NEW MEXICO
ENVIRONMENT DEPARTMENT

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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

August 19, 2019

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

RE: APPROVAL WITH MODIFICATIONS
REVISED 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), revised July 2019 and submitted on behalf of Marathon Petroleum Company dba Western Refining Southwest Inc., Gallup Refinery (the Permittee). NMED hereby issues this Approval with Modifications. The Permittee must address the following comments.

Comment 1

In the responses to NMED's *Disapproval* Comments 1, 2, 11, 15 and 19, the Permittee states, "[n]one required..." Although no revision is required to the Report to address these comments, these comments provide NMED's direction and still require the Permittee's compliance and a response. The Permittee's response does not clearly express concurrence, but NMED assumes as such. Respond to future comments appropriately.

Comment 2

In the response to NMED's *Disapproval* Comment 8, the Permittee states, "[n]ew Figure 21 has been added to show the identified underground pipelines in the investigation area." During the

site visit conducted on June 6, 2019, NMED observed that many pipelines within the Facility were exposed to facilitate visual inspection for potential leaks. Explain whether the pipelines depicted in Figure 21 (Underground Pipelines) were also exposed or if they are buried. If the pipelines are buried, provide information regarding the dimensions and depths of the pipelines in a response letter.

Comment 3

NMED's Disapproval Comment 10 states, "[f]rom 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."

The Permittee's response states, "[t]he discussion regarding the thickness of transmissive materials on page 4-2 has been removed from the Report and a sentence added stating that the thickness of transmissive materials is highly variable. We have also noted that this is according to NMED. We are not arguing that the thickness is not variable, but neither DiSorbo nor MPC Refinery is of the opinion there are no trends to the distribution of the thickness of transmissive materials. Where NMED wants statements added that could be considered an interpretation the data, we think it important to clarify whose interpretation is being presented." The Permittee revised the Report to state, in Section 4.2.1 (Geology) that, "[a]n isopach map of the thickness of potentially transmissive material (e.g., sand, sandy gravel, clayey gravel, clayey sand, etc.) that are below the water table is included as Figure 11. The thickness of the transmissive materials is highly variable according to NMED."

The trends the Permittee references are not clear and not discussed in the response letter or within the text of the Report. The Permittee's presentation of the saturated lithology as a monolith of transmissive material is an overly broad characterization of the site's soils, which was the basis of NMED's comment. As the Permittee states in the Report twice, in Section 4.2.1 (Geology) and Section 4.2.2 (Hydrogeology), the subsurface is characterized by "diverse properties and complex, irregular stratigraphy of the surface soils [Quaternary alluvium]..." Contaminant migration occurs primarily within deposits of sands and gravels or clayey sands and gravels, such as the sand stringers that occur irregularly throughout the facility's subsurface. The presence of transmissive materials is variable. This is depicted in the boring logs as well, for instance the well log for boring TK569-3 depicts two separate saturated intervals in silty sand/sandy clayey gravel separated by a layer of silty clay. In the January 2019 version of the Report, the Permittee stated, "[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. There is also an increased thickness of saturated transmissive sediments near OW-14, which may extend to the north towards old

boring 643." In the same Geology section of the Report the Permittee discusses the top of the Chinle Group regarding troughs and highs in the top of the bedrock and refers to Figure 12 (Paleotopography Top of Chinle Group). The transmissive material lies atop the Chinle Group bedrock; where there are troughs in the bedrock, generally an accumulation of transmissive material is present, unless erosion or other reworking occurred post deposition. Contour maps of the top of the Chinle formation, the Chinle/Alluvium deposits, and the potentiometric surface should be roughly comparable. Treating the subsurface soils as a monolith presents a simplified version of potential migration pathways, which are more complicated. In the response letter, explain the more monolithic trends which the Permittee believes to be present in the subsurface.

Comment 4

In the response to NMED's *Disapproval* Comment 12, the Permittee states, "[a]s noted by NMED, the slope of the potentiometric surface and that of the contact between the Chinle Formation and the overlying Alluvial deposits do not correlate [in the area of RW-2 and OW-58]." In Section 4.2.2 (Hydrogeology) the Permittee states "... the groundwater elevations in RW-2 and OW-58 were similar in September 2016 (0.84 feet higher at OW-58) but the gradient increased to 1.59 feet in August 2018 with the flow direction to the southwest from OW-58 towards RW-2. This is in contrast to the elevation change of the top of the Chinle, which is 8 feet higher at RW-2 than OW-58. Generally, the shallow groundwater potentiometric surface reflects the topography of the top of the Chinle Formation, but not in this particular location." It seems unlikely that groundwater flows in the opposite direction between these two wells from the rest of the shallow groundwater flow to the north and northeast in this area of the facility. Either there is an ongoing leak contributing to the increase in the groundwater gradient or the measurements were not recorded correctly; either way these data appear to be anomalous. No revision required.

Comment 5

In the response to NMED's *Disapproval* Comment 16, the Permittee states,

"[i]n reviewing the referenced well log [TK569-3], we note that the 2-foot interval above the 14' - 16' interval consisted of a silty clay with a trace of fine sand but was otherwise similar to the interval above, which was logged as silty clay, low, firm, damp, brown, odor. The overlying silty clay that extends to the land surface is also noted as being damp. In this case, following NMED's recommendation, the well screen would extend from the land surface to the total depth of 39 feet. We would respectfully suggest that an indication of being damp does not mean it is likely the water table would rise to the upper levels. Also, consideration must be given to the presence of confined intervals, where the potentiometric surface may rise in a cased [well] when

above the screened interval, but not be reflective of "water table" conditions at a given location. MPC will employ longer screen intervals where appropriate based on NMED's direction above and attempt to consult with NMED regarding well screen placement when conditions arise that could potentially result in "submerged" well screens and/or cross-contamination between otherwise vertically isolated intervals."

Signs of saturation in tight formations (e.g., silty clay) are often difficult to identify. According to the boring log for TK569-3, the presence of fine sand and odor is first noted at the depth of 14 feet below ground surface (bgs) and the soil description is clearly different from that of the shallower subsurface. Nevertheless, the screened interval of temporary well TK569-3 intersected the water table and the well was appropriately installed according to Table 4 (Groundwater Field Measurements). No revision required.

Comment 6

In the response to NMED's *Disapproval* Comment 17, the Permittee states, "[y]es, the groundwater samples collected at TK569-2 and TK570-1 were collected from beneath the layer SPH. The text on pages 4-11 and 4-14 is revised to reflect collection of the water samples from beneath the SPH." The response partially addresses Comment 17. Comment 17 also states, "[i]n 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." Acknowledge the provision in the response letter.

Comment 7

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." According to a conversation with the Permittee at the end of July 2019 the leaks in Tank 570 may have also contributed to the product discovered in the French drain by pond STP-1. The Permittee provided cross-sections of the subsurface but no cross sections that depict the subsurface from Tank 570 to OW-14 or towards STP-1. The cross-sections focused on the area around recovery well RW-1 and none of the cross-sections depict the subsurface towards well OW-14. Submit a figure that depicts the likely subsurface conditions between Tank 570 to OW-14 and STP-1.

Comment 8

In Section 2 (Background), page 2-1, the Permittee states, "The three leaded gasoline storage tanks (TK-568, TK-569, and TK-570) closest to OW-14 were investigated as part of SWMU No. 6 in the early to mid-1990s. Tanks TK-569 and TK-570 are still used to store gasoline, while TK-568 was switched to store MTBE sometime after 1996 and later switched to ammonium thiosulfate in 1986." Note that NMED considers SWMU 6 to include the entire tank farm, not just the leaded tanks. Also, it seems that the dates are incorrect regarding the history of tank TK-568. No revision required.

Comment 9

The Permittee notes several times in Section 6.1 (Soil Analytical Results) that since soil samples with analytical results above residential levels that were collected below 10 feet that, "[t]his sample was collected at a depth below 10 feet and thus the residential screening level does not apply." At this point in the investigative process, the soil screening levels are being used for comparison and to develop a better understanding of site conditions to see where contaminants are present above screening levels to guide the investigation. Once an investigation is complete, appropriate risk-based screening levels may be used to direct corrective action decisions.

Comment 10

In Section 7.1 (Conclusions) the Permittee discusses that, "[t]he presence of soil samples with elevated concentrations of constituents does help to better understand potential transport pathways. The greatest number of detections of organic constituents with the highest concentrations occurred in the soil sample collected at a depth of 24 feet to 26 feet bgl in boring TK 569-3. This boring is located up-gradient of Tank 569 and down-gradient of Tank 570. There were much lower concentrations of organic constituents detected in a shallower (16 feet to 18 feet bgl) soil sample in the same boring, potentially indicating the deeper impacts are the result of lateral transport to this location." The Permittee does not discuss the soil type(s) present at these intervals, which is an even better way to understand potential contaminant pathways. Include the discussion in the response letter.

Comment 11

In Section 7.1 (Conclusions) the Permittee states, "[t]he highest MTBE concentration was found in a groundwater sample from TK 568-1 (10,000 ug/L), which is located north (downgradient) of Tank 568. The groundwater sample collected from the temporary well TK 568-2, which is up-gradient of Tank 568, was reported to have a MTBE concentration of 140 ug/L. The second highest MTBE concentration was found in groundwater collected from OW-58 (3,300 ug/L), which is located approximately 560 feet north (down-gradient) of TK 568-1." Other downgradient wells contain concentrations of MTBE: well OW-14 0.60 mg/L (600 ug/L) in 2018,

well OW-30 contains concentrations of MTBE at 4,000 ug/L, and well OW-55 at a concentration of 2,000 ug/L in 2017. It appears that the Permittee may be able to better delineate the migration of MTBE in groundwater from Tank 568 using additional data points. Figure 20 (Benzene, Ethylbenzene, Toluene, Total Xylenes, and MTBE Groundwater Map) depicts wells only as far north as well OW-14. Provide a figure that includes the other downgradient wells identified in this comment to provide further context to the MTBE plume migration.

The Permittee must address all comments in this Approval with Modifications and submit a response letter no later than **October 1, 2019**.

This approval is based on the information presented in the document as it relates to the objectives of the work identified by NMED at the time of review. Approval of this document does not constitute agreement with all information or every statement presented in the document.

If you have questions regarding this correspondence, please contact Kristen Van Horn of my staff at 505-476-6059.

Sincerely,

John E. Kieling
Chief
Hazardous Waste Bureau

cc: K. Van Horn, NMED HWB
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File: Reading File and WRG 2019 File
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