NEW MEXICO ENVIRONMENT DEPARTMENT

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CERTIFIED MAIL – RETURN RECEIPT REQUESTED

April 2, 2019

John Moore
Environmental Superintendent
Western Refining, Southwest Inc., Gallup Refinery
92 Giant Crossing Road
Gallup, New Mexico 87301

RE: DISAPPROVAL
INVESTIGATION REPORT OW-14 SOURCE AREA
WESTERN REFINING SOUTHWEST INC., GALLUP REFINERY
EPA ID # NMD000333211
HWB-WRG-19-002

Dear Mr. Moore:

The New Mexico Environment Department (NMED) has reviewed the *Investigation Report OW-14 Source Area* (Report), dated January 2019, submitted on behalf of Marathon Petroleum Company dba Western Refining Southwest Inc., Gallup Refinery (the Permittee). NMED hereby issues this Disapproval. The Permittee must address the following comments.

Comment 1

In the Executive Summary, page E-i, the Permittee states, "[t]he current investigation began on September 21, 2016 and continued through October 5, 2016." The Report referenced by this statement was not submitted to NMED until February 4, 2019. Other related investigation activities have commenced before the Report was submitted and reviewed. In order to maintain chronological order, the Report should have been submitted before other investigations were initiated. In the future, the Permittee must submit investigation reports in a timely manner.

Comment 2

In Section 2, *Background,* page 2-1, the Permittee states, "[a] second soil boring B-2, which was later identified as OW-28 and RW-2, was drilled southwest of TK-576 to a depth of 38 feet.

Saturation was first encountered in a sand layer at a depth of 23.6 feet with additional deeper water-bearing sand/gravel layers extending to top of the Chinle Group at a depth of 32.9 feet. The well screen was set from 36.1 feet to 26.1 feet bgl. The water level initially was measured at 24' 3" with 2" of SPH." Although saturation was identified at a depth of 23.6 feet below ground surface (bgs), the well screen was set below the uppermost saturation depth. Consequently, the well screen is submerged below the water table. In order to properly assess the presence of SPH, well screens must intersect with the water table. In the future, the Permittee must include the provision that well screens must intersect the water table when installing a groundwater monitoring well unless otherwise approved by the NMED. The Permittee may use longer well screens to accomplish this. No revision is required to the Report.

Comment 3

In Section 2, *Background,* page 2-2, the Permittee states, "[a] possible leak from a seam in an unidentified storage tank located adjacent to Tank 569 was reported to have been repaired in 1995 (Giant, 1997). A review of historical tank inspection files identified an email in 1990's that indicated a concern of a possible leak at Tank 568, which is located just east of Tank 569. This email also indicates former usage of the tank to store MTBE, which was not previously identified as a material stored in this tank. It is likely that this leaking tank contributed to the observed presence of SPH instead of the burial of leaded tank bottoms." Clarify whether the unidentified storage tank located adjacent to Tank 569 refers to Tank 568. In addition, provide a copy of the cited email and relevant tank inspection reports, if available. A release of MTBE from the leaking tank (Tank 568) did not likely contribute to the observed presence of SPH. However, if the SPH observed in the vicinity of Tank 568 is believed to be MTBE, collect a SPH sample from well RW-1 and verify whether the SPH contains MTBE. The results of the analysis and a copy of the laboratory report must be submitted to NMED no later than **May 31, 2019**. If the SPH is not believed to be MTBE, revise the Report to clearly state that the presence of SPH in the vicinity of Tanks 568, 569, 570, and 716 is likely not caused by the MTBE release. Furthermore, if the burial of leaded tank bottoms contributed to the observed presence of SPH, residual lead in shallow soils may potentially affect groundwater.

Comment 4

In Section 2, *Background,* page 2-2, the Permittee states, "[t]he most recent inspection of Tank 570 was conducted in March 2015. During the internal inspection, two ¼" diameter through holes were found in the floor. It was noted in the report that these holes were apparently in the same areas that were drilled and repaired with epoxy back in August of 1994. Based on these inspection reports, it appears that recent leaks have been occurring through the bottom of Tank 570 and may have been present in the past with earlier repairs dating back to 1994." Tank 570 contains gasoline and the release may have contributed to the observed presence of SPH in the area. Provide information regarding the current status of Tank 570 and whether it is still in use or decommissioned. Comment 4 in the May 12, 2016 *Approval with Modifications* requires the Permittee to provide the records of repairs. It should be noted that epoxy resin is not compatible with some chemicals. Discuss whether all chemical constituents in Tank 570 are compatible with the epoxy resin used for repairs and whether the method used to repair the holes was appropriate (e.g., in terms of fluid head pressure) in the response letter.

Comment 5
Section 3, *Scope of Activities,* starts with page number 3-4. Section 3 must start with page number 3-1. Revise the Report accordingly.

Comment 6
In Section 3.2, *Collection and Management of Investigation Derived Waste,* page 3-5, the Permittee states, "[t]he soils in the 23 drums were not sampled. Using a generator waste profile sheet, the drums were shipped off-site to Advanced Chemical Treatment Facility for disposal on March 13, 2017. Copies of the waste characterization form and the waste manifest are included in Appendix C." The waste manifest in Appendix C indicates that the chemical analysis is included. In addition, the approved work plan, dated April 2016 states that all investigation derived waste will be characterized. Provide an explanation for the discrepancy. Clarify whether the waste was characterized prior to shipment for disposal and provide the analytical results of any testing in the response letter.

Comment 7
In Section 4.1, *Surface Conditions,* page 4-1, the Permittee states, "[a] topographic map of the area near the monitoring well OW-14 and the refinery main tank farm is included as Figure 4." Figure 4, *Topographic Map,* does not include the areas pertinent to the investigation (e.g., the locations of Tanks 568, 569 and 570). Include the areas pertinent to the investigation in the revised figure.

Comment 8
In Section 4.1, *Surface Conditions,* page 4-1, the Permittee states, "[u]nderground pipelines were detected during clearance of utilities in the area of the tank farm and the rail loading rack." Provide a figure showing the locations of the underground pipelines and provide descriptions of the use of each underground pipeline in the revised Report.

Comment 9
In Section 4.2.1, *Geology,* page 4-2, the Permittee states, "[f]our cross sections of the shallow subsurface in the immediate vicinity of the tank farm and the area up-gradient of OW-14 (Figures 7 thru 10). Figure 6 shows the location of the cross sections." Figure 7, *Cross Section A-A'* and Figure 10, *Cross Section D-D'* indicate that the potentiometric surface is higher to the west and lower to the east. Figure 13, *September 2016 Potentiometric Surface Map* presents potentiometric contours in the area and the groundwater flow direction appears to be consistent with the interpretation depicted in Figures 7 and 10. If groundwater flows eastward from the suspected source area, the SPH plume may have expanded east of well RW-1. In order to delineate the extent of dissolved phase contaminant plumes, the Permittee proposed to install a monitoring well northeast of OW-30 in the *Work Plan 2015 Annual Groundwater Report Comments,* dated October 2018; however, the proposed well will not delineate the eastern extent of the SPH plume. Propose to submit a work plan to install groundwater monitoring wells to define the eastern extent of the SPH plume.

Comment 10
In Section 4.2.1, *Geology,* page 4-2, the Permittee states, "[t]here are two areas that show a thicker accumulation of saturated transmissive materials, with one being near RW-1 and TK 568-2 possibly extending northeast towards old boring 652." Figure 11, *Isopach Map,* indicates that the distance between RW-1 and boring 652 is approximately 1,000 feet. There are no data points between RW-1 and boring 652 to support the statement. Boring TK569-2 was installed less than 100 feet northwest of TK568-2 and the thickness of transmissive materials at the location is recorded as one foot, and boring TK-569-1 was installed less than 100 feet west of TK569-2 and the thickness of transmissive materials at the location is recorded as 3.5 feet. From past investigations and general knowledge of the depositional environment, the thickness of transmissive materials is highly variable without any obvious trends. Remove the discussion regarding the thickness of transmissive materials from the revised Report or note that it is highly variable.

Comment 11
In Section 4.2.2, *Hydrogeology,* page 4-3, the Permittee states, "Figure 13 presents the potentiometric surface during field work activities conducted during the month of September 2016. A second potentiometric surface map (Figure 13A) is included using measurements collected in August 2018. The groundwater flow direction is to the north-northeast." Note that the flow directions depicted in the figures may not be accurate because groundwater monitoring wells are either located far apart or are absent in the area. No revision is required to the Report.

Comment 12
In Section 4.2.2, *Hydrogeology,* page 4-3, the Permittee states, "[t]here is a steep groundwater gradient between OW-57 and RW-2, which coincides with an 11-foot elevation change of the top of the Chinle as seen on the paleography map presented as Figure 12. The groundwater elevations in RW-2 and OW-58 are similar even though the elevation change of the top of the Chinle is 8 feet between RW-2 and OW-58." The potentiometric surface and the Alluvium/Chinle Interface elevations do not appear to correlate to one another. Explain the purpose and implication of the discussion in the revised Report.

Comment 13
In Section 4.3.1, *Soil Investigation, TK568-1,* page 4-6, the Permittee states, "TK 568-1 was located inside the tank dike for Tank T-568 and is approximately 31 feet north of Tank T-568." Clarify whether the distance of 31 feet is measured from the center or outer wall of the tank in the response letter. This comment applies to all borings and wells where their locations are referenced from their respective tanks.

Comment 14
In Section 4.3.1, *Soil Investigation, TK568-1,* page 4-6, the Permittee states, "[t]hree soil samples were collected for laboratory analysis from the following intervals: 12 feet bgl – 14 feet bgl: PID reading – 1,957 ppm, odor and oily…" The soil boring log for TK568-1 included in Appendix F, *Soil Boring/Well Logs,* indicates that the highest PID reading of 2,214 ppm was recorded from the depth between 10 and 12 feet bgs. The Permittee did not submit soil samples from the depths where the highest PID reading was recorded for laboratory analysis. Provide an explanation for

why the Permittee did not collect a sample from the interval with the highest PID reading was not submitted for laboratory analysis in the revised Report.

Comment 15

In Section 4.3.1, *Soil Investigation, TK568-1,* page 4-7, the Permittee states, "[o]n October 1, 2016 the well was gauged and developed. No phase-separated hydrocarbon was detected during the gauging event. The water sample was collected on October 2, 2016. On October 3, 2016 the well casing and screen were removed and the borehole was grouted." The seepage velocity of groundwater is often faster than SPH; therefore, in order to verify the presence or absence of SPH in a temporary well, a temporary well should have been left in place for a longer period of time. Some temporary wells were abandoned before the presence of SPH could be evaluated; therefore, the data obtained from these temporary wells may not be useful for the delineation of the SPH plume. In temporary wells TK569-1 and TK569-3, SPH was detected during the gauging event, but SPH was not detected after the well was developed. This observation likely indicates that the seepage velocity of SPH is slower than that for groundwater. In the future, leave temporary wells in place for a longer period of time to evaluate for the presence or absence of SPH. No revision is required to the Report.

Comment 16

In Section 4.3.1, *Soil Investigation, TK569-3,* page 4-11, the Permittee states, "[t]he well was installed with the screened interval ranging from 22 feet bgl to 37 feet bgl. The top of the screen was set approximately 4 feet above the occurrence of saturation within a silty sand (26 feet bgl to 27 feet bgl)." The screened intervals of many existing groundwater monitoring wells are submerged below the water table. The boring log for TK569-3 indicates that dampness was initially detected at the depths from 14 to 16 feet bgs. In order to avoid potential submersion of the screened interval, the top depth of the screened interval should have been set at 14 feet bgs. In the future, longer screened intervals must be installed for all temporary and permanent wells, and the top of the screened interval must be set at the depth where notable moisture is observed, because this may be a sign of groundwater fluctuation. No revision is necessary to the Report.

Comment 17

In Section 4.3.1, *Soil Investigation, TK570-1,* page 4-14, the Permittee states, "[o]n September 30, 2016 the [temporary] well [TK570-1] was gauged and developed. Phase-separated hydrocarbon was detected during the gauging event and after the well was developed. The water sample was collected on September 30, 2016. On October 3, 2016 the well casing and screen were removed and the borehole was grouted." Table 4, *Groundwater Field Measurements,* records 1.88 feet of SPH column thickness in temporary well TK570-1. The SPH sample should have been collected for hydrocarbon fingerprint analysis. Explain whether the water samples were collected beneath the SPH layer since it does not appear that SPH was removed prior to sample collection. When groundwater samples are collected at a well where SPH is present, the groundwater samples may not be representative of natural groundwater conditions. In addition, SPH was present when the well was abandoned. The temporary well should have been preserved to monitor and abate SPH. In the future, when SPH is present in any temporary wells after purging, the wells must be converted to permanent groundwater monitoring or recovery wells or

the Permittee must contact NMED to discuss the circumstances. This comment is also applicable to temporary well TK569-2, where SPH returned to the well after purging.

Comment 18

In Section 4.3.1, *Soil Investigation, OW-58,* page 4-17, the Permittee states, "[t]he well [OW-58] was installed with the screened interval ranging from 38 feet bgl to 48 feet bgl." Comment 31 in NMED's *Disapproval Facility-wide Ground Water Monitoring Work Plans – Updates for 2016, 2017 and 2018,* dated June 5, 2018 states that well OW-58 is appropriately positioned to monitor the SPH plume; however, the screened interval is submerged approximately 12 feet below the water table which prevents detection of SPH. Accordingly, the Permittee submitted a work plan to reinstall well OW-58 on August 24, 2018. NMED issued the *Disapproval Investigation Work Plan OW-58 Twin Well* on October 19, 2018 and directed the Permittee to submit the revised work plan by December 31, 2018. However, the Permittee has not submitted the revised work plan or a request for extension for the submittal date, which constitutes noncompliance with Permit Section I.J.12. The revised work plan must be submitted to NMED no later than **April 1, 2019**.

Comment 19

In Section 5, *Regulatory Criteria,* page 5-2, the Permittee states, "[t]he motor oil range analytical results are compared to the "unknown oil" screening level as directed by NMED. However, it is noted that the laboratory analyses for motor oil range organics only reports results for the >C28 to C35 hydrocarbon range, while the "unknown oil" screening level is based on a hydrocarbon mixture assumed to include only C11-C22 aromatics." Table 6-1 in the 2017 *Guidance* presents assumptions used to develop the screening levels rather than the actual composition of the material. If the Permittee is able to identify specific sources of the hydrocarbon constituents, then it is appropriate to discuss the specific carbon range of the hydrocarbons. Otherwise, compare site TPH concentrations with the screening level for "unknown oil". No revision is required to the Report.

Comment 20

In Section 7.1, *Conclusions, Soils,* page 7-1, the Permittee states, "[a]s noted above in Section 6.1, all of the detections of constituents in soils at concentrations above soil screening levels occur in soil samples that were collected below the depth to which the soil screening levels would normally apply (e.g., 10 feet for residential receptors)." The statement is misleading. It should be noted that no soil samples were collected from above the depth of ten feet bgs; soils above the depth of ten feet bgs were not investigated and presence or absence of contamination is unknown. Revise the Report for clarity.

Comment 21

In Section 7.2, *Recommendations,* page 7-2, the Permittee states, "[a]n additional monitoring well is recommended to the south of Tank 570 to determine if there are any additional up gradient sources. A well west of Tanks 569 and 570 could also provide better coverage to define impacts observed near these two tanks." NMED concurs with installation of additional monitoring wells south of Tank 570 and west of Tanks 569 and 570. Propose to submit a work plan to install the wells.

Comment 22
According to Table 4, *Groundwater Field Measurements,* groundwater field parameters (temperature, specific conductivity, dissolved oxygen concentration, pH and oxidation-reduction potential) were not collected from temporary well TK570-1 because hydrocarbon was detected. Groundwater field parameters were reported to have been collected from temporary well TK569-2 even though hydrocarbon was detected after purging according to Table 4.

Comment 23
Figure 5, *Geologic Map of New Mexico,* does not fully include descriptions of geologic units. For example, no descriptions are provided for units Kml, Kcc, Kmm and Pg. Revise the Report to include the descriptions of all geologic units that are shown in the figure.

Comment 24
The Permittee provided hard copies of analytical data reports in Appendix H. Hard copies of these reports are unnecessary. Analytical data reports must be submitted in electronic format only. Replace the hard copies of the analytical data reports with electronic version in the revised Report.

The Permittee must address all comments in this Disapproval and submit a revised Report. Two bound hard copies and two electronic versions must be submitted to NMED. In addition, include a red-line strikeout version in electronic format showing where all revisions to the Report have been made. The revised Report must be accompanied with a response letter that details where revisions have been made, cross-referencing NMED's numbered comments. The revised Report must be submitted to NMED no later than **July 12, 2019**.

The relevant tank inspection reports and laboratory report required by Comment 3 must be submitted to NMED no later than **May 31, 2019**.

Propose to submit the work plan required by Comments 9 and 21 no later than **September 13, 2019**.

If you have questions regarding this Disapproval, please contact Michiya Suzuki of my staff at 505-476-6059.

Sincerely,

John E. Kieling
Chief
Hazardous Waste Bureau

cc: K. Van Horn, NMED HWB
D. Cobrain, NMED HWB
M. Suzuki, NMED HWB
C. Chavez, OCD
L. King, EPA Region 6
B. Moore, WRG

File: Reading File and WRG 2019 File
HWB-WRG-19-002