

AR	CAI	DIS Design & for natura built asset	Consultancy al and ets		Well Const	ruction Log	;	Sheet: 2 of 15
Date Starte		5/31/2019			_Surface Elevation:	547.35 ft amsl	Well ID: MV	N-87-192, MW-87-275
Date Comp					_Shallow Well Elevation:			•
Drilling Co.		Cascade			_Deep Well Elevation:	547.11 ft amsl	Client: PG&E	
Drilling Met		Sonic Drilling			_Northing (NAD83):	2102445.86		GW Remedy Phase 1
Driller Nam		Ramos / D		a	_Easting (NAD83):	7614401.93	Location: <u>PG&</u> E	E Topock, Needles, California
Drilling Ass		Amaya/ O.			_Borehole Diameter:	4-12 inches		D0000750 0054
Logger:					_Static Water Level:	See Log for Depths	Project Numbe	r: RC000753.0051
Editor: Total Depth		Sean McGrar 187 ft bgs	<u>1e</u>		_Development End Date: _Well Completion:	✓ Flush ☐ Stick-up ☐	 To Be Completed	in Well Vault
Total Bopti	··· <u>~</u>				_ vvoii Gompiouon.	- I lacit - Cuck up -	To Bo completed	
	oundwater ample ID	Geologic Formation	Code	USCS		onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
20 21		Topock - Alluvium Deposits	SW-SM		(0.1 - 172.0') 2" PVC Sch 80 Casing	(0.2 - 255.0') 2" PVC Sch 80 Casing		
22 23 24		Topock - Alluvium Deposits	SM					
24		Topock - Alluvium Deposits	SW-SM		(25.5 - 26.5') Centralizer (10.0 - 66.8') Portland Cement 5% Bentonite Type I, II and V with Hydrogel	(15.0 - 279.0') 10.0" Borehole	(10.0 - 66.8') 221.8 gallons	(10.0 - 66.8') 320 gallons (144%) Note: Grout seal, used >20% of the calculated volume due to potential voids forming during drilling and grout migration.
34 35		Topock - Alluvium Deposits	SW					
36 37			NR					
38		Topock - Alluvium Deposits	SM					

ARC	ADIS Design for natural built as	& Consultancy		Well Const	ruction Log		Sheet: 3 of 15
Date Started: Date Completed	05/31/2019	sets		_Surface Elevation: _Shallow Well Elevation:	547.35 ft amsl	Well ID: M	W-87-192, MW-87-275
Drilling Co.:	Cascade			_ Deep Well Elevation:	547.11 ft amsl	 Client: <u>PG&</u> l	E
Drilling Method:		I		 _Northing (NAD83):	2102445.86		GW Remedy Phase 1
Driller Name:	E. Ramos / D		ra	_Easting (NAD83):	7614401.93	-	E Topock, Needles, California
Drilling Asst:	L. Amaya/ O			Borehole Diameter:	4-12 inches		, ,
Logger:	G. Jeffers / C			_Static Water Level:	See Log for Depths	Project Numbe	er: RC000753.0051
Editor:	Sean McGra	ne		_Development End Date	: 7/9/2019		
Total Depth:	287 ft bgs			_Well Completion:		To Be Completed	l in Well Vault
Groundw Sample		USCS Code	USCS Class	Well C	Construction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
40	Topock - Alluvium Deposits	SM		(0.1 - 172.0') 2" PVC Sch 80 Casing	(0.2 - 255.0') 2" PVC Sch 80 Casing		
42 43 44 45 46 47	Topock - Alluvium Deposits	SW-SM					
48 49 50		NR		(10.0 - 66.8') Portland Cement 5% Bentonite Type I, II and V with Hydrogel	(15.0 - 279.0') 10.0" Borehole	(10.0 - 66.8') 221.8 gallons	(10.0 - 66.8') 320 gallons (144%) Note: Grout seal, used >20% of the calculated volume due to potential voids forming during drilling and grout migration.
51	Topock - Alluvium Deposits	SW-SM					

9/	ARC4	DIS Design for national built as	& Consultancy ural and ssets		Well Const	ruction Log	:	Sheet: 4 of 15
Date St	tarted:	05/31/2019			_Surface Elevation:	547.35 ft amsl	Well ID: MI	N-87-192, MW-87-275
Date C	ompleted:	07/31/2019			_Shallow Well Elevation:	547.26 ft amsl		
Drilling	Co.:	Cascade			_Deep Well Elevation:	547.11 ft amsl	Client: PG&E	<u> </u>
Drilling	Method:	Sonic Drilling	1		_Northing (NAD83):	2102445.86	Project: Final	GW Remedy Phase 1
Driller N	Name:	E. Ramos / [D. O'Mar	а	_Easting (NAD83):	7614401.93	Location: PG&I	<u> E Topock, Needles, California</u>
Drilling	Asst:	L. Amaya/ O			_Borehole Diameter:	4-12 inches	<u></u>	
Logger		G. Jeffers / C		rt	Static Water Level:	See Log for Depths	Project Numbe	r: RC000753.0051
Editor:		Sean McGra			 Development End Date:	•		
	Total Depth: 287 ft bgs				Well Completion:		To Be Completed	in Well Vault
					'			
Depth (ft)	Groundwat Sample II		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
60			NR		(0.1 - 172.0') ————————————————————————————————————	(0.2 - 255.0') 2" PVC Sch 80		
L -					Casing	Casing		
61		Topock -	SW-SM					
LJ		Deposits						
62								
63					(10.0 - 66.8')			(10.0 - 66.8') 320 gallons (144%) Note: Grout seal, used >20% of
73/20		Topock -	SM		Portland Cement 5% Bentonite Type		(10.0 - 66.8') 221.8 gallons	the calculated volume due to
E		Deposits			I, II and V with Hydrogel		22 1.0 gallono	potential voids forming during drilling and grout migration.
64_					riydroger			
W -								
65_		Topock -						
- H		Alluvium	SW					
66		Deposits			(65.5 - 66.5')			
ğ					Centralizer			
₽ <u>67</u>								
GB.								
68								
E .					(00.0, 74.0))			(66.8 - 71.0') 5.5 bags (186%)
69 _					(66.8 - 71.0') Bentonite seal chips		(66.8 - 71.0')	Note: Seal above high solids grout, used >20% for the calculated
Y DAY		Topock -	SM		Enviroplug medium chips	(45.0070.01)	`2.96 bags ´	volume due to chips potentially
00 70		Deposits			onipo	(15.0 - 279.0') 10.0" Borehole		settling into the high solids grout.
2025								
# -71-								
ğ72			+	*****				
- J								
73								
ğ								
ĕ74								
75					(71.0 - 149.7')			(71.0 - 149.7') 320 gallons (108%)
COME		Topode			Agua Guard High Solids Bentonite		(71.0 - 149.7') 295.2 gallons	Note: Annular seal across the screen intervals of the wells in the
~ 76 _		Topock - Alluvium	SW-SM		Grout		200.2 gallorio	MW-87s borehole.
GRA .		Deposits						
JWS/S 77								
L''								
5 70 T								
8 78 —								
79								
ETA								
5					•	= below ground surface, a		
<u></u>						ory reporting limit, NR = no		
g water ta	able mark	s represent de	epth to w	ater (ft.	. bgs.) measured post dev	elopment for the shallow w	ell and deep well re	espectively; installed in

₩W-87d

ARCADIS Design & Consultancy for natural and built assets					Well Const	ruction Log	;	Sheet: 5 of 15
Date S	started:	05/31/2019			_Surface Elevation:	547.35 ft amsl	Well ID: M\	<i>N</i> -87-192, MW-87-275
	-	07/31/2019			_Shallow Well Elevation:			•
Drilling		Cascade			_Deep Well Elevation:	547.11 ft amsl	Client: PG&E	
_	Method:	Sonic Drilling			_Northing (NAD83):	2102445.86	-	GW Remedy Phase 1
Driller I		E. Ramos / D		a	_Easting (NAD83):	7614401.93	Location: <u>PG&</u>	E Topock, Needles, California
Drilling		L. Amaya/ O.			_Borehole Diameter:	4-12 inches		
Logge		G. Jeffers / C		<u>rt</u>	_Static Water Level:	See Log for Depths	Project Numbe	r: RC000753.0051
Editor: Total D		Sean McGrai 287 ft bgs	ne		_Development End Date _Well Completion:	: <u>7/9/2019</u>	— To Be Completed	in Wall Vault
TOtal L	ериі.				_ Well Completion.	△ Flusii	To be Completed	
Depth (ft)	Groundwat Sample II		Code	USCS	Well Construction		Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
80 81 82 83 84 85 86		Topock - Alluvium Deposits	SW-SM		(0.1 - 172.0') 2" PVC Sch 80 Casing	(0.2 - 255.0') 2" PVC Sch 80 Casing		Note: 1/2 Bag of Halliburtion medium chips and 1/2 bag of Cemex #3 MESH (8x20) Lapis Lustre Sand installed in annulus to determine depth to high solids grout.
87	MW-R-VAS 92-97 (45 ppb) 5/13/2019 11:44	Topock - Alluvium Deposits	SM		(71.0 - 149.7') Agua Guard High Solids Bentonite Grout	(15.0 - 279.0') 10.0" Borehole	(71.0 - 149.7') 295.2 gallons	(71.0 - 149.7') 320 gallons (108%) Note: Annular seal across the screen intervals of the wells in the MW-87s borehole.
99								

AF	RCAI	DIS Design & Of for natura built asset	Consultancy Il and ts		Well Const	ruction Log	:	Sheet: 6 of 15
Date Star		05/31/2019			_Surface Elevation:	547.35 ft amsl	Well ID: M	<i>N</i> -87-192, MW-87-275
	•	07/31/2019			_Shallow Well Elevation:			·
Drilling Co		Cascade Sonic Drilling			_Deep Well Elevation:	547.11 ft amsl	Client: PG&I	E GW Remedy Phase 1
Drilling Me Driller Nar		E. Ramos / D.	O'Mai	a	_Northing (NAD83): _Easting (NAD83):	2102445.86 7614401.93	•	E Topock, Needles, California
Drilling As		Amaya/ O.			_Borehole Diameter:	4-12 inches		<u> </u>
Logger:		G. Jeffers / C.	Stewa	rt	_Static Water Level:	See Log for Depths	Project Numbe	r: RC000753.0051
Editor:		Sean McGran	<u>e</u>		_Development End Date:			
Total Dep	oth: <u>2</u>	287 ft bgs			_Well Completion:	X Flush	To Be Completed	in Well Vault
	roundwater Sample ID	Geologic Formation	Code	USCS		onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
	W-R-VAS- 117-122 5.8 ppb) /14/2019 10:14	Topock - Alluvium Deposits Topock - Alluvium Deposits	SM		(105.5 - 106.5') Centralizer (71.0 - 149.7') Agua Guard High Solids Bentonite Grout	(0.2 - 255.0') 2" PVC Sch 80 Casing (15.0 - 279.0') 10.0" Borehole	(71.0 - 149.7') 295.2 gallons	Note: 1 Bag of Halliburtion medium chips and 1/2 bag of Cemex #3 MESH (8x20) Lapis Lustre Sand installed in annulus to determine depth to high solids grout. (71.0 - 149.7') 320 gallons (108%) Note: Annular seal across the screen intervals of the wells in the MW-87s borehole.

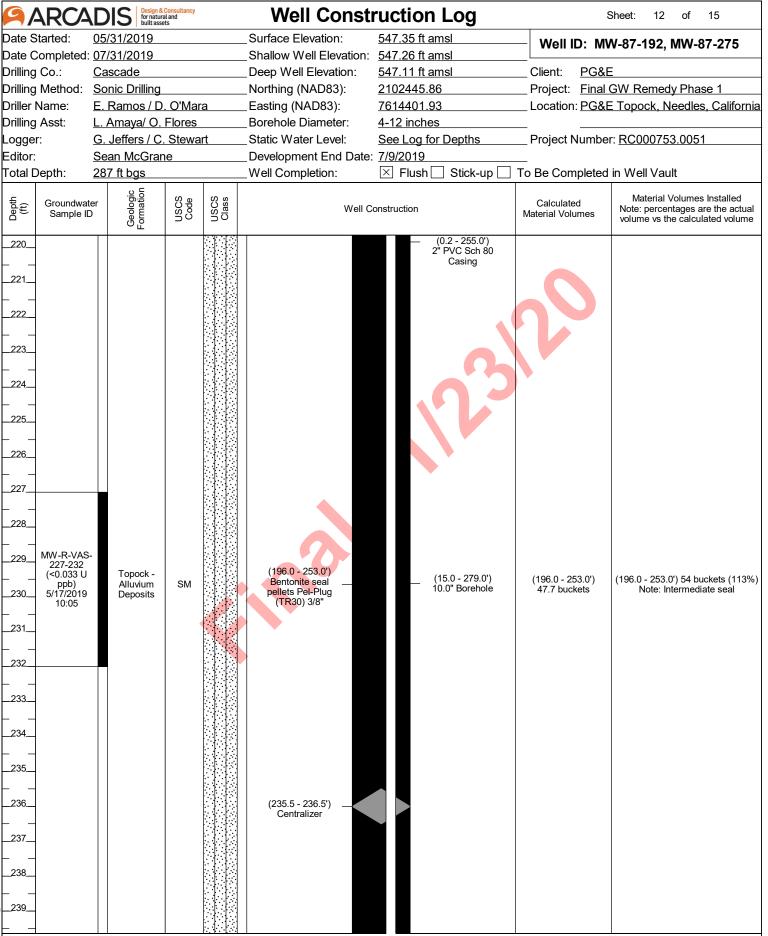
9/	ARC4	DIS Design & for nature built asset	Consultancy al and ets		Well Const	ruction Log	:	Sheet: 7 of 15
Date S	Started:	05/31/2019			_Surface Elevation:	547.35 ft amsl	Well ID: MI	<i>N</i> -87-192, MW-87-275
	•	07/31/2019			_Shallow Well Elevation:	547.26 ft amsl		
Drilling		Cascade			_Deep Well Elevation:	547.11 ft amsl	Client: <u>PG&I</u>	
-		Sonic Drilling			_Northing (NAD83):	2102445.86		GW Remedy Phase 1
	Name:	E. Ramos / D		ra	_Easting (NAD83):	7614401.93	Location: <u>PG&I</u>	<u> E Topock, Needles, California</u>
Drilling		L. Amaya/ O.			_Borehole Diameter:	4-12 inches		
Logge					_Static Water Level:	See Log for Depths	Project Numbe	r: RC000753.0051
Editor:		Sean McGrar	ne		_Development End Date:			
Total [Depth:	287 ft bgs			_Well Completion:		To Be Completed	in Well Vault
Depth (ft)	Groundwat Sample II		USCS	USCS Class	Well C	onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
120	MW-R-VAS 117-122 (5.8 ppb) 5/14/2019 10:14	Topock - Alluvium Deposits Topock - Alluvium Denosits	GM		(71.0 - 149.7') Agua Guard High	(15.0 - 279.0') 10.0" Borehole	(71.0 - 149.7') 295.2 gallons	(71.0 - 149.7') 320 gallons (108%) Note: Annular seal across the screen intervals of the wells in the
130		Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - Alluvium Deposits	GM ML SM		Solids Bentonite Grout		295.2 gallons	MW-87s borehole.

9/	ARC4	DIS Design & for nature built ass	Consultancy al and ets		Well Const	ruction Log	5	Sheet: 8 of 15
Date S	started:	05/31/2019			_Surface Elevation:	547.35 ft amsl	Well ID: MV	V-87-192, MW-87-275
Date C	completed:	07/31/2019			_Shallow Well Elevation:	547.26 ft amsl		101 102, 1111 01 210
Drilling	Co.:	Cascade			_Deep Well Elevation:	547.11 ft amsl	Client: PG&E	
Drilling	Method:	Sonic Drilling			_Northing (NAD83):	2102445.86	Project: <u>Final</u>	GW Remedy Phase 1
Driller I		E. Ramos / D	<u>. O'Maı</u>	a	_Easting (NAD83):	7614401.93	Location: <u>PG&E</u>	Topock, Needles, California
Drilling	Asst:	L. Amaya/ O.			Borehole Diameter: 4-12 inches			
Logge		G. Jeffers / C		ırt	_Static Water Level:	See Log for Depths	Project Numbe	r: RC000753.0051
Editor:		Sean McGrar	ne		_Development End Date:			
Total D	Depth:	287 ft bgs			_Well Completion:		To Be Completed	in Well Vault
Depth (ft)	Groundwat Sample II		USCS Code	USCS Class	Well Construction		Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
140		Topock - Alluvium Deposits	SM		(71.0 - 149.7') Agua Guard High Solids Bentonite Grout (147.5 - 148.5') Centralizer	(0.2 - 255.0') 2" PVC Sch 80 Casing (15.0 - 279.0') 10.0" Borehole	(71.0 - 149.7') 295.2 gallons	(71.0 - 149.7') 320 gallons (108%) Note: Annular seal across the screen intervals of the wells in the MW-87s borehole.
150	MW-R-VAS 151-156 (<0.033 U ppb) 5/15/2019 10:20	Topock - Alluvium Deposits Topock - Alluvium Deposits	GM		(149.7 - 170.0') Bentonite seal pellets Pel-Plug (TR30) 3/8"		(149.7 - 170.0') 16.3 buckets	(149.7 - 170.0') 15 buckets (92%) Note: Seal above filter pack

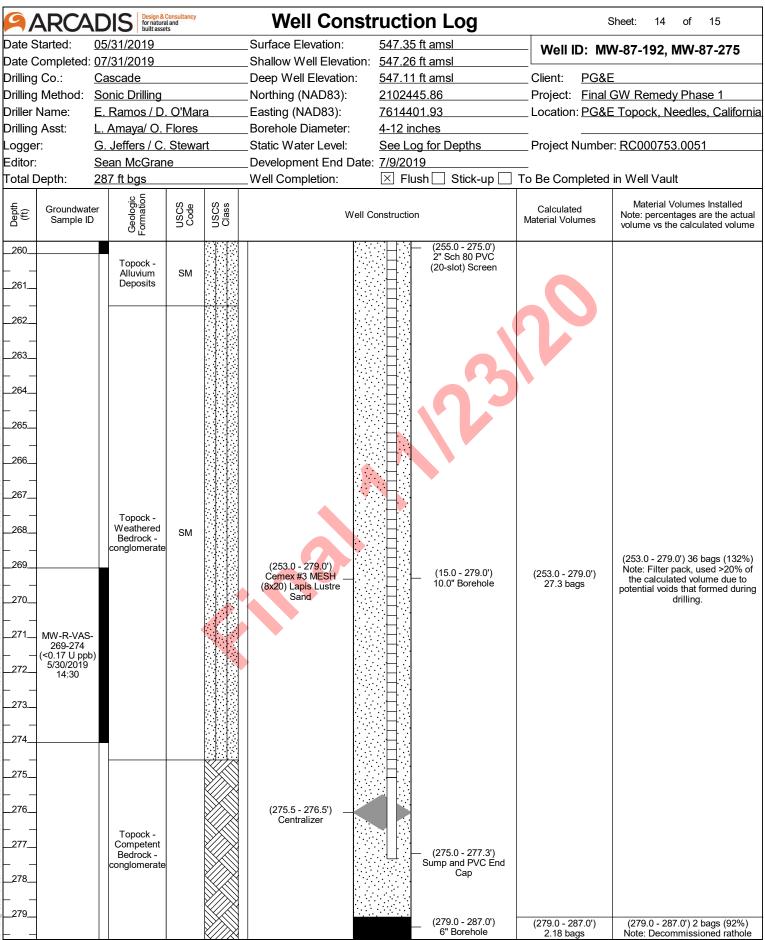
ADIS Design 8 for natur built ass	Consultancy ral and ets		Well Const	ruction Log	\$	Sheet: 9 of 15		
05/31/2019			_Surface Elevation:	547.35 ft amsl	Well ID: MV	<i>N</i> -87-192, MW-87-275		
l: <u>07/31/2019</u>								
Cascade			- •					
-						GW Remedy Phase 1		
		a	,		Location: <u>PG&E</u>	<u> E Topock, Needles, California</u>		
-						D0000750 0054		
		<u>rt</u>		- ·	Project Numbe	r: <u>RC000753.0051</u>		
	<u>1e</u>				— To Be Completed	_ o Be Completed in Well Vault		
	USCS	USCS	·	·	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume		
Topock - Alluvium Deposits	GW		(0.1 - 172.0') 2" PVC Sch 80 Casing (149.7 - 170.0') Bentonite seal pellets Pel-Plug (TR30) 3/8"	— (0.2 - 255.0') 2" PVC Sch 80 Casing — (15.0 - 279.0') 10.0" Borehole	(149.7 - 170.0') 16.3 buckets	(149.7 - 170.0') 15 buckets (92%) Note: Seal above filter pack		
Topock -	SM-SM		(172.0 - 192.0') 2" Sch 80 PVC (20-slot) Screen (170.0 - 196.0') Cemex #3 MESH (8x20) Lapis Lustre Sand		(170.0 - 196.0') 25.2 bags	(170.0 - 196.0') 30.75 bags (122%) Note: Filter pack, used >20% of the calculated volume due to potential voids that formed during drilling.		
	05/31/2019 d: 07/31/2019 Cascade Sonic Drilling E. Ramos / D L. Amaya/ O. G. Jeffers / C Sean McGrar 287 ft bgs ater OB BOOK Topock - Alluvium Deposits	O5/31/2019 Cascade Sonic Drilling E. Ramos / D. O'Mar L. Amaya/ O. Flores G. Jeffers / C. Stewa Sean McGrane 287 ft bgs ater OF STEWA SONO Topock - Alluvium Deposits Topock - Alluvium Deposits Topock - SW-SM	O5/31/2019 Cascade Sonic Drilling E. Ramos / D. O'Mara L. Amaya/ O. Flores G. Jeffers / C. Stewart Sean McGrane 287 ft bgs ater ID Topock - Alluvium Deposits Topock - SW-SM Deposits SW-SM Topock - SW-SM Topock - SW-SM Deposits	D5/31/2019 Surface Elevation: Shallow Well Elevation: Cascade Deep Well Elevation: Northing (NAD83): E. Ramos / D. O'Mara E. Ramos / D. O'Mara L. Amaya/ O. Flores G. Jeffers / C. Stewart Sean McGrane Development End Date: Well Completion: Topock Alluvium Deposits Topock Alluvium Deposits Topock Alluvium Deposits Topock Alluvium Deposits SM Topock Alluvium Deposits Topock Alluvium Deposits Topock Alluvium Deposits Topock Alluvium Deposits SM Topock Alluvium Deposits SM Topock Alluvium Deposits Topock Alluvium Deposits Alluvium Deposits Alluvium Deposits Alluvium Deposits Alluvium Deposits Alluvium Deposits Alluv	Surface Elevation: 547.35 ft ams	Surface Elevation: S47.35 ft.ams Well ID: M		

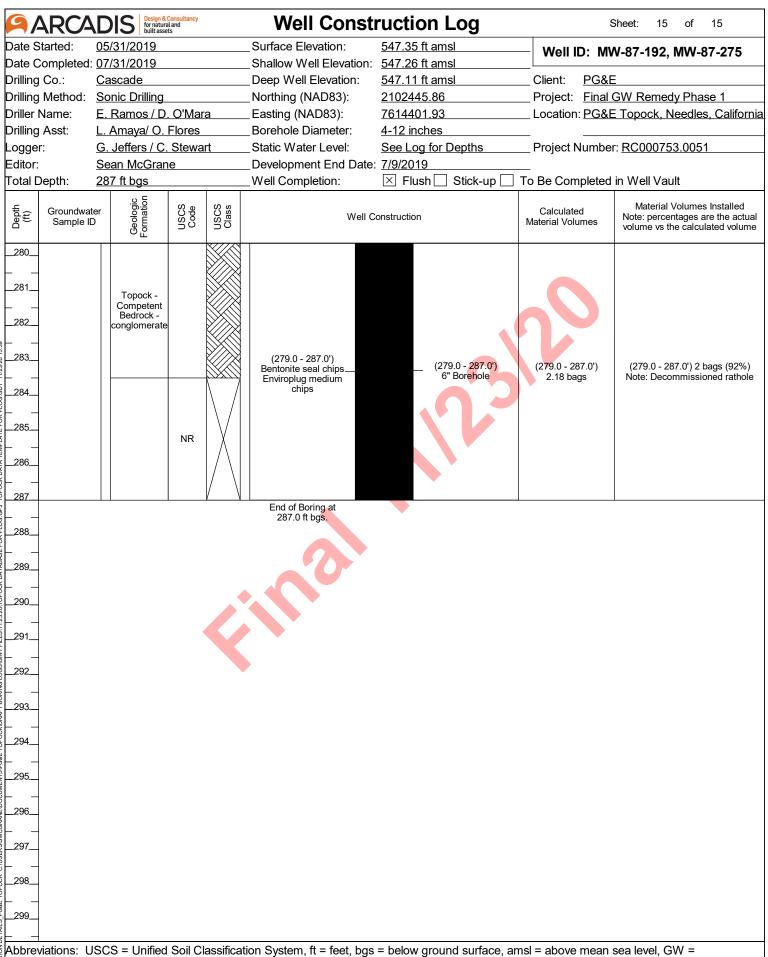
9/	ARC4	DIS Design & for natural built ass	& Consultancy ral and sets		Well Const	ruction Log	;	Sheet: 10 of 15
Date S	tarted:	05/31/2019			_Surface Elevation:	547.35 ft amsl	Well ID: M\	N-87-192, MW-87-275
	-	07/31/2019			_Shallow Well Elevation:	547.26 ft amsl		•
Drilling		Cascade			_Deep Well Elevation:	547.11 ft amsl	Client: PG&	
_		Sonic Drilling			_Northing (NAD83):	2102445.86	•	GW Remedy Phase 1
Driller N		E. Ramos / D		a	_Easting (NAD83):	7614401.93	Location: PG&I	<u> Topock, Needles, California</u>
Drilling	Asst:	L. Amaya/ O.			_Borehole Diameter:	4-12 inches		
Logger					_Static Water Level:	See Log for Depths	Project Numbe	r: RC000753.0051
Editor:		Sean McGrai	ne		_Development End Date:			
Total D	epth:	287 ft bgs			_Well Completion:	✓ Flush	To Be Completed	in Well Vault
Depth (ft)	Groundwat Sample II	Geol	Code	USCS		onstruction	Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
180		Alluvium Deposits	SW-SM		(172.0 - 192.0') — :	(0.2 - 255.0') 2" PVC Sch 80		
		Topock - Alluvium	SM		(20-slot) Screen	Casing		
181		Deposits	_					
182		Topock -						
		Alluvium	ML					
183		Deposits						
184								
185								
186								
187								(470.0400.01).00.751(4000(/)
					(170.0 - 196.0)		(170.0 - 196.0')	(170.0 - 196.0') 30.75 bags (122%) Note: Filter pack, used >20% of
188					Cemex #3 MESH (8x20) Lapis Lustre	掛樹	25.2 bags	the calculated volume due to potential voids that formed during
					Sand	 		drilling.
189								
						(15.0 - 279.0')		
190						10.0" Borehole		
191		Topock -]		
		Alluvium Deposits	SM					
_192		Берозітэ						
193					(192.5 - 193.5')			
					Centralizer			
194	MW-R-VAS 192-197	-			(400 0 404 0)			
	(<0.033 U				(192.0 - 194.3') —			
195	ppb) 5/16/2019				Cap	해 [해		
L	09:55							
196								
197								
					(196.0 - 253.0')			
 198					Bentonite seal		(196.0 - 253.0') 47.7 buckets	(196.0 - 253.0') 54 buckets (113%) Note: Intermediate seal
					pellets Pel-Plug (TR30) 3/8"		TI.I DUCKES	Note. intermediate seal
 199					, ,			
	:: II	000 - 11-:5-	10-10	<u> </u>		= bolow ground surface or		

9/	ARCA	DIS Design & for natura built asse	Consultancy all and ts		Well Const	ruction Log	S	sheet: 11 of 15	
Date S	tarted:	05/31/2019			_Surface Elevation:	547.35 ft amsl	Well ID: MV	V-87-192, MW-87-275	
Date C	completed:	07/31/2019			_Shallow Well Elevation:	547.26 ft amsl	_ VVCII ID. IVIV	V-07-132, WWV-07-270	
Drilling	Co.:	Cascade			_Deep Well Elevation:	547.11 ft amsl	_ Client: PG&E		
Drilling	Method:	Sonic Drilling			_Northing (NAD83):	2102445.86	_ Project: Final 0	GW Remedy Phase 1	
Driller I		E. Ramos / D		a	_Easting (NAD83):	7614401.93	Location: <u>PG&E</u>	Topock, Needles, California	
Drilling	Asst:	L. Amaya/ O.			_Borehole Diameter:	4-12 inches			
Loggeı		G. Jeffers / C.		rt	_Static Water Level: <u>See Log for Depths</u> Project Number: <u>RC</u>		: RC000753.0051		
Editor:		Sean McGran	ie		_Development End Date:		_		
Total D	epth:	287 ft bgs			_Well Completion:	Vell Completion:			
Depth (ft)	Groundwat Sample ID		USCS	USCS Class			Calculated Material Volumes	Material Volumes Installed Note: percentages are the actual volume vs the calculated volume	
	Sample IL	Topock - Alluvium Deposits	SM SM	SO D	(196.0 - 253.0') Bentonite seal pellets Pel-Plug (TR30) 3/8"	— (0.2 - 255.0') 2" PVC Sch 80 Casing — (15.0 - 279.0') 10.0" Borehole	(196.0 - 253.0') 47.7 buckets	volume vs the čalculated volume (196.0 - 253.0') 54 buckets (113%) Note: Intermediate seal	
 _219									



9/	ARC4	DIS Design & for nature built asso	Consultancy ral and ets		Well Const	ruction Log	;	Sheet: 13 of 15
Date S	tarted:	05/31/2019			_Surface Elevation:	547.35 ft amsl	Well ID: M\	N-87-192, MW-87-275
Date C	ompleted:	07/31/2019			_Shallow Well Elevation:	547.26 ft amsl		
Drilling	Co.:	Cascade			_Deep Well Elevation:	547.11 ft amsl	Client: PG&E	≣
Drilling	Method:	Sonic Drilling			_Northing (NAD83):	2102445.86	Project: <u>Final</u>	GW Remedy Phase 1
Driller I	Name:	E. Ramos / D	. O'Maı	ra	_Easting (NAD83):	7614401.93	Location: <u>PG&</u>	<u> E Topock, Needles, California</u>
Drilling	Asst:	L. Amaya/ O.	Flores		_Borehole Diameter:	4-12 inches		
Loggei		G. Jeffers / C	. Stewa	ırt	_Static Water Level:	See Log for Depths	Project Numbe	r: RC000753.0051
Editor:		Sean McGrar	ne		_Development End Date		_	
Total D	epth:	287 ft bgs	<u> </u>		_Well Completion:	X Flush	To Be Completed	in Well Vault
Depth (ft)	Groundwat Sample ID		USCS	USCS Class	Well C	Well Construction		Material Volumes Installed Note: percentages are the actual volume vs the calculated volume
240		Topock - Alluvium Deposits	SM	2	(196.0 - 253.0') Bentonite seal pellets Pel-Plug (TR30) 3/8"	— (0.2 - 255.0') 2" PVC Sch 80 Casing	(196.0 - 253.0') 47.7 buckets	(196.0 - 253.0') 54 buckets (113%) Note: Intermediate seal
248		Topock - Alluvium Deposits	GM			(15.0 - 279.0') 10.0" Borehole		
254	MW-R-VAS 255-260 (<0.17 U ppt 5/29/2019 12:00		SM		(253.0 - 279.0') Cemex #3 MESH (8x20) Lapis Lustre Sand	(255.0 - 275.0') 2" Sch 80 PVC (20-slot) Screen	(253.0 - 279.0') 27.3 bags	(253.0 - 279.0') 36 bags (132%) Note: Filter pack, used >20% of the calculated volume due to potential voids that formed during drilling.
					<u></u>			1 1 0 1 1





groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery; 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-87d

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	She	eet: 1 of	15
Date S	started:	05/11/2	2019	_	Surface	Elevat	tion: <u>547.35 ft amsl</u>	Boring No.:	MW-87d	
	•	ted: <u>06/04/2</u>			Northing		•			
Drilling		Casca			Easting	•	•	Client: PG&E		
Drilling					Total De	•	287 ft bgs	Project: Final GW Remedy Phase 1 Location: PG&E Topock, Needles,		
Drill Ri Driller l			nic Truck Mou nos / D. O'Ma		Borehol		neter: <u>4-12 inches</u> Water: <u>91.1 ft bgs</u>	Californ	•	ies,
Drilling			aya/ O. Flores		Samplin		_)51
Logge			ers / C. Stewa		Samplin	-		i rojectivamber.	10000733.00	70 1
Editor:			//cGrane		Convert	-				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
1	60			Topock - Alluvium Deposits	SM		(0.0 - 7.0') Topock - Alluvium Deposits; Silty s (SM); brown (10YR 5/3); very fine grained to v angular to subround; little granules to very large to subround; little silt; trace angular to subround clasts compose of granite, basalt and metadic	rery coarse grained, ge pebbles, angular nd; dry; coarser	(0.0 - 5.0') Hand augered to 5 feet bgs for utility clearance. (3.5 - 5.0') Lost 12" casing down hole.	(0.0 - 27.0') No water used
	84	No Sieve Samples Collected		Topock - Alluvium Deposits	SW-SM		(7.0 - 14.0') Topock - Alluvium Deposits; Well silt and gravel (SW-SM); brown (10YR 5/3); we very coarse grained, angular to subround; little large pebbles, angular to subangular; little silt subangular; trace mica; coarser clasts compodry (14.0 - 17.0') No recovery (NR)	ery fine grained to e granules to very ;; trace angular to	(13.0') 12 inch casing started to fall added 2 more feet of casing and set at 15 ft. bgs.	
16	120			Topock - Alluvium Deposits Topock - Alluvium Deposits	SM SW-SM		(17.0 - 19.0') Topock - Alluvium Deposits; Silty (SM); brown (10YR 5/3); very fine grained to an angular to subround; some granules to very late to subangular; little silt; trace angular to subart coarser clasts composed of metadiorite; dry; it (19.0 - 21.0') Topock - Alluvium Deposits; We silt and gravel (SW-SM); brown (10YR 5/3); we very coarse grained, angular to subround; son	rery coarse grained, repepables, angular ngular; trace mica; ron oxide staining		
						10 0 0 10 E	9			·

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 2 of	15
Date S	tarted:	05/11/2	2019		Surface	Elevat	ion: <u>547.35 ft amsl</u>	Boring No.	MW-87d	
	•	ted: <u>06/04/2</u>			Northing		•	_	<u></u>	
Drilling		Cascad			Easting	•	•	Client: PG&E		
Drilling					Total De	•	287 ft bgs		W Remedy Pr	
Drill Ri			ic Truck Mou		Borehol			Location: PG&E	•	les,
Driller			nos / D. O'Mai		-		Water: 91.1 ft bgs	_ Californ		F.4
Drilling			ya/ O. Flores		Samplin	-		Project Number:	RC000753.00	51
Logge		·	ers / C. Stewa	<u>art</u>	Samplin	-		-		
Editor:		<u>Sean N</u>	/IcGrane		Convert	ed to v	Vell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
 21				Topock - Alluvium Deposits	SW-SM		large pebbles, angular to subangular; little sil subangular; trace boulders, subangular; trace composed of metadiorite; dry	e mica; coarser clasts		
	120			Topock - Alluvium Deposits	SM		(21.0 - 24.0') Topock - Alluvium Deposits; Sil (SM); brown (10YR 5/3); very fine grained to angular to subround; some granules to very leto subangular; little silt; trace angular to suba coarser clasts composed of metadiorite; dry	very coarse grained, arge pebbles, angular		
24 25 26 27							(24.0 - 33.0') Topock - Alluvium Deposits; We silt and gravel (SW-SM); brown (10YR 5/3); very coarse grained, angular to subround; so large pebbles, angular to subangular; little sil subangular; trace mica; coarser clasts computy	very fine grained to me granules to very t; trace angular to	(27.0. 22.0)	(27.0 22.01)
28 29 30 31	60	No Sieve Samples Collected		Topock - Alluvium Deposits	SW-SM		(28.5'); pulverized boulder (29'); and granules to very large pebbles, and decrease in sand	jular to subangular;	(27.0 - 32.0') Core barrel and sediments in core hot, slow drilling due to tight formation and soils falling out of core during clean out runs.	(27.0 - 32.0') 10 gallons of water used; 0 gallons of water recovered; 10 gallons of water lost
32 33							(32'); some granules to very large pebbles, an increase in sand	ngular to subangular;	(32.0 - 37.0') Core barrel and sediments	(32.0 - 37.0') 5 gallons of water used; 0
34 35	36			Topock - Alluvium Deposits	sw		(33.0 - 35.0') Topock - Alluvium Deposits; Wogravel (SW); brown (10YR 5/3); very fine grained, angular to subround; some granules pebbles, angular to subangular; trace silt; traclasts composed of metadiorite; dry	ned to very coarse to very large	in core hot, slow drilling due to tight formation and soils falling out of core during clean out runs.	gallons of water recovered; 5 gallons of water lost
 36 37					NR		(35.0 - 37.0') No recovery (NR)			
38 39 40	60			Topock - Alluvium Deposits	SM		(37.0 - 41.0') Topock - Alluvium Deposits; Sil (SM); brown (10YR 5/3); very fine grained to angular to subround; some silt; little granules pebbles, angular to subangular; trace clay; traclasts composed of metadiorite; dry	very coarse grained, to very large	(37.0 - 47.0') Slow drilling due to tight formation and soils falling out of core during clean out runs.	(37.0 - 42.0') 5 gallons of water used; 0 gallons of water recovered; 5 gallons of water lost
Abbre	/iations	s: USCS = L	Inified Soil Cla	assification	System	, ft = f	eet, bgs = below ground surface, am	sl = above mean se	a level, GW =	

groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; wells MW-87-192, MW-87-275 installed in borehole

9/	۱RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	S	heet: 3 of	15
Date S				_	Surface		<u>- </u>	Borina No	.: <u>MW-87d</u>	
Date C	•				Northing		•		<u> </u>	
Drilling		<u>Cascac</u>			Easting	`	,	Client: PG&E		1
Drilling Drill Ri			orilling Dic Truck Mou	unt	Total De Borehol	•	287 ft bgs neter: 4-12 inches	Project: Final (Location: PG&E	GW Remedy Pl	
Driller I			nos / D. O'Ma				Water: 91.1 ft bgs	Califor	-	ies,
Drilling			ıya/ O. Flores		Samplin		——————————————————————————————————————	Project Number:)51
Logge			ers / C. Stewa		Samplin	•				
Editor:		Sean M	/IcGrane		Convert	-				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description		Drilling Notes	Drilling Fluid
				Topock - Alluvium	SM					
41	60			Deposits			(41.0 - 47.0') Topock - Alluvium Deposits; We	ell graded sand with		
F -							silt and gravel (SW-SM); brown (10YR 5/3); very coarse grained, angular to subround; sor	ery fine grained to		
42							large pebbles, angular to subangular; little silts clasts composed of metadiorite; dry; trace oxi	; trace mica; coarser		(42.0 - 270.0')
 43							clasts composed of metadionte, dry, trace on	dized stairing.		No water used
43										
44				Topock - Alluvium	SW-SM					
	60			Deposits	500-5101					
45	00									
46										
47				<u></u>			(47.0 - 50.0') No recovery (NR); core bag brok	re soils fell into	(47.0 - 52.0')	
						$ \setminus $	hopper	io cono ion into	Drill rods chattering,	
48									slow drilling due to tight	
					NR	X			formation and	
49									soils falling out of core during	
50		No Sieve							clean out runs.	
50	48	Samples Collected					(50.0 - 57.0') Topock - Alluvium Deposits; We silt and gravel (SW-SM); brown (10YR 5/3); w	Ill graded sand with	1	
51	40						very coarse grained, angular to subangular; little silf	tle granules to very		
							mica; coarser clasts composed of metadiorite			
52									(F2.0, F4.0')	
<u> </u>									(52.0 - 54.0') Slow drilling	
53				Topock -					due to tight formation and	
				Alluvium	SW-SM				soils falling out of core during	
54				Deposits			(54.0 - 57.0'); some granules to very large pel	obles, angular to	(54.0 - 72.0')	
 							subangular; decrease in sand, no clay	-	Drill rods chattering,	
55									slow drilling due to tight	
	36								formation and	
									soils falling out of core during	
57				L	_L			. = =	clean out runs.	
						\ /	(57.0 - 60.0') No recovery (NR); see drilling no	otes	(57.0 - 60.0') Core bag	
58						$ \setminus $			broke, core lost in hopper.	
<u> </u>	24				NR	\			Ioot III Noppel.	
59						/\				
<u> </u>						/ \				
60						<u>/</u>	V			

9/-	۱RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	Sh	eet: 4 of	15
Date S					Surface	Eleva		Boring No.	: MW-87d	
		ted: <u>06/04/2</u>			Northing		•	_		
Drilling		<u>Cascac</u>			Easting	•	•	Client: PG&E		
Drilling					Total De	•	287 ft bgs	•	W Remedy Pr	
Drill Ri			nic Truck Mou		Borehol			Location: <u>PG&E</u>	•	les,
Driller I			<u>nos / D. O'Ma</u>				Water: <u>91.1 ft bgs</u>	<u>Califor</u>		
Drilling			aya/ O. Flores		Samplin	•		Project Number:	RC000753.00	51
Logge			ers / C. Stewa	art	Samplin	-		_		
Editor:		Sean N	<u>//cGrane</u>		Convert	ed to \	Vell: ⊠ Yes ☐ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class	Soil Description		Drilling Notes	Drilling Fluid
 61 	24			Topock - Alluvium Deposits	SW-SM		(60.0 - 62.0') Topock - Alluvium Deposits; We silt and gravel (SW-SM); brown (10YR 4/3); very coarse grained, angular to subangular; slarge pebbles, angular to subangular; little sil clasts composed of metadiorite; dry	very fine grained to some granules to very		
63 64				Topock - Alluvium Deposits	SM		(62.0 - 64.5') Topock - Alluvium Deposits; Sil (SM); brown (10YR 5/3); very fine grained to angular to subround; some silt; little granules pebbles, angular to subangular; trace clay; tra- clasts composed of metadiorite; dry	very coarse grained, to very large		
65 66				Topock - Alluvium Deposits	sw		(64.5 - 66.5') Topock - Alluvium Deposits; We gravel (SW); brown (10YR 5/3); very fine grained, angular to subangular; some granule pebbles, angular to subangular; trace silt; tradry; larger clasts consist of metadiorite and constant of the subangular in the suban	ned to very coarse es to very large ce clay; trace mica; onglomerate		
67 68 69 70 71	120	No Sieve Samples Collected	4	Topock - Alluvium Deposits	SM		(66.5 - 72.0') Topock - Alluvium Deposits; Sili (SM); brown (10YR 5/3) little brown (10YR 4/2 to very coarse grained, angular to subround; very large pebbles, angular to subangular; little dry; larger clasts consist of metadiorite and c	3); very fine grained some granules to le silt; trace mica; onglomerate		
73 74 75 76 77	60			Topock - Alluvium Deposits	SW-SM		(72.0 - 86.0') Topock - Alluvium Deposits; We silt and gravel (SW-SM); brown (10YR 5/3) st 4/3); very fine grained to very coarse grained subangular; some granules to very large pebl subangular; little silt; trace angular; trace mic consist of metadiorite and conglomerate, trace	ome brown (10YR angular to bles, angular to a; dry; larger clasts	(72.0 - 92.0') Slow drilling due to tight formation and soils falling out of core during clean out runs.	
78 79 80	108									

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	I		She	et: 5 of	15
Date S	Started:	05/11/2	2019		Surface	Elevat	ion:	547.35 ft amsl	Borin	a No:	MW-87d	
	•	ted: <u>06/04/2</u>			Northing			2102445.86	_		<u> </u>	
Drilling		Cascac			Easting	•	33):	7614401.93	_ Client:	PG&E		
Drilling			•		Total De	•		287 ft bgs	_ •		V Remedy Pr	
Drill Ri			ic Truck Mou		Borehol			4-12 inches	_ Location:		opock, Need	les,
Driller			ios / D. O'Ma ya/ O. Flores		-			91.1 ft bgs 4 inch x 10 ft Core Barrel	- Droiget N	<u>Californi</u>	a RC000753.00	NE 1
Drilling Logge			ers / C. Stewa		Samplin Samplin	-		Continuous	_ Project N	umber. <u>r</u>	<u> </u>	13 1
Editor:			1cGrane	<u> </u>	Convert	•			-			
Depth (ft)	Recovery (in)	Sieve	Groundwater	Geologic	Code	USCS		Soil Description			Drilling Notes	Drilling Fluid
ے ق	Rec	Sample ID	Sample ID	Gec	30		9					
81 82 83 84 85 86	108			Topock - Alluvium Deposits	SW-SM							
87 88 89 90 91	72	No Sieve Samples Collected			S		(SM); b angular to subst consist (87'); do	117.0') Topock - Alluvium Deposits; S own (10YR 5/3); very fine grained to to subround; some granules to very langular; little silt; trace clay; trace micro of metadiorite and conglomerate acrease in silt, increase in sand	very coarse gr arge pebbles, a; dry; larger cl	ained, angular asts		
93 94 95 96	60		MW-R-VAS- 92-97 (45 ppb) 5/13/2019 11:44	Topock - Alluvium Deposits	SM		subang	ome silt; little small to very large pebb ular; wet; no clay, no cementation some small to very large pebbles, and ay; weak cementation; increase in silt	gular to suban	gular;	(92.0') Approximate depth to water.	
97 98 99 100	120	11000					(97'); lit increas	tle granules to very large pebbles, ang e in silt, decrease in sand, weathered	gular to suban granules to po	gular; ebbles		

9/	ARC	ADIS	Design & Consultancy for natural and built assets		Во	ring Lo	g	She	et: 6 of	15
Date S	Started:	05/11/	2019			Elevation:	547.35 ft amsl	Boring No.:	MW-87d	
		ted: <u>06/04/</u>				g (NAD83):	2102445.86	_		
Drilling Drilling		Casca od: Sonic			Total De	(NAD83):	7614401.93 287 ft bgs		N Remedy Ph	nase 1
Drill Ri			nic Truck Mou	 unt		le Diameter:	4-12 inches	_ Location: <u>PG&E 1</u>	•	
Driller I			nos / D. O'Ma			o First Water:		Californ	•	,
Drilling	Asst:		aya/ O. Flores		-	ng Method:	4 inch x 10 ft Core Barrel	_ Project Number: <u>I</u>	RC000753.00	51
Logge			fers / C. Stew	art		ng Interval:	Continuous	_		
Editor:		<u>Sean I</u>	McGrane		Convert	ted to Well:				
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
101	120									
108 109 110 111 112	120	No Sieve Samples Collected		Topock - Alluvium Deposits	SM	(112');	pulverized weathered metadiorite bou	lder fragments		
113 114						granule) brown (10YR 5/3) trace reddish brow es to very large pebbles, angular to su cementation, trace mottling			
 115										
									(115.0 - 122.0')	
116						4400	degrade all ingresses seemed and	nahhlaa	Soft drilling	
-						(110);	decrease silt, increase granules and	pennies		
117					+	0 (117.0	- 128.5') Topock - Alluvium Deposits;	Silty gravel with sand		
 118			1414/ D 1113	1		(GM); I to sma	prown (10YR 5/3) little reddish brown (Il cobbles, angular to subangular; som	(2.5YR 5/4); granules ne very fine to very		
110	60		MW-R-VAS- 117-122	Topock -	CNA	coarse	grained sand, angular to subround; lit r clasts composed of metadiorite; wet	ttle silt; trace mica;		
119	60		(5.8 ppb) 5/14/2019	Alluvium Deposits	GM	5714	,			
			10:14	i		P\$P				
120				1		1° 4°1d				

			built assets		DU	ring	_og		She	et: 7 of	15
Date Sta		05/11/2			Surface			Boring	g No.:	MW-87d	
Date Co Drilling (ted: <u>06/04/2</u> <u>Cascac</u>			Northing Easting	- '	•	_ Client:	PG&E		
Drilling N					Total De	•	287 ft bgs			V Remedy Ph	nase 1
Drill Rig			nic Truck Mou		Borehol	•	•	-		opock, Need	
Driller N			nos / D. O'Ma		Depth to	First V	ater: 91.1 ft bgs		Californi	•	,
Drilling A	Asst:	L. Ama	ıya/ O. Flores		Samplin	g Meth	d: 4 inch x 10 ft Core Barrel	_ Project Nu	ımber: <u>F</u>	RC000753.00)51
Logger:			ers / C. Stewa	art	Samplin	-		_			
Editor:		Sean N	/IcGrane		Convert	ed to W	ell: X Yes No				<u> </u>
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS Class	Soil Description			Drilling Notes	Drilling Fluid
 121 122	60		MW-R-VAS- 117-122 (5.8 ppb) 5/14/2019 10:14					_0			
123											
124	60			Topock - Alluvium Deposits	GM		0,2				
125							125'); and very fine to very coarse grained subangular; decrease in granules to cobbles	and, angular to			
126 127											
129				Topock - Alluvium	SM		128.5 - 130.5') Topock - Alluvium Deposits; GM); brown (10YR 5/3) trace reddish brown rained to very coarse grained, angular to su	(2.5YR 5/4); ve ıbangular; some	ery fine		
_130		No Sieve Samples Collected		Deposits	Sim		ranules to very large pebbles, angular to su ace mica; coarser clasts composed of meta (130.5 - 137.5') Topock - Alluvium Deposits;	adiorite; wet	ŕ		
131			•				(1903): 1973 Topock - Audvid Deposits, GM); brown (10YR 5/3) trace reddish brown ranules to small cobbles, angular to subangery coarse grained sand, angular to subang nica; coarser clasts composed of metadiorit	n (2.5ЎR 5/4); gular; and very f jular; little silt; tr	ine to		
132	120						iica, coarsei ciasts composed of metauloni	te, wet, siit nout	iles		
134				Topock - Alluvium	GM						
 135				Deposits							
136											
 137											
138	120			Topock - Alluvium Deposits	ML		137.5 - 138.5') Topock - Alluvium Deposits; vL); brown (10YR 5/3); medium plasticity; surge pebbles, angular to subangular; some	some granules to very fine to very	o very		
139_	120			Topock - Alluvium Deposits	SM		oarse grained sand, angular to subangular; lasts composed of metadiorite; wet; soft to l 138.5 - 153.0') Topock - Alluvium Deposits; SM); brown (10YR 5/3) trace reddish brown rained to very coarse grained, angular to su	medium stiff Silty sand with (2.5YR 5/4); ve	gravel ery fine		

9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	She	et: 8 of	15
Date S	tarted:	05/11/			Surface			Boring No.:	MW-87d	
	•	ted: <u>06/04/</u>			Northing		•			
Drilling		<u>Casca</u>			Easting Total De	•	•	Client: PG&E	N Domody Dk	1
Drilling Drill Ri			<u>Drilling</u> nic Truck Mou	ınt	Borehol	•	287 ft bgs eter: 4-12 inches	Project: Final G\ Location: PG&E 1	N Remedy Ph	
Driller I			mos / D. O'Ma				Vater: 91.1 ft bgs	Californ	-	
Drilling			aya/ O. Flores		Samplin		_	Project Number: J		51
Logge			fers / C. Stewa		Samplin	-				
Editor:		<u>Sean I</u>	McGrane		Convert	ed to W	/ell: Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
141	120			Topock - Alluvium Deposits	SM		granules to very large pebbles, angular to subtrace mica; coarser clasts composed of metainterbedded silt and granule to pebble lenses (141'); some silt; decrease in sand, increase ipebbles (142.5'); little silt; increase in sand, increase ipebbles	diorite; wet; in granules and		
148 149 150 151		No Sieve Samples Collected			5		(149'); some silt; decrease in sand		(151.0 - 156.0')	
152 153 154 155 156 157	120		MW-R-VAS- 151-156 (<0.033 U ppb) 5/15/2019 10:20	Topock - Alluvium Deposits	GM		(153.0 - 157.0') Topock - Alluvium Deposits; S (GM); brown (10YR 5/3) little reddish brown (tory large pebbles, angular to subangular; sor coarse grained sand, angular to subangular; locarser clasts composed of metadiorite; wet; sand lenses, trace reddish brown (2.5YR 5/4)	5YR 5/4); granules to me very fine to very ittle silt; trace mica; interbedded silt and	Cave in prevented sampler from being set at 152 to 157 ft. bgs.	
158 158 159 160	120			Topock - Alluvium Deposits	GW		(157.0 - 168.5') Topock - Alluvium Deposits; V with sand (GW); brown (10YR 4/3); granules pebbles, angular to subangular; and very fine grained sand, angular to subangular; trace sil coarser clasts composed of metadiorite; wet;	to very large to very coarse t; trace mica;	(157.0 - 167.0') Soft drilling	

9/	۱RC	ADIS	Design & Consultancy for natural and built assets		Во	ring Log	g	She	eet: 9 of	15
Date S	tarted:	05/11/2				Elevation:	547.35 ft amsl	Boring No.:	MW-87d	
Date C Drilling		ted: <u>06/04/2</u> <u>Cascac</u>				g (NAD83): (NAD83):	2102445.86 7614401.93	_		
Drilling					Total De	•	287 ft bgs		N Remedy Ph	 nase 1
Drill Ri			nic Truck Mou	ınt		le Diameter:	4-12 inches	Location: PG&E T	-	
Driller I			nos / D. O'Ma		Depth to	o First Water:	_	<u>Californi</u>		
Drilling			aya/ O. Flores		-	ng Method:	4 inch x 10 ft Core Barrel	_ Project Number: <u> </u>	RC000753.00)51
Logge Editor:		·	ers / C. Stewa	art	-	ng Interval: ted to Well:	Continuous	_		
Editor.		Sean	<u>//cGrane</u>		Conven	led to vveii.	△ res ☐ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
161	120			Topock - Alluvium Deposits	GW					
168 169 170 171 172 173 174 175 176 177 1178	120	No Sieve Samples Collected		Topock - Alluvium Deposits	SM	(SM); Li angula compo pebble (170'); and pe	- 179.0') Topock - Alluvium Deposits; prown (7.5YR 4/4); very fine grained to r to subangular; some granules to very r to subangular; little silt; trace mica; cosed of metadiorite; wet; interbedded s lenses some silt; trace angular to subangular bbles, decrease in sand pulverized boulder fragments increase in silt, decrease in sand dark yellowish brown (10YR 4/4) some lay; mottled; iron oxide staining; decress, no cobbles	very coarse grained, ylarge pebbles, coarser clasts it and granule to r; increase in granules		
179 180	120			Topock - Alluvium Deposits	SW-SM	with sil	- 180.0') Topock - Alluvium Deposits; t and gravel (SW-SM); dark yellowish orown (7.5YR 4/3); very fine grained to	brown (10YR 4/4)		

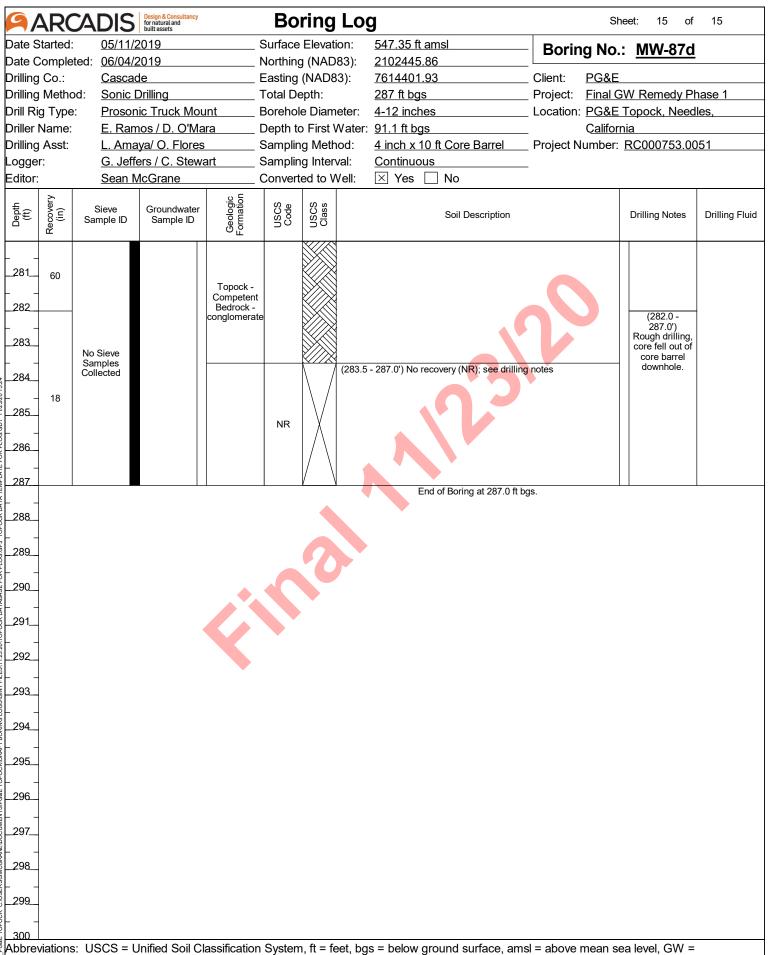
9/	\R(ADIS	Design & Consultancy for natural and built assets		Во	ring	Log	She	eet: 10 of	15
Date S	tarted:	05/11/			Surface			Boring No.:	MW-87d	
	•	ted: <u>06/04/</u>			Northing	- '	•			
Drilling		<u>Casca</u>			Easting	•	•	Client: PG&E	M. Damadı Di	
Drilling Drill Ri			חוווח <u>ט</u> nic Truck Mou		Total De Borehol	•	287 ft bgs eter: 4-12 inches	Project: Final G Location: PG&E	W Remedy Ph	
Driller I			nos / D. O'Ma				Vater: 91.1 ft bgs	Californ	-	<u>cs, </u>
Drilling			aya/ O. Flores		Samplin		_			51
Logge	r:	G. Jeff	fers / C. Stewa	art	Samplin	ig Inter	val: <u>Continuous</u>	-		
Editor:		<u>Sean I</u>	<u>McGrane</u>		Convert	ed to V	Vell: ⊠ Yes □ No			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS	Soil Description		Drilling Notes	Drilling Fluid
 181 _182_				Topock - Alluvium Deposits	SM		angular to subangular; some granules to very angular to subangular; little silt; trace angular mica; coarser clasts composed of metadiorite (180.0 - 181.0') Topock - Alluvium Deposits; (SM); brown (10YR 4/3) little brown (7.5YR to very coarse grained, angular to subangular very large pebbles, angular to subangular; little	to subangular; trace e; wet; mottled Silty sand with gravel (3); very fine grained e; some granules to		
102 				Topock - Alluvium Deposits	ML		very large peobles, angular to subangular, nut coarser clasts composed of metadiorite; wet; silt and granule to peoble lenses (181.0 - 182.0'); some silt; trace clay; iron oxid lin sand	mottled; interbedded		
 184	120						(182.0 - 183.0') Topock - Alluvium Deposits; \$ (ML); brown (7.5YR 4/3); low plasticity; some large pebbles, angular to subangular; some v coarse grained sand, angular to subround; tra	granules to very ery fine to very		
185							coarser clasts composed of metadiorite; wet; weak cementation; iron oxide staining; trace vand pebbles (183.0 - 247.0') Topock - Alluvium Deposits; \$	stiff to very stiff; weathered granules		
186							(SM); brown (7.5YR 4/3) some brown (10YR grained to very coarse grained, angular to subgranules to very large pebbles, angular to subtrace angular to subangular; trace mica; coarse	5/3); very fine coangular; some coangular; some silt;		
187 188							of metadiorite; wet; laminated; weak cementa granules and pebbles, interbedded silt and gr lenses, mottled, (186'); dry; for 0.5 ft.	tion; little weathered		
 189							(187'); decrease in silt, increase in granules a	and pebbles	(188.0 - 207.0') Drill rod broke off during	
 190	60	No Sieve Samples Collected		•					reaming, was retrieved to continue drilling.	
 191		Concoled	•	Topock -						
 192				Alluvium Deposits	SM					
 193							(193'); increase in sand, decrease in silt, no c	cementation, no		
194	00		MW-R-VAS- 192-197 (<0.033 U				lamination			
195	60		ppb) 5/16/2019 09:55							
196										
 _197										
198	120						(198'); increase in silt, decrease in granules a	and pebbles		
199	.20									
 200										

9/	٩RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log]		She	et: 11 of	15
Date S					Surface			547.35 ft amsl	Borin	a No.:	MW-87d	
		ted: <u>06/04/2</u>			Northing			2102445.86				
Drilling		Cascac			Easting		33):	7614401.93	Client:	PG&E		
Drilling			-		Total De	-		287 ft bgs	Project:		V Remedy Ph	
Drill Ri			ic Truck Mou		Borehol			4-12 inches	Location:		opock, Need	les,
Driller I Drilling			<u>ios / D. O'Ma</u> ya/ O. Flores		Samplin			91.1 ft bgs 4 inch x 10 ft Core Barrel	Droiget N	Çaliforni	a RC000753.00)51
Logge			ers / C. Stewa		Samplin	•		Continuous	Projectiv	umber. <u>r</u>	<u> </u>	101
Editor:			1cGrane	<u> </u>	Convert	•			-			
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	USCS	USCS Class		Soil Description			Drilling Notes	Drilling Fluid
201	120						(205');	some silt; increase in granules to pebblesome silt; increase in granules and petrace clay; decrease in sand	S		(207.0 - 227.0') Soft drilling	
	120	No Sieve Samples Collected	•	Topock - Alluvium Deposits	SM		(217');	some silt; increase in silt, decrease in decrease in silt, increase in sand, incr obles, no clay, silt nodules		ules	(10" casing)	
 220												

Drilling Method: Sonic Drilling Total Depth: 287 ft bgs Project: Final GW Remedy Phase 1 Drill Rig Type: Prosonic Truck Mount Borehole Diameter: 4-12 inches Location: PG&E Topock, Needles, Driller Name: E. Ramos / D. O'Mara Depth to First Water: 91.1 ft bgs California Drilling Asst: L. Amaya/ O. Flores Sampling Method: 4 inch x 10 ft Core Barrel Project Number: RC000753.0051 Logger: G. Jeffers / C. Stewart Sampling Interval: Continuous Editor: Sean McGrane Converted to Well: Yes No	9/	۱RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		She	eet: 12 of	15
Northing (NAD83) Total Depth:					-				Borii	na No.:	MW-87d	
Drilling Method: Drilling Type: Prosonic Truck Mount E. Ramos 70 O'Mara Doph to First Water: Drilling Asst: L. Amayar O. Fores Cogger: Colloc: Seam McGrane Converted to Well: Converte												
Driller Name: Continue: C	_											
Diller Name: L. Ramaya D. Flores Sean McGrane Sean McGr	_			-			-	-			-	
Dolling Assist L. Amayal O. Flores Sampling Interval Separate Continuous Continuous Sean No Grand Service Service of Sean No Grand Service Ser									Location			ies,
Logger: Sean McGrane Converted to Well: No Continuous Converted to Well: No No Drilling Notes Drilling F Sean McGrane Converted to Well: No Soil Description Drilling Notes Drilling F Sean McGrane Converted to Well: No Soil Description Drilling Notes Drilling F Sean McGrane Converted to Well: No Soil Description Drilling Notes Drilling F Sean McGrane Converted to Well: No Soil Description Drilling Notes Drilling F Sean McGrane Converted to Well: No Soil Description Drilling Notes Drilling F Sean McGrane Converted to Well: No Soil Description Drilling Notes Drilling F Sean McGrane Converted to Well: No Soil Description Drilling Notes Drilling F Sean McGrane Converted to Well: No Soil Description Drilling Notes Drilling F Sean McGrane Converted to Well: No Soil Description Drilling Notes Drilling F Sean McGrane Converted to Well: No Soil Description Drilling Notes Drilling F Sean McGrane Converted to Well: No Soil Description Drilling Notes Drilling F Sean McGrane Converted Drill						-		_	re Barrel Project N)51
Editor: Seam McGrane	_			-		-	-		1 10,0001	14.11.201. <u>1</u>	10000100.00	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
221						-	-					
222	Depth (ft)	Recovery (in)			Geologic Formation	Code	USCS Class	Soi	l Description		Drilling Notes	Drilling Fluid
228 MW.R.VAS. 227.232 (0.033 U ppb) Topock Samples Collected 10.05 Topock Samples 10.05 Mo Sieve Samples 10.05 Mo		120						(225'); little silt; increase in g	ranules and pebbles	5	(227.0 -	
233 (5YR 4/4); and granules to very large pebbles, angular to subangular; trace angular trac	229 230 	60	Samples	227-232 (<0.033 U ppb) 5/17/2019	Alluvium	SM					232.0') Picked sample location based on lithology. (227.0 - 267.0') Soft drilling	
240 (250.0), some grandes to very large peoples, angular to	233	180						(5YR 4/4); and granules to ve subangular; trace angular to (233.5'); pulverized boulder f thick	ery large pebbles, angular to subangular; decrease in silt, ragments within silt matrix, 1	mottled		

9/	۱RC	ADIS	Design & Consultancy for natural and built assets		Во	ring	Log		Shee	et: 13 of	15
Date S					Surface			Boring	No.:	MW-87d	
Date C Drilling		ted: <u>06/04/2</u> <u>Cascac</u>			Northing		•		G&E		
Drilling					Easting Total De	•	33): <u>7614401.93</u> <u>287 ft bgs</u>			/ Remedy Ph	ase 1
Drill Ri			nic Truck Mou		Borehol	•	-	-		opock, Needl	
Driller I			nos / D. O'Ma	ara	Depth to	First '	Water: <u>91.1 ft bgs</u>		California	-	
Drilling	Asst:		aya/ O. Flores		Samplin	-		Project Nur	mber: <u>R</u>	C000753.00	51
Loggei			ers / C. Stewa	art	Samplin	-		-			
Editor:		Sean N	<u>////////////////////////////////////</u>		Convert	ed to V	Vell:		<u> </u>		
Depth (ft)	Recovery (in)	Sieve Sample ID	Groundwater Sample ID	Geologic Formation	Code	USCS	Soil Description			Drilling Notes	Drilling Fluid
241 242 243 244 245 246 247	180			Topock - Alluvium Deposits	SM		subangular; trace angular to subangular; incr (241'); and granules to very large pebbles, an trace angular to subangular; decrease in silt	ngular to subang			
248 249 250 251 252 253 254 255 256 257	120	No Sieve Samples Collected	MW-R-VAS- 255-260	Topock - Alluvium Deposits	GM		(247.0 - 258.0') Topock - Alluvium Deposits; (GM); brown (7.5YR 4/4) and reddish brown (5YR 4/4); granules to small cobbles, angular very fine to very coarse grained sand, angular silt; trace mica; coarser clasts composed of mottled; trace weathered granules to cobbles interbedded silt and sand lenses	/ moderate brow r to subangular; r to subangular; netadiorite; wet;	n and little	(247.0 - 274.0') Smooth drilling (10" casing)	
	120	NO.53	(<0.17 U ppb) 5/29/2019 12:00	Topock - Alluvium Deposits	SM		(258.0 - 261.5') Topock - Alluvium Deposits; (SM); brown (7.5YR 4/4); very fine grained to angular to subangular; some granules to very angular to subangular; some silt; trace angular trace mica; coarser clasts composed of metaweathered granules and pebbles, interbedder pebble lenses, gradual increase in silt with depet hos = helow ground surface and	very coarse graingly large pebbles, ar to subangular adiorite; wet; track disilt and granulepth	ined, ; ce e to		

ARCADIS Design & Consultancy for natural and built assets Boring Log Sheet: 14 of 15											
Date Started: 05/11/2019					Surface Elevation:			547.35 ft amsl	Boring No	.: <u>MW-87d</u>	
Date Completed: <u>06/04/2019</u>				Northing (NAD83):			2102445.86		<u> </u>		
_					Easting (NAD83):			7614401.93	Client: PG&E		
				Total Depth:			287 ft bgs	Project: Final GW Remedy Phase 1			
							4-12 inches	Location: PG&E Topock, Needles,			
				Depth to First Water:				California Project Number: RC000753.0051			
-				Sampling Method: Sampling Interval:			4 inch x 10 ft Core Barrel	Project Number	: <u>RC000753.00</u>	151	
				Converted to Well:			Continuous	-			
							V CII.	/ 1C3 140			
Depth (ft)	Recovery (in)	Sieve Groundwater Sample ID Sample ID		Geologic Formation	USCS Code USCS Class			Soil Description		Drilling Notes	Drilling Fluid
 _261				Topock - Alluvium Deposits	SM		(261'):	pulverized boulder fragments			
 262					+		(261.5 Silty sa	5 - 274.5') Topock - Weathered Bedrock - conglomerate; sand with gravel (SM); reddish brown / moderate brown (5Y race red / moderate reddish brown (10R 4/6); very fine			
 263							graine	d to very coarse grained, angular to <mark>su</mark> t es to very large pebbles, angular <mark>to</mark> sub	pangular; some pangular; some silt;		
 264	120						wet; we lenses	lay; trace mica; coarser clasts compose eak cementation; interbedded silt and o	granule to pebble		
								103	•		
										(265.0 - 267.0') Tight	
266										formation	
267 				Topock -			(267');	increase in silt, no clay		(267.0 - 279.0')	
268		No Sieve Samples Collected	MW-R-VAS- 269-274 (<0.17 U ppb) 5/30/2019 14:30	Weathered Bedrock - conglomerat	SIVI		(200 5). Italia - ita kanana	i	Tight and rough drilling (10" casing)	
269								s'); little silt; trace angular to subangular; increase in sand, se in granules to cobbles			
_270							(270');	weathered metadiorite		(270.0 - 279.0')	(270.0 - 279.0')
271								increase in sand, increase silt, decrease in granules as weathered fractured boulder of metadiorite		Formation collapse after pulling 10"	800 gallons of water used; 0 gallons of
272	120						Pebble	s, weathered hastared boulder of mete		casing up 10 ft	recovered; 800 gallons of
273											water lost
274										(274.0 -	
 275					+		(274.5 - 283.5') Topock - Competent Bedroc reddish brown / moderate brown (5YR 4/4);			. 279.0') Tight and rough drilling	
 276										(10" casing)	
 _277			Co	Topock -							
				Competent Bedrock - conglomerate			(277');	dry		(277.0 - 282.0') Tight	
_278							}			formation	
 279	60						4				
							}				
280		11000					1				



groundwater, ppb = parts per billion, U = not detected above the laboratory reporting limit, NR = no recovery; Notes: blue water table symbol represents depth to water measured during the first VAS interval; apparent partial recoveries can be the result of potential compaction of sediments in the core bag; wells MW-87-192, MW-87-275 installed in borehole