MICHELLE LUJAN GRISHAM
GOVERNOR

JAMES C. KENNEY
CABINET SECRETARY

Certified Mail - Return Receipt Requested

August 15, 2023

Mr. Bobby McNamar
Terminal Manager
Western Refining Southwest, Inc.
Bloomfield Terminal
#50 County Road 4490
Bloomfield, New Mexico 87413

RE: DISAPPROVAL
BACKGROUND INVESTIGATION REPORT
AND ADDENDUM - REVISED JANUARY 2015
BLOOMFIELD TERMINAL (FORMER BLOOMFIELD REFINERY)
WESTERN REFINING SOUTHWEST, INC. - BLOOMFIELD TERMINAL
SAN JUAN COUNTY, BLOOMFIELD, NEW MEXICO
EPA ID# NMD089416416
HWB-WRB-12-005

Dear Mr. McNamar:

The New Mexico Environment Department (NMED) has received Western Refining Southwest, Inc., dba Marathon Petroleum Company's (Western) Bloomfield Terminal (Former Bloomfield Refinery) *Background Investigation Report Addendum - Revised January 2015* (Revised Background IR) dated January 8, 2015, and received on January 9, 2015. NMED has reviewed Western's Revised Background IR and hereby issues this Disapproval. The Respondent must address the following comments.

Comment 1

In Section 2.2 (Groundwater Sample Locations), page 2, Western states that "[t]he southernmost location for a background monitoring well [MW-BCK1] is approximately 700 feet southwest of the gas well, which should place it beyond any potential impacts from operations near the gas well." Since the background monitoring wells have not been sampled for several years, Western must confirm that there continues to be no impacts at these locations. Collect and analyze groundwater samples from MW-BCK1 and MW-BCK2 for two monitoring events

and present and discuss the data in the upcoming annual groundwater monitoring report. The monitoring wells must be analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), RCRA metals, total petroleum hydrocarbons (TPH as diesel range organics (DRO), gasoline range organics (GRO), and motor oil range organics (ORO)), and total dissolved solids (TDS).

Comment 2

In Section 2.3.2 (Subsurface Conditions), pages 4 through 5, Western states "[w]ithin the deeper interval that includes the gravel and cobble sized material, the matrix is similar to the finer grained material discussed above. While the gravel and cobble materials are composed of both quartz and igneous rocks of various compositions, the finer grained matrix material will have the dominant influence on contaminant fate and transport through this interval. Also, the finer grained matrix material would represent the potential exposure medium in this deeper interval and not the gravel and cobble sized fraction, thus any evaluation of background constituent concentrations would be performed on the finer grained matrix material." Western does not provide any support for the statement such as calculating background concentrations discussing preferential flow paths or the types of exposures expected to occur in these layers. Revise Section 2.3.2 to include a discussion about the type of subsurface exposures that may be occurring at the site to support the assertion that development of a background concentration for the layer of the finer grained matrix material is more appropriate than developing background concentrations for other layers or multiple layers in the subsurface in the revised report.

Comment 3

In Section 2.3.2, page 6, Western states "[p]revious site investigations have identified and delineated on-site impacts to groundwater from historical site operations, which are down-gradient of the locations selected for the two new background monitoring wells. Figure 7 [(Separate Phase Hydrocarbon Thickness Map, August 2010)] shows the distribution of [separate phase hydrocarbons (SPH)] in the subsurface based on the apparent thickness of SPH measured in on-site monitoring wells. Dissolved-phase impacts are depicted on Figure 8 [(Dissolved-Phase Groundwater Data, August 2011)]." Background wells MW-BCK-1 and MW-BCK-2 are not depicted on Figures 7 and 8. Revise Figures 7 and 8 to present the background well locations of MW-BCK-1 and MW-BCK-2 in the revised report.

Comment 4

In Section 3.1 (Soil Boring, Monitoring Well Installation and Sample Collection), paragraph 2, Western discusses the samples collected from ten soil borings, two of which were converted into the background monitoring wells. However, there appears to be an issue with consistency in naming the soil borings. In Section 3.1, the soil borings are labeled as BK-1 through BK-10 but in Section 4.1 (Exploratory Drilling Investigations, Soil Sampling and Boring Abandonment),

Western designates the soil borings as BCK-1 through BCK-10. In Section 4.2 (Monitoring Well Construction and Groundwater Sampling), Western references the soil boring location as BK-9 and BCK-9. Revise the report for consistency to utilize the same designations throughout the entire submittal of the Background IR, which would be the use of "BK" rather than "BCK" for the soil boring locations since "BK" is more consistently used. For future reports, Western must not change the sample location names for the same sample locations in the text, figures, tables, laboratory reports, soil boring logs, or other applicable sections of the submittals. If the sample location names were changed during the investigation, Western must discuss why the names were changed in the report.

Comment 5

In Section 3.3 (Collection and Management of Investigation Derived Waste), page 8, paragraph 2, Western states that "the soils were all collected from within areas that were purposely selected to not have any impacts, the characterization is based on the actual soil sample analysis...The sample analyses for the background soil samples indicate that the samples were collected from locations without any historical environmental impacts and that the soils are "clean" and suitable for reuse on-site." Although the background locations were selected in areas without any historical environmental impacts, there is no discussion in Section 3.3 to support Western's statement that the "soils are clean." Revise Section 3.3 to include a discussion comparing the soil sample results (including detected concentrations) and the applicable soil screening levels from Table 3 to support Western's statement in the revised report.

Comment 6

In Section 5.1 (Soil Background Concentrations), pages 17 through 20, Western did not include dates for the statistical evaluations performed on the soil data set in the discussion or Appendix H (Soils Statistical Evaluation). Since ProUCL version 4.1.00 (ProUCL v4.1) was used to evaluate soils and ProUCL version 5.0.00 (ProUCL v5) was used to perform the statistical evaluations of the groundwater results, it is recommended that the date(s) of the soil evaluation be included in Section 5.1 and also in Appendix H. Revise Section 5.1 and Appendix H to include the date(s) of the statistical evaluations performed on the background soil data set in the revised report.

Comment 7

In Section 5.1 (Soil Background Concentrations), page 19, paragraph 3, Western indicates that ProUCL v4.1 was used to determine the distribution of the soil background data set. According to the discussion, all soil data subjected to statistical evaluation were normally distributed with the exception of barium, chloride, and fluoride, which were log normally distributed. However, Western did not discuss if any other distributions were considered during the evaluation of the soil data. Western must list all distributions that were considered in the statistical determination of the data distribution in Section 5.1. Revise the discussion in Section 5.1 to

state if other statistical tests were performed to determine if the soil background data fit other distributions (e.g. gamma distribution) in the revised report.

Comment 8

In Section 5.2 (Groundwater Background Concentrations), pages 21 through 22, Western states "[t]he sample quantitation limit (SQL) as presented in [Tables 3 (Soil Analytical Results and Statistical Summary) and 4 (Groundwater Analytical Results Summary)] is based on the laboratory's reporting detection limit as it is shown in the laboratory analytical reports. The RL acronym is shown in the laboratory Qualifiers as the "Reporting Detection Limit" but this is not the analytical method detection limit. In fact, the Reporting Detection Limit is actually the sample specific quantitation limit, thus this value is shown in Tables 3 and 4 as the SQL." Although Western addressed the first part of Comment 7b from the July 2013 Disapproval letter which required Western to explain why the SQL did not match the reporting limit or the detection limit in Table 3, Western did not include a footnote to summarize the reasoning in the table. Ensure Tables 3 and 4 include a footnote about the SQL in the revised Background IR. Also state that the issues discovered in Table 3 from Comments 7a through 7f of the July 2013 Disapproval letter were not carried over to Table 4 in the revised report.

Comment 9

In Section 5.2 (Background Groundwater Concentrations), page 23, paragraph 2 Western states that arsenic is among a group of constituents detected in the groundwater background wells that was not subjected to statistical evaluation because there were "very few detections such as to make it impossible to calculate reliable BTVs." The statement is followed by a reference to page 226 of the ProUCL v5 Technical Guide; however, the page provided in the reference presents information on the Dixon and Rosner tests for outliers and does not appear to be applicable to the discussion. Sections 1.7 (Minimum Sample Size Requirements and Power Evaluations) and 1.12 (Samples with Low Frequency of Detection) of the ProUCL v5 Technical Guide address sample size and the minimum number of detections required for reliable results (e.g., ten observations with four detections among the observations). Total arsenic concentrations were detected in four of the nine samples at MW-BCK-1, with one of the detections exceeding the groundwater screening level. Total arsenic was also detected in one sample at MW-BCK-2; however, three of the samples collected from MW-BCK-2 had SQLs reported as equal to or greater than the groundwater screening level. There were no other constituents reported in Table 4 (Groundwater Analytical Results Summary), other than total arsenic, that exceeded the groundwater screening level but were not subjected to the statistical evaluation. Therefore, it is not clear why the samples that had detectable concentrations of total arsenic were not included in the upper tolerance limit (UTL) analysis. Revise the discussion in Section 5.2 to include additional information supporting the exclusion of total arsenic from the statistical evaluation and provide a correct citation for the statement in the revised report.

Comment 10

In Section 5.2 (Groundwater Background Concentrations), page 23, paragraph 2 Western states that the groundwater concentrations of "some constituents had reported concentrations that are significantly less than the groundwater screening levels developed pursuant to the 2007 Order, thus making the calculation of background threshold values (BTVs) for these constituents irrelevant for the Corrective Action Process." Western does not include a discussion comparing the groundwater concentrations for these constituents to the applicable screening levels to support the statement. Revise Section 5.2 to include a more comprehensive discussion about the development of the background concentration values referencing the analytical results in Table 4 in the revised report.

Comment 11

In Section 5.2 (Groundwater Background Concentrations), page 24, paragraph 2 Western discusses the use of the Regression on Order Statistic (ROS) methodology to develop replacement values for non-detect results in the groundwater background data set. While the substitution and ROS methods are retained in ProUCL v5 for historical reasons and comparison purposes, the EPA does not recommend these methods (i.e., ROS) for estimating decision statistics. Section 1.14.2 (ProUCL Recommendation about ROS Method and Substitution (DL/2) Method) of the ProUCL v5 Technical Guide indicates that the March 2006 Environmental Protection Agency (EPA) publication (EPA/600/R-06/022) by Singh, Maichle and Lee, *On the Computation of a 95% Upper Confidence Limit of the Unknown Population Mean Based Upon Data Sets with Below Detection Limit Observations*, used an extensive simulation study to demonstrate that the statistically rigorous Kaplan-Meier (KM) method yields accurate estimates of the population mean for data sets with non-detects. In the past NMED recommended the use of ROS methods when determining replacement values for non-detect results in left-censored environmental data sets. However, NMED concurs with EPA's recommendation that one of the approaches presented in the subsections of Section 5.3.3 (Computing Upper Tolerance Limits (UTLs) for Left-Censored Data Sets) of the ProUCL v5 Technical Guide be used in determining the 95 percent confidence and 95 percent coverage UTLs (95/95 UTLs) for groundwater background data sets. For example, if the data are believed to be normally distributed, the methodology in Section 5.3.3.1 (UTLs Based on KM Estimates when Detected Data are Normally Distributed) of the ProUCL v5 Technical Guide must be followed. NMED acknowledges that at the time the Bloomfield Terminal performed the groundwater BTV analysis, the ROS methodology was recommended for determining replacement values for non-detect results. Therefore, NMED is not requiring the Bloomfield Terminal to revise its calculations of the 95/95 UTLs for the groundwater background data set. However, NMED encourages the Bloomfield Terminal to review the calculation of UTLs currently presented in Table 8 (Groundwater – Statistical Evaluation Summary) and review the recommendations provided in Section 5.3.3 of the ProUCL v5 Technical Guide. Based on the results of that review, the Bloomfield Terminal may decide to continue using the BTVs for the groundwater analytical results currently listed in Table 8. If not, the evaluation of 95/95 UTLs must be completed

according to Section 5.3.3 of the ProUCL v5 Technical Guide, the BTVs for groundwater recalculated, and the applicable sections and tables in the revised report. Note that an update to the 2014 NMED Soil Screening Guidance was issued as of March 2015 and the most recent update is November 2022.

Comment 12

In Section 5.2 (Groundwater Background Concentrations), pages 24 to 25, it is not clear that the statistically determined values of the UTLs with 95/95 UTL were determined in accordance with NMED's recommendations. Western states that the background groundwater concentration data set was evaluated using Q-Q plots to determine if the constituents fit a normal or lognormal distribution and that all data subject to the statistical analysis were determined to be normally distributed. However, Western does not provide a discussion indicating that the recommendations in Chapter 5 (Computing Upper Limits to Estimate Background Threshold Values Based Upon Data Sets Consisting of Nondetect (ND) Observations) of the ProUCL v5 Technical Guide were followed in performing the statistical evaluations of the background groundwater concentration data. For example, Section 5.1 (Introduction) of the ProUCL v5 Technical Guide states that the use of Student's t-statistic (and percentile bootstrap method) based UTLs are difficult to defend for moderately skewed to highly skewed data sets with standard deviations of the log-transformed data exceeding 0.75 to 1.0. The ProUCL v5 output files provided in Appendix K (Groundwater Statistical Evaluation) report that the skewness for a number of constituents exceeds 1.0 (e.g., total Boron). Revise Section 5.2 to provide an additional discussion to support the UTL values listed in Table 8 for those background constituents with data sets that exhibit skewness greater than an absolute value of 1.0 (|1|) in the revised report.

Comment 13

Table 3 (Soil Analytical Results and Statistical Summary), pages 1 through 3, summarizes the constituents analyzed during the background study. There are two instances on the table where the sample results and statistical summary are not on the same page. For example, on page 1, the columns for the Cobalt results are reported on two separate pages and on page 2, the columns for the Sulfate results are also reported on two separate pages. Revise Table 3 to keep the results for each of the constituents on the same page in the revised report.

Comment 14

In pages 1 and 2 of Table 4 (Groundwater Analytical Results Summary), the first column lists names of the constituents for the analytical results. The second column appears to list the groundwater screening levels for each of the constituents; however, there is no title header for the second column. Revise Table 4 to include a title header for the second column to indicate that the values presented are the groundwater screening levels in the revised report.

Comment 15

Figure 9 (Background Soil Sample Locations) only depicts soil sample locations BK-1 though BK-9. Revise Figure 9 to include the soil sample location for BK-10 in the revised report.

Western must address all of NMED's comments in this Disapproval and submit a revised Report with a response letter. Western must submit two hard copies and two electronic copies on CDs with an electronic red-line strikeout version of the revised Report showing where all changes were made to the Report with a response letter cross-referencing NMED's numbered comments no later than **October 31, 2023**.

If you have any questions regarding this letter, please contact Leona Tsinnajinnie at (505) 690-7820.

Sincerely,

Ricardo Maestas Digitally signed by Ricardo Maestas
Date: 2023.08.14 14:20:45 -06'00'

Ricardo Maestas
Acting Chief
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB
N. Dhawan, NMED HWB
L. Tsinnajinnie, NMED HWB
C. Eads, NMED HWB
L. King, EPA Region 6
S. Wells, EMNRD OCD
K. Luka, Marathon Petroleum Company

File: Reading File and WRB 2023 File

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 252085

CONDITIONS

Operator: Western Refining Southwest LLC 539 South Main Street Findlay, OH 45840	OGRID: 267595
	Action Number: 252085
	Action Type: [UF-DP] Discharge Permit (DISCHARGE PERMIT)

CONDITIONS

Created By	Condition	Condition Date
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