GW-040

Baseline GW Quality Statistics

2019

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, October 31, 2019 9:28 AM
To: 'Stuart Hyde'
Cc: Devin Hencmann; Ashley Ager; Griswold, Jim, EMNRD
Subject: RE: Background Concentrations for COCs at GBR
Attachments: 20.006.0002New Final.pdf

Stuart, et, al.:

Good morning!

Regarding the msg. from Devin on 6/10/19, yes the New Mexico Oil Conservation Division (OCD) reviewed the revised statistical data with "ND" default to PQLs. This is the accepted statistical approach to data.

However, OCD observes the concentration averages or "baseline" are significantly above regulatory levels for some constituents of concern. OCD had alerted LTE of the most recent WQCC Regulatory changes in reference to "background" (see attached WQCC Regulations). Basically, the concept or remediation to groundwater background concentration has changed to reflect the "natural background" concentration, and not an unnatural background situation. This is why LTE and OCD are in discussions with the EPA for the Lee Acres Superfund Site. If Lee Acres Superfund Site is not responsible for the elevated baseline contamination, the responsibility for contamination may reside with Marathon?

I will update the GW-40 administrative record based on your attached information. Please contact me if you have questions.

Thank you.

Mr. Carl J. Chavez, CHMM (#13099)
New Mexico Oil Conservation Division
Energy Minerals and Natural Resources Department
1220 South St Francis Drive
Santa Fe, New Mexico 87505
Ph. (505) 476-3490
E-mail: CarlJ.Chavez@state.nm.us
"Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?" (To see how, go to: http://www.emnrd.state.nm.us/OCD and see "Publications")

From: Stuart Hyde <shyde@ltenv.com>
Sent: Monday, October 28, 2019 11:47 AM
To: Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
Cc: Devin Hencmann <dhencmann@ltenv.com>; Ashley Ager <aager@ltenv.com>
Subject: [EXT] FW: Background Concentrations for COCs at GBR

Carl,

Have you had a chance to further review the background data for the Giant Bloomfield Refinery (GBR) site (see email below and attachments). We will be conducting the annual groundwater sampling in the next couple weeks and would

like to be able to compare the results to the calculated “background” concentrations for chloride, sulfate, chromium, iron, manganese, and TDS.

In addition, I discovered that there were some missing data from the table we created for EPA’s review for the above mentioned constituents (for 2015 and 2016 annual events). I have attached the updated table for your records and will also send this updated table to Nelly to review.

Thanks and please let us know if you have any further questions/concerns regarding the background data.

Stuart Hyde, LG
Project Geologist
970.385.1096 *direct*
970.903.1607 *cell*

From: Devin Hencmann
Sent: Monday, June 10, 2019 3:13 PM
To: Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
Cc: McCartney, Gregory J. <gjmccartney@marathonpetroleum.com>
Subject: Background Concentrations for COCs at GBR

Carl,

Attached are the tables you had requested in your email dated 5/9/2019 for establishing background concentrations for constituents of concern at the former Giant Bloomfield Refinery. Statistics have been rerun replacing all Non-Detects with the PQLs. We presented results from the various statistical runs in one table to make comparing the different results easier. Explanations are also presented in the table.
I have also attached a table containing the historical data that was used in the stats, and the bio of the LTE data analyst that ran the statistics. Paloma Lang can be reached at **plang.ltenv.com** if you have any questions. Please cc myself on any correspondence so I can follow through and sure you receive an answer in a timely manner.

Thank you,
Devin

LT Environmental, Inc.
Advancing Opportunity
25 YEARS

Devin Hencmann
Project Geologist
(970) 385-1096 office
(970) 403-6023 cell
848 East 2nd Avenue, Durango CO 81301
www.ltenv.com

Chavez, Carl J, EMNRD

From: Stuart Hyde <shyde@ltenv.com>
Sent: Monday, October 28, 2019 11:47 AM
To: Chavez, Carl J, EMNRD
Cc: Devin Hencmann; Ashley Ager
Subject: [EXT] FW: Background Concentrations for COCs at GBR
Attachments: Upgradient_Results for statistical analysis.pdf; Background Stats Table_Updated.pdf; LangP 2018.pdf; 2019_Requested Analytical Results for GBR.pdf

Carl,

Have you had a chance to further review the background data for the Giant Bloomfield Refinery (GBR) site (see email below and attachments). We will be conducting the annual groundwater sampling in the next couple weeks and would like to be able to compare the results to the calculated "background" concentrations for chloride, sulfate, chromium, iron, manganese, and TDS.

In addition, I discovered that there were some missing data from the table we created for EPA's review for the above mentioned constituents (for 2015 and 2016 annual events). I have attached the updated table for your records and will also send this updated table to Nelly to review.

Thanks and please let us know if you have any further questions/concerns regarding the background data.

Stuart Hyde, LG
Project Geologist
970.385.1096 *direct*
970.903.1607 *cell*

From: Devin Hencmann
Sent: Monday, June 10, 2019 3:13 PM
To: Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
Cc: McCartney, Gregory J. <gjmccartney@marathonpetroleum.com>
Subject: Background Concentrations for COCs at GBR

Carl,

Attached are the tables you had requested in your email dated 5/9/2019 for establishing background concentrations for constituents of concern at the former Giant Bloomfield Refinery. Statistics have been rerun replacing all Non-Detects with the PQLs. We presented results from the various statistical runs in one table to make comparing the different results easier. Explanations are also presented in the table.
I have also attached a table containing the historical data that was used in the stats, and the bio of the LTE data analyst that ran the statistics. Paloma Lang can be reached at **plang.ltenv.com** if you have any questions. Please cc myself on any correspondence so I can follow through and sure you receive an answer in a timely manner.

Thank you,
Devin

Devin Hencmann
Project Geologist
(970) 385-1096 office
(970) 403-6023 cell
848 East 2nd Avenue, Durango CO 81301
www.ltenv.com

PROPOSED FACILITY-SPECIFIC BACKGROUND THRESHOLD VALUES FOR INORGANICS IN GROUNDWATER
FORMER GIANT BLOOMFIELD REFINERY
BLOOMFIELD, NEW MEXICO

												Original Reported UTL	NDs replaced with PQL - Analyzed as Detections (per Agency's request)				Original Dataset with NDs (Statistic based on Gamma distribution for previously lognormal cases)					
Analyte	**Units**	**Number of Samples**	**Percent ND**	**Non-Detects**	**Detections**	**ND EM**	**Distribution**	**Min**	**Max**	**Mean**	**Std Deviation**	**95%UTL 95% Coverage**	**CV**	**ND EM**	**Distribution**	**95%UTL 95% Coverage**	**CV**	**ND EM**	**Distribution**	**95%UTL 95% Coverage**	**Proposed Background Threshold Values (BTVs)**	**Comments**
Chloride	mg/L	40	0	0	40	NA	Non-Parametric\Max	44	560	232.3	153.4	560									560	No Change. Dataset do not follow a discernible distribution, use Max value as UTL
Chromium	mg/L	32	3.125	1	31	ROS	Lognormal	0.006	1.4	0.318	0.379	4.46	1.19	PQL	Gamma-WH	1.59	0.145	KM	Gamma-WH	1.553	1.553	Calculated UTL based on lognormal distribution is disproportionately high when compared to maximum detection= 1.4 due to highly variable sample data, recommend using UTL based on Gamma distribution with WH approximation
Iron	mg/L	33	6	2	31	ROS	Lognormal	0.1	170	16.62	33.37	261.7	2.008	PQL	Gamma-HW	100.1	1168	KM	Gamma-HW	97.06	97.06	Calculated UTL based on lognormal distribution is disproportionately high when compared to maximum detection= 170 due to highly variable sample data, recommend using UTL based on Gamma distribution with HW approximation
Manganese	mg/L	24	0	0	24	NA	Lognormal	0.041	6.4	0.765	1.578	10.63					1.226	NA	Gamma-HW	6.42	6.42	Calculated UTL based on lognormal distribution is disproportionately high when compared to maximum detection= 6.4 due to highly variable sample data, recommend using UTL based on Gamma distribution with HW approximation
Sulfate	mg/L	40	0	0	40	NA	Normal	698	2800	1801	351.9	2546									2546	Low coefficient of variation, use UTL based on normal distribution
Total Dissolved Solids	mg/L	40	0	0	40	NA	Normal	1460	4320	3234	629	4566									4566	Low coefficient of variation, use UTL based on normal distribution

Notes:
CV - Coefficient of Variation
HW - Hawkins–Wixley approximation
KM - Kaplan-Meier method
NA - Not Applicable
ND - Non-detect
ND EM - Non-detect estimation method
ROS - Regression on order statistics
WH - Wilson-Hilferty approximation

PALOMA LANG

GIS / DATABASE MANAGEMENT

EXPERTISE

Database Design and Maintenance

Data Quality Control

Data Analysis and Reporting

ENVIRONMENTAL EXPERIENCE

22 years / 8 years LTE

EDUCATION

B.S. Chemistry, University of Colorado

REGISTRATIONS / CERTIFICATIONS

Information Systems Programming Advanced Training, 2001, Denver Technical College

SharePoint 2013 Administrator, 2014, Mission Critical Training

SharePoint 2013 Designer, 2014, Mission Critical Training

PROJECT EXPERIENCE

Ms. Lang is a chemist and database management specialist who has experience in the environmental consulting field, including data analysis and validation, groundwater monitoring statistics, quality assurance/quality control (QA/QC), database management using Intelex Asset & Compliance Tracking System (ACTS) and Microsoft's SQL, Access, and SharePoint applications, and designing and implementing tools and reports in support of groundwater monitoring, remediation engineering, and greenhouse gas management projects and Spill Prevention, Control, and Countermeasure (SPCC) inspections.

Designed and implemented a SharePoint hosted Access Web Application for reporting analytical data and managing documents.

Designed and maintained a database application to test for outliers, normality, and inter-well/intra-well descriptive statistics, and trends in groundwater samples.

Designed and maintained a database application for managing and reporting water treatment systems. Functionality included Supervisory Control and Data Acquisition data imports, system status, and compliance reports.

Designed and maintained a database for calculating greenhouse gas emissions and aggregate inventories and for managing asbestos clean-up projects.

Wrote code and Implemented statistical analyses such as normality, outlier, trends, prediction and tolerance limits, box plots, and control charts using Microsoft's SQL and S-Plus platforms in support of large groundwater monitoring projects.

Ms. Lang provides data management support for multiple groundwater monitoring, baseline water quality, air permitting, and stormwater programs overseeing data quality from field collection to client and agency reporting.

Designed and implemented tools for the automated production of discharge monitoring reports submitted to Colorado Department of Public Health and Environment, Texas Natural Resource Conservation Commission Form 312, and New Jersey Department of Environmental Protection Electronic Data Deliverables system.

Ms. Lang has effectively integrated M.S. Excel, M.S. Access, M.S. Word, TapForms, GoCanvas, and FormMaker, on iPads, tablets, and laptops to support large field data collection projects such as equipment inventories, tank registrations, and environmental, health and safety and leak detection and repair inspections. She also provides training and technical support to internal and external end-users.

Ms. Lang also has experience providing technical support for non-database tasks such as air permit renewals, Dispersion Models, SPCC reports, and water well management programs.

Ms. Lang is a certified administrator and developer for ACTS and Microsoft SharePoint and has expertise in using ProUCL and ChemStat software.

2008-2018 GROUNDWATER LABORATORY ANALYTICAL RESULTS
FORMER GIANT BLOOMFIELD REFINERY
WESTERN REFINING SOUTHWEST, INC.

Analyte	NMWQCC Standard	Unit	GBR-32											GBR-48										
			Jan 2008	Jan 2009	Jan 2010	Jan 2011	Jan 2012	Jan 2013	Jan 2014	Jan 2015	Jan 2016	Jan 2017	Jan 2018	Jan 2008	Jan 2009	Jan 2010	Jan 2011	Jan 2012	Jan 2013	Jan 2014	Jan 2015	Jan 2016	Jan 2017	Jan 2018
USEPA Method 300.0: Anions																								
chloride	250	mg/L	104	**530**	-	**420**	**500**	**400**	**380**	**370**	**320**	**290**	200	144	**560**	-	**390**	200	230	**420**	**370**	**340**	**350**	**300**
sulfate	600	mg/L	**1,750**	**2,100**	-	**2,300**	**2,800**	**2,200**	**1,900**	**2,000**	**2,000**	**1,600**	**1,700**	**698**	**1,300**	-	**2,200**	**1,700**	**2,200**	**2,100**	**2,100**	**2,000**	**1,900**	**1,800**
iron	1	mg/L	-	<0.1	-	-	0.88	**1.2**	**5.9**	0.26	**11**	**2.3**	**2.7**	-	<0.10	-	**9.3**	**15**	**17**	**52**	**170**	**89**	**40**	**18**
total dissolved solids	1,000	mg/L	**4,270**	**4,100**	-	**4,010**	**4,290**	**4,320**	**3,800**	**3,830**	**3,500**	**3,210**	**3,110**	**1,460**	**2,700**	-	**3,510**	**2,940**	**4,020**	**4,030**	**3,730**	**3,360**	**3,690**	**3,580**
chromium	0.05	mg/L	**0.189**	-	-	**0.13**	0.030	**0.098**	**1.4**	**0.20**	**0.33**	**0.13**	-	**1.32**	-	-	**0.71**	**0.63**	**0.52**	**0.92**	**0.95**	**0.42**	**0.13**	-
manganese	0.2	mg/L	-	-	-	-	**0.50**	**0.40**	**0.70**	**0.56**	**1.2**	**1.2**	-	-	-	-	-	**0.83**	**0.94**	**2.0**	**6.4**	**4.8**	**1.7**	-

Analyte	NMWQCC Standard	Unit	GBR-49											GBR-50										
			Jan 2008	Jan 2009	Jan 2010	Jan 2011	Jan 2012	Jan 2013	Jan 2014	Jan 2015	Jan 2016	Jan 2017	Jan 2018	Jan 2008	Jan 2009	Jan 2010	Jan 2011	Jan 2012	Jan 2013	Jan 2014	Jan 2015	Jan 2016	Jan 2017	Jan 2018
USEPA Method 300.0: Anions																								
chloride	250	mg/L	99.7	**280**	-	**310**	**260**	240	63	180	210	150	180	46.5	44	-	46	49	49	52	44	59	54	59
sulfate	600	mg/L	**1,720**	**2,100**	-	**2,000**	**2,000**	**1,600**	**1,400**	**1,500**	**1,900**	**1,300**	**1,800**	**1,380**	**1,700**	-	**1,800**	**1,800**	**1,600**	**1,700**	**1,700**	**1,500**	**1,500**	**1,700**
iron	1	mg/L	-	**1.4**	-	-	0.23	**4.6**	**41**	**7.1**	**11**	0.44	**23**	-	0.41	-	-	0.72	**1.3**	**3.6**	**2.2**	**6.8**	**5.8**	**4**
total dissolved solids	1,000	mg/L	**3,460**	**3,300**	-	**3,390**	**3,470**	**3,290**	**2,340**	**2,840**	**3,160**	**2,720**	**3,010**	**2,830**	**2,400**	-	**2,640**	**2,730**	**2,830**	**2,800**	**2,760**	**2,580**	**2,590**	**2,770**
chromium	0.05	mg/L	**0.217**	-	-	**0.48**	0.018	0.041	**0.060**	**0.38**	**0.20**	0.018	-	0.011	-	-	0.023	0.0069	<0.0060	0.013	**0.073**	**0.36**	**0.16**	-
manganese	0.2	mg/L	-	-	-	-	**0.34**	**1.3**	**3.9**	**0.54**	**1.1**	**0.30**	-	-	-	-	-	0.041	0.12	**0.22**	**0.19**	**1.3**	**0.32**	-

Notes:
BOLD - indicates concentration exceeds the NMWQCC standard
mg/L - milligrams per liter
- - not tested
ND - not detected
NMWQCC - New Mexico Water Quality Control Commission
µg/L - micrograms per liter
USEPA - United States Environmental Protection Agency

TABLE 1
2010 to 2018 - ANNUAL COMPLIANCE GROUNDWATER LABORATORY ANALYTICAL RESULTS

FORMER GIANT BLOOMFIELD REFINERY
SAN JUAN COUNTRY, NEW MEXICO
WESTERN REFINING PIPELINE, LLC.

Exploration Location	Wellhead Elevation (feet)	Well Depth (feet)	Screened Interval (depth in feet)	Well Diameter (inches)	Sample Date	Depth to Water (feet BTOC)	USEPA Method 300.0: Anions		USEPA Method 200.7: Total Metals			USEPA Method SM2540C Modified: Total Dissolved Solids
							chloride	sulfate	chromium	iron	manganese	total dissolved solids
NMWQCC Standard							**250**	**600**	**0.05**	**1.0**	**0.2**	**1,000**
GBR Background Threshold Values (1)							**560**	**2,546**	**1.553**	**97.06**	**6.42**	**4,566**
Regional Background Levels (Stone, et al. 1983) (2)							**2 - 34,000**	**1.9 - 14,000**	**0.001 - 0.06**	**0.01 - 16**	**0 - 2.6**	NA
Lee Acres RI Background Concentrations - Alluvial Aquifer (1992) (3)							**6.4 - 404**	**420 - 2,120**	**0.0144 - 0.113**	**0 - 1.48**	**0.0161 - 0.423**	**760 - 3,600**
Lee Acres RI/ROD Remedial Goals (1992/2004) (4)							**34,000**	**14,000**	**0.06**	**16**	**0.346**	**10,000**
Units							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Lee Acres Sampling, 1992 RI Report (5)												
Lee Acres Site 1, Subarea 2, OU 2 - Alluvial Aquifer							**8.8 - 730**	**195 - 4,370**	**0.0108 - 0.124**	**0.118 - 1.71**	**0.0161 - 8.62**	**943 - 6,560**
Lee Acres Site 1, Subarea 3, OU 2 - Southern Area - Alluvial Aquifer							**19 - 2,110**	**830 - 2,610**	**0.0145 - 0.0406**	**0.148 - 23.9**	**0.0214 - 4.23**	**622 - 5,300**
Lee Acres Site 2, Subarea 4 - Alluvial Aquifer							**3.5 - 604**	**310 - 3,220**	**0.043 - 0.110**	**0.0749 - 64.1**	**0.0131 - 3.4**	**616 - 6,370**
GBR Sampling, Upgradient Wells (6)												
GBR-32	5,414.86	45	25 - 40	2	Oct 2018	33.95	200	1,700	0.074	2.7	1.9	3,110
					Dec 2017		290	1,600	0.13	2.3	1.2	3,210
					Jan 2017		320	2,000	0.33	11	1.2	3,500
					Aug 2015		370	2,000	0.02	0.26	0.56	3,830
					Nov 2014		380	1,900	1.4	5.9	0.70	3,800
					Jan 2013		400	2,200	0.098	1.2	0.40	4,320
					Jan 2012		500	**2,800**	0.030	0.88	0.50	4,290
					Jan 2011		420	2,300	0.13	NT	NT	4,010
					Jan 2010		NT	NT	NT	NT	NT	NT
GBR-48	5,413.90	43.6	28.4 - 38.4	2	Oct 2018	35.62	300	1,800	0.036	18	0.49	3,580
					Dec 2017		350	1,900	0.13	40	1.7	3,690
					Jan 2017		340	2,000	0.42	89	4.8	3,360
					Aug 2015		370	2,100	0.95	170	6.4	3,730
					Nov 2014		420	2,100	0.92	52	2.0	4,030
					Jan 2013		230	2,200	0.52	17	0.94	4,020
					Jan 2012		200	1,700	0.63	15	0.83	2,940
					Jan 2011		390	2,200	0.71	9.3	NT	3,510
					Jan 2010		NT	NT	NT	NT	NT	NT
GBR-49	*	38.5	25.9 - 36.3	2	Oct 2018	32.06	180	1,800	1.2	23	0.98	3,010
					Dec 2017		150	1,300	0.018	0.44	0.30	2,720
					Jan 2017		210	1,900	0.2	11	1.1	3,160
					Aug 2015		180	1,500	0.38	7.1	0.54	2,840
					Nov 2014		63	1,400	0.060	41	3.9	2,340
					Jan 2013		240	1,600	0.041	4.6	1.3	3,290
					Jan 2012		260	2,000	0.018	0.23	0.34	3,470
					Jan 2011		310	2,000	0.48	NT	NT	3,390
					Jan 2010		NT	NT	NT	NT	NT	NT

Exploration Location	Wellhead Elevation (feet)	Well Depth (feet)	Screened Interval (depth in feet)	Well Diameter (inches)	Sample Date	Depth to Water (feet BTOC)	USEPA Method 300.0: Anions		USEPA Method 200.7: Total Metals			USEPA Method SM2540C Modified: Total Dissolved Solids
							chloride	sulfate	chromium	iron	manganese	total dissolved solids
NMWQCC Standard							**250**	**600**	**0.05**	**1.0**	**0.2**	**1,000**
GBR Background Threshold Values (1)							**560**	**2,546**	**1.553**	**97.06**	**6.42**	**4,566**
Regional Background Levels (Stone, et al. 1983) (2)							**2 - 34,000**	**1.9 - 14,000**	**0.001 - 0.06**	**0.01 - 16**	**0 - 2.6**	NA
Lee Acres RI Background Concentrations - Alluvial Aquifer (1992) (3)							**6.4 - 404**	**420 - 2,120**	**0.0144 - 0.113**	**0 - 1.48**	**0.0161 - 0.423**	**760 - 3,600**
Lee Acres RI/ROD Remedial Goals (1992/2004) (4)							**34,000**	**14,000**	**0.06**	**16**	**0.346**	**10,000**
Units							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
GBR-50	*	42.5	26.91 - 37.26		Oct 2018	31.26	59	1,700	0.044	4.0	0.13	2,770
					Dec 2017		54	1,500	0.16	5.8	0.32	2,590
					Jan 2017		59	1,500	0.36	6.8	1.3	2,580
					Aug 2015		44	1,700	0.073	2.2	0.19	2,760
					Nov 2014		52	1,700	0.013	3.6	0.22	2,800
					Jan 2013		49	1,600	<0.0060	1.3	0.12	2,830
					Jan 2012		49	1,800	0.0069	0.72	0.041	2,730
					Jan 2011		46	1,800	0.023	NT	NT	2,640
					Jan 2010		NT	NT	NT	NT	NT	NT
GBR Sampling, Source-Area Wells												
GRW-3/GBR-29 or 43	5,388.77	58.3	34.5 - 50.2	6	Oct 2018	43.13	99	640	NT	18	0.80	2,190
					Dec 2017		74	1,400	NT	54	1.9	2,920
					Jan 2017		74	1,200	NT	150	2.9	2,730
					Aug 2015		38	1,900	NT	0.89	0.69	3,320
					Nov 2014		26	2,200	NT	0.86	0.44	3,680
					Jan 2013		59	1,300	NT	2.8	0.54	2,620
					Jan 2012		54	1,300	NT	2.8	0.67	2,660
					Jan 2011		95	480	NT	NT	NT	1,810
					Jan 2010		NT	NT	NT	NT	NT	NT
GRW-6/GBR-44	5,390.81	58.6	32.6 - 48.3	6	Oct 2018	40.89	100	1,300	NT	**890**	**45**	2,390
					Dec 2017		120	1,200	NT	40	**9.1**	2,570
					Jan 2017		89	1,500	NT	11	**17**	2,580
					Aug 2015		88	1,400	NT	15	**18**	3,220
					Nov 2014		86	1,600	NT	35	**8.5**	3,170
					Jan 2013		100	1,500	NT	2.4	1.2	2,760
					Apr 2012		80	1,900	NT	0.47	1.0	2,740
					Jan 2011		110	1,400	NT	NT	NT	2,490
					Jan 2010		NT	NT	NT	NT	NT	NT
GBR-17	5,402.69	51	31 - 51	2	Oct 2018	34.00	49	1,200	NT	**100**	3.0	2,180
					Dec 2017		50	1,000	NT	9.3	0.25	2,110
					Jan 2017		46	1,100	NT	15	0.35	1,890
					Aug 2015		43	1,100	NT	3.6	<0.00200	1,960
					Nov 2014		44	1,200	NT	3.7	0.13	1,980
					Jan 2013		47	1,300	NT	1.2	0.045	2,700
					Jan 2012		46	1,400	NT	3.9	0.15	2,150
					Jan 2011		47	1,300	NT	NT	NT	2,140
					Jan 2010		NT	NT	NT	NT	NT	NT

Exploration Location	Wellhead Elevation (feet)	Well Depth (feet)	Screened Interval (depth in feet)	Well Diameter (inches)	Sample Date	Depth to Water (feet BTOC)	USEPA Method 300.0: Anions		USEPA Method 200.7: Total Metals			USEPA Method SM2540C Modified: Total Dissolved Solids
							chloride	sulfate	chromium	iron	manganese	total dissolved solids
NMWQCC Standard							**250**	**600**	**0.05**	**1.0**	**0.2**	**1,000**
GBR Background Threshold Values (1)							**560**	**2,546**	**1.553**	**97.06**	**6.42**	**4,566**
Regional Background Levels (Stone, et al. 1983) (2)							**2 - 34,000**	**1.9 - 14,000**	**0.001 - 0.06**	**0.01 - 16**	**0 - 2.6**	NA
Lee Acres RI Background Concentrations - Alluvial Aquifer (1992) (3)							**6.4 - 404**	**420 - 2,120**	**0.0144 - 0.113**	**0 - 1.48**	**0.0161 - 0.423**	**760 - 3,600**
Lee Acres RI/ROD Remedial Goals (1992/2004) (4)							**34,000**	**14,000**	**0.06**	**16**	**0.346**	**10,000**
Units							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
GBR-24D	5,396.77	46.3	33 - 43	2	Oct 2018	30.92	130	2,300	NT	9.1	1.8	3,780
					Dec 2017		140	1,800	NT	11	1.8	3,560
					Jan 2017		130	1,900	NT	14	1.8	3,390
					Aug 2015		160	2,100	NT	11	1.8	3,380
					Nov 2014		210	1,800	NT	12	1.7	3,410
					Jan 2013		200	1,700	NT	3.6	1.8	3,430
					Jan 2012		200	2,000	NT	2.4	1.7	3,320
					Jan 2011		170	2,400	NT	NT	NT	3,410
					Jan 2010		NT	NT	NT	NT	NT	NT
GBR-30	5,395.59	45	25 - 40	2	Oct 2018	32.31	250	1,500	NT	28	0.76	3,000
					Dec 2017		220	1,300	NT	38	1.4	2,770
					Jan 2017		220	1,400	NT	64	2.3	2,580
					Aug 2015		310	1,600	NT	7.6	0.5	3,020
					Nov 2014		270	1,400	NT	88	2.2	2,520
					Jan 2013		310	1,500	NT	**130**	6.1	3,340
					Jan 2012		390	1,700	NT	2.9	0.29	3,240
					Jan 2011		320	1,600	NT	NT	NT	3,340
					Jan 2010		NT	NT	NT	NT	NT	NT
GBR-31	5,396.58	45	24.6 - 39.6	2	Oct 2018	32.27	220	1,400	NT	13	3.1	2,660
					Dec 2017		93	1,700	NT	21	4.2	2,940
					Jan 2017		84	1,700	NT	1.9	0.18	2,970
					Aug 2015		250	1,700	NT	2.4	0.45	3,170
					Nov 2014		230	1,500	NT	12	1.6	3,100
					Jan 2013		79	1,600	NT	15	0.77	2,720
					Jan 2012		74	1,700	NT	3.8	0.27	2,760
					Jan 2011		97	1,800	NT	NT	NT	2,740
					Jan 2010		NT	NT	NT	NT	NT	NT
GBR-51	5,389.68	59.5	38.5 - 54.25	6	Oct 2018	NM	54	1,300	NT	0.059	<0.0020	2,330
					Dec 2017		51	1,200	NT	0.080	<0.020	2,250
					Jan 2017		45	990	NT	9.1	0.47	2,080
					Aug 2015		54	1,600	NT	17	0.42	2,430
					Nov 2014		54	1,400	NT	16	0.47	2,320
					Jan 2013		56	1,500	NT	9.7	0.88	2,540
					Jan 2012		53	1,600	NT	3.1	0.16	2,440
					Jan 2011		53	1,600	NT	NT	NT	2,380
					Jan 2010		NT	NT	NT	NT	NT	NT

Exploration Location	Wellhead Elevation (feet)	Well Depth (feet)	Screened Interval (depth in feet)	Well Diameter (inches)	Sample Date	Depth to Water (feet BTOC)	USEPA Method 300.0: Anions		USEPA Method 200.7: Total Metals			USEPA Method SM2540C Modified: Total Dissolved Solids
							chloride	sulfate	chromium	iron	manganese	total dissolved solids
NMWQCC Standard							**250**	**600**	**0.05**	**1.0**	**0.2**	**1,000**
GBR Background Threshold Values (1)							**560**	**2,546**	**1.553**	**97.06**	**6.42**	**4,566**
Regional Background Levels (Stone, et al. 1983) (2)							**2 - 34,000**	**1.9 - 14,000**	**0.001 - 0.06**	**0.01 - 16**	**0 - 2.6**	NA
Lee Acres RI Background Concentrations - Alluvial Aquifer (1992) (3)							**6.4 - 404**	**420 - 2,120**	**0.0144 - 0.113**	**0 - 1.48**	**0.0161 - 0.423**	**760 - 3,600**
Lee Acres RI/ROD Remedial Goals (1992/2004) (4)							**34,000**	**14,000**	**0.06**	**16**	**0.346**	**10,000**
Units							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
GBR-52	5,387.74	50.78	30.08 - 45.75	6	Oct 2018	NM	54	1,500	NT	0.12	0.0028	2,580
					Dec 2017		54	1,500	NT	0.048	<0.0020	2,640
					Jan 2017		58	1,400	NT	18	0.46	2,540
					Aug 2015		65	1,400	NT	8.2	0.15	2,840
					Nov 2014		65	1,700	NT	12	0.25	2,540
					Jan 2013		63	1,700	NT	2.3	0.036	2,770
					Jan 2012		60	1,800	NT	2.2	0.032	2,720
					Jan 2011		62	1,900	NT	NT	NT	2,700
					Jan 2010		NT	NT	NT	NT	NT	NT
GBR Sampling, Downgradient Wells												
SHS-1	5,383.54	50.97	35.67 - 45.67	4	June 2017	P&A	100	1,300	NT	NT	NT	2,400
					Jan 2011		NT	NT	NT	NT	NT	NT
SHS-2	5,381.66	41.28	30.98 - 40.98	4	June 2017	P&A	310	2,200	NT	NT	NT	4,100
					Jan 2011		NT	NT	NT	NT	NT	NT
SHS-4	5,383.62	55	37 - 47	2	June 2017	P&A	59	1,600	NT	NT	NT	2,270
SHS-5	5,378.36	53.33	37.62 - 48.0	4	June 2017	P&A	50	1,200	NT	NT	NT	2,030
					Jan 2011		NT	NT	NT	NT	NT	NT
SHS-6	5,378.17	47.88	32.48 - 42.85	4	Jan 2018	37.85	NT	NT	NT	NT	NT	NT
SHS-8	5,380.25	52.5	30.83 - 46.60	4	Oct 2018	38.25	130	890	NT	50	3.1	2,730
SHS-8					Dec 2017		110	1,200	NT	10	3.6	2,730
SHS-8					Jan 2017		100	720	NT	66	3.0	2,210
SHS-8					Aug 2015		120	47	NT	8.6	0.41	1,300
SHS-8					Nov 2014		110	350	NT	**260**	5.0	1,400
SHS-8					Jan 2013		120	770	0.099	**100**	4.7	1,800
SHS-8					Jan 2012		170	430	NT	15	2.3	2,040
SHS-8					Jan 2011		150	150	0.0063	NT	NT	1,440
SHS-8					Jan 2010		NT	NT	NT	NT	NT	NT
SHS-9	5,380.79	49.88	34.46 - 44.46	4	Jan 2018	37.43	NT	NT	NT	NT	NT	NT
SHS-13	5,367.81	47.4	27 - 42	4	Jan 2018	35.85	NT	NT	NT	NT	NT	NT
SHS-14	5,367.07	54	28.70 - 48.70	4	Jan 2018	34.18	NT	NT	NT	NT	NT	NT
SHS-15	5,366.21	47.8	27.40 - 42.40	4	Jan 2018	33.00	NT	NT	NT	NT	NT	NT

Exploration Location	Wellhead Elevation (feet)	Well Depth (feet)	Screened Interval (depth in feet)	Well Diameter (inches)	Sample Date	Depth to Water (feet BTOC)	USEPA Method 300.0: Anions		USEPA Method 200.7: Total Metals			USEPA Method SM2540C Modified: Total Dissolved Solids
							chloride	sulfate	chromium	iron	manganese	total dissolved solids
NMWQCC Standard							**250**	**600**	**0.05**	**1.0**	**0.2**	**1,000**
GBR Background Threshold Values (1)							**560**	**2,546**	**1.553**	**97.06**	**6.42**	**4,566**
Regional Background Levels (Stone, et al. 1983) (2)							**2 - 34,000**	**1.9 - 14,000**	**0.001 - 0.06**	**0.01 - 16**	**0 - 2.6**	NA
Lee Acres RI Background Concentrations - Alluvial Aquifer (1992) (3)							**6.4 - 404**	**420 - 2,120**	**0.0144 - 0.113**	**0 - 1.48**	**0.0161 - 0.423**	**760 - 3,600**
Lee Acres RI/ROD Remedial Goals (1992/2004) (4)							**34,000**	**14,000**	**0.06**	**16**	**0.346**	**10,000**
Units							mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
SHS-16	5,362.58	42.6	22.2 - 37.2	4	Jan 2018	32.68	NT	NT	NT	NT	NT	NT
SHS-17	5,364.35	46.21	35.67 - 45.67	4	Jan 2018	32.63	NT	NT	NT	NT	NT	NT
SHS-18	5,373.64	47.36	37.36 - 47.36	4	Jan 2018	39.24	NT	NT	NT	NT	NT	NT
SHS-19	5,378.89	52.4	32.40 - 52.40	4	Jan 2018	37.77	NT	NT	NT	NT	NT	NT

Notes

(1) Background Concentrations Proposed for the Giant Bloomfield Refinery Site. Based on Statistical Analysis Prepared by LT Environmental and Submitted to New Mexico Oil Conservation District in an Email Dated June 10, 2019.
(2) Regional Background Concentrations Established in Document Titled *Hydrogeology and Water Resources of San Juan Basin, New Mexico,* Stone et al., dated 1983
(3) "Background" Concentration Proposed in Lee Acres DRAFT *Remedial Investigation Report* Prepared for the US Bureau of Land Management (dated February 1992)
(4) Contaminant Concentrations Established as the "Remedial Goals" or "Background" Concentrations for the Lee Acres Superfund Site. Based on the Lee Acres DRAFT *Remedial Investigation Report* and *Record of Decision* (dated May 2004).
(5) The Lee Acres *Remedial Investigation Report* Presents Analytical Data for Areas of the Site and Not Data for Individual Wells
(6) Well Location Used for Statistical Analysis of Background Concentrations
* Top-of-Casing Elevation is Unknown
NM Not Measured
P&A Plugged and Abandoned
µg/L micrograms per liter
BOLD Indicates Concentration Exceeds the Greater Value of the NMWQCC Water-Quality Standards or Background Threshold Values Proposed for the Giant Bloomfield Refinery
mg/L milligrams per liter
NMWQCC New Mexico Water Quality Control Commission
NT Not Tested
USEPA United States Environmental Protection Agency

Chavez, Carl J, EMNRD

From: Devin Hencmann <dhencmann@ltenv.com>
Sent: Monday, June 10, 2019 3:13 PM
To: Chavez, Carl J, EMNRD
Cc: McCartney, Gregory J.
Subject: [EXT] Background Concentrations for COCs at GBR
Attachments: Upgradient_Results for statistical analysis.pdf; Background Stats Table_Updated.pdf; LangP 2018.pdf

Carl,

Attached are the tables you had requested in your email dated 5/9/2019 for establishing background concentrations for constituents of concern at the former Giant Bloomfield Refinery. Statistics have been rerun replacing all Non-Detects with the PQLs. We presented results from the various statistical runs in one table to make comparing the different results easier. Explanations are also presented in the table.
I have also attached a table containing the historical data that was used in the stats, and the bio of the LTE data analyst that ran the statistics. Paloma Lang can be reached at **plang.ltenv.com** if you have any questions. Please cc myself on any correspondence so I can follow through and sure you receive an answer in a timely manner.

Thank you,
Devin

LT Environmental, Inc.
Advancing Opportunity
25 YEARS

Devin Hencmann
Project Geologist
(970) 385-1096 office
(970) 403-6023 cell
848 East 2nd Avenue, Durango CO 81301
www.ltenv.com

PALOMA LANG

GIS / DATABASE MANAGEMENT

EXPERTISE

Database Design and Maintenance

Data Quality Control

Data Analysis and Reporting

ENVIRONMENTAL EXPERIENCE

22 years / 8 years LTE

EDUCATION

B.S. Chemistry, University of Colorado

REGISTRATIONS / CERTIFICATIONS

Information Systems Programming Advanced Training, 2001, Denver Technical College

SharePoint 2013 Administrator, 2014, Mission Critical Training

SharePoint 2013 Designer, 2014, Mission Critical Training

PROJECT EXPERIENCE

Ms. Lang is a chemist and database management specialist who has experience in the environmental consulting field, including data analysis and validation, groundwater monitoring statistics, quality assurance/quality control (QA/QC), database management using Intelex Asset & Compliance Tracking System (ACTS) and Microsoft's SQL, Access, and SharePoint applications, and designing and implementing tools and reports in support of groundwater monitoring, remediation engineering, and greenhouse gas management projects and Spill Prevention, Control, and Countermeasure (SPCC) inspections.

Designed and implemented a SharePoint hosted Access Web Application for reporting analytical data and managing documents.

Designed and maintained a database application to test for outliers, normality, and inter-well/intra-well descriptive statistics, and trends in groundwater samples.

Designed and maintained a database application for managing and reporting water treatment systems. Functionality included Supervisory Control and Data Acquisition data imports, system status, and compliance reports.

Designed and maintained a database for calculating greenhouse gas emissions and aggregate inventories and for managing asbestos clean-up projects.

Wrote code and Implemented statistical analyses such as normality, outlier, trends, prediction and tolerance limits, box plots, and control charts using Microsoft's SQL and S-Plus platforms in support of large groundwater monitoring projects.

Ms. Lang provides data management support for multiple groundwater monitoring, baseline water quality, air permitting, and stormwater programs overseeing data quality from field collection to client and agency reporting.

Designed and implemented tools for the automated production of discharge monitoring reports submitted to Colorado Department of Public Health and Environment, Texas Natural Resource Conservation Commission Form 312, and New Jersey Department of Environmental Protection Electronic Data Deliverables system.

Ms. Lang has effectively integrated M.S. Excel, M.S. Access, M.S. Word, TapForms, GoCanvas, and FormMaker, on iPads, tablets, and laptops to support large field data collection projects such as equipment inventories, tank registrations, and environmental, health and safety and leak detection and repair inspections. She also provides training and technical support to internal and external end-users.

Ms. Lang also has experience providing technical support for non-database tasks such as air permit renewals, Dispersion Models, SPCC reports, and water well management programs.

Ms. Lang is a certified administrator and developer for ACTS and Microsoft SharePoint and has expertise in using ProUCL and ChemStat software.

PROPOSED FACILITY-SPECIFIC BACKGROUND THRESHOLD VALUES FOR INORGANICS IN GROUNDWATER
FORMER GIANT BLOOMFIELD REFINERY
BLOOMFIELD, NEW MEXICO

												Original Reported UTL	NDs replaced with PQL - Analyzed as Detections (per Agency's request)				Original Dataset with NDs (Statistic based on Gamma distribution for previously lognormal cases)					
Analyte	**Units**	**Number of Samples**	**Percent ND**	**Non-Detects**	**Detections**	**ND EM**	**Distribution**	**Min**	**Max**	**Mean**	**Std Deviation**	**95%UTL 95% Coverage**	**CV**	**ND EM**	**Distribution**	**95%UTL 95% Coverage**	**CV**	**ND EM**	**Distribution**	**95%UTL 95% Coverage**	**Proposed Background Threshold Values (BTVs)**	**Comments**
Chloride	mg/L	40	0	0	40	NA	Non-Parametric\Max	44	560	232.3	153.4	560									560	No Change. Dataset do not follow a discernible distribution, use Max value as UTL
Chromium	mg/L	32	3.125	1	31	ROS	Lognormal	0.006	1.4	0.318	0.379	4.46	1.19	PQL	Gamma-WH	1.59	0.145	KM	Gamma-WH	1.553	1.553	Calculated UTL based on lognormal distribution is disproportionately high when compared to maximum detection= 1.4 due to highly variable sample data, recommend using UTL based on Gamma distribution with WH approximation
Iron	mg/L	33	6	2	31	ROS	Lognormal	0.1	170	16.62	33.37	261.7	2.008	PQL	Gamma-HW	100.1	1168	KM	Gamma-HW	97.06	97.06	Calculated UTL based on lognormal distribution is disproportionately high when compared to maximum detection= 170 due to highly variable sample data, recommend using UTL based on Gamma distribution with HW approximation
Manganese	mg/L	24	0	0	24	NA	Lognormal	0.041	6.4	0.765	1.578	10.63					1.226	NA	Gamma-HW	6.42	6.42	Calculated UTL based on lognormal distribution is disproportionately high when compared to maximum detection= 6.4 due to highly variable sample data, recommend using UTL based on Gamma distribution with HW approximation
Sulfate	mg/L	40	0	0	40	NA	Normal	698	2800	1801	351.9	2546									2546	Low coefficient of variation, use UTL based on normal distribution
Total Dissolved Solids	mg/L	40	0	0	40	NA	Normal	1460	4320	3234	629	4566									4566	Low coefficient of variation, use UTL based on normal distribution

Notes:
CV - Coefficient of Variation
HW - Hawkins–Wixley approximation
KM - Kaplan-Meier method
NA - Not Applicable
ND - Non-detect
ND EM - Non-detect estimation method
ROS - Regression on order statistics
WH - Wilson-Hilferty approximation

2008-2018 GROUNDWATER LABORATORY ANALYTICAL RESULTS
FORMER GIANT BLOOMFIELD REFINERY
WESTERN REFINING SOUTHWEST, INC.

Analyte	NMWQCC Standard	Unit	GBR-32											GBR-48										
			Jan 2008	Jan 2009	Jan 2010	Jan 2011	Jan 2012	Jan 2013	Jan 2014	Jan 2015	Jan 2016	Jan 2017	Jan 2018	Jan 2008	Jan 2009	Jan 2010	Jan 2011	Jan 2012	Jan 2013	Jan 2014	Jan 2015	Jan 2016	Jan 2017	Jan 2018
USEPA Method 300.0: Anions																								
chloride	250	mg/L	104	**530**	-	**420**	**500**	**400**	**380**	**370**	**320**	**290**	200	144	**560**	-	**390**	200	230	**420**	**370**	**340**	**350**	**300**
sulfate	600	mg/L	**1,750**	**2,100**	-	**2,300**	**2,800**	**2,200**	**1,900**	**2,000**	**2,000**	**1,600**	**1,700**	**698**	**1,300**	-	**2,200**	**1,700**	**2,200**	**2,100**	**2,100**	**2,000**	**1,900**	**1,800**
iron	1	mg/L	-	<0.1	-	-	0.88	**1.2**	**5.9**	0.26	**11**	**2.3**	**2.7**	-	<0.10	-	**9.3**	**15**	**17**	**52**	**170**	**89**	**40**	**18**
total dissolved solids	1,000	mg/L	**4,270**	**4,100**	-	**4,010**	**4,290**	**4,320**	**3,800**	**3,830**	**3,500**	**3,210**	**3,110**	**1,460**	**2,700**	-	**3,510**	**2,940**	**4,020**	**4,030**	**3,730**	**3,360**	**3,690**	**3,580**
chromium	0.05	mg/L	**0.189**	-	-	**0.13**	0.030	**0.098**	**1.4**	**0.20**	**0.33**	**0.13**	-	**1.32**	-	-	**0.71**	**0.63**	**0.52**	**0.92**	**0.95**	**0.42**	**0.13**	-
manganese	0.2	mg/L	-	-	-	-	**0.50**	**0.40**	**0.70**	**0.56**	**1.2**	**1.2**	-	-	-	-	-	**0.83**	**0.94**	**2.0**	**6.4**	**4.8**	**1.7**	-

Analyte	NMWQCC Standard	Unit	GBR-49											GBR-50										
			Jan 2008	Jan 2009	Jan 2010	Jan 2011	Jan 2012	Jan 2013	Jan 2014	Jan 2015	Jan 2016	Jan 2017	Jan 2018	Jan 2008	Jan 2009	Jan 2010	Jan 2011	Jan 2012	Jan 2013	Jan 2014	Jan 2015	Jan 2016	Jan 2017	Jan 2018
USEPA Method 300.0: Anions																								
chloride	250	mg/L	99.7	**280**	-	**310**	**260**	240	63	180	210	150	180	46.5	44	-	46	49	49	52	44	59	54	59
sulfate	600	mg/L	**1,720**	**2,100**	-	**2,000**	**2,000**	**1,600**	**1,400**	**1,500**	**1,900**	**1,300**	**1,800**	**1,380**	**1,700**	-	**1,800**	**1,800**	**1,600**	**1,700**	**1,700**	**1,500**	**1,500**	**1,700**
iron	1	mg/L	-	**1.4**	-	-	0.23	**4.6**	**41**	**7.1**	**11**	0.44	**23**	-	0.41	-	-	0.72	**1.3**	**3.6**	**2.2**	**6.8**	**5.8**	**4**
total dissolved solids	1,000	mg/L	**3,460**	**3,300**	-	**3,390**	**3,470**	**3,290**	**2,340**	**2,840**	**3,160**	**2,720**	**3,010**	**2,830**	**2,400**	-	**2,640**	**2,730**	**2,830**	**2,800**	**2,760**	**2,580**	**2,590**	**2,770**
chromium	0.05	mg/L	**0.217**	-	-	**0.48**	0.018	0.041	**0.060**	**0.38**	**0.20**	0.018	-	0.011	-	-	0.023	0.0069	<0.0060	0.013	**0.073**	**0.36**	**0.16**	-
manganese	0.2	mg/L	-	-	-	-	**0.34**	**1.3**	**3.9**	**0.54**	**1.1**	**0.30**	-	-	-	-	-	0.041	0.12	**0.22**	**0.19**	**1.3**	**0.32**	-

Notes:
BOLD - indicates concentration exceeds the NMWQCC standard
mg/L - milligrams per liter
- - not tested
ND - not detected
NMWQCC - New Mexico Water Quality Control Commission
µg/L - micrograms per liter
USEPA - United States Environmental Protection Agency

Chavez, Carl J, EMNRD

From: Chavez, Carl J, EMNRD
Sent: Thursday, May 9, 2019 3:21 PM
To: Devin Hencmann
Cc: gjmccartney@marathonpetroleum.com; Ashley Ager; Griswold, Jim, EMNRD
Subject: RE: [EXT] Correspondence Letter For GW-040 Partial Remediation System Closure Request Meeting
Attachments: 20.006.0002New Final.pdf

Mr. Hencmann:

The New Mexico Oil Conservation Division (OCD) hereby concurs with the "Partial Remediation System Closure Request" of 3/22/2019 below.

To address the intent to establish "background" concentrations for constituents of concern, OCD requires additional supporting statistical documentation for Table 1 Constituents of Concern background groundwater values. In addition, OCD requires that another similar statistical evaluation be performed and submitted with supporting statistical documentation with "ND" values defaulting to the "Quantitation Limit" instead of the Table 1 values for comparison and further evaluation of background levels.

Please submit the above to OCD within 30 days of receipt of this message or by COB on 6/10/19. I have attached the WQCC Regulations containing the 20.6.2.3103 NMAC water quality standards.

Please contact me if you have questions. Thank you.

Mr. Carl J. Chavez, CHMM (#13099)
New Mexico Oil Conservation Division
Energy Minerals and Natural Resources Department
1220 South St Francis Drive
Santa Fe, New Mexico 87505
Ph. (505) 476-3490
E-mail: CarlJ.Chavez@state.nm.us
"Why not prevent pollution, minimize waste to reduce operating costs, reuse or recycle, and move forward with the rest of the Nation?" (To see how, go to: http://www.emnrd.state.nm.us/OCD and see "Publications")

From: Devin Hencmann <dhencmann@ltenv.com>
Sent: Friday, March 22, 2019 4:42 PM
To: Chavez, Carl J, EMNRD <CarlJ.Chavez@state.nm.us>
Cc: gjmccartney@marathonpetroleum.com; Ashley Ager <aager@ltenv.com>
Subject: [EXT] Correspondence Letter For GW-040 Partial Remediation System Closure Request Meeting

Carl,

The attached letter is being submitted in response to our meeting on February 26, 2019 discussing the Giant Former Refinery (GW-040) Partial Remediation System Closure Request.
Please let me know if you have any questions.

Thank you,
Devin

Devin Hencmann
Project Geologist
(970) 385-1096 office
(970) 403-6023 cell
848 East 2nd Avenue, Durango CO 81301
www.ltenv.com

LT Environmental, Inc.
848 East 2nd Avenue
Durango, Colorado 81301
970.385.1096

March 22, 2019

Mr. Carl Chavez
Environmental Engineer, New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, NM 87505

RE: GW-040 Partial Remediation System Closure Request Meeting Correspondence

Dear Mr. Chavez:

This correspondence is in response to the meeting held on February 26, 2019, attended by Ashley Ager (LT Environmental), Devin Hencmann (LT Environmental), Greg McCartney (Marathon Petroleum and Western Refining Southwest, Inc.) via telephone, and Carl Chavez (New Mexico Oil Conservation Division), regarding the Partial Remediation System Closure Request dated November 27, 2018 and submitted to the New Mexico Oil Conservation Division (NMOCD) on February 15, 2019 for discharge permit GW-040 associated with the Giant former Bloomfield Refinery. In the partial closure request, Western Refining Southwest, Inc. (Western) requested permission to remove all infrastructure associated with a portion of the remediation system located south of United States (US) Highway 64, and to plug and abandon monitoring wells SHS-6, SHS-8, SHS-9, SHS-10, SHS-12, SHS-13, SHS-14, SHS-15, SHS-16, SHS-17, SHS-18, and SHS-19. NMOCD was in general agreement with the proposed actions, including decommissioning of the remediation infrastructure and plugging and abandoning most of the monitoring wells. NMOCD requested that Western leave two monitoring points in place and consider a statistical analysis of background conditions to propose analytical parameters for future monitoring.

During the meeting, the NMOCD expressed concern about constituents exceeding New Mexico Water Quality Control Commission (NMWQCC) standards in historical groundwater samples. Constituents that exceeded NMWQCC standards included chloride, sulfate, iron, manganese, chromium, and total dissolved solids. These constituents are observed in excess of NMWQCC standards in upgradient monitoring wells GBR-32, GBR-48, GBR-49, and GBR-50 (Figure 1). LTE conducted a statistical analysis of laboratory analytical results from ten years of groundwater monitoring in the upgradient wells for the following analytes: chloride, iron, sulfate, total dissolved solids, chromium, and manganese. ProUCL, a software developed by the Environmental Protection Agency (EPA) for use with nondetect data samples, was applied to calculate statistical limits of the historical data and establish a background concentration value.

The data were evaluated for fit to normal, lognormal, or non-parametric (if neither normal or lognormal) distributions. That information was then used to calculate the Upper Tolerance Limit at 95% Confidence Level (95% UTL), based on distribution and presence of non-detects, to be used as not-to-exceed background concentrations for each of the six analytes. Results of the statistical analysis and proposed background concentrations are presented in Table 1. No detected concentrations in historical samples collected from SHS wells exceeded the background 95% UTL for the six analytes.

The NMOCD also noted detections of total petroleum hydrocarbons (TPH) observed in groundwater samples collected from monitoring wells SHS-8, SHS-9, and SHS-13 on January 23, 2018. Based on those detections, maintaining at least two monitoring points was recommended. In response, LTE proposes leaving SHS-9 and SHS-13 in place and sampling groundwater from each well on a semi-annual basis. SHS-8 contains obstructions in the well which prevent accurate data collection. SHS-9 is located in close proximity to SHS-8 (Figure 1) and will serve as an adequate monitoring point for the area immediately south of Highway 64. Monitoring of SHS-9 and SHS-13 will allow for the detection of any residual groundwater impact. Since there is no NMWQCC regulatory standard for TPH and all other parameters that have historically exceeded NMWQCC standards are below the statistically derived background concentrations, LTE proposes analyzing those groundwater samples for volatiles according to EPA method 8260B.

Upon approval of the revisions proposed above, all SHS monitoring wells except SHS-9 and SHS-13 will be plugged in accordance with 19.27.4.30 NMAC. All remediation infrastructure will be abandoned and removed as detailed in the Partial Remediation Closure Request dated November 27th, 2019.

If you have any questions or comments regarding this correspondence, do not hesitate to contact me at (970) 385-1096 or via email at dhencmann@ltenv.com

Sincerely,

LT ENVIRONMENTAL, INC.

Devin Hencmann
Project Geologist

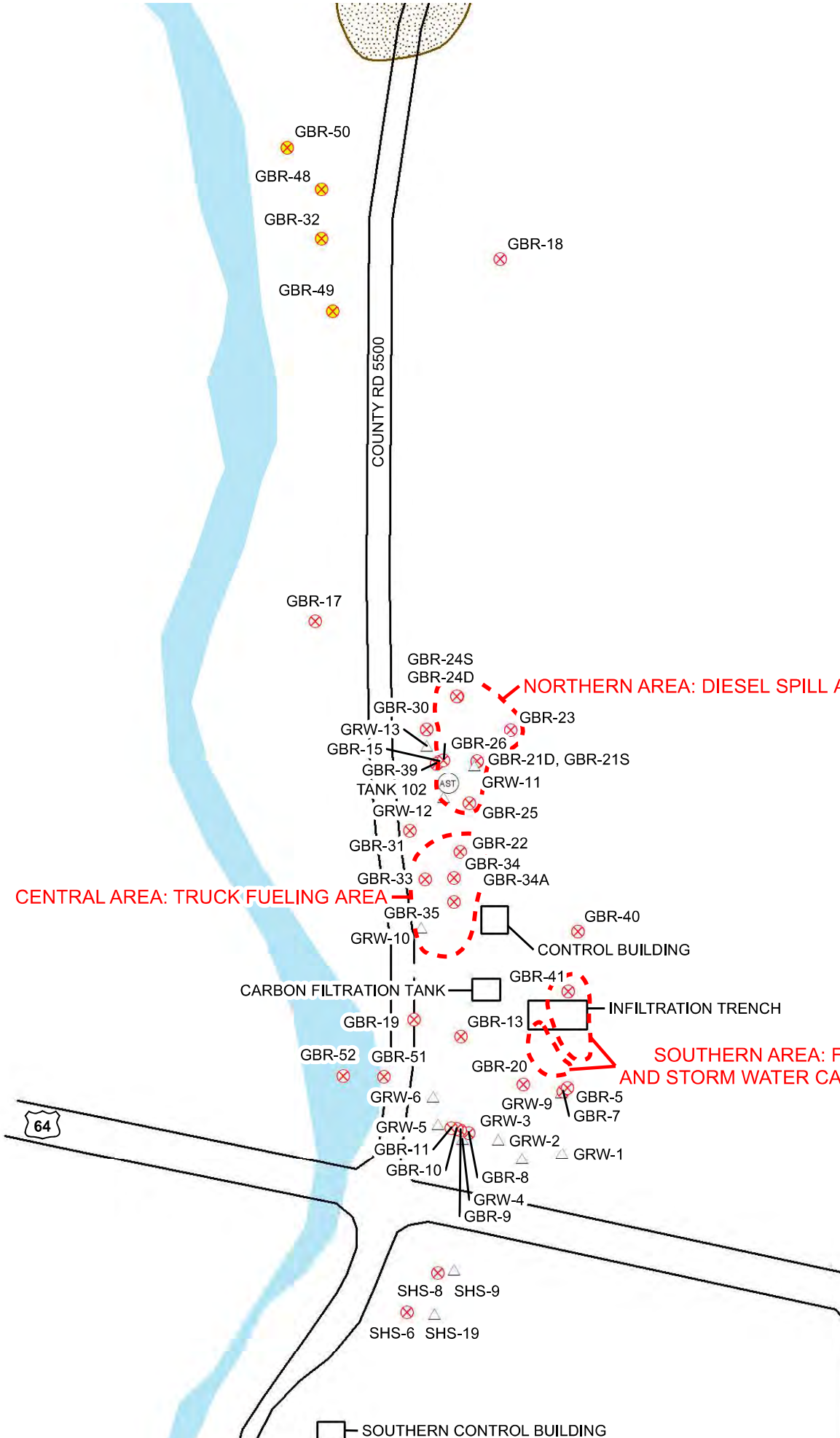
GBR-50
GBR-48
GBR-32
GBR-18
GBR-49
COUNTY RD 5500
GBR-17
GBR-24S
GBR-24D
NORTHERN AREA: DIESEL SPILL A
GBR-30
GBR-23
GRW-13
GBR-15
GBR-26
GBR-21D, GBR-21S
GBR-39
TANK 102
AST
GRW-11
GRW-12
GBR-25
GBR-31
GBR-22
GBR-34
GBR-33
GBR-34A
CENTRAL AREA: TRUCK FUELING AREA
GBR-35
GBR-40
GRW-10
CONTROL BUILDING
GBR-41
CARBON FILTRATION TANK
INFILTRATION TRENCH
GBR-19
GBR-13
GBR-52
GBR-51
SOUTHERN AREA: F
AND STORM WATER CA
GBR-20
GRW-6
GRW-9
GBR-5
GBR-7
64
GRW-5
GRW-3
GRW-2
GRW-1
GBR-11
GBR-10
GBR-8
GRW-4
GBR-9
SHS-8
SHS-9
SHS-6
SHS-19
SOUTHERN CONTROL BUILDING

TABLE 1
BACKGROUND THRESHOLD VALUES FOR ANALYTES OBSERVED IN UPGRADIENT WELLS

GIANT BLOOMFIELD REFINERY
SAN JUAN COUNTY, NEW MEXICO
WESTERN REFINING SOUTHWEST, INC.

Analyte	Units	N	% ND	Non-Detects	Detections	ND EM	Distribution	Mean	Std Deviaion	95% UTL
Chloride	mg/L	40	0	0	40	NA	Non-Parametric\Max	232.3	153.4	560
Chromium	mg/L	32	3	1	31	ROS	Lognormal	0.318	0.379	4.46
Iron	mg/L	33	6	2	31	ROS	Lognormal	16.62	33.37	261.7
Manganese	mg/L	24	0	0	24	NA	Lognormal	0.765	1.578	10.63
Sulfate	mg/L	40	0	0	40	NA	Normal	1,801	351.9	2,546
Total Dissolved Solids	mg/L	40	0	0	40	NA	Normal	3,234	629	4,566

% - percent
mg/L - miligram per litre
ND - Non-detect
ND EM - Non-detect estimation method
N - total number of observations
ROS - Regression on order statistics
UTL - Upper Tolerance Limit