

Date Started: 10/09/2019	Surface Elevation: 520.40 ft amsl	<b>Well ID: MW-11D</b>
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							
3							
4							
5					(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.
6							
7					(8.5 - 197.0') 6.0" Borehole		
8							
9					(13.5 - 14.5') Centralizer		
10							
11							
12							
13							
14							
15							
16							
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

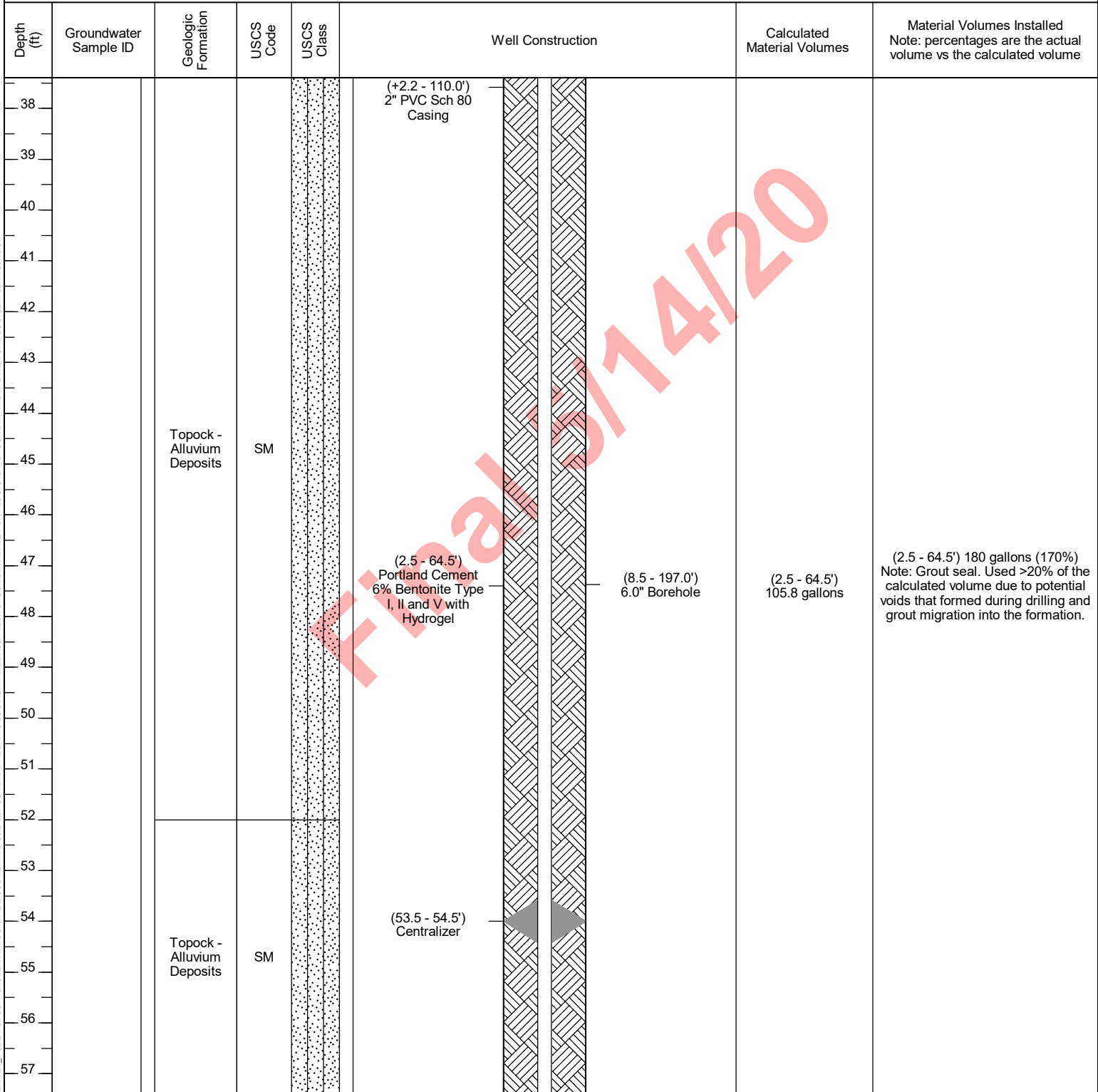
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Driller Name: Steve Vasquez	Easting (NAD83): 7614879.83	Location: PG&E Topock, Needles, California
Drilling Asst: L. Amaya / O. Floures	Borehole Diameter: 6 inches	
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Depth (ft)	Groundwater Sample 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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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	
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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
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		Topock - Alluvium Deposits	SM		(8.5 - 197.0') 6.0" Borehole		
64							
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						
70							
71							
72		Topock - Alluvium Deposits	SM				
73							
74							
75							
76							
77							

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Date Started: 10/09/2019	Surface Elevation: 520.40 ft amsl	<b>Well ID: MW-11D</b>
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
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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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				
118							

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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
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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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	
138		Topock - Alluvium Deposits	SM	[Dotted Pattern]	[Solid Black]			
139								
140								
141								
142								
143					(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
144								
145								
146								
147								
148								
149		Topock - Alluvium Deposits	ML	[Dotted Pattern]				
150								
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	[Dotted pattern]	[Solid black bar]		
159							
160							
161		Topock - Alluvium Deposits	SM	[Dotted pattern]	[Solid black bar]		
162							
163							
164		Topock - Alluvium Deposits	SM	[Dotted pattern]	[Solid black bar]		
165							
166							
167		Topock - Alluvium Deposits	GM	[Stippled pattern]	[Solid black bar]		
168							
169							
170		Topock - Alluvium Deposits	GM	[Stippled pattern]	[Solid black bar]		
171							
172							
173		Topock - Alluvium Deposits	GM	[Stippled pattern]	[Solid black bar]		
174							
175							
176		Topock - Alluvium Deposits	GM	[Stippled pattern]	[Solid black bar]		
177							

(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

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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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