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**ENTERED**

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**Certified Mail - Return Receipt Requested**

August 15, 2023

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

**RE: DISAPPROVAL  
NORTH DRAINAGE DITCH AREA INVESTIGATION WORK PLAN PHASE II  
WESTERN REFINING SOUTHWEST LLC, GALLUP REFINERY  
MCKINLEY COUNTY, GALLUP, NEW MEXICO  
EPA ID# NMD000333211  
HWB-WRG-23-003**

Dear Mr. Moore,

The New Mexico Environment Department (NMED) has completed its review of Marathon Petroleum Company dba Western Refining Southwest LLC, Gallup Refinery (the Permittee) the *North Drainage Ditch Area Investigation Work Plan Phase II* (Phase II Work Plan), dated November 28, 2022. NMED hereby issues this Disapproval with the following comments.

**Comment 1**

In Executive Summary, page 1 of 17, paragraph 2, the Permittee states, “[s]oil samples will be analyzed for total TPH – diesel range organics, TPH – motor oil range organics, TPH – gasoline range organics, and total manganese, as outlined in Table 1.” The December 17, 2021 *North Drainage Ditch Area Investigation Report* (December 2021 IR) states that the benzene and ethylbenzene concentrations in the soil samples collected from the North Drainage Ditch Area exceeded the respective soil screening levels and the benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, 1,2-dichloroethane, arsenic, barium, chromium, lead, and beryllium concentrations in the groundwater samples collected from the area exceeded the respective groundwater screening levels. Based on the results of the December 2021 IR, these contaminants may also be present in the samples collected from the site during this investigation. Propose to include volatile organic compounds (VOCs) and Skinner list metals analyses in addition to the proposed analyses of total TPH – diesel range organics, TPH – motor oil range organics, TPH – gasoline range organics, and total manganese in the revised Phase II Work Plan.

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**Comment 2**

In Section 2.2 (Historical Sampling and Results), page 7 of 17, last paragraph, the Permittee states, “[a]nalytical results for the permanent monitoring wells have continued to exceed the applicable screening levels for multiple constituents and are discussed in the Annual Groundwater Reports.” The 1,4-dioxane concentration in the groundwater sample collected from well OW-56 during the September 2020 sampling event exceeded the respective screening level. Accordingly, 1,4-dioxane may be present in the samples collected from the site. Propose to conduct 1,4-dioxane analysis in addition to the proposed analytical suite required by Comment 1 above in the revised Phase II Work Plan.

**Comment 3**

In Section 3.1 (Surface Conditions), page 9 of 17, paragraph 3, the Permittee states, “[s]urface soils within most of the area of investigation are primarily Rehobeth silty clay loam. Rehobeth soil properties include a pH ranging from 8 to 9 standard units and salinity naturally occurring and typically measuring up to approximately 8 millimhos per centimeter.” Although the pH and salinity of the soil at the site are described in the text, the implication of such soil characteristics associated with contamination that may be present at the site is not discussed. Discuss the implication of these soil characteristics in the revised Phase II Work Plan.

**Comment 4**

In Section 3.2 (Subsurface Conditions), page 9 of 17, last paragraph, the Permittee states, “[i]nterbedded within the Chinle Formation is the Sonsela Sandstone bed, which represents the uppermost potential aquifer in the region.” The statement is inaccurate. There is an uppermost aquifer within fluvial and alluvial deposits overlying the Chinle Formation where the groundwater (i.e., shallow groundwater) was most affected by the constituents released by the facility operations. Correct the statement for accuracy in the revised Phase II Work Plan.

**Comment 5**

In Section 3.2 (Subsurface Conditions), page 10 of 17, last paragraph, the Permittee states, “[g]roundwater in the area of the North Drainage Ditch flows from the east to the west. Surveying for the permanent monitoring wells was completed in January 2022. The survey data will be included in the 2022 Annual Groundwater Report and incorporated into the site-wide potentiometric [sic] surface map. Up-gradient of the North Drainage Ditch includes the eastern boundary of the refinery and the tank farm.” Since the North Drainage Ditch is located in the vicinity of the Former Fire Training Area (FFTA) where per- and polyfluoroalkyl substances (PFAS) may have been released to the environment, the presence or absence of PFAS must also be evaluated. Propose to include PFAS analysis for the soil samples collected from the North Drainage Ditch Area in the revised Phase II Work Plan. Refer to the May 23, 2023 *Disapproval*,

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*OW-63 PFAS Investigation Work Plan* letter for specific directions associated with the collection of PFAS samples and incorporate the requirements during this Phase II investigation.

**Comment 6**

In Section 4.0 (Scope of Activities), page 11 of 17, paragraph 2, the Permittee states, “[t]he proposed soil borings consist of two soil borings 25 ft to the south and southwest of NDD-SB-1, two soil borings 25 ft to the south and southwest of NDD-SB-3, and five soil borings starting 25 ft to the northeast of NDD-SB-3.” According to Figure 2-1 (Proposed Soil Boring / Historic Sampling Locations), the proposed soil boring locations that are 25 feet to the south and southwest of NDD-SB-3 are not depicted. Instead, there are two proposed soil borings depicted south of NDD-SB-2 on Figure 2-1. Resolve the discrepancies and provide a revised Figure 2-1 with the correct proposed soil boring locations in the revised Phase II Work Plan.

**Comment 7**

In Section 4.0 (Scope of Activities), page 11 of 17, paragraph 2, the Permittee states, “[a]ll soil borings will be drilled to a minimum depth of five feet below the deepest interval in which constituents were detected above applicable screening levels in borings completed in August 2021.” It is unclear which soil boring installed during the August 2021 Investigation was used to determine the depth of the newly proposed borings. For example, the TPH-GRO concentration in the soil sample collected from boring NDD-MW-2 installed during the August 2021 investigation at a depth of 47.5-48 feet bgs is recorded as 150 mg/kg and exceeds the residential soil screening level (SSL) according to the December 2021 IR. Based on the statement and the information from NDD-MW-2, the Permittee is proposing to advance the soil borings to a depth of 53 feet bgs. However, it is NMED’s opinion that each proposed soil boring does not have to be advanced to 53 feet bgs. Since the locations of the proposed borings are not the same as those of the August 2021 borings, the depth of soils where contamination may potentially be detected in each proposed boring may vary and must not be estimated from previous data. All proposed soil borings must be advanced to a depth five feet below the water table or if the water table is not observed during the investigation, the soil borings must be advanced to the Alluvium/Chinle interface at a minimum, regardless of the presence or absence of field evidence of impacts. Revise the appropriate section(s) of the Phase II Work Plan.

**Comment 8**

In Section 4.0 (Scope of Activities), page 11 of 17, paragraph 2, the Permittee states, “[i]f there is field evidence of impacts at greater depths (e.g., PID readings, odor, staining, etc.), then the soil boring will be advanced deeper to achieve full vertical delineation. Soil borings will be advanced until no impacts are observed, or groundwater is reached, whichever occurs first.” Field evidence of impacts caused by PFAS, 1,4-dioxane, and metals that must be included as required analytes during this Phase II investigation (see Comments 1, 2, and 5 above) may not

be detected by the proposed field screening methods. Therefore, all proposed soil borings must be advanced to a depth five feet below the water table or the Alluvium/Chinle interface at a minimum (see Comment 7 above). Include this provision in the appropriate section(s) of the revised Phase II Work Plan.

**Comment 9**

In Section 4.0 (Scope of Activities), pages 11 through 12, last paragraph, the Permittee states, “[p]er NMED SSL guidance, soil leachate-based SSLs (SL-SSL) with a dilution attenuation factor (DAF) of 20 will be compared to the maximum reported concentration as a first step screening assessment. However, the Refinery has known impacts to groundwater, including the presence of separate phase hydrocarbons and an associated smear zone which can act as a long-term source to groundwater. For organic contaminants, vadose zone sources of hydrocarbons are expected to deplete before smear zone sources, [and] it follows that soils overlying the smear zone may not require an interim response for the purpose of protecting groundwater. The Refinery proposes to conduct a holistic migration to groundwater analysis on a site-wide basis. As such, the results of the first step screening assessment reported on the tables are not further discussed in the text, and the ratios (maximum reported concentration divided by the SL-SSL) will not be reported.” Although NMED agrees that DAF SSLs of hydrocarbon constituents are not applicable to the investigation area, metals, PFAS, and 1,4-dioxane concentrations must be compared to the respective DAF SSLs to evaluate the leaching potential of the contaminants. Include this requirement in all applicable sections of the revised Phase II Work Plan. In addition, the Permittee must evaluate such risk and include a discussion in the Phase II investigation report.

**Comment 10**

In Section 5.0 (Investigation Methods), page 13 of 17, first paragraph, the Permittee states, “[s]oil samples will be field screened using a PID for evidence of VOCs.” NMED agrees with the use of a photoionization detector (PID) for field screening because soil and groundwater in the area where the Phase II investigation takes place may be contaminated with VOCs although an FID is preferred. Evaluate whether there is an effective field screening method for PFAS and if so, propose to include that method in the revised Phase II Work Plan.

**Comment 11**

In Section 5.1 (Soil Sample Collection Procedures), page 13 of 17, paragraph 2, the Permittee states, “[s]oil samples will be collected in accordance with the “Standard Operating Procedure - Soil Sampling” (Appendix A).” It is not appropriate to reference an appendix to describe the soil sampling procedures. A discussion associated with the soil sampling procedures must be included within the text of the Phase II Work Plan in accordance with Permit Section IV.J.1. Include the discussion in the revised Phase II Work Plan.

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**Comment 12**

In Section 5.1 (Soil Sample Collection Procedures), page 13 of 17, paragraph 2, the Permittee states, “[s]ample-specific information will include field sample identification, time of sample collection, initial and final sample depth, collection method, sample type (i.e., composite or aliquot).” The Permittee is reminded that composite samples are not acceptable for use as site characterization data which must be acknowledged and stated in the revised Phase II Work Plan. Furthermore, Section 5 of Appendix A (Standard Operating Procedure – Soil Sampling) states that “the material to be sampled will be easy to access, and simple "grab" samples collected using a shovel, trowel, or drive sampler are appropriate.” Therefore, there should be three different designations of sample type (i.e., composite, aliquot, and grab) stated. However, it is unclear which sample type will be collected to acquire site characterization data. Revise the Phase II Work Plan to clarify the statement and to state that the sample collection method(s) will be reported in the Phase II investigation report.

**Comment 13**

In Section 5.1 (Soil Sample Collection Procedures), page 13 of 17, paragraph 3, the Permittee states, “[a]ll equipment will be decontaminated with Simple Green™ (or equivalent) using a four-stage decontamination system consisting of a two detergent/water washes and two deionized water rinses and recorded in the field logbook.” Include the safety data sheet(s) for Simple Green™ or the equivalent detergent(s) to be used in an appropriate appendix section of the Phase II Work Plan. State which cleaner was used in the Phase II investigation report. Note that NMED prefers the use of Alconox® or Fantastik® as a cleaner because the product is not likely to contain any chemical that interferes with analytes of concern.

**Comment 14**

In Section 5.2 (Data Quality and Validation), page 14 of 17, paragraph 2, the Permittee states, “[f]ield duplicates and equipment blanks will be analyzed for the same constituents as the soil samples; trip blanks will be analyzed for VOCs.” Since PFAS is required to be included in the analytical suite, trip blanks must also be included to analyze for PFAS for quality assurance and quality control purposes. Include this provision in the revised Phase II Work Plan.

**Comment 15**

In Section 5.3 (Data Evaluation and Waste Management), page 15 of 17, last paragraph, the Permittee states, “[w]aste characterization analysis will include testing for TPH-DRO, TPH-GRO, TPH-MRO by Method 8015, and total manganese by Method 6010/6020.” Soil waste must also be analyzed for constituents which are required by the receiving landfill and specific waste acceptance criteria must be met before disposal. Include this provision in the revised Phase II Work Plan.

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**Comment 16**

In Appendix A (Standard Operating Procedure – Soil Sampling), page 1, the Permittee states, “[t]he PID will be checked to ensure that the PID has the appropriate lamp strength for the investigation. The lamp to be used in a PID is a 10.6 electron volt (eV) lamp, which will ionize compounds with ionization potentials from 8.0 eV to 10.6 eV.” NMED recommends the use of a lower lamp strength (9.5 eV) to avoid inaccurate readings due to a fouled lamp because of moisture, dust, and high contaminants in PID samples. Note that PIDs with higher lamp strengths (i.e., 10.6 eV) are more likely to foul during use due to moisture and dust in the soils sampled, resulting in inaccurate PID readings. Propose to use the 9.5 eV lamp in the revised Phase II Work Plan.

The Permittee must address all comments in this letter and submit a revised Phase II Work Plan. Two hard copies and an electronic version of the revised Phase II Work Plan must be submitted to NMED. The Permittee must also include a redline-strikeout version in electronic format showing where all revisions to the Phase II Work Plan have been made. The revised Phase II Work Plan must be accompanied with a response letter that details where all revisions have been made to the Phase II Work Plan, cross-referencing NMED’s numbered comments. The revised Phase II Work Plan and response letter must be submitted to NMED no later than **January 26, 2024**.

If you have questions regarding this letter, please contact Michiya Suzuki of my staff at 505-690- 6930.

Sincerely,

**Ricardo Maestas**

Digitally signed by Ricardo  
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Ricardo Maestas  
Acting Chief  
Hazardous Waste Bureau

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