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Sent: Friday, June 27, 2014 9:07 PM
To: YJM1@PGE.COM (YJM1@pge.com); Piper, Jay/LAS; Innis, Pamela (pamela_innis@ios.doi.gov)
Cc: Yue, Aaron@DTSC; Baker, Karen@DTSC
Subject: PG&E Topock: DTSC response to Section 7 2013 Annual Report Recommendations

Yvonne/Jay,

DTSC responses to Section 7 Recommendations are provided.

DTSC is responding to the recommendations contained in Section 7 of the Fourth Quarter 2013 and Annual PMP (IM3 Performance) and Site-wide GMP (groundwater and surface water) monitoring report (Report) dated March 14, 2014. Sections from the Report are cited below.

Section 7.2 Recommended Modifications to the Groundwater Monitoring Program Reporting Schedule

DTSC concurs with the minor modification to the reporting schedule outlined in Table 7.1.

Section 7.3 Recommended Modifications to Groundwater Monitoring Program Sampling Frequency and Analytical List

Specific GMP sampling frequencies were evaluated and were either accepted or modified as identified on the attached Table 7-2. Please note comment boxes on Table 7.2 as well. In general, more frequent sampling was retained to assess any changes related to the switch to the micropurge (MP) sampling method prior to remedy start up. While the Report request is not clear, DTSC requests that the annual water-level snapshot remain an annual event.

Due to the switch to MP sampling, DTSC requests that BWQ/+OD analytes be performed annually or semi-annually so that three or four rounds of data will exist before remedy start up. It is requested that Title 22 (T22) analyses be conducted at select wells across the site for MP comparison including current and recent T22 wells as well as at monitoring wells outboard or in the vicinity of injection/extraction wells (to potentially assist in assessing injected/extracted water behavior). This would include Arizona wells too. PG&E should propose a list of wells for T22 sampling.

Section 7.4 Recommendation for Site-wide Implementation of Micropurge Groundwater Sampling Method

DTSC concurs with PG&E's/CH2MHill's proposed switch from three-volume (3V) purge to MP groundwater sample collection for all site alluvial/fluvial wells without long well screens (i.e., wells with greater than 20 feet of saturated thickness within the well screen interval). While it is noted that the well trial resulted in some differences with the concentration data at select wells associated with the different sampling methods, the data, in general, are comparable. However, please take note that DTSC may request that select wells revert back to 3V sampling after an ample micropurge data set is amassed. DTSC's initial concern is that certain 3V sampling can provide data that samples a larger radius away from a well as compared to MP and could monitor more distal groundwater without the need to install an additional well. Please devise a method to easily note if a well is sampled by MP vs 3V vs grab in data tables and figures to allow meaningful trend analyses.

DTSC assumes that this technique would not apply to the New Pond Water Board wells as well as others noted in the 2013 Annual Report. Additionally, it is noted that wells such as TW series, OW-5D and PT-

7D are reported to have greater than 20 feet of saturated screen and would not be included in this approval. Of course, if desired, additional sampling trials for those wells could be proposed by PG&E. Finally, DTSC encourages PG&E to conduct a separate trial for the bedrock wells to determine if alternate sampling techniques are viable for those wells and to gather information that may assist in understanding plume configuration in bedrock.

In addition to the recommendations section of the Annual Report, DTSC requests that chemical concentration contours be carefully plotted (e.g., Figure 3-1c) and that appropriate scales be selected for trend/time-series (e.g., Figures C-8, C-10, C-13, C-15, C-17, C-18).

Please contact me if there are questions.

Chris Guerre
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TABLE 7-1

Proposed Schedule Changes for GMP-PMP Reporting
 Fourth Quarter 2013 and Annual Interim Measure Performance Monitoring and Site-wide
 Groundwater and Surface Water Monitoring Report,
 PG&E Topock Compressor Station, Needles, California

Period	Sampling Event	Approximate Number of Wells	GMP Sample Date	Current IM-3 Sample Date	Current Reporting Period	Current Report Date	Proposed IM-3 Sample Date ^c	Proposed Revised Reporting Date	Months from End of GMP Sample Date to Report
First Period	Quarterly	58	Early February to early March	End of February	January through March	30-Apr	No Change	No Change	
Second Period	Semiannually	98	April to mid May ^a	End of May	April through June	15-Aug	No Change	No Change	
Third Period	Quarterly	58	Late September to mid October ^b	End of September	July through October	30-Nov	No Change	15-Dec	2
Fourth Period	Annually/Biennially	139	Early to mid December	End of December	November through December	15-Mar	No Change	No Change	

Notes:

^a Sampling of wells in SWFL nesting area will be conducted in the last week of April.

^b Sampling of wells in SWFL nesting area will be conducted in the first week of October.

SWFL nesting season is May through September. Efforts are made to minimize activities in the floodplain during this time.

No GMP sampling events occur between the May semiannual event (potential nesting area sampled during the last week of April) and the September quarterly event (potential nesting area sampled during the first week of October). One RMP quarterly river sampling event takes place in July during this time period.

^c In 2009, the GMP reporting periods (January through March, etc.) shifted to match the PMP reporting periods (February through April, etc.) when the reporting for the two programs was combined.

Proposed IM-3 sample date is based on proposed revised reporting date

To minimize the time between GMP sample date and report submittal date, the timing for the last IM-3 sample (collected at end of month) included for each reporting period was changed.

GMP = Groundwater Monitoring Program.

IM-3 = Interim Measures Number 3.

PMP = Performance Monitoring Program.

RMP = Surface Water Monitoring Program.

SWFL = Southwest Willow Flycatcher

TABLE 7-2

Proposed Groundwater Monitoring Program Sampling Frequency and Analytical Suite Modifications

Fourth Quarter 2013 and Annual Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report,
PG&E Topock Compressor Station, Needles, California

Well ID	Current Frequency	Proposed Frequency	Current Analytes	Proposed Analytes	Location vs. Plume	Remedy Role	Trends	Typical [Cr(VI)] ug/L (approx)	Comments
MW-09 SA	Annual	Annual ; BCW flow	Cr, COPC, AWQ	Cr, COPC, BP, BWQ	BCW in plume		Cr sta	300	
MW-10 SA	Semi-annual	Annual ; BCW flow	Cr, COPC, F, T22, AWQ	Cr, COPC, BWQ	BCW in plume		Cr sta; COPC var	450	
MW-11 SA	Annual	Annual ; BCW flow	Cr, COPC, AWQ	Cr, COPC, BP, BWQ	BCW in plume		Cr dec	180	ISPT
MW-12 ok	Quarterly	Semi-annual	Cr, COPC, T22, AWQ	Cr, COPC, BWQ	TCS in plume	TCS loop	Cr var	2,500	
MW-13 ok	Annual	NC	Cr, BP, AWQ	Cr, BP, BWQ	E of BCW, edge plume	IR Loop - Mon	Cr sta	21	
MW-14 SA	Annual	NC	Cr, AWQ	Cr, COPC, BP, BWQ	W of BCW, outside plume	IR Loop - DR	Cr dec	20	
MW-15 A	Biennial	NC	Cr, AWQ	Cr, BWQ	W of BCW, outside plume			11	
MW-16 ok	Semi-annual	Biennial	Cr, BKG, AWQ	Cr, BWQ	W of BCW, outside plume		Cr sta	10	
MW-17 ok	Semi-annual	Biennial	Cr, BKG, AWQ	Cr, BWQ	W of BCW, outside plume		Cr sta	14	
MW-18 A	Annual	Biennial	Cr, AWQ	Cr, BWQ	W of BCW, outside plume		Cr sta	21	
MW-19 SA	Annual	NC	Cr, AWQ	Cr, BWQ	NTH, in plume		Cr var; COPC sta	250	
MW-20-070 SA	Semi-annual	Annual	Cr, COPC, AWQ, PMP	Cr, COPC, BWQ+OD	NTH, in plume	NTH IRZ DR	Cr sta	3,200	
MW-20-100 SA	Semi-annual	Annual	Cr, COPC, AWQ, PMP	Cr, COPC, BWQ+OD	NTH, in plume	NTH IRZ DR	Cr dec; COPC sta	3,400	
MW-20-130 SA	Semi-annual	Annual	Cr, COPC, BP, AWQ, PMP	Cr, COPC, BP, BWQ+OD	NTH, in plume	NTH IRZ DR	Cr sta; COPC var	10,000	
MW-21 ok	Quarterly	Semi-annual	Cr, COPC, AWQ	Cr, COPC, BWQ	NTH, outside plume	NTH IRZ DR	Cr sta	2 to ND	IMCP
MW-22 SA	Semi-annual	Biennial	Cr, BP, T22	Cr, BP, BWQ+OD		NTH IRZ DG, RE	Cr sta	ND	well not typical of FP or upland
MW-23-060 ok	Quarterly	Semi-annual	Cr, BP, AWQ, rdx	Cr, BP, BWQ, rdx	NE of TCS outside plume	TCS loop	Cr sta; COPC var	30	
MW-23-080 ok	Quarterly	Semi-annual	Cr, BP, AWQ, rdx	Cr, BP, BWQ, rdx	NE of TCS outside plume	TCS loop	Cr var; COPC var	16	
MW-24A ok	Semi-annual	NC	Cr, ISPT	NC	N of TCS in plume		Cr dec	ND	ISPT
MW-24B ok	Semi-annual	NC	Cr, ISPT	NC	N of TCS in plume		Cr dec	1,500	ISPT
MW-24BR ok	Quarterly	Annual	Cr, AWQ	Cr, COPC, BP, BWQ	N of TCS outside plume		Cr sta	ND	
MW-25 SA	Annual	Biennial	Cr, BP, AWQ, PMP	Cr, COPC, BP, BWQ	N of TCS in plume		Cr dec; COPC inc	250	
MW-26 ok	Semi-annual	NC	Cr, COPC, BP, AWQ, PMP	Cr, COPC, BP, BWQ+OD, rdx	NTH in plume	NTH IRZ DR	Cr sta; COPC var	1,800	
MW-27-020 ok	Annual	NC	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	FP outside plume	NTH IRZ RE	Cr sta	1 to ND	
MW-27-060 ok	Annual	NC	Cr, COPC, F, BP, AWQ, rdx	Cr, COPC, BP, F, BWQ, rdx	FP outside plume	NTH IRZ RE	Cr sta	ND	
MW-27-085 ok	Quarterly	Semi-annual	Cr, COPC, F, BP, AWQ, rdx	Cr, COPC, BP, F, BWQ, rdx	FP outside plume	NTH IRZ RE	Cr sta	ND	IMCP
MW-28-025 SA	Semi-annual	Annual	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	FP outside plume	NTH IRZ RE	Cr sta	ND	
MW-28-090 ok	Quarterly	Semi-annual	Cr, COPC, F, BP, AWQ, rdx	Cr, COPC, BP, F, BWQ, rdx	FP outside plume	NTH IRZ RE	Cr sta	ND	IMCP
MW-29 ok	Semi-annual	NC	Cr, COPC, AWQ, BP, As, rdx	Cr, COPC, BP, BWQ, rdx	FP outside plume	NTH IRZ DG, RE	Cr sta	ND	
MW-30-030 ok	Semi-annual	Annual	Cr, COPC, AWQ, As	Cr, COPC, BP, BWQ	FP outside plume	NTH IRZ DG, RE	Cr sta	ND	
MW-30-050 A	Annual	Biennial	Cr, COPC, BP, AWQ, OD, rdx	Cr, COPC, BP, BWQ+OD, rdx	FP outside plume	NTH IRZ DG, RE	Cr sta	ND	
MW-31-60 ok	Semi-annual	NC	Cr, BP, AWQ, PMP, rdx	Cr, BP, BWQ+OD, rdx	FP in plume		Cr var	350	
MW-31-135 A	Annual	Biennial	Cr, COPC, BP, AWQ, rdx	Cr, BP, BWQ+OD, rdx	FP in plume		Cr dec	13	IM3 CZ
MW-32-020 A	Annual	Biennial	Cr, BP, AWQ, rdx	Cr, BP, BWQ, rdx	FP outside plume	NTH IRZ DG, RE	Cr sta	ND	IMCP
MW-32-035 SA	Semi-annual	Annual	Cr, BP, AWQ, PMP, rdx	Cr, BP, BWQ+OD, rdx	FP outside plume	NTH IRZ DG, RE	Cr sta	ND	IMCP
MW-33-040 ok	Quarterly	Semi-annual	Cr, COPC, F, BP, AWQ, rdx	Cr, COPC, BP, F, BWQ, rdx	FP outside plume	NTH IRZ DG, RE	Cr sta; COPC var	ND	IMCP
MW-33-090 ok	Quarterly	Semi-annual	Cr, COPC, F, BP, AWQ, OD, rdx	Cr, COPC, BP, F, BWQ+OD, rdx	FP outside plume	NTH IRZ DG, RE	Cr var	17	IMCP
MW-33-150 ok	Quarterly	Semi-annual	Cr, COPC, F, BP, AWQ, OD, rdx	Cr, COPC, BP, F, BWQ+OD, rdx	FP outside plume	NTH IRZ DG, RE	Cr sta	12	IMCP
MW-33-210 SA	Quarterly	Annual	Cr, COPC, F, BP, AWQ, OD, rdx	Cr, COPC, BP, F, BWQ+OD, rdx	FP outside plume	NTH IRZ DG, RE	Cr sta	12	IMCP
MW-34-055 ok	Annual	NC	Cr, COPC, BP, AWQ, PMP, rdx	Cr, COPC, BP, BWQ+OD, rdx	FP outside plume	NTH IRZ RE	Cr sta	ND	
MW-34-080 ok	Quarterly	Semi-annual	Cr, BP, AWQ, PMP, rdx	Cr, BP, BWQ+OD, rdx	FP outside plume	NTH IRZ RE	Cr sta	ND	IMCP
MW-34-100 ok	Quarterly + M	Quarterly	Cr, COPC, BP, AWQ, PMP, rdx	Cr, COPC, BP, BWQ+OD, rdx	FP in plume	NTH IRZ RE	Cr dec	200	IMCP
MW-35-060 ok	Quarterly	Semi-annual	Cr, COPC, BP, AWQ, OD, rdx	Cr, COPC, BP, BWQ+OD, rdx	FP outside plume	NTH IRZ	Cr sta	25	
MW-35-135 ok	Semi-annual	NC	Cr, COPC, BP, AWQ, OD, rdx	Cr, COPC, BP, BWQ+OD, rdx	FP in plume	NTH IRZ	Cr sta	31	
MW-36-020 A	Annual	Biennial	Cr, AWQ, As, rdx	Cr, BP, BWQ, rdx	FP outside plume	NTH IRZ DG, RE	Cr sta	ND	
MW-36-040 A	Annual	Biennial	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	FP outside plume	NTH IRZ DG, RE	Cr sta	ND	
MW-36-050 A	Annual	Biennial	Cr, BP, AWQ, rdx	Cr, BP, BWQ, rdx	FP outside plume	NTH IRZ DG, RE	Cr sta	ND	
MW-36-070 A	Annual	Biennial	Cr, BP, AWQ, rdx	Cr, BP, BWQ, rdx	FP outside plume	NTH IRZ DG, RE	Cr sta	ND	IMCP
MW-36-090 SA	Semi-annual	Annual	Cr, AWQ, OD, As, rdx	Cr, BP, BWQ+OD, rdx	FP outside plume	NTH IRZ DG, RE	Cr dec	ND	

TABLE 7-2

Proposed Groundwater Monitoring Program Sampling Frequency and Analytical Suite Modifications

Fourth Quarter 2013 and Annual Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report,
 PG&E Topock Compressor Station, Needles, California

Well ID	Current Frequency	Proposed Frequency	Current Analytes	Proposed Analytes	Location vs. Plume	Remedy Role	Trends	Typical [Cr(VI)] ug/L (approx)	Comments
MW-36-100 SA	Semi-annual	Annual	Cr, COPC, BP, AWQ, OD, rdx	Cr, COPC, BP, BWQ+OD, rdx	FP in plume	NTH IRZ DG, RE	Cr dec	67	
MW-37D SA	Annual	NC	Cr, COPC, AWQ	Cr, COPC, BWQ	BCW outside plume	IRL DG	Cr dec	40	
MW-37S ok	Annual	NC	Cr, BP, AWQ	Cr, BP, BWQ	BCW in plume	IRL DG	Cr sta	10	
MW-38D SA	Annual	NC	Cr, COPC, BP, AWQ, ISPT	Cr, COPC, BP, BWQ, ISPT	BCW outside plume		Cr sta		ISPT; 2 consecutive Q events also performed after 2013 repair
MW-38S Q	Annual	NC	Cr, COPC, BP, AWQ, ISPT	Cr, COPC, BP, BWQ, ISPT	BCW outside plume		Cr sta		ISPT; 2 consecutive Q events also performed after 2013 repair
MW-39-040 A	Biennial	NC	Cr, As	Cr, BP	FP outside plume	NTH IRZ DG, RE	Cr sta	ND	IMCP
MW-39-050 A	Annual	Biennial	Cr, COPC, BP, AWQ, rdx	Cr, BP, BWQ, rdx	FP outside plume	NTH IRZ DG, RE	Cr dec	ND	
MW-39-060 A	Annual	Biennial	Cr, COPC, BP, AWQ, rdx	Cr, COPC+BP, BWQ, rdx	FP outside plume	NTH IRZ DG, RE	Cr dec	ND	
MW-39-070 A	Annual	Biennial	Cr, AWQ, OD, rdx	Cr, BWQ+OD, rdx	FP outside plume	NTH IRZ DG, RE	Cr dec	ND	
MW-39-080 A	Annual	Biennial	Cr, AWQ, OD, rdx	Cr, BWQ+OD, rdx	FP outside plume	NTH IRZ DG, RE	Cr dec	ND	
MW-39-100 SA	Annual	NC	Cr, COPC, BP, AWQ, OD, rdx	Cr, COPC, BP, BWQ+OD, rdx	FP in plume	NTH IRZ DG, RE	Cr dec	110	
MW-40D SA	Annual	NC	Cr, COPC, BP, AWQ	Cr, COPC, BP, BWQ	W of BCW in plume		Cr inc; COPC sta	160	
MW-40S ok	Annual	NC	Cr, COPC, BP	Cr, COPC, BP	BCW outside plume		Cr sta	8	
MW-41D SA	Semi-annual	Annual	Cr, BP, AWQ	Cr, COPC, BP, BWQ	BCW outside plume	IRL DG	Cr sta	3	
MW-41M ok	Annual	NC	Cr, BP, AWQ	Cr, COPC, BP, BWQ	BCW outside plume	IRL DG	Cr sta	10	
MW-41S ok	Annual	NC	Cr, COPC, BP, AWQ	Cr, COPC, BP, BWQ	BCW outside plume	IRL DG	Cr sta	19	
MW-42-030 A	Biennial	NC	Cr, COPC, OD, As	Cr, COPC, BP, OD	FP outside plume	NTH IRZ DG, RE	Cr sta	ND	
MW-42-055 SA	Quarterly	NC	Cr, AWQ, OD, As, rdx	Cr, BP, BWQ+OD, rdx	FP outside plume	NTH IRZ DG, RE	Cr sta	ND	IMCP
MW-42-065 ok	Quarterly	Semi-annual	Cr, BP, AWQ, OD, rdx	Cr, BP, BWQ+OD, rdx	FP outside plume	NTH IRZ DG, RE	Cr sta	ND	IMCP
MW-43-025 ok	Annual	NC	Cr, BP, AWQ, rdx	Cr, BP, BWQ, rdx	FP outside plume	NTH IRZ DG, RE	Cr sta	ND	
MW-43-075 ok	Annual	NC	Cr, BP, AWQ, rdx	Cr, BP, BWQ, rdx	FP outside plume	NTH IRZ DG, RE	Cr sta	ND	IMCP
MW-43-090 ok	Annual	NC	Cr, BP, AWQ, rdx	Cr, BP, BWQ, rdx	FP outside plume	NTH IRZ DG, RE	Cr sta	ND	IMCP
MW-44-070 SA	Semi-annual	Biennial	Cr, BP, AWQ, OD, rdx	Cr, BP, BWQ+OD, rdx	FP outside plume	NTH IRZ DG, RE	Cr sta	ND	IMCP
MW-44-115 Q	Quarterly	Semi-annual	Cr, COPC, BP, AWQ, OD, rdx	Cr, COPC, BP, BWQ+OD, rdx	FP in plume	NTH IRZ DG, RE	Cr dec; COPC var	100	IMCP
MW-44-125 ok	Quarterly	Semi-annual	Cr, COPC, BP, AWQ, OD, rdx	Cr, COPC, BP, BWQ+OD, rdx	FP in plume	NTH IRZ DG, RE	Cr dec; COPC var	ND	IMCP
MW-46-175 ok	Quarterly + M	Quarterly	Cr, COPC, AWQ, OD, rdx	Cr, COPC, BWQ+OD, rdx	FP in plume	NTH IRZ DG, RE	Cr dec; COPC var	80	IMCP
MW-46-205 ok	Semi-annual	NC	Cr, AWQ, rdx	Cr, BWQ, rdx	FP in plume	NTH IRZ DG, RE	Cr sta	5 to ND	IMCP
MW-47-055 ok	Semi-annual	NC	Cr, BP, AWQ, OD, rdx	Cr, BP, BWQ+OD, rdx	FP in plume	NTH IRZ DR	Cr var	25	IMCP
MW-47-115 ok	Semi-annual	NC	Cr, AWQ, OD, rdx	Cr, BWQ+OD, rdx	FP in plume	NTH IRZ DR	Cr sta	20	IMCP
MW-48 ok	Quarterly	Semi-annual	Cr, AWQ	Cr, BWQ	N of TCS outside plume	TCS loop	Cr dec	ND	
MW-49-135 ok	Annual	NC	Cr, BP, AWQ, OD, rdx	Cr, BP, BWQ+OD, rdx	FP outside plume	NTH IRZ RE	Cr sta	1.5 to ND	
MW-49-275 A	Annual	Biennial	Cr, AWQ, OD, rdx	Cr, BWQ+OD, rdx	FP outside plume	NTH IRZ RE	Cr sta	ND	
MW-49-365 A	Annual	Biennial	Cr, AWQ, OD, rdx	Cr, BWQ+OD, rdx	FP outside plume	NTH IRZ RE	Cr sta	ND	
MW-50-095 SA	Semi-annual	Annual	Cr, AWQ, rdx	Cr, BWQ, rdx	NTH outside plume		Cr dec	14	
MW-50-200 ok	Quarterly	Semi-annual	Cr, AWQ, rdx	Cr, BWQ, rdx	NTH in plume		Cr dec	8,000	
MW-51 ok	Semi-annual	NC	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	NTH in plume	NTH IRZ DR	Cr sta	4,700	
MW-52S ok	Semi-annual	NC	Cr, BP, AWQ, rdx	Cr, BP, BWQ, rdx	FP outside plume	NTH IRZ DG, RE	Cr sta	ND	
MW-52M ok	Semi-annual	NC	Cr, BP, AWQ, rdx	Cr, BP, BWQ, rdx	FP outside plume	NTH IRZ DG, RE	Cr sta	ND	
MW-52D ok	Semi-annual	NC	Cr, BP, AWQ, rdx	Cr, BP, BWQ, rdx	FP outside plume	NTH IRZ DG, RE	Cr sta	ND	
MW-53M ok	Semi-annual	NC	Cr, BP, AWQ, rdx	Cr, BP, BWQ, rdx	FP outside plume	NTH IRZ DG, RE	Cr sta	ND	
MW-53D ok	Semi-annual	NC	Cr, BP, AWQ, rdx	Cr, BP, BWQ, rdx	FP outside plume	NTH IRZ DG, RE	Cr sta	ND	
OW-3S ok	Annual	NC	Cr, AWQ	Cr, BWQ	W of BCW, outside plume	FWI	Cr inc	27	
OW-3M ok	Annual	NC	Cr, AWQ	Cr, BWQ	W of BCW, outside plume	FWI	Cr sta	17	
OW-3D ok	Annual	NC	Cr, COPC, BP, AWQ	Cr, BWQ	W of BCW, outside plume	FWI	Cr sta-inc	10	
PGE-7BR A	Annual	Biennial	Cr, AWQ	Cr, BWQ	TCS outside plume		Cr sta	ND	ND Cr
PGE-8 A	Annual	Biennial	Cr, COPC, AWQ	Cr, COPC, BWQ	TCS outside plume		Cr dec	ND	
TEST WELLS									
PE-1 ok	Monthly	NC	Cr, AWQ	Cr, BWQ	FP in plume		Cr dec	7	

Conduct MP and 3V at these wells

Try grab sample trail at these wells

TABLE 7-2

Proposed Groundwater Monitoring Program Sampling Frequency and Analytical Suite Modifications

Fourth Quarter 2013 and Annual Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report,
PG&E Topock Compressor Station, Needles, California

Well ID	Current Frequency	Proposed Frequency	Current Analytes	Proposed Analytes	Location vs. Plume	Remedy Role	Trends	Typical [Cr(VI)] ug/L (approx)	Comments
TW-1 <i>ok</i>	Quarterly	Semi-annual	Cr, COPC, AWQ	Cr, COPC, BWQ	TCS in plume		Cr dec	3,000	in plume
TW-2S <i>A</i>	Annual	Biennial	Cr, AWQ	Cr, COPC, BWQ	FP in plume		Cr dec	500	
TW-2D <i>A</i>	Annual	Biennial	Cr, AWQ	Cr, BWQ	FP in plume		Cr dec	200	
TW-3D <i>ok</i>	Monthly	NC	Cr, AWQ	Cr, BWQ	FP in plume		Cr sta	900	
TW-4 <i>ok</i>	Annual	Biennial	Cr, AWQ	Cr, BWQ	FP in plume		Cr dec	9	
TW-5 <i>ok</i>	Annual	Biennial	Cr, AWQ	Cr, BWQ	NTH in plume		Cr sta	14	
PARK MOABI									
PM-03 <i>ok</i>	Annual	NC	Cr, AWQ, rdx	Cr, BWQ, rdx			Cr sta	7	water supply well
PM-04 <i>ok</i>	Annual	NC	Cr, AWQ, rdx	Cr, BWQ, rdx			Cr sta	20	water supply well
ARIZONA									
MW-54-085 <i>ok</i>	Semi-annual	NC	Cr, BP, AWQ, rdx	Cr, BP, BWQ, rdx	outside plume		Cr sta	ND	
MW-54-140 <i>ok</i>	Semi-annual	NC	Cr, BP, AWQ, rdx	Cr, BP, BWQ, rdx	outside plume		Cr sta	ND	
MW-54-195 <i>ok</i>	Semi-annual	NC	Cr, BP, AWQ, rdx	Cr, BP, BWQ, rdx	outside plume		Cr sta	ND	
MW-55-045 <i>SA</i>	Annual	NC	Cr, AWQ	Cr, BWQ	outside plume		Cr sta	ND	
MW-55-120 <i>SA</i>	Annual	NC	Cr, AWQ	Cr, BWQ	outside plume		Cr sta	7	
MW-56S <i>ok</i>	Semi-annual	NC	Cr, AWQ, rdx	Cr, BWQ, rdx	FP outside plume		Cr sta	ND	same freq CA slant wells
MW-56M <i>ok</i>	Semi-annual	NC	Cr, AWQ, rdx	Cr, BWQ, rdx	FP outside plume		Cr sta	ND	same freq CA slant wells
MW-56D <i>ok</i>	Semi-annual	NC	Cr, AWQ, rdx	Cr, BWQ, rdx	FP outside plume		Cr sta	ND	same freq CA slant wells
EAST RAVINE - TOPOCK COMPRESSOR STATION									
MW-57-050	dry	NC	Cr, AWQ	Cr, BWQ			--	--	
MW-57-070 <i>ok</i>	Quarterly	Semi-annual	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	in ER in plume		Cr var	700	inside plume, lacks strong trend
MW-57-185 <i>ok</i>	Quarterly	Semi-annual	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	in ER in plume	TCS - TWB/ER	Cr inc	8	inside plume, lacks strong trend
MW-58-065	dry	NC	Cr, AWQ, As	Cr, BWQ		TCS - ER	--	--	
MW-58BR <i>Q</i>	Quarterly	Semi-annual	Cr, AWQ, As	Cr, COPC, BP, BWQ, rdx	in ER in plume	TCS - ER	Cr var; COPC var	2	semiannual frequency after 4Q 2013 event (4 quarterly samples in new configuration)
MW-59-100 <i>ok</i>	Quarterly	Semi-annual	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	N of ER, in plume	TCS - TWB	Cr dec	4,400	inside plume, decreasing trend
MW-60-125 <i>ok</i>	Quarterly	Semi-annual	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	S of ER, in plume	TCS - WL	Cr var; COPC var	880	in plume, near edge, upland
MW-60BR-245 <i>Q</i>	Quarterly	Semi-annual	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	S of ER, in plume		Cr dec	75	near plume edge, upland
MW-61-110 <i>ok</i>	Quarterly	Semi-annual	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	S of ER, in plume	TCS - ER	Cr sta	650	inside plume
MW-62-065 <i>ok</i>	Quarterly	NC	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	N of ER, in plume	TCS - ER	Cr sta	500	close to river
MW-62-110 <i>ok</i>	Quarterly	NC	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	N of ER, in plume	TCS - ER	Cr inc	900	close to river, Cr trend
MW-62-190 <i>ok</i>	Quarterly	Semi-annual	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	N of ER, in plume		Cr sta	ND	ND and stable
MW-63-065 <i>ok</i>	Quarterly	NC	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	near ER mouth at river, sentry at plume edge	TCS - ER	Cr sta	1.5	sentry location at plume edge near river
MW-64BR <i>Q</i>	Quarterly	Semi-annual	Cr, AWQ, As	Cr, COPC, BP, BWQ, rdx	S of ER, edge of plume, inland from river		Cr dec	6	semiannual frequency after 4Q 2013 event (4 quarterly samples in new configuration)
MW-65-160 <i>ok</i>	Quarterly	NC	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	SW TCS, in plume	TCS - WL	Cr inc	70	near plume edge
MW-65-225 <i>ok</i>	Quarterly	NC	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	SW TCS, in plume	TCS - WL	Cr inc	500	near plume edge
MW-66-165 <i>ok</i>	Quarterly	Semi-annual	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	W TCS, in plume	TCS - DR	Cr sta	650	inside plume, stable trend
MW-66-230 <i>ok</i>	Quarterly	Semi-annual	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	W TCS, in plume	TCS - DR	Cr inc	6,000	inside plume
MW-66BR-270 <i>ok</i>	Quarterly	Semi-annual	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	W TCS, in plume	TCS - WL	Cr sta	ND	inside plume, stable trend
MW-67-185 <i>ok</i>	Quarterly	Semi-annual	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	N TCS, inside plume	TCS - DG, TWB	Cr inc	2,300	inside plume
MW-67-225 <i>ok</i>	Quarterly	Semi-annual	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	N TCS, inside plume	TCS - DG, TWB	Cr sta	3,200	inside plume, stable trend
MW-67-260 <i>ok</i>	Quarterly	Semi-annual	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	N TCS, inside plume	TCS - DG, TWB	Cr sta	2,100	inside plume
MW-68-180 <i>ok</i>	Quarterly	NC	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	TCS, inside plume	TCS - TWB	Cr var; COPC var	20,000	variable trend - at least 4 more Q
MW-68-240 <i>ok</i>	Quarterly	Semi-annual	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	TCS, inside plume	TCS - TWB	Cr inc	2,000	inside plume, stable trend
MW-68BR-280 <i>ok</i>	Quarterly	Semi-annual	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	TCS, inside plume		Cr sta; COPC sta	ND	inside plume, stable trend
MW-69-195 <i>ok</i>	Quarterly	NC	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	S TCS, inside plume	TCS - WL	Cr inc; COPC inc	800	increasing trends

Clarify when checked/sampled

Reconfigure well

Reconfigure well

TABLE 7-2

Proposed Groundwater Monitoring Program Sampling Frequency and Analytical Suite Modifications

Fourth Quarter 2013 and Annual Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report,
 PG&E Topock Compressor Station, Needles, California

Well ID	Current Frequency	Proposed Frequency	Current Analytes	Proposed Analytes	Location vs. Plume	Remedy Role	Trends	Typical [Cr(VI)] ug/L (approx)	Comments
MW-70-105 <i>ok</i>	Quarterly	Semi-annual	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	W ER, in plume	TCS - ER	Cr inc	75	inland from river, lower [Cr]
MW-70BR-225 <i>ok</i>	Quarterly	Semi-annual	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	W ER, in plume		Cr dec	2,200	inland from river, dec trend [Cr]
MW-71-035 <i>ok</i>	Quarterly	Semi-annual	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	NW of TCS, N of ER, plume edge	NTH IRZ DR	Cr sta	ND	plume edge but inland from river, stable ND trend
MW-72-080 <i>ok</i>	Quarterly	NC	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	SE of ER, in plume	TCS - ER	Cr inc; COPC var	150	near plume edge, near river
MW-72BR-200 <i>ok</i>	Quarterly	NC	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	SE of ER, in plume		Cr var	5	near plume edge, near river
MW-73-080 <i>ok</i>	Quarterly	NC	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	SE of ER, plume edge	TCS - ER	Cr sta	36	sentry location at plume edge near river
MW-74-240 <i>ok</i>	Quarterly	Semi-annual	Cr, COPC, BP, AWQ, rdx	Cr, COPC, BP, BWQ, rdx	TCS - outside plume		Cr sta	ND	Stable

TABLE 7-2

Proposed Groundwater Monitoring Program Sampling Frequency and Analytical Suite Modifications

Fourth Quarter 2013 and Annual Interim Measures Performance Monitoring and Site-wide Groundwater and Surface Water Monitoring Report,
PG&E Topock Compressor Station, Needles, California

Well ID	Current Frequency	Proposed Frequency	Current Analytes	Proposed Analytes	Location vs. Plume	Remedy Role	Trends	Typical [Cr(VI)] ug/L (approx)	Comments
Notes:									
Frequency -	Quarterly + M ER or BCW flow NC —		quarterly, with additional monthly sampling during Colorado River low water level interval from November through February to be sampled in the next quarterly event following a runoff event with flow in the well location wash (East Ravine or Bat Cave Wash) No Change in frequency proposed Underline indicates a change in this table from the 2012 Annual Report frequency recommendation						
Trends -	sta inc dec var	stable increasing decreasing variable	Trend descriptions based on Appendix C plots and historical data review						
Analytes -	Cr COPC, F BP PMP OD AWQ BWQ BKG T22 As rdx	current & new current & new current & new current & new current new current current current current & new	hexavalent and dissolved total Chromium, Cr(VI) and Cr. Additional contaminants of potential concern derived from risk assessment: Mo, Se, and Nitrate. At a small number of wells, Fluoride (F) is added. In-situ reduction possible by-products: As and Mn Performance monitoring suite: oxygen and deuterium stable isotopes annual water quality snapshot: new biennial water quality suite, for collection with the 3Q/4Q 2013 & 4Q 2015 GMP events: Background Study metals list Title 22 metals list Arsenic additional redox indicator	cations (Ca, Mg, Na, Fe, Mn, B), TDS, anions (bromide, chloride, sulfate, nitrate), alkalinity, stable isotopes (see "OD"). cations (Ca, Mg, Na, Fe, Mn), anions (chloride, sulfate, nitrate), alkalinity cations (Ca, Mg, Na, Fe, Mn, B), TDS, anions (bromide, chloride, sulfate), alkalinity, and COPC metals (Mo, Se). BWQ+OD indicates biennial stable isotope analyses are added. Al, Sb, As, Ba, Be, B, Ca, Cd, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, Se, Ag, Tl, V, Zn Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Hg, Mo, Ni, Se, Ag, Tl, V, Zn Ammonia added to AWQ, PMP or BWQ allows for chemical evaluation of redox conditions.					
<u>Compliance Monitoring Program (CMP) monitoring wells with added COPC and BP sampling proposed: OW-1S, OW-1M, OW-1D; OW-5S, OW-5M, OW-5D; CW-01D, CW-01M; CW-2D, CW-02M</u>									
Location vs. Plume -		BCW, ER, TCS FP, NTH N, E, S, W	Bat Cave Wash, East Ravine, Topock Compressor Station Floodplain (area east of NTH along Colorado River) and NTH or National Trails Highway north, east, south or west relative to location (e.g. E of BCW)						
Remedy Role -		DR, DG, RE NTH IRZ IRL TCS FWI WL	dose-response monitoring, or down gradient monitoring, or riverbank extraction monitoring National Trails Highway in-situ reduction zone Inner Recirculation Loop Topock Compressor Station Loop, including Transwestern Bench (TWB) and East Ravine (ER) Extraction remedy monitoring Freshwater injection monitoring well Water level monitoring						
Comments -	IMCP IM3 CZ	This well is part of the IM chemical performance monitoring plan and has an assigned Cr(VI) trigger level. This well is located within the IM3 capture zone							