

Date Started:	02/18/2020	Surface Elevation:	501.6 ft amsl	Well ID: IRZ-29
Date Completed:	02/22/2020	Shallow Well Elevation:	N/A	
Drilling Co.:	Cascade	Deep Well Elevation:	N/A	Client: PG&E
Drilling Method:	Dual Rotary	Northing (NAD83):	2102085.0	Project: Final GW Remedy Phase 1
Driller Name:	Jon Martinez	Easting (NAD83):	7615788.9	Location: PG&E Topock, Topock, California
Drilling Asst:	A. & H. Amezguita	Borehole Diameter:	15.5-18 inches	
Logger:	D. Cornell / E. Redner	Water Level Start:	47.75 ft bgs	Project Number: RC000753.0051
Editor:	Sean McGrane	Development End Date:	N/A	
Total Depth:	128.5 ft bgs	Well Completion:	<input checked="" type="checkbox"/> Flush <input type="checkbox"/> Stick-up	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
1		Topock - Fill	SM		(0.0 - 48.2') 10" Suregrip 17 Casing		
2					(0.0 - 4.3') Cemex #30 Mesh (30x70)	(0.0 - 4.3') 10.5 bags	(0.0 - 4.3') 9 bags (-14%) Note: Lapis Lustre Sand
3							
4							
5		Topock - Fill	SM				
6							
7							
8							
9		Topock - Fill	SM				
10					(0.0 - 21.0') 18.0" Borehole		
11							
12					(4.3 - 37.0') Portland Cement 3% Bentonite	(4.3 - 37.0') 289.7 gallons	(4.3 - 37.0') 310 gallons (7%) Note: Type I, II and V and Benseal
13		Topock - Alluvium Deposits	SM				
14							
15							
16							
17		Topock - Alluvium Deposits	SM				
18							
19							
20							

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Drilling Co.:	Cascade	Deep Well Elevation:	N/A	Client: PG&E
Drilling Method:	Dual Rotary	Northing (NAD83):	2102085.0	Project: Final GW Remedy Phase 1
Driller Name:	Jon Martinez	Easting (NAD83):	7615788.9	Location: PG&E Topock, Topock, California
Drilling Asst:	A. & H. Amezguita	Borehole Diameter:	15.5-18 inches	
Logger:	D. Cornell / E. Redner	Water Level Start:	47.75 ft bgs	Project Number: RC000753.0051
Editor:	Sean McGrane	Development End Date:	N/A	
Total Depth:	128.5 ft bgs	Well Completion:	<input checked="" type="checkbox"/> Flush <input type="checkbox"/> Stick-up	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
21		Topock - Alluvium Deposits	SM		(0.0 - 48.2') 10" Suregrip 17 Casing		
22							
23							
24							
25		Topock - Alluvium Deposits	NR				
26							
27		Topock - Alluvium Deposits	ML				
28							
29		Topock - Alluvium Deposits	SC		(4.3 - 37.0') Portland Cement 3% Bentonite	(4.3 - 37.0') 289.7 gallons	(4.3 - 37.0') 310 gallons (7%) Note: Type I, II and V and Benseal
30							
31		Topock - Alluvium Deposits	ML				
32							
33		Topock - Alluvium Deposits	SC				
34							
35					(21.0 - 42.0') 18.0" Borehole		
36							
37		Topock - Alluvium Deposits	SC		(34.5 - 35.5') Centralizer		
38							
39		Topock - Alluvium Deposits	ML				
40					(37.0 - 40.4') Cemex #60 Mesh (40x70)	(37.0 - 40.4') 8.3 bags	(37.0 - 40.4') 8 bags (-4%) Note: Lapis Lustre Sand

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Date Completed:	02/22/2020	Shallow Well Elevation:	N/A	
Drilling Co.:	Cascade	Deep Well Elevation:	N/A	Client: PG&E
Drilling Method:	Dual Rotary	Northing (NAD83):	2102085.0	Project: Final GW Remedy Phase 1
Driller Name:	Jon Martinez	Easting (NAD83):	7615788.9	Location: PG&E Topock, Topock, California
Drilling Asst:	A. & H. Amezcuita	Borehole Diameter:	15.5-18 inches	
Logger:	D. Cornell / E. Redner	Water Level Start:	47.75 ft bgs	Project Number: RC000753.0051
Editor:	Sean McGrane	Development End Date:	N/A	
Total Depth:	128.5 ft bgs	Well Completion:	<input checked="" type="checkbox"/> Flush <input type="checkbox"/> Stick-up	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
41		Topock - Alluvium Deposits	SM		(0.0 - 48.2') 10" Suregrip 17 Casing		
42		Topock - Alluvium Deposits	ML				
43		Topock - Alluvium Deposits	SC				
44		Topock - Alluvium Deposits	SM				
45							
46							
47							
48		Topock - Alluvium Deposits	SM				
49	IRZ-29-VAS-47-52 (4400 ppb) 12/16/2019 14:46				(48.2 - 77.0') 10" 10-Slot Screen		
50					(40.4 - 79.0') Cemex #30 Mesh (30x70)	(40.4 - 79.0') 66.8 bags	(40.4 - 79.0') 92 bags (38%) Note: Lapis Lustre Sand, used >20% of the calculated volume due to potential voids forming during drilling. Swabbed lower screen for approximately 105 minutes.
51							
52		Topock - Alluvium Deposits	SM				
53							
54							
55							
56		Topock - Alluvium Deposits	SM				
57							
58							
59							
60			ML		(58.8 - 79.1') 16.0" Borehole		

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Date Completed:	02/22/2020	Shallow Well Elevation:	N/A	
Drilling Co.:	Cascade	Deep Well Elevation:	N/A	Client: PG&E
Drilling Method:	Dual Rotary	Northing (NAD83):	2102085.0	Project: Final GW Remedy Phase 1
Driller Name:	Jon Martinez	Easting (NAD83):	7615788.9	Location: PG&E Topock, Topock, California
Drilling Asst:	A. & H. Amezguita	Borehole Diameter:	15.5-18 inches	
Logger:	D. Cornell / E. Redner	Water Level Start:	47.75 ft bgs	Project Number: RC000753.0051
Editor:	Sean McGrane	Development End Date:	N/A	
Total Depth:	128.5 ft bgs	Well Completion:	<input checked="" type="checkbox"/> Flush <input type="checkbox"/> Stick-up	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
61	IRZ-29-VAS-62-67 (2400 ppb) 12/17/2019 10:00	Topock - Alluvium Deposits	ML		(48.2 - 77.0') 10" 10-Slot Screen		
62							
63		Topock - Alluvium Deposits	ML				
64							
65		Topock - Alluvium Deposits	ML				
66							
67		Topock - Alluvium Deposits	ML				
68							
69		Topock - Alluvium Deposits	SM		(40.4 - 79.0') Cemex #30 Mesh (30x70)	(58.8 - 79.1') 16.0" Borehole	(40.4 - 79.0') 66.8 bags
70							(40.4 - 79.0') 92 bags (38%) Note: Lapis Lustre Sand, used >20% of the calculated volume due to potential voids forming during drilling. Swabbed lower screen for approximately 105 minutes.
71		Topock - Older Alluvium Deposits	SM				
72							
73							
74							
75							
76							
77		Topock - Alluvium Deposits	ML			(77.0 - 92.1') 10" Suregrip 17 Casing	
78		Topock - Alluvium Deposits	SM				
79		Topock - Alluvium Deposits	ML		(79.0 - 80.4') Cemex #60 Mesh (40x70)	(79.1 - 99.1') 16.0" Borehole	(79.0 - 80.4') 2.3 bags
80							(79.0 - 80.4') 2 bags (-13%) Note: Lapis Lustre Sand

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Date Started: 02/18/2020	Surface Elevation: 501.6 ft amsl	Well ID: IRZ-29
Date Completed: 02/22/2020	Shallow Well Elevation: N/A	
Drilling Co.: Cascade	Deep Well Elevation: N/A	Client: PG&E
Drilling Method: Dual Rotary	Northing (NAD83): 2102085.0	Project: Final GW Remedy Phase 1
Driller Name: Jon Martinez	Easting (NAD83): 7615788.9	Location: PG&E Topock, Topock, California
Drilling Asst: A. & H. Amezguita	Borehole Diameter: 15.5-18 inches	
Logger: D. Cornell / E. Redner	Water Level Start: 47.75 ft bgs	Project Number: RC000753.0051
Editor: Sean McGrane	Development End Date: N/A	
Total Depth: 128.5 ft bgs	Well Completion: <input checked="" type="checkbox"/> Flush <input type="checkbox"/> Stick-up	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
81		Topock - Alluvium Deposits	ML				
82		Topock - Alluvium Deposits	GW		(80.4 - 85.9') Bentonite seal pellets		(80.4 - 85.9') 11 buckets (47%) Note: Pel-Plug 3/8" TR30, used >20% of the calculated volume due to potential voids forming during drilling.
83		Topock - Alluvium Deposits	ML		(82.5 - 83.5') Centralizer	(80.4 - 85.9') 7.5 buckets	
84							
85							
86		Topock - Alluvium Deposits	SM				(85.9 - 87.3') 4 bags (67%) Note: Lapis Lustre Sand, used >20% of the calculated volume due to potential voids forming during drilling.
87					(85.9 - 87.3') Cemex #60 Mesh (40x70)	(85.9 - 87.3') 2.4 bags	
88		Topock - Alluvium Deposits	ML				
89		Topock - Alluvium Deposits	SM				
90	IRZ-29-VAS-87-92 (<0.033 U ppb) 12/17/2019 14:41	Topock - Alluvium Deposits	ML			(79.1 - 99.1') 16.0" Borehole	
91							
92							
93		Topock - Alluvium Deposits	SM			(92.1 - 120.9') 10" 10-Slot 316L SS Wire Wrap Screen	
94					(87.3 - 128.5') Cemex #30 Mesh (30x70)	(87.3 - 128.5') 72.5 bags	(87.3 - 128.5') 68 bags (-6%) Note: Lapis Lustre Sand, swabbed lower screen for approximately 90 minutes.
95							
96		Topock - Alluvium Deposits	ML				
97							
98		Topock - Alluvium Deposits	ML				
99							
100		Topock - Alluvium	ML			(99.1 - 119.4') 16.0" Borehole	

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Date Completed:	02/22/2020	Shallow Well Elevation:	N/A	
Drilling Co.:	Cascade	Deep Well Elevation:	N/A	Client: PG&E
Drilling Method:	Dual Rotary	Northing (NAD83):	2102085.0	Project: Final GW Remedy Phase 1
Driller Name:	Jon Martinez	Easting (NAD83):	7615788.9	Location: PG&E Topock, Topock, California
Drilling Asst:	A. & H. Amezcuita	Borehole Diameter:	15.5-18 inches	
Logger:	D. Cornell / E. Redner	Water Level Start:	47.75 ft bgs	Project Number: RC000753.0051
Editor:	Sean McGrane	Development End Date:	N/A	
Total Depth:	128.5 ft bgs	Well Completion:	<input checked="" type="checkbox"/> Flush <input type="checkbox"/> Stick-up	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
101		Deposits			(92.1 - 120.9') 10" 10-Slot 316L SS Wire Wrap Screen		
102		Topock - Alluvium Deposits	ML				
103							
104							
105		Topock - Alluvium Deposits	GW				
106							
107							
108							
109		Topock - Alluvium Deposits	ML				
110					(87.3 - 128.5') Cemex #30 Mesh (30x70)		
111					(99.1 - 119.4') 16.0" Borehole		
112						(87.3 - 128.5') 72.5 bags	(87.3 - 128.5') 68 bags (-6%) Note: Lapis Lustre Sand, swabbed lower screen for approximately 90 minutes.
113							
114	IRZ-29-VAS-112-117 (760 ppb) 12/18/2019 15:12	Topock - Alluvium Deposits	SM				
115							
116							
117							
118	IRZ-29-VAS-116-120.5 (23 ppb) 12/19/2019 10:26	Topock - Alluvium Deposits	SM				
119		Topock - Weathered Bedrock -	ML				
120					(119.4 - 128.5') 15.5" Borehole		

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Drilling Co.:	Cascade	Deep Well Elevation:	N/A	Client: PG&E
Drilling Method:	Dual Rotary	Northing (NAD83):	2102085.0	Project: Final GW Remedy Phase 1
Driller Name:	Jon Martinez	Easting (NAD83):	7615788.9	Location: PG&E Topock, Topock, California
Drilling Asst:	A. & H. Amezguita	Borehole Diameter:	15.5-18 inches	
Logger:	D. Cornell / E. Redner	Water Level Start:	47.75 ft bgs	Project Number: RC000753.0051
Editor:	Sean McGrane	Development End Date:	N/A	
Total Depth:	128.5 ft bgs	Well Completion:	<input checked="" type="checkbox"/> Flush <input type="checkbox"/> Stick-up	

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
121		conglomerate	ML				
122		Topock - Competent Bedrock - conglomerate					
123			NR				
124					(123.0 - 124.0') Centralizer (87.3 - 128.5') Cemex #30 Mesh (30x70)	(119.4 - 128.5') 15.5" Borehole	(87.3 - 128.5') 72.5 bags Note: Lapis Lustre Sand, swabbed lower screen for approximately 90 minutes.
125		Topock - Competent Bedrock - conglomerate					
126							
127							
128							
129					End of Boring at 128.5' bgs.		
130							
131							
132							
133							
134							
135							
136							
137							
138							
139							
140							

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Drilling Log

Sheet: 1 of 7

Date Started:	02/10/2020	Surface Elevation:	501.6 ft amsl	Boring No.: IRZ-29
Date Completed:	02/12/2020	Northing (NAD83):	2102085.0	
Drilling Co.:	Cascade	Easting (NAD83):	7615788.9	Client: PG&E
Drilling Method:	Dual Rotary	Total Depth:	128.5 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type:	Foremost DR-24HD	Conductor Casing Diameter:	18 inches	Location: PG&E Topock, Topock, California
Driller Name:	Jon Martinez	Drill Casing Diameter:	16 inches	
Drilling Asst:	A. & H. Amezcuita	Drill Bit:	15.5 & 17.5 Tricone	Project Number: RC000753.0051
Tool-Pusher:	Arnold Lamon	Depth to First Water:	47.75 ft bgs	
Rig Geologist:	D. Cornell / E. Redner	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Depth (ft)	Drilling Run and Average Penetration Rate	USCS Code	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling Notes	Drilling Fluid
1					(0.0 - 7.0') Topock - Fill; Silty sand with gravel (SM); yellowish brown / moderate yellowish brown (10YR 5/4)	(0.0 - 0.3') Observed temporary backfill material, Cemex #60 Mesh sand, at the surface (see Photo Log).	(0.0 - 21.0') 231 gallons of water used; 150 gallons of water recovered; 81 gallons of water lost
2							
3							
4		SM					
5						(5.0 - 10.0') Observed temporary backfill material Cemex # 3 in drill cuttings (see Photo Log).	
6							
7					(7.0 - 13.0') Topock - Fill; Silty sand with gravel (SM); yellowish brown / moderate yellowish brown (10YR 5/4)		
8							
9							
10	(0.0 - 21.0) 1.69 mins/ft	SM		(0.0 - 21.0') 18.0" Steel Casing		(10.1 - 20.0') Observed temporary backfill material Cemex # 3 in drill cuttings (see Photo Log).	
11							
12							
13					(13.0 - 17.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); pale brown (10YR 6/3) little brown (10YR 4/3)		
14							
15		SM					
16							
17					(17.0 - 27.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (10YR 4/3) trace reddish brown (5YR 5/4)		
18		SM					
19							
20							

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Drilling Co.:	Cascade	Easting (NAD83):	7615788.9	Client:	PG&E
Drilling Method:	Dual Rotary	Total Depth:	128.5 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Foremost DR-24HD	Conductor Casing Diameter:	18 inches	Location:	PG&E Topock, Topock, California
Driller Name:	Jon Martinez	Drill Casing Diameter:	16 inches		
Drilling Asst:	A. & H. Amezcuita	Drill Bit:	15.5 & 17.5 Tricone	Project Number:	RC000753.0051
Tool-Pusher:	Arnold Lamon	Depth to First Water:	47.75 ft bgs		
Rig Geologist:	D. Cornell / E. Redner	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

Depth (ft)	Drilling Run and Average Penetration Rate	USCS Code	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling Notes	Drilling Fluid
21	(0.0 - 21.0) 1.69 mins/ft			(0.0 - 21.0') 18.0" Steel Casing		(20.1 - 30.0') Observed temporary backfill material Cemex # 3 in drill cuttings (see Photo Log).	
22							(21.0 - 42.0') 347 gallons of water used; 250 gallons of water recovered; 97 gallons of water lost
23							
24		SM					
25							
26						(25.0 - 42.0') Rough drilling.	
27		NR			(27.0 - 27.5') No recovery (NR)		
28		ML			(27.5 - 29.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML); brown (10YR 4/3)		
29							
30		SC			(29.0 - 31.0') Topock - Alluvium Deposits; Clayey sand with gravel (SC); brown (7.5YR 4/4)		
31	(21.0 - 42.0) 1.81 mins/ft			(21.0 - 42.0') 18.0" Steel Casing		(30.1 - 40.0') Observed temporary backfill material Cemex # 3 in drill cuttings (see Photo Log).	
32		ML			(31.0 - 31.8') Topock - Alluvium Deposits; Sandy silt with gravel (ML); brown (10YR 4/3)		
33					(31.8 - 38.0') Topock - Alluvium Deposits; Clayey sand with gravel (SC); brown (7.5YR 5/4)		
34							
35		SC					
36							
37							
38							
39		ML			(38.0 - 40.5') Topock - Alluvium Deposits; Sandy silt with gravel (ML); brown (7.5YR 4/4)		
40							

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Drilling Co.:	Cascade	Easting (NAD83):	7615788.9	Client: PG&E
Drilling Method:	Dual Rotary	Total Depth:	128.5 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type:	Foremost DR-24HD	Conductor Casing Diameter:	18 inches	Location: PG&E Topock, Topock, California
Driller Name:	Jon Martinez	Drill Casing Diameter:	16 inches	
Drilling Asst:	A. & H. Amezcuita	Drill Bit:	15.5 & 17.5 Tricone	Project Number: RC000753.0051
Tool-Pusher:	Arnold Lamon	Depth to First Water:	47.75 ft bgs	
Rig Geologist:	D. Cornell / E. Redner	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Depth (ft)	Drilling Run and Average Penetration Rate	USCS Code	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling Notes	Drilling Fluid
41	(21.0 - 42.0) 1.81 mins/ft	ML		(21.0 - 42.0') 18.0" Steel Casing	(40.5 - 41.3') Topock - Alluvium Deposits; Silty sand with gravel (SM); dark yellowish brown (10YR 4/4)	(40.1 - 50.0') Observed temporary backfill material Cemex # 3 in drill cuttings (see Photo Log).	
		SM					
42		ML					
43	(42.0 - 58.8) 1.96 mins/ft	SC		(42.0 - 58.8') 16.0" Steel Casing	(42.0 - 43.5') Topock - Alluvium Deposits; Clayey sand with gravel (SC); brown (7.5YR 5/4)	(42.0 - 81.0') Smooth drilling possibly due to new bit.	(42.0 - 58.8') 230 gallons of water used; 300 gallons of water recovered; 70 gallons of water gained
44		SM			(43.5 - 44.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (10YR 5/3)		
45					(44.0 - 51.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 4/4)		
46							
47							
48		SM			(48') brown (7.5YR 4/3)		
49							
50							
51							
52			SM				
53				(53.0 - 59.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/4)			
54							
55							
56		SM					
57				(57') brown (7.5YR 4/4)			
58							
59	(58.8 - 79.1) 1.33 mins/ft			(58.8 - 79.1') 16.0" Steel Casing		(50.1 - 60.0') Observed temporary backfill material Cemex # 3 in drill cuttings (see Photo Log).	
60		ML			(59.5 - 64.5') Topock - Alluvium		

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Date Completed:	<u>02/12/2020</u>	Northing (NAD83):	<u>2102085.0</u>	
Drilling Co.:	<u>Cascade</u>	Easting (NAD83):	<u>7615788.9</u>	Client: <u>PG&E</u>
Drilling Method:	<u>Dual Rotary</u>	Total Depth:	<u>128.5 ft bgs</u>	Project: <u>Final GW Remedy Phase 1</u>
Drill Rig Type:	<u>Foremost DR-24HD</u>	Conductor Casing Diameter:	<u>18 inches</u>	Location: <u>PG&E Topock, Topock, California</u>
Driller Name:	<u>Jon Martinez</u>	Drill Casing Diameter:	<u>16 inches</u>	
Drilling Asst:	<u>A. & H. Amezguita</u>	Drill Bit:	<u>15.5 & 17.5 Tricone</u>	Project Number: <u>RC000753.0051</u>
Tool-Pusher:	<u>Arnold Lamon</u>	Depth to First Water:	<u>47.75 ft bgs</u>	
Rig Geologist:	<u>D. Cornell / E. Redner</u>	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Depth (ft)	Drilling Run and Average Penetration Rate	USCS Code	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling Notes	Drilling Fluid
61	(58.8 - 79.1) 1.33 mins/ft	ML		(58.8 - 79.1') 16.0" Steel Casing	Deposits; Sandy silt with gravel (ML); reddish brown (5YR 4/3)	(60.1 - 70.0') Observed temporary backfill material Cemex # 3 in drill cuttings (see Photo Log).	
62							
63							
64							
65							
66							
67							
68							
69							
70							
71	(58.8 - 79.1) 1.33 mins/ft	SM		(58.8 - 79.1') 16.0" Steel Casing	(64.5 - 67.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML); brown (7.5YR 5/3)	(70.1 - 80.0') Observed temporary backfill material Cemex # 3 in drill cuttings (see Photo Log).	
72							
73							
74							
75							
76							
77							
78							
79							
80							
79	(79.1 - 99.1) 1.56 mins/ft	ML		(79.1 - 99.1') 16.0" Steel Casing	(67.0 - 67.8') Topock - Alluvium Deposits; Silt with sand (ML); brown (7.5YR 4/4) with dark reddish brown (2.5YR 3/4)		
80							
	(79.1 - 99.1) 1.56 mins/ft	SM		(79.1 - 99.1') 16.0" Steel Casing	(67.8 - 70.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown / moderate brown (5YR 4/4)		
	(79.1 - 99.1) 1.56 mins/ft	ML		(79.1 - 99.1') 16.0" Steel Casing	(70.5 - 76.8') Topock - Older Alluvium Deposits; Silty sand with gravel (SM); reddish brown / moderate brown (5YR 4/4)		
	(79.1 - 99.1) 1.56 mins/ft	SM		(79.1 - 99.1') 16.0" Steel Casing	(76.8 - 77.8') Topock - Alluvium Deposits; Silt with sand (ML); brown (7.5YR 4/4)		
	(79.1 - 99.1) 1.56 mins/ft	ML		(79.1 - 99.1') 16.0" Steel Casing	(77.8 - 79.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown (5YR 5/4)		
	(79.1 - 99.1) 1.56 mins/ft	SM		(79.1 - 99.1') 16.0" Steel Casing	(79.0 - 81.5') Topock - Alluvium Deposits; Sandy silt (ML); brown (7.5YR 4/4)		(79.1 - 99.0') 200 gallons of water used; 275 gallons of water recovered; 75

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater

Remarks: NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval of pilot borehole

Date Started:	02/10/2020	Surface Elevation:	501.6 ft amsl	Boring No.: IRZ-29
Date Completed:	02/12/2020	Northing (NAD83):	2102085.0	
Drilling Co.:	Cascade	Easting (NAD83):	7615788.9	Client: PG&E
Drilling Method:	Dual Rotary	Total Depth:	128.5 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type:	Foremost DR-24HD	Conductor Casing Diameter:	18 inches	Location: PG&E Topock, Topock, California
Driller Name:	Jon Martinez	Drill Casing Diameter:	16 inches	
Drilling Asst:	A. & H. Amezguita	Drill Bit:	15.5 & 17.5 Tricone	Project Number: RC000753.0051
Tool-Pusher:	Arnold Lamon	Depth to First Water:	47.75 ft bgs	
Rig Geologist:	D. Cornell / E. Redner	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Depth (ft)	Drilling Run and Average Penetration Rate	USCS Code	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling Notes	Drilling Fluid
81		ML			(80.75')	(80.1 - 90.0') Observed temporary backfill material Cemex # 3 in drill cuttings (see Photo Log).	gallons of water gained
82		GW			(81.5 - 81.8') Topock - Alluvium Deposits; Well graded gravel (GW); very dark greenish gray (GLEY 1 3/1)		
83		ML			(81.8 - 85.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML); brown (7.5YR 4/3) (83') reddish brown / moderate brown (5YR 4/4)		
84							
85							
86		SM			(85.0 - 87.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 4/4)		
87		ML			(87.0 - 87.8') Topock - Alluvium Deposits; Sandy silt with gravel (ML); brown (7.5YR 4/3)		
88		SM			(87.8 - 88.3') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown / moderate brown (5YR 4/4)		
89		ML			(88.3 - 90.5') Topock - Alluvium Deposits; Sandy silt with gravel (ML); reddish brown / moderate brown (5YR 4/4)		
90	(79.1 - 99.1) 1.56 mins/ft			(79.1 - 99.1') 16.0" Steel Casing		(90.1 - 100.0') Observed temporary backfill material Cemex # 3 in drill cuttings (see Photo Log).	
91					(90.5 - 95.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown / moderate brown (5YR 4/4)		
92							
93		SM					
94							
95							
96		ML			(95.0 - 96.5') Topock - Alluvium Deposits; Sandy silt with gravel (ML); reddish brown / moderate brown (5YR 4/4)		
97					(96.5 - 99.3') Topock - Alluvium Deposits; Sandy silt with gravel (ML); brown (7.5YR 4/4)		
98		ML					
99							
100	(99.1 - 119.4) 1.42 mins/ft	ML		(99.1 - 119.4') 16.0" Steel Casing	(99.3 - 104.5') Topock - Alluvium Deposits; Sandy silt with gravel		(99.1 - 119.4') 165 gallons of water used; 300 gallons of water recovered; 135

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Remarks: NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval of pilot borehole

Date Started:	02/10/2020	Surface Elevation:	501.6 ft amsl	Boring No.: IRZ-29
Date Completed:	02/12/2020	Northing (NAD83):	2102085.0	
Drilling Co.:	Cascade	Easting (NAD83):	7615788.9	Client: PG&E
Drilling Method:	Dual Rotary	Total Depth:	128.5 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type:	Foremost DR-24HD	Conductor Casing Diameter:	18 inches	Location: PG&E Topock, Topock, California
Driller Name:	Jon Martinez	Drill Casing Diameter:	16 inches	
Drilling Asst:	A. & H. Amezcuita	Drill Bit:	15.5 & 17.5 Tricone	Project Number: RC000753.0051
Tool-Pusher:	Arnold Lamon	Depth to First Water:	47.75 ft bgs	
Rig Geologist:	D. Cornell / E. Redner	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Depth (ft)	Drilling Run and Average Penetration Rate	USCS Code	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling Notes	Drilling Fluid
101					(ML); reddish brown / moderate brown (5YR 4/4)	(100.1 - 110.0') Observed temporary backfill material Cemex # 3 in drill cuttings (see Photo Log).	gallons of water gained
102		ML					
103							
104							
105		GW			(104.5 - 105.0') Topock - Alluvium Deposits; Well graded gravel (GW); very dark greenish gray (GLE1 3/1)		
106					(105.0 - 113.5') Topock - Alluvium Deposits; Sandy silt with gravel (ML); reddish brown / moderate brown (5YR 4/4)		
107					(107') reddish brown (5YR 5/4)		
108							
109		ML			(109') reddish brown / moderate brown (5YR 4/4)		
110	(99.1 - 119.4) 1.42 mins/ft			(99.1 - 119.4') 16.0" Steel Casing		(110.1 - 120.0') Observed temporary backfill material Cemex # 3 in drill cuttings (see Photo Log).	
111							
112							
113							
114					(113.5 - 117.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown / moderate brown (5YR 4/4)		
115		SM					
116							
117							
118		SM			(117.0 - 119.0') Topock - Alluvium Deposits; Silty sand (SM); brown (10YR 4/3)		
119							
120	(119.4 - 128.5) 2.91 mins/ft	ML			(119.0 - 121.0') Topock - Weathered Bedrock - conglomerate; Sandy silt with	(119.0 - 128.1') Rods bouncing likely due to bedrock.	(119.4 - 128.5') 230 gallons of water used; 500

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Remarks: NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval of pilot borehole

Date Started:	02/10/2020	Surface Elevation:	501.6 ft amsl	Boring No.: IRZ-29
Date Completed:	02/12/2020	Northing (NAD83):	2102085.0	
Drilling Co.:	Cascade	Easting (NAD83):	7615788.9	Client: PG&E
Drilling Method:	Dual Rotary	Total Depth:	128.5 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type:	Foremost DR-24HD	Conductor Casing Diameter:	18 inches	Location: PG&E Topock, Topock, California
Driller Name:	Jon Martinez	Drill Casing Diameter:	16 inches	
Drilling Asst:	A. & H. Amezguita	Drill Bit:	15.5 & 17.5 Tricone	Project Number: RC000753.0051
Tool-Pusher:	Arnold Lamon	Depth to First Water:	47.75 ft bgs	
Rig Geologist:	D. Cornell / E. Redner	Converted to Well:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Depth (ft)	Drilling Run and Average Penetration Rate	USCS Code	USCS Class	Casing Diameter	Description (See Pilot boring log for full geologic descriptions)	Drilling Notes	Drilling Fluid
121		ML			gravel (ML); reddish brown / moderate brown (5YR 4/4)	(120.1 - 128.5') Observed temporary backfill material Cemex # 3 in drill cuttings (see Photo Log).	gallons of water recovered; 270 gallons of water gained
122					(121.0 - 123.0') Topock - Competent Bedrock - conglomerate; (2.5YR4/3)		
123					(123.0 - 124.0') No recovery (NR)		
124	(119.4 - 128.5) 2.91 mins/ft	NR		(119.4 - 128.5') 15.5" Open Hole	(124.0 - 128.5') Topock - Competent Bedrock - conglomerate; (2.5YR4/3)		
125							
126							
127							
128							
129					End of Boring at 128.5' bgs.		
130							
131							
132							
133							
134							
135							
136							
137							
138							
139							
140							

Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater
Remarks: NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval of pilot borehole

Date Started:	<u>12/11/2019</u>	Surface Elevation:	<u>501.6 ft amsl</u>	Boring No.: <u>IRZ-29 Pilot</u>
Date Completed:	<u>12/19/2019</u>	Northing (NAD83):	<u>2102085.0</u>	
Drilling Co.:	<u>Cascade</u>	Easting (NAD83):	<u>7615788.9</u>	Client: <u>PG&E</u>
Drilling Method:	<u>Sonic Drilling</u>	Total Depth:	<u>132 ft bgs</u>	Project: <u>Final GW Remedy Phase 1</u>
Drill Rig Type:	<u>Boart Longyear Track Mount</u>	Borehole Diameter:	<u>6-10 inches</u>	Location: <u>PG&E Topock, Topock, California</u>
Driller Name:	<u>Eddie Ramos</u>	Depth to First Water:	<u>47.75 ft bgs</u>	
Drilling Asst:	<u>H. Amezguita/ L. Amaya</u>	Sampling Method:	<u>4 inch x 10 ft. Core Barrel</u>	Project Number: <u>RC000753.0051</u>
Logger:	<u>S. McGrane / G. Willford</u>	Sampling Interval:	<u>Continuous</u>	
Editor:	<u>Kendra Keon</u>	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							(0.0 - 7.0') Topock - Fill; Silty sand with gravel (SM); yellowish brown / moderate yellowish brown (10YR 5/4); fine grained to very coarse grained, angular to subround; little granules to large pebbles, subangular to round; little silt; dry; possible fill	(0.0 - 7.0') Soft-Loose material fell out of initial run into the hopper, logged material from hopper.	(0.0 - 67.0') No water used
2									
3									
4	84			Topock - Fill	SM				
5									
6									
7									
8							(7.0 - 13.0') Topock - Fill; Silty sand (SM); yellowish brown / moderate yellowish brown (10YR 5/4); very fine grained to coarse grained, angular to subround; little granules to small pebbles, angular to subround; little silt; dry; possible fill	(7.0 - 14.0') Normal drilling conditions.	
9									
10				Topock - Fill	SM				
11									
12	120								
13							(13.0 - 17.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); pale brown (10YR 6/3) little brown (10YR 4/3); very fine grained to very coarse grained, angular to subround; little granules to medium pebbles, angular to subangular; little silt; dry	(14.0 - 17.0') Soft drilling.	
14				Topock - Alluvium Deposits	SM				
15									
16									
17							(17.0 - 27.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (10YR 4/3) trace reddish brown (5YR 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 cobbles, angular; trace clay; dry; moderate cementation; some pieces of drill cuttings moderately cemented	(17.0 - 27.0') Rough drilling.	
18				Topock - Alluvium Deposits	SM				
19	120								
20									

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Date Started:	12/19/2019	Surface Elevation:	501.6 ft amsl	Well ID: IRZ-29 Pilot
Date Completed:	12/20/2019	Northing (NAD83):	2102085.0	
Drilling Co.:	Cascade	Easting (NAD83):	7615788.9	Client: PG&E
Drilling Method:	Sonic Drilling	Total Depth:	132 ft bgs	Project: Final GW Remedy Phase 1
Driller Name:	Eddie Ramos	Borehole Diameter:	6-10 inches	Location: PG&E Topock, Topock, California
Drilling Asst:	H. Amezquita/ L. Amaya	Depth to First Water:	47.75 ft bgs	
Logger:	S. McGrane / G. Willford	Editor:	Kendra Keon	Project Number: RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
1					(0.0 - 0.5') Steel Plate		Note: Steel plates with BMPs in place
2							
3					(0.5 - 5.0') Transition Sand (#00)	(0.5 - 5.0') 5.5 bags	(0.5 - 5.0') 5 bags (-9%) Note: Lapis Lustre Sand
4		Topock - Fill	SM		(0.0 - 7.0') 10.0" Borehole		
5							
6							
7							
8							
9							
10		Topock - Fill	SM				
11							
12							
13					(5.0 - 118.0') Cemex #3 MESH (8x10)	(5.0 - 118.0') 45.3 bags	(5.0 - 118.0') 57 bags (26%) Note: Lapis Lustre Sand, used >20% of calculated volume due to potential voids forming
14							
15		Topock - Alluvium Deposits	SM		(7.0 - 116.0') 6.0" Borehole		
16							
17							
18							
19		Topock - Alluvium Deposits	SM				
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, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

Date Started:	12/19/2019	Surface Elevation:	501.6 ft amsl	Well ID: IRZ-29 Pilot
Date Completed:	12/20/2019	Northing (NAD83):	2102085.0	
Drilling Co.:	Cascade	Easting (NAD83):	7615788.9	Client: PG&E
Drilling Method:	Sonic Drilling	Total Depth:	132 ft bgs	Project: Final GW Remedy Phase 1
Driller Name:	Eddie Ramos	Borehole Diameter:	6-10 inches	Location: PG&E Topock, Topock, California
Drilling Asst:	H. Amezquita/ L. Amaya	Depth to First Water:	47.75 ft bgs	
Logger:	S. McGrane / G. Willford	Editor:	Kendra Keon	Project Number: RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
21							
22							
23		Topock - Alluvium Deposits	SM				
24							
25							
26							
27			NR				
28		Topock - Alluvium Deposits	ML				
29							
30		Topock - Alluvium Deposits	SC		(5.0 - 118.0') Cemex #3 MESH (8x10)	(5.0 - 118.0') 45.3 bags	(5.0 - 118.0') 57 bags (26%) Note: Lapis Lustre Sand, used >20% of calculated volume due to potential voids forming
31		Topock - Alluvium Deposits	ML				
32							
33							
34		Topock - Alluvium Deposits	SC				
35							
36							
37							
38							
39		Topock - Alluvium Deposits	ML				
40							

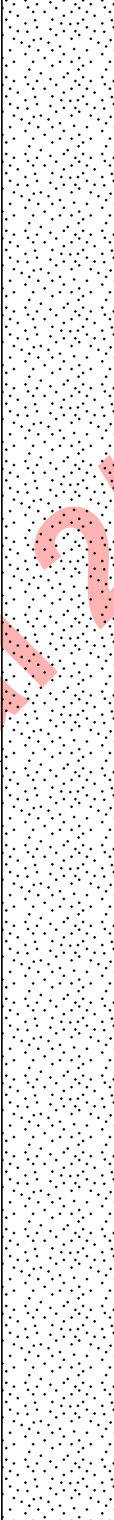
Abbreviations: USCS = Unified Soil Classification System, ft = feet, bgs = below ground surface, amsl = above mean sea level, GW = groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

Date Started:	12/19/2019	Surface Elevation:	501.6 ft amsl	Well ID: IRZ-29 Pilot
Date Completed:	12/20/2019	Northing (NAD83):	2102085.0	
Drilling Co.:	Cascade	Easting (NAD83):	7615788.9	Client: PG&E
Drilling Method:	Sonic Drilling	Total Depth:	132 ft bgs	Project: Final GW Remedy Phase 1
Driller Name:	Eddie Ramos	Borehole Diameter:	6-10 inches	Location: PG&E Topock, Topock, California
Drilling Asst:	H. Amezquita/ L. Amaya	Depth to First Water:	47.75 ft bgs	
Logger:	S. McGrane / G. Willford	Editor:	Kendra Keon	Project Number: RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
41		Topock - Alluvium Deposits	SM				
42		Topock - Alluvium Deposits	ML				
43		Topock - Alluvium Deposits	SC				
44		Topock - Alluvium Deposits	SM				
45							
46							
47							
48		Topock - Alluvium Deposits	SM				
49	IRZ-29-VAS-47-52 (4400 ppb) 12/16/2019 14:46						
50					(5.0 - 118.0') Cemex #3 MESH (8x10)	(7.0 - 116.0') 6.0" Borehole	(5.0 - 118.0') 45.3 bags
51							
52		Topock - Alluvium Deposits	SM				
53							
54							
55							
56		Topock - Alluvium Deposits	SM				
57							
58							
59							
60			ML				

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, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

Date Started:	12/19/2019	Surface Elevation:	501.6 ft amsl	Well ID: IRZ-29 Pilot
Date Completed:	12/20/2019	Northing (NAD83):	2102085.0	
Drilling Co.:	Cascade	Easting (NAD83):	7615788.9	Client: PG&E
Drilling Method:	Sonic Drilling	Total Depth:	132 ft bgs	Project: Final GW Remedy Phase 1
Driller Name:	Eddie Ramos	Borehole Diameter:	6-10 inches	Location: PG&E Topock, Topock, California
Drilling Asst:	H. Amezquita/ L. Amaya	Depth to First Water:	47.75 ft bgs	
Logger:	S. McGrane / G. Willford	Editor:	Kendra Keon	Project Number: RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
61	IRZ-29-VAS-62-67 (2400 ppb) 12/17/2019 10:00	Topock - Alluvium Deposits	ML				
62		Topock - Alluvium Deposits	ML				
63		Topock - Alluvium Deposits	ML				
64		Topock - Alluvium Deposits	ML				
65		Topock - Alluvium Deposits	ML				
66		Topock - Alluvium Deposits	ML				
67		Topock - Alluvium Deposits	ML				
68		Topock - Alluvium Deposits	ML				
69		Topock - Alluvium Deposits	SM				
70		Topock - Alluvium Deposits	SM				
71		Topock - Alluvium Deposits	SM				
72		Topock - Older Alluvium Deposits	SM				
73		Topock - Older Alluvium Deposits	SM				
74		Topock - Older Alluvium Deposits	SM				
75		Topock - Older Alluvium Deposits	SM				
76		Topock - Alluvium Deposits	ML				
77		Topock - Alluvium Deposits	ML				
78		Topock - Alluvium Deposits	SM				
79		Topock - Alluvium Deposits	ML				
80		Topock - Alluvium Deposits	ML				

(5.0 - 118.0') Cemex
#3 MESH (8x10)

(7.0 - 116.0') 6.0"
Borehole

(5.0 - 118.0') 45.3
bags

(5.0 - 118.0') 57 bags (26%)
Note: Lapis Lustre Sand, used >20%
of calculated volume due to potential
voids forming

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, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

Date Started:	12/19/2019	Surface Elevation:	501.6 ft amsl	Well ID: IRZ-29 Pilot
Date Completed:	12/20/2019	Northing (NAD83):	2102085.0	
Drilling Co.:	Cascade	Easting (NAD83):	7615788.9	Client: PG&E
Drilling Method:	Sonic Drilling	Total Depth:	132 ft bgs	Project: Final GW Remedy Phase 1
Driller Name:	Eddie Ramos	Borehole Diameter:	6-10 inches	Location: PG&E Topock, Topock, California
Drilling Asst:	H. Amezquita/ L. Amaya	Depth to First Water:	47.75 ft bgs	
Logger:	S. McGrane / G. Willford	Editor:	Kendra Keon	Project Number: RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
81		Topock - Alluvium Deposits	ML				
82		Topock - Alluvium Deposits	GW				
83		Topock - Alluvium Deposits	ML				
84							
85							
86		Topock - Alluvium Deposits	SM				
87							
88		Topock - Alluvium Deposits	ML				
89		Topock - Alluvium Deposits	SM				
90	IRZ-29-VAS-87-92 (<0.033 U ppb) 12/17/2019 14:41	Topock - Alluvium Deposits	ML		(5.0 - 118.0') Cemex #3 MESH (8x10)	(7.0 - 116.0') 6.0" Borehole	(5.0 - 118.0') 45.3 bags
91							
92							
93		Topock - Alluvium Deposits	SM				
94							
95							
96		Topock - Alluvium Deposits	ML				
97							
98		Topock - Alluvium Deposits	ML				
99							
100		Topock - Alluvium Deposits	ML				

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, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

Date Started:	12/19/2019	Surface Elevation:	501.6 ft amsl	Well ID: IRZ-29 Pilot
Date Completed:	12/20/2019	Northing (NAD83):	2102085.0	
Drilling Co.:	Cascade	Easting (NAD83):	7615788.9	Client: PG&E
Drilling Method:	Sonic Drilling	Total Depth:	132 ft bgs	Project: Final GW Remedy Phase 1
Driller Name:	Eddie Ramos	Borehole Diameter:	6-10 inches	Location: PG&E Topock, Topock, California
Drilling Asst:	H. Amezquita/ L. Amaya	Depth to First Water:	47.75 ft bgs	
Logger:	S. McGrane / G. Willford	Editor:	Kendra Keon	Project Number: RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
101		Topock - Alluvium Deposits	ML				
102							
103							
104							
105		Topock - Alluvium Deposits	GW				
106							
107							
108							
109		Topock - Alluvium Deposits	ML		(5.0 - 118.0') Cemex #3 MESH (8x10)	(5.0 - 118.0') 45.3 bags	(5.0 - 118.0') 57 bags (26%) Note: Lapis Lustre Sand, used >20% of calculated volume due to potential voids forming
110							
111							
112							
113							
114	IRZ-29-VAS-112-117 (760 ppb) 12/18/2019 15:12	Topock - Alluvium Deposits	SM				
115							
116							
117							
118	IRZ-29-VAS-116-120.5 (23 ppb) 12/19/2019 10:26	Topock - Alluvium Deposits	SM		(116.0 - 132.0') 4.0" Borehole		
119		Topock - Weathered Bedrock - conglomerate	ML		(118.0 - 128.0') Cemex # 2/12 MESH (16x30)	(118.0 - 128.0') 1.7 bags	(118.0 - 128.0') 2.5 bags (47%) Note: Lapis Lustre Sand, used >20% due to potential voids forming during drilling
120							

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Date Started:	12/19/2019	Surface Elevation:	501.6 ft amsl	Well ID: IRZ-29 Pilot
Date Completed:	12/20/2019	Northing (NAD83):	2102085.0	
Drilling Co.:	Cascade	Easting (NAD83):	7615788.9	Client: PG&E
Drilling Method:	Sonic Drilling	Total Depth:	132 ft bgs	Project: Final GW Remedy Phase 1
Driller Name:	Eddie Ramos	Borehole Diameter:	6-10 inches	Location: PG&E Topock, Topock, California
Drilling Asst:	H. Amezquita/ L. Amaya	Depth to First Water:	47.75 ft bgs	
Logger:	S. McGrane / G. Willford	Editor:	Kendra Keon	Project Number: RC000753.0051

Depth (ft)	Groundwater Sample ID	Geologic Formation	USCS Code	USCS Class	Well Construction	Calculated Material Volumes	Material Volumes Installed
121			ML				
122		Topock - Competent Bedrock - conglomerate					
123			NR				
124					(118.0 - 128.0') Cemex # 2/12 MESH (16x30)	(118.0 - 128.0') 1.7 bags	(118.0 - 128.0') 2.5 bags (47%) Note: Lapis Lustre Sand, used >20% due to potential voids forming during drilling
125							
126							
127							
128		Topock - Competent Bedrock - conglomerate					
129							
130					(128.0 - 132.0') Bentonite seal pellets	(128.0 - 132.0') 0.6 buckets	(128.0 - 132.0') 1 buckets (67%) Note: Pel-Plug (TR30) 3/8", used >20% due to potential voids forming during drilling
131							
132							
133							
134							
135							
136							
137							
138							
139							
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, blue water table symbol represents depth to water measured during the first VAS interval Note: Granule backfill material will be excavated from the pilot borehole during drilling for the construction of the well.

Date Started:	12/11/2019	Surface Elevation:	501.6 ft amsl	Boring No.: IRZ-29 Pilot
Date Completed:	12/19/2019	Northing (NAD83):	2102085.0	
Drilling Co.:	Cascade	Easting (NAD83):	7615788.9	Client: PG&E
Drilling Method:	Sonic Drilling	Total Depth:	132 ft bgs	Project: Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track Mount	Borehole Diameter:	6-10 inches	Location: PG&E Topock, Topock, California
Driller Name:	Eddie Ramos	Depth to First Water:	47.75 ft bgs	
Drilling Asst:	H. Amezguita/ L. Amaya	Sampling Method:	4 inch x 10 ft. Core Barrel	Project Number: RC000753.0051
Logger:	S. McGrane / G. Willford	Sampling Interval:	Continuous	
Editor:	Kendra Keon	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	SM				
22									
23									
24									
25									
26									
27	114				NR		(27.0 - 27.5') No recovery (NR); fell out of core barrel when bagging.	(27.0 - 31.0') Hard drilling.	
28				Topock - Alluvium Deposits	ML		(27.5 - 29.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML); brown (10YR 4/3); no plasticity; some very fine to very coarse grained sand, angular to subround; little granules to small pebbles, angular to subround; little clay; trace small cobbles, subround; dry; cobbles composed of conglomerate		
29				Topock - Alluvium Deposits	SC		(29.0 - 31.0') Topock - Alluvium Deposits; Clayey sand with gravel (SC); brown (7.5YR 4/4); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, subangular to round; little small cobbles, subangular to subround; little silt; little clay; moist; cobbles composed of conglomerate		
30				Topock - Alluvium Deposits	ML		(31.0 - 31.8') Topock - Alluvium Deposits; Sandy silt with gravel (ML); brown (10YR 4/3); no plasticity; some very fine to very coarse grained sand, angular to subround; little granules to small pebbles, angular to subround; little clay; trace small cobbles, subround; dry; cobbles composed of conglomerate	(31.0 - 33.0') Soft drilling.	
31				Topock - Alluvium Deposits	SC		(31.8 - 38.0') Topock - Alluvium Deposits; Clayey sand with gravel (SC); brown (7.5YR 5/4); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, subangular to round; little silt; little clay; trace small cobbles, subangular to subround; coarser clasts composed of metadiorite; moist to dry; cobbles composed of conglomerate	(33.0 - 34.5') Hard drilling.	
32							(33.25') dark grayish brown / dark yellowish brown (10YR 4/2); trace silt; dry; increase in sand, decrease in granules and pebbles, angular to subangular	(34.5 - 35.0') Soft drilling.	
33							(34.25') brown (7.5YR 5/2); coarser clasts composed of metadiorite; moist to dry; weak cementation; granules and pebbles angular to subround	(35.0 - 37.0') Hard drilling.	
34							(35.25') brown (7.5YR 4/4); moist		
35									
36									
37	120			Topock - Alluvium Deposits	ML		(38.0 - 40.5') Topock - Alluvium Deposits; Sandy silt with gravel (ML); brown (7.5YR 4/4); no plasticity; some very fine to very coarse grained sand, angular to subround; little granules to large pebbles, angular to subangular; little clay; coarser clasts composed of metadiorite; dry to moist; moderate cementation	(37.0 - 43.0') Normal drilling.	
38									
39									
40								(39.5 - 42.5')	

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Date Started:	12/11/2019	Surface Elevation:	501.6 ft amsl	Boring No.: IRZ-29 Pilot	
Date Completed:	12/19/2019	Northing (NAD83):	2102085.0		
Drilling Co.:	Cascade	Easting (NAD83):	7615788.9	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	132 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track Mount	Borehole Diameter:	6-10 inches	Location:	PG&E Topock, Topock, California
Driller Name:	Eddie Ramos	Depth to First Water:	47.75 ft bgs		
Drilling Asst:	H. Amezquita/ L. Amaya	Sampling Method:	4 inch x 10 ft. Core Barrel	Project Number:	RC000753.0051
Logger:	S. McGrane / G. Willford	Sampling Interval:	Continuous		
Editor:	Kendra Keon	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	120			Topock - Alluvium Deposits	ML		(40.5 - 41.3') 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 silt; little granules to very large pebbles, angular to subangular; little clay; coarser clasts composed of metadiorite; dry to moist	Core bag broke sample disturbed.	
42				Topock - Alluvium Deposits	ML				
43				Topock - Alluvium Deposits	SC		(41.3 - 42.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML); dark yellowish brown (10YR 4/4); no plasticity; some very fine to very coarse grained sand, angular to subround; little granules to very large pebbles, angular to subangular; little clay; trace small cobbles, subangular; coarser clasts composed of metadiorite; dry to moist; sample disturbed	(43.0 - 43.5') Hard drilling.	
44				Topock - Alluvium Deposits	SM		(42.0 - 43.5') Topock - Alluvium Deposits; Clayey sand with gravel (SC); brown (7.5YR 5/4); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, angular to subangular; little clay; trace small cobbles, subround; trace silt; coarser clasts composed of metadiorite; dry to moist; cobbles composed of conglomerate	(43.5 - 47.0') Normal drilling.	
45									
46							(43.5 - 44.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (10YR 5/3); very fine grained to very coarse grained, angular to subround; some silt; little granules to very large pebbles, angular to subangular; little clay; trace small cobbles, subangular; coarser clasts composed of metadiorite; dry to moist; cobbles composed of conglomerate		
47		IRZ-29-SS-45-50 12/20/2019 11:00		Topock - Alluvium Deposits	SM		(44.0 - 51.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 4/4); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, angular to subround; little silt; little clay; coarser clasts composed of metadiorite; dry to moist; weak cementation	(47.8') Approximate depth to groundwater.	
48							(45.25') moist		
49	62.4		IRZ-29-VAS-47-52 (4400 ppb) 12/16/2019 14:46				(48') brown (7.5YR 4/3); some silt; trace clay; coarser clasts composed of metadiorite; wet; increase in sand, decrease in granules and pebbles		
50							(48.75'); moist to wet		
51							(50'); some granules to large pebbles, angular to subangular; little silt; moist to wet; increase in sand, no clay		
52							(51'); some granules to very large pebbles, angular to subangular; trace clay; decrease in sand		
53		IRZ-29-SS-50-55 12/20/2019 11:05		Topock - Alluvium Deposits	SM		(51.5 - 53.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown / moderate brown (5YR 4/4); very fine grained to very coarse grained, angular to subround; some silt; little granules to medium pebbles, angular to subround; trace clay; moist to wet	(52.0 - 57.0') Hard drilling.	
54							(52'); and silt; decrease in sand		
55	63.6			Topock - Alluvium Deposits	SM		(53.0 - 59.5') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 5/4); very fine grained to medium grained, angular to subround; some silt; little granules to very large pebbles, angular to subangular; little coarse to very coarse grained sand, angular to subround; little clay; coarser clasts composed of metadiorite; moist to wet; moderate cementation; weak HCL reaction		
56									
57									
58		IRZ-29-SS-55-60 12/20/2019 11:10					(57') brown (7.5YR 4/4); little granules to large pebbles, angular to subangular; little silt; trace clay; increase sand, trace very large pebbles	(57.0 - 67.0') Hard drilling, fine grained sediments stretched during bagging.	
59	132								
60					ML		(59.5 - 64.5') Topock - Alluvium Deposits; Sandy silt with gravel		

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Date Started:	12/11/2019	Surface Elevation:	501.6 ft amsl	Boring No.: IRZ-29 Pilot	
Date Completed:	12/19/2019	Northing (NAD83):	2102085.0		
Drilling Co.:	Cascade	Easting (NAD83):	7615788.9	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	132 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track Mount	Borehole Diameter:	6-10 inches	Location:	PG&E Topock, Topock, California
Driller Name:	Eddie Ramos	Depth to First Water:	47.75 ft bgs		
Drilling Asst:	H. Amezguita/ L. Amaya	Sampling Method:	4 inch x 10 ft. Core Barrel	Project Number:	RC000753.0051
Logger:	S. McGrane / G. Willford	Sampling Interval:	Continuous		
Editor:	Kendra Keon	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	132	IRZ-29-SS-60-65 12/20/2019 11:15	IRZ-29-VAS-62-67 (2400 ppb) 12/17/2019 10:00	Topock - Alluvium Deposits	ML	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div>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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, blue water table symbol represents depth to water measured during the first VAS interval

Date Started:	12/11/2019	Surface Elevation:	501.6 ft amsl	Boring No.: IRZ-29 Pilot	
Date Completed:	12/19/2019	Northing (NAD83):	2102085.0		
Drilling Co.:	Cascade	Easting (NAD83):	7615788.9	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	132 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track Mount	Borehole Diameter:	6-10 inches	Location:	PG&E Topock, Topock, California
Driller Name:	Eddie Ramos	Depth to First Water:	47.75 ft bgs		
Drilling Asst:	H. Amezguita/ L. Amaya	Sampling Method:	4 inch x 10 ft. Core Barrel	Project Number:	RC000753.0051
Logger:	S. McGrane / G. Willford	Sampling Interval:	Continuous		
Editor:	Kendra Keon	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				Topock - Alluvium Deposits	ML		(7.5YR 4/4); low plasticity; some very fine to very coarse grained sand, angular to subround; little granules to medium pebbles, angular to subangular; little clay; coarser clasts composed of metadiorite; moist; very stiff (80.75'); trace clay; increase in silt, decrease in sand		
82		IRZ-29-SS-80-85 12/20/2019 11:40		Topock - Alluvium Deposits	GW		(81.5 - 81.8') Topock - Alluvium Deposits; Well graded gravel (GW); very dark greenish gray (GLE1 3/1); small cobbles to boulders, angular to subround; coarser clasts composed of metadiorite; dry; iron oxide staining; boulder and cobbles have been pulverized		
83				Topock - Alluvium Deposits	ML		(81.8 - 85.0') Topock - Alluvium Deposits; Sandy silt with gravel (ML); brown (7.5YR 4/3); medium plasticity; some very fine to very coarse grained sand, angular to subround; little granules to medium pebbles, angular to subround; little clay; coarser clasts composed of metadiorite; moist to wet; very stiff (83') reddish brown / moderate brown (5YR 4/4); little granules to large pebbles, angular to subround; decrease in silt, increase in granules and pebbles		
84	240			Topock - Alluvium Deposits	ML		(85.0 - 87.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); brown (7.5YR 4/4); very fine grained to very coarse grained, angular to subround; some silt; little granules to large pebbles, angular to subangular; little clay; coarser clasts composed of metadiorite; moist; sand increases, silt decreases with depth		
85				Topock - Alluvium Deposits	SM		(87.0 - 87.8') Topock - Alluvium Deposits; Sandy silt with gravel (ML); brown (7.5YR 4/3); medium plasticity; some very fine to very coarse grained sand, angular to subround; little granules to large pebbles, angular to subangular; little clay; coarser clasts composed of metadiorite; moist; very stiff		
86		IRZ-29-SS-85-90 12/20/2019 11:45		Topock - Alluvium Deposits	ML		(87.8 - 88.3') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown / moderate brown (5YR 4/4); very fine grained to very coarse grained; some silt; little granules to very large pebbles, angular to subangular; trace clay; coarser clasts composed of metadiorite; wet	(87.0 - 92.0') Normal drilling.	
87				Topock - Alluvium Deposits	SM		(88.3 - 90.5') Topock - Alluvium Deposits; Sandy silt with gravel (ML); reddish brown / moderate brown (5YR 4/4); medium plasticity; some very fine to very coarse grained sand, angular to subround; little granules to very large pebbles, angular to subangular; little clay; coarser clasts composed of metadiorite; moist		
88	60		IRZ-29-VAS-87-92 (<0.033 U ppb) 12/17/2019 14:41	Topock - Alluvium Deposits	ML		(90.5 - 95.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown / moderate brown (5YR 4/4); very fine grained to very coarse grained, angular to subround; some silt; little granules to very large pebbles, angular to subangular; little clay; coarser clasts composed of metadiorite; wet (92'); little silt; wet; increase in sand, increase in granules and pebbles, no clay	(92.0 - 103.0') Normal drilling.	
89				Topock - Alluvium Deposits	SM		(95.0 - 96.5') Topock - Alluvium Deposits; Sandy silt with gravel (ML); reddish brown / moderate brown (5YR 4/4); medium plasticity; and very fine to very coarse grained sand, angular to subround; little granules to very large pebbles, angular to subangular; wet		
90		IRZ-29-SS-90-95 12/20/2019 11:50		Topock - Alluvium Deposits	ML		(96.5 - 99.3') Topock - Alluvium Deposits; Sandy silt with gravel (ML); brown (7.5YR 4/4); low plasticity; some very fine to very coarse grained sand, angular to subround; little granules to very large pebbles, angular to subangular; little clay; coarser clasts composed of metadiorite; moist; hard		
91				Topock - Alluvium Deposits	ML		(99.3 - 104.5') Topock - Alluvium Deposits; Sandy silt with gravel (ML); reddish brown / moderate brown (5YR 4/4); medium		
92				Topock - Alluvium Deposits	ML				
93				Topock - Alluvium Deposits	ML				
94				Topock - Alluvium Deposits	ML				
95				Topock - Alluvium Deposits	ML				
96	180			Topock - Alluvium Deposits	ML				
97		IRZ-29-SS-95-100 12/20/2019 11:55		Topock - Alluvium Deposits	ML				
98				Topock - Alluvium Deposits	ML				
99				Topock - Alluvium Deposits	ML				
100				Topock - Alluvium Deposits	ML				





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Date Started:	<u>12/11/2019</u>	Surface Elevation:	<u>501.6 ft amsl</u>	Boring No.: <u>IRZ-29 Pilot</u>
Date Completed:	<u>12/19/2019</u>	Northing (NAD83):	<u>2102085.0</u>	
Drilling Co.:	<u>Cascade</u>	Easting (NAD83):	<u>7615788.9</u>	Client: <u>PG&E</u>
Drilling Method:	<u>Sonic Drilling</u>	Total Depth:	<u>132 ft bgs</u>	Project: <u>Final GW Remedy Phase 1</u>
Drill Rig Type:	<u>Boart Longyear Track Mount</u>	Borehole Diameter:	<u>6-10 inches</u>	Location: <u>PG&E Topock, Topock, California</u>
Driller Name:	<u>Eddie Ramos</u>	Depth to First Water:	<u>47.75 ft bgs</u>	
Drilling Asst:	<u>H. Amezguita/ L. Amaya</u>	Sampling Method:	<u>4 inch x 10 ft. Core Barrel</u>	Project Number: <u>RC000753.0051</u>
Logger:	<u>S. McGrane / G. Willford</u>	Sampling Interval:	<u>Continuous</u>	
Editor:	<u>Kendra Keon</u>	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	180	IRZ-29-SS-100-105 12/20/2019 12:00		Deposits	ML		plasticity; some granules to very large pebbles, angular to subangular; some very fine to very coarse grained sand, angular to subround; trace clay; coarser clasts composed of metadiorite; moist; hard	(103.0 - 104.0') Hard drilling.	
102				Topock - Alluvium Deposits					
103									
104									
105	120	IRZ-29-SS-105-110 12/20/2019 12:05		Topock - Alluvium Deposits	GW		(104.5 - 105.0') Topock - Alluvium Deposits; Well graded gravel (GW); very dark greenish gray (GLE1 3/1); boulders, angular to subangular; dry; pulverized boulder	(107.0 - 112.0') Normal drilling.	(107.0 - 132.0') No water used
106				Topock - Alluvium Deposits	ML	(105.0 - 113.5') Topock - Alluvium Deposits; Sandy silt with gravel (ML); reddish brown / moderate brown (5YR 4/4); medium plasticity; some very fine to very coarse grained sand, angular to subround; little granules to very large pebbles, angular to subangular; trace clay; coarser clasts composed of metadiorite; moist; hard			
107						(107') reddish brown (5YR 5/4); little clay; decrease in silt			
108						(109') reddish brown / moderate brown (5YR 4/4); trace clay; moist; increase in silt			
109	72	IRZ-29-SS-110-113.5 12/20/2019 12:10		Topock - Alluvium Deposits	SM		(113') little clay; dry; decrease in silt	(112.0 - 117.0') Intermittent zones of hard and soft drilling, potential confining units.	
110									
111									
112									
113		IRZ-29-VAS-112-117 (760 ppb) 12/18/2019 15:12		Topock - Alluvium Deposits	SM		(113.5 - 117.0') Topock - Alluvium Deposits; Silty sand with gravel (SM); reddish brown / moderate brown (5YR 4/4); very fine grained to very coarse grained, angular to subround; some granules to very large pebbles, angular to subangular; some silt; trace clay; coarser clasts composed of metadiorite; wet	(117.0 - 119.0') Normal drilling.	
114									
115									
116									
117		IRZ-29-SS-113.5-119 12/20/2019 12:15		Topock - Alluvium Deposits	SM		(117.0 - 119.0') Topock - Alluvium Deposits; Silty sand (SM); brown (10YR 4/3); very fine grained to very coarse grained, angular to round; some silt; little granules to very large pebbles, angular to subround; coarser clasts composed of metadiorite; wet	(119.0 - 123.0') Hard drilling.	
118									
119									
120									
		IRZ-29-SS-119-121 12/20/2019		Topock - Weathered Bedrock -	ML		(119.0 - 121.0') Topock - Weathered Bedrock - conglomerate; Sandy silt with gravel (ML); reddish brown / moderate brown (5YR 4/4); medium plasticity; some very fine to very coarse grained		

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, blue water table symbol represents depth to water measured during the first VAS interval

Date Started:	12/11/2019	Surface Elevation:	501.6 ft amsl	Boring No.: IRZ-29 Pilot	
Date Completed:	12/19/2019	Northing (NAD83):	2102085.0		
Drilling Co.:	Cascade	Easting (NAD83):	7615788.9	Client:	PG&E
Drilling Method:	Sonic Drilling	Total Depth:	132 ft bgs	Project:	Final GW Remedy Phase 1
Drill Rig Type:	Boart Longyear Track Mount	Borehole Diameter:	6-10 inches	Location:	PG&E Topock, Topock, California
Driller Name:	Eddie Ramos	Depth to First Water:	47.75 ft bgs		
Drilling Asst:	H. Amezguita/ L. Amaya	Sampling Method:	4 inch x 10 ft. Core Barrel	Project Number:	RC000753.0051
Logger:	S. McGrane / G. Willford	Sampling Interval:	Continuous		
Editor:	Kendra Keon	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	72	12:20		conglomerate	ML		sand, angular to subround; little granules to very large pebbles, angular to subangular; moist to wet	(120.5') During clean out run material kept falling out of the core barrel. Attempted push sampler down to 122 ft. bgs tagged at 120.5 ft bgs. (123.0 - 124.0') Core barrel locked up stopped cutting lost bottom foot of core. (124.0 - 127.0') Drill rods chattering heavily. (126.0 - 132.0') Lost core down hole. (127.0 - 129.0') Softer zone, drill rods stopped chattering. (129.0 - 130.0') Drill rods chattering. (130.0 - 132.0') Smoother drilling, rods stopped chattering.	
122			Topock - Competent Bedrock - conglomerate			(121.0 - 123.0') Topock - Competent Bedrock - conglomerate; (2.5YR4/3); dry; friable pulverized			
123					NR		(123.0 - 124.0') No recovery (NR); see drilling notes		
124	24						(124.0 - 132.0') Topock - Competent Bedrock - conglomerate; (2.5YR4/3); dry; friable pulverized		
125							(124.75'); moist		
126							(126'); core fell out of core barrel down hole and mixed with water column what was recovered was highly saturated		
127									
128					Topock - Competent Bedrock - conglomerate				
129									
130									
131									
132									
End of Boring at 132.0 'bgs.									
133									
134									
135									
136									
137									
138									
139									
140									

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