVC Sch 40 Casing				
101									
102									
103									
104									
105									
106									
107									
108									
109									
110		Topock - Alluvium Deposits	SM		(74.0 - 120.0') Bentonite seal pellets Pel-Plug (TR30) 3/8"	(74.0 - 120.0') 44.4 buckets	(74.0 - 120.0') 49 buckets (110%) Note: Pel Plug Pellets (TR30) 3/8"		
111									
112									
113									
114	MW-E-VAS-112.0-117.0 (3100 ppb) 11/6/2018 15:22								
115									
116									
117									
118		Topock - Alluvium Deposits	ML						
119									

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Drilling Co.: Cascade	Deep Well Elevation: 500.91 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2102331.28	Project: Final GW Remedy Phase 1
Driller Name: Steve Vasquez	Easting (NAD83): 7615837.05	Location: PG&E Topock, Needles, California
Drilling Asst: N. Dominguez/C. Alvarez	Borehole Diameter: 4-12 inches	
Logger: Connor Mills	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 12/14/2018	
Total Depth: 150 ft bgs	Well Completion: <input checked="" type="checkbox"/> Flush <input 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	
120		Topock - Alluvium Deposits	ML		(0.2 - 122.0') 2" PVC Sch 40 Casing			
121					(120.5 - 121.5') Centralizer			
122		Topock - Alluvium Deposits	SM		(122.0 - 142.0') Sch 40 PVC (20-slot) Screen			
123								
124								
125								
126		Topock - Weathered Bedrock - conglomerate	SM		(120.0 - 144.0') Cemex #3 MESH (8x20) Lapis Lustre Sand	(120.0 - 144.0') 10" Borehole	(120.0 - 144.0') 29.3 bags	(120.0 - 144.0') 26 bags (89%) Note: Filter pack
127								
128								
129								
130								
131		Topock - Weathered Bedrock - conglomerate	SM					
132								
133		Topock - Weathered Bedrock - conglomerate	SM					
134								
135		Topock - Weathered Bedrock - conglomerate	SM					
136								
137		Topock - Weathered Bedrock - conglomerate	SM					
138	MW-E-VAS-137-142 (7300 ppb) 11/7/2018 15:20							
139		Topock - Weathered Bedrock -	ML					

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Drilling Co.: Cascade	Deep Well Elevation: 500.91 ft amsl	Client: PG&E
Drilling Method: Sonic Drilling	Northing (NAD83): 2102331.28	Project: Final GW Remedy Phase 1
Driller Name: Steve Vasquez	Easting (NAD83): 7615837.05	Location: PG&E Topock, Needles, California
Drilling Asst: N. Dominguez/C. Alvarez	Borehole Diameter: 4-12 inches	
Logger: Connor Mills	Static Water Level: See Log for Depths	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: 12/14/2018	
Total Depth: 150 ft bgs	Well Completion: <input checked="" type="checkbox"/> Flush <input 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		
140	MW-E-VAS-137-142 (7300 ppb) 11/7/2018 15:20	Topock - Weathered Bedrock - conglomerate	SM	[Pattern]	(122.0 - 142.0') 2" Sch 40 PVC (20-slot) Screen	(120.0 - 144.0') 29.3 bags	(120.0 - 144.0') 26 bags (89%) Note: Filter pack		
141					(9.0 - 144.0') 10" Borehole				
142					(142.0 - 142.3') PVC End Cap				
143		Topock - Competent Bedrock - conglomerate	[Pattern]	[Pattern]	(120.0 - 144.0') Cemex #3 MESH (8x20) Lapis Lustre Sand				
144									
145									
146									
147					(144.0 - 150.0') Bentonite seal chips Puregold medium chips	(144.0 - 150.0') 0.73 bags	(144.0 - 150.0') 1.5 bags (205%) Note: Decommissioned rathole, used >20% of the calculated volume due to potential voids that formed during drilling.		
148									
149									
150					End of Boring at 150.0 ft bgs.				
151									
152									
153									
154									
155									
156									
157									
158									
159									

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Date Started: 11/02/2018	Surface Elevation: 501.06 ft amsl	<b>Boring No.: MW-78</b>
Date Completed: 11/17/2018	Northing (NAD83): 2102331.28	
Drilling Co.: Cascade	Easting (NAD83): 7615837.05	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 150 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type: Prosonic Truck Mount	Borehole Diameter: 4-12 inches	Location: PG&E Topock, Needles, California
Driller Name: Steve Vasquez	Depth to First Water: 47.3 ft bgs	Project Number: RC000753.0051
Drilling Asst: N. Dominguez/C. Alvarez	Sampling Method: 4 inch X 10 ft Core Barrel	
Logger: Connor Mills	Sampling Interval: Continuous	
Editor: Sean McGrane	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	72			Topock - Fluvial Deposits	SW-SM		(0.0 - 4.5') Topock - Fluvial Deposits; Well graded sand with silt and gravel (SW-SM); brown (7.5YR 4/3); fine grained to coarse grained, angular to subround; some small to very large pebbles, angular to subround; little silt; trace angular to subrounded; dry		(0.0 - 27.0') No water used				
2													
3													
4													
5				Topock - Fluvial Deposits	SP-SM		(4.5 - 8.0') Topock - Fluvial Deposits; Poorly graded sand with silt and gravel (SP-SM); brown (7.5YR 4/3); fine grained to medium grained, subangular to round; some small to very large pebbles, angular to subround; little silt; trace angular to subangular; trace coarse grained sand, subangular to round; dry						
6													
7													
8		No sieve samples collected		Topock - Fluvial Deposits	GM		(8.0 - 12.5') Topock - Fluvial Deposits; Silty gravel with sand (GM); yellowish brown / moderate yellowish brown (10YR 5/4); granules to very large pebbles, angular to subround; some fine to coarse grained sand, subangular to round; some silt; trace subround to round; dry	(7.0 - 15.0') Rough drilling, had to let core barrel cool down, drilled through a boulder, which was pulverized into a fine powder.					
9													
10													
11	85.2												
12													
13				Topock - Fluvial Deposits	SM		(12.5 - 15.0') Topock - Fluvial Deposits; Silty sand (SM); yellowish brown / moderate yellowish brown (10YR 5/4); very fine grained to medium grained, angular to subround; little granule to large pebbles, angular to round; little silt; trace subangular to subrounded; dry						
14													
15													
16				Topock - Fluvial Deposits	GP-GM		(15.0 - 32.0') Topock - Fluvial Deposits; Poorly graded gravel with silt (GP-GM); light brownish gray / pale yellowish brown (10YR 6/2); granules to very large pebbles, angular to subangular; some angular to subangular; little silt; trace boulders, angular to subround; trace fine to medium grained sand, angular to subround; dry; boulder 10 inch rock cores composed of metadiorite	(15.0 - 26.0') Rough drilling, drilled like solid rock.					
17	93.6												
18													
19													
20													

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Drilling Method: Sonic Drilling	Total Depth: 150 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type: Prosonic Truck Mount	Borehole Diameter: 4-12 inches	Location: PG&E Topock, Needles, California
Driller Name: Steve Vasquez	Depth to First Water: 47.3 ft bgs	Project Number: RC000753.0051
Drilling Asst: N. Dominguez/C. Alvarez	Sampling Method: 4 inch X 10 ft Core Barrel	
Logger: Connor Mills	Sampling Interval: Continuous	
Editor: Sean McGrane	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	93.6			Topock - Fluvial Deposits	GP-GM				
22									
23									
24									
25									
26	54	No sieve samples collected							
27									
28									
29									
30									
31	51.6			Topock - Fluvial Deposits	SM		(32.0 - 34.5') Topock - Fluvial Deposits; Silty sand with gravel (SM); pale brown (10YR 6/3); very fine grained to medium grained, angular to subround; and granule to very large pebbles, angular to subround; little silt; trace angular to subangular; dry		
32									
33									
34									
35	48			Topock - Fluvial Deposits	SM		(34.5 - 37.0') Topock - Fluvial Deposits; Silty sand with gravel (SM); light yellowish brown (10YR 6/4); fine grained to coarse grained, angular to round; and granules to small pebbles, angular to subangular; little angular to subround; little silt; trace clay; dry		
36									
37									
38									
39	40			Topock - Fluvial Deposits	GM		(37.0 - 42.5') Topock - Fluvial Deposits; Silty gravel with sand (GM); light yellowish brown (10YR 6/4); granules to very large pebbles, angular to round; some fine to coarse grained sand, angular to round; some silt; trace angular to subangular; trace boulders, subround; dry; boulder 10 inch rock core composed of basalt with yellowish green olivine crystals and frothy texture		(37.0 - 117.0') No water used
40									

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SOIL BORING LOG: PG&E TOPOCK C:\USERS\SMC\GRANEDOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\11.18.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/18/20 16:24

Date Started:	11/02/2018	Surface Elevation:	501.06 ft amsl	<b>Boring No.: MW-78</b>	
Date Completed:	11/17/2018	Northing (NAD83):	2102331.28		
Drilling Co.:	Cascade	Easting (NAD83):	7615837.05	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	150 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Prosonic Truck Mount	Borehole Diameter:	4-12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Steve Vasquez	Depth to First Water:	47.3 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	N. Dominguez/C. Alvarez	Sampling Method:	4 inch X 10 ft Core Barrel		
Logger:	Connor Mills	Sampling Interval:	Continuous		
Editor:	Sean McGrane	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	48			Topock - Fluvial Deposits	GM				
42									
43				Topock - Alluvium Deposits	SM		(42.5 - 47.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light yellowish brown (10YR 6/4); fine grained to coarse grained, angular to subround; some granules to very large pebbles, angular to subangular; little silt; trace clay; dry		
44									
45									
46									
47									
48				Topock - Alluvium Deposits	ML		(47.0 - 54.5') Topock - Alluvium Deposits; Silt with sand (ML); light brown (7.5YR 6/4); low plasticity; little fine to coarse grained sand, angular to subangular; little clay; trace granule to medium pebbles, angular to subround; moist		
49									
50		No sieve samples collected							
51									
52	120								
53									
54			MW-E-VAS-52-57 (7000 ppb) 11/5/2018 17:40						
55				Topock - Alluvium Deposits	GM		(54.5 - 64.0') Topock - Alluvium Deposits; Silty gravel with sand (GM); pale brown (10YR 6/3); granules to large pebbles, angular to subangular; some fine to medium grained sand, angular to subangular; some silt; trace clay; dry		
56									
57									
58								(57.0') Core hot and dry	
59	120								
60									

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Date Started:	11/02/2018	Surface Elevation:	501.06 ft amsl	<b>Boring No.: MW-78</b>	
Date Completed:	11/17/2018	Northing (NAD83):	2102331.28		
Drilling Co.:	Cascade	Easting (NAD83):	7615837.05	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	150 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Prosonic Truck Mount	Borehole Diameter:	4-12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Steve Vasquez	Depth to First Water:	47.3 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	N. Dominguez/C. Alvarez	Sampling Method:	4 inch X 10 ft Core Barrel		
Logger:	Connor Mills	Sampling Interval:	Continuous		
Editor:	Sean McGrane	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	120			Topock - Alluvium Deposits	GM				
62									
63									
64	No sieve samples collected			Topock - Alluvium Deposits	ML		(64.0 - 67.0') Topock - Alluvium Deposits; Sandy silt (ML); reddish brown (5YR 5/4); no plasticity; some fine to coarse grained sand, subangular to subround; little granule to medium pebbles, angular to subangular; trace clay; moist		
65									
66									
67	108			Topock - Alluvium Deposits	SM		(67.0 - 87.0') Topock - Alluvium Deposits; Silty sand (SM); reddish brown (5YR 5/4); very fine grained to coarse grained, angular to subround; some silt; little granule to large pebbles, angular to subangular; wet		
68									
69									
70	102								
71									
72									
73									
74									
75									
76									
77									
78									
79									
80									

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SOIL BORING LOG: PG&E TOPOCK C:\USERS\MCGRANE\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\11.18.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/18/20 16:24

Date Started: 11/02/2018	Surface Elevation: 501.06 ft amsl	<b>Boring No.: MW-78</b>
Date Completed: 11/17/2018	Northing (NAD83): 2102331.28	
Drilling Co.: Cascade	Easting (NAD83): 7615837.05	Client: PG&E
Drilling Method: Sonic Drilling	Total Depth: 150 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type: Prosonic Truck Mount	Borehole Diameter: 4-12 inches	Location: PG&E Topock, Needles, California
Driller Name: Steve Vasquez	Depth to First Water: 47.3 ft bgs	Project Number: RC000753.0051
Drilling Asst: N. Dominguez/C. Alvarez	Sampling Method: 4 inch X 10 ft Core Barrel	
Logger: Connor Mills	Sampling Interval: Continuous	
Editor: Sean McGrane	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	102		MW-E-VAS-82-87.0 (200 ppb) 11/6/2018 10:12	Topock - Alluvium Deposits	SM	[Pattern]			
82									
83									
84									
85	No sieve samples collected			Topock - Alluvium Deposits	ML	[Pattern]	(87.0 - 94.5') Topock - Alluvium Deposits; Sandy silt (ML); reddish brown (5YR 5/4); low plasticity; some fine to coarse grained sand, angular to subangular; some clay, little granule to medium pebbles, angular to subangular; wet		
86									
87									
88									
89									
90									
91									
92									
93									
94									
95	105.6			Topock - Alluvium Deposits	SM	[Pattern]	(94.5 - 97.0') Topock - Alluvium Deposits; Silty sand (SM); reddish brown (5YR 5/4); medium grained to coarse grained, angular to subround; some silt; little granule to medium pebbles, angular to subangular; wet		
96									
97									
98	104.4			Topock - Alluvium Deposits	ML	[Pattern]	(97.0 - 109.5') Topock - Alluvium Deposits; Silt with sand (ML); reddish brown (5YR 5/4); no plasticity; little granule to large pebbles, angular to subangular; little fine to coarse grained sand, angular to subround; wet		
99									
100									

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Date Started:	11/02/2018	Surface Elevation:	501.06 ft amsl	<b>Boring No.: MW-78</b>	
Date Completed:	11/17/2018	Northing (NAD83):	2102331.28		
Drilling Co.:	Cascade	Easting (NAD83):	7615837.05	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	150 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Prosonic Truck Mount	Borehole Diameter:	4-12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Steve Vasquez	Depth to First Water:	47.3 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	N. Dominguez/C. Alvarez	Sampling Method:	4 inch X 10 ft Core Barrel		
Logger:	Connor Mills	Sampling Interval:	Continuous		
Editor:	Sean McGrane	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	ML				
102									
103				Topock - Alluvium Deposits	SM		(109.5 - 118.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (5YR 5/4); fine grained to coarse grained, angular to subangular; and silt; little granule to large pebbles, angular to subangular; wet; some green staining observed in sections the core		
104	104.4								
105				Topock - Alluvium Deposits	ML		(118.0 - 122.0') Topock - Alluvium Deposits; Sandy silt (ML); reddish brown (5YR 5/3); no plasticity; some fine to coarse grained sand, angular to subround; little granule to large pebbles, angular to subangular; moist; very weathered		
106									
107				Topock - Alluvium Deposits	ML				
108									
109				Topock - Alluvium Deposits	SM				
110	No sieve samples collected								
111				Topock - Alluvium Deposits	SM				
112	102	MW-E-VAS-112.0-117.0 (3100 ppb) 11/6/2018 15:22							
113				Topock - Alluvium Deposits	ML				
114									
115				Topock - Alluvium Deposits	ML				
116									
117				Topock - Alluvium Deposits	ML				
118									
119	108			Topock - Alluvium Deposits	ML				(117.0 - 127.0') No water used
120									

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SOIL BORING LOG: PG&E TOPOCK C:\USERS\MCGRANE\DOCUMENTS\PG&E TOPOCK\DRIFT BORING LOGS\GINT FILES\11.18.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/18/20 16:24

Date Started:	11/02/2018	Surface Elevation:	501.06 ft amsl	<b>Boring No.: MW-78</b>	
Date Completed:	11/17/2018	Northing (NAD83):	2102331.28		
Drilling Co.:	Cascade	Easting (NAD83):	7615837.05	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	150 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Prosonic Truck Mount	Borehole Diameter:	4-12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Steve Vasquez	Depth to First Water:	47.3 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	N. Dominguez/C. Alvarez	Sampling Method:	4 inch X 10 ft Core Barrel		
Logger:	Connor Mills	Sampling Interval:	Continuous		
Editor:	Sean McGrane	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	108			Topock - Alluvium Deposits	ML						
122				Topock - Alluvium Deposits	SM			(122.0 - 127.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); light reddish brown / light brown (5YR 6/4); very fine grained to coarse grained, angular to subround; and silt; little granule to large pebbles, angular to subangular; trace; wet; trace 1-4 inch large pebbles to small cobbles of metadiorite			
123											
124											
125	120	No sieve samples collected		Topock - Weathered Bedrock - conglomerate	SM		(127.0 - 137.0') Topock - Weathered Bedrock - conglomerate; Silty sand (SM); reddish brown (5YR 5/4); very fine grained to coarse grained, angular to subround; some silt; little granule to large pebbles, angular to subangular; wet		(127.0 - 150.0') No water used		
126											
127											
128											
129											
130											
131											
132											
133	114		MW-E-VAS-137-142 (7300 ppb) 11/7/2018 15:20	Topock - Weathered Bedrock - conglomerate	SM		(137.0 - 138.5') Topock - Weathered Bedrock - conglomerate; Silty sand (SM); reddish brown / moderate brown (5YR 4/4); fine grained to coarse grained, angular to subround; some silt; little granule to medium pebbles, angular to subangular; wet	(137.0') Rough drilling			
134				Topock - Weathered Bedrock - conglomerate	ML		(138.5 - 139.5') Topock - Weathered Bedrock - conglomerate; Silt (ML); reddish brown / moderate brown (5YR 4/4); no plasticity; trace granule to medium pebbles, angular to subangular; trace fine grained sand, angular to subround; dry; very weathered bedrock, cemented				
135											
136											
137											
138											
139											
140											

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SOIL BORING LOG: PG&amp;E TOPOCK C:\USERS\SMC\DOCUMENTS\PG&amp;E TOPOCK\DRIFT BORING LOGS\GINT FILES\11.18.20\TOPOCK DATABASE FOR PLOG.GPJ TOPOCK DATA TEMPLATE FOR PLOG.GDT 11/18/20 16:24

Date Started:	11/02/2018	Surface Elevation:	501.06 ft amsl	<b>Boring No.: MW-78</b>	
Date Completed:	11/17/2018	Northing (NAD83):	2102331.28		
Drilling Co.:	Cascade	Easting (NAD83):	7615837.05	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	150 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Prosonic Truck Mount	Borehole Diameter:	4-12 inches	Location:	PG&E Topock, Needles, California
Driller Name:	Steve Vasquez	Depth to First Water:	47.3 ft bgs	Project Number:	RC000753.0051
Drilling Asst:	N. Dominguez/C. Alvarez	Sampling Method:	4 inch X 10 ft Core Barrel		
Logger:	Connor Mills	Sampling Interval:	Continuous		
Editor:	Sean McGrane	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			MW-E-VAS-137-142 (7300 ppb) 11/7/2018 15:20	Topock - Weathered Bedrock - conglomerate	SM		(139.5 - 142.0') Topock - Weathered Bedrock - conglomerate; Silty sand (SM); reddish brown (5YR 5/4); fine grained to coarse grained, angular to subangular; some silt; little granule to medium pebbles, angular to subangular; wet		
142							(142.0 - 150.0') Topock - Competent Bedrock - conglomerate; brown (7.5YR 5/4); dry; strong cementation; hard, friable	(142.0') Rough drilling	
143	114								
144		No sieve samples collected							
145									
146				Topock - Competent Bedrock - conglomerate					
147									
148	36								
149									
150									
							End of Boring at 150.0 ft bgs.		
151									
152									
153									
154									
155									
156									
157									
158									
159									
160									

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