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Certified Mail - Return Receipt Requested

May 23, 2023



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

**RE: DISAPPROVAL
OW-63 PFAS INVESTIGATION WORK PLAN
WESTERN REFINING SOUTHWEST LLC, GALLUP REFINERY
MCKINLEY COUNTY, GALLUP, NEW MEXICO
EPA ID# NMD000333211
HWB-WRG-23-005**

Dear Mr. Moore,

The New Mexico Environment Department (NMED) has completed its review of the Marathon Petroleum Company dba Western Refining Southwest Inc., Gallup Refinery (the Permittee) *OW-63 PFAS Investigation Work Plan* (Work Plan), dated December 7, 2022. NMED hereby issues this Disapproval with the following comments.

Comment 1

In Section 1.1 (Background), pages 4 and 5 of 18, the Permittee states, "Trihydro conducts groundwater sampling for PFAS at OW-63 on a quarterly basis... [t]hese [PFAS] results are included in the annual groundwater monitoring reports." The Permittee did not include previous per- and polyfluoroalkyl substances (PFAS) analytical results for the groundwater samples collected from well OW-63 in the current Work Plan. The previous PFAS analytical results prompted this investigation; therefore, the results should be included in the Work Plan. Include the previous PFAS analytical results and provide a discussion in the revised Work Plan.

Comment 2

Section 1.3 (PFAS-Containing Materials at the Refinery), page 5 of 18 states, "[s]ince the 1950s, PFAS have been incorporated into many consumer and industrial products." PFAS are often detected in wastewater where many consumer and industrial products end up. Therefore, it is possible that wastewater containing PFAS may have been released to the evaporation ponds (SWMU-2) and the Sanitary Lagoon in the past. Propose to submit a separate work plan to

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investigate potential PFAS contamination associated with a discharge of wastewater to SWMU-2 and the Sanitary Lagoon in the response letter. No revision is required for the current Work Plan.

Comment 3

Section 1.3 (PFAS-Containing Materials at the Refinery), page 6 of 18 states, “[m]odern AFFF products contain little to no PFOA or PFOS but may contain shortchain PFAS compounds such as perfluorobutane sulfonate (PFBS).” It is not clear if the firefighting foams that have recently been used at the facility no longer contain PFAS. Revise the Work Plan to confirm and state that the recent firefighting foams that the facility uses do not contain any PFAS. If the firefighting foams used at the facility contain short chain PFAS, the foams stored for use in the future should be replaced so to remove any source of PFAS contamination at the site. Include this proposal in the revised Work Plan.

Comment 4

Section 2.0 (Field Investigation Activities), page 7 of 18 states, “[m]any PFAS compounds are potentially mobile in groundwater and are prone to accumulate at air/water and oil/water interfaces (Brusseau 2018, ITRC 2022b). The sampling program described herein has been developed to account for these aspects, with sampling designed to identify potentially mobile PFAS within the bulk water phase (i.e., avoiding interfaces) associated with shallow groundwater.” Groundwater samples collected from the bulk water phase may present false-negative results because PFAS accumulates at interfaces. It is more appropriate to collect groundwater samples at a depth where PFAS are likely to accumulate (e.g., air/water interface). Revise the Work Plan to collect PFAS groundwater samples from the air/water and oil/water interfaces rather than the bulk water phase, where applicable.

Comment 5

Section 2.0 (Field Investigation Activities), page 7 of 18 states, “[g]roundwater sampling [will be conducted] at four existing groundwater monitoring wells (OW-14, OW-57, OW-63, and OW-70). These wells are located cross gradient and down gradient of OW-63 (Figure 1-1).” Address the following:

- a) All four monitoring wells proposed to be sampled for PFAS are screened to the Chinle/Alluvial Interface. Since many PFAS compounds are potentially mobile in groundwater as stated above Comment 4, the Sonsela aquifer beneath the Fire Training area may potentially be affected by PFAS. Well OW-12 is screened to the Sonsela and located near the Fire Training area. Propose to also collect groundwater samples from well OW-12 for PFAS analysis in the revised Work Plan.

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- b) The screened interval of well OW-14 is submerged under the water table. Comment 4 above directs the Permittee “to collect PFAS groundwater samples from the air/water interface rather than the bulk water phase, where applicable.” Well OW-55 is located directly downgradient of the Fire Training area and the screened interval of well OW-55 intersects the water table; thus, well OW-55 allows for collection of groundwater samples at the interface. Add well OW-55 to the list of the proposed wells to be sampled in the revised Work Plan.

Comment 6

In Section 2.1 (Phase 1: Groundwater Sampling at Existing Monitoring Wells), page 8 of 18, the Permittee states, “[t]he reporting limits for the analytes on Table 2-3 will be dependent upon the lab selected for PFAS analysis. Reporting limits will be evaluated against NMED PFAS screening levels once a lab has been selected.” The PFAS reporting limits (e.g., limits of quantitation) must be evaluated prior to the selection of a laboratory. The Permittee must ensure that the laboratory is capable of providing reporting limits lower than applicable PFAS groundwater screening levels (SLs) and soil screening levels (SSLs). Acknowledge this provision in the response letter. No revision is required to the Work Plan.

Comment 7

Section 2.1.2 (Groundwater Sample Collection), page 8 of 18 states, “[n]o-purge sampling involves collecting water directly from the screened interval after deploying the sampling device in the well for an extended period, thus allowing groundwater within the well to achieve dynamic equilibrium with formation groundwater.” The proposed no-purge sampling must be approved by NMED prior to being implemented in the field. The analytical results and water quality parameter readings obtained from no-purge (i.e., passive) sampling and grab (i.e., active) sampling methods must be comparable to be acceptable. If the Permittee chooses to use passive sampling for PFAS analysis, propose to submit a separate work plan that proposes to demonstrate its acceptability. In this case, the submittal due date for the revised Work Plan provided in this letter may be deferred until such demonstration is complete. Alternatively, if the Permittee chooses to propose an active sampling method (e.g., low-flow sampling), revise the Work Plan accordingly.

Comment 8

Section 2.1.2 (Groundwater Sample Collection), page 9 of 18 states, “HydraSleeve™ samplers will be deployed for a minimum of a week and up to four weeks prior to sampling and will be retrieved following procedures described in the SOP.” According to Table 2-1 (Summary of PFAS Soil and Groundwater Sample, Identification, Sample Methods, and Analytical Methods), all groundwater samples collected by the HydraSleeve™ sampler are identified as “grab” samples. Grab samples refer to instantaneous grab groundwater samples. Since the HydraSleeve™ sampler is deployed for a minimum of a week, it is not clear how it allows collection of grab

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samples. Provide a clarification in the revised Work Plan. In addition, explain whether the HydraSleeve™ sampler is capable of collecting representative formation water at the air/water interface as required by Comment 4 above in the revised Work Plan (See also Comment 7).

Note that Interstate Technology and Regulatory Council (ITRC) recommends that the passive samplers be installed for a minimum of two weeks. In addition, ITRC states that passive samplers should not be used if the hydraulic conductivity is less than 0.283 feet per day (ft/day), the hydraulic gradient is less than 0.001 or the groundwater velocity is less than 0.5 ft/day. These conditions must be met if the passive samplers are proposed to be used for the investigation.

Comment 9

Section 2.1.2 (Groundwater Sample Collection), page 9 of 18 states, “[t]he target sampling depth for each of the wells is the mid-point of the screened interval.” Since PFAS accumulates at interface, groundwater samples collected at the mid-point of the screened interval may have a low bias. It is more appropriate to collect groundwater samples at air/water interface where PFAS are likely to accumulate. Propose to collect PFAS groundwater samples from the air/water interface rather than at the mid-point of the screened interval, where applicable. See Comment 4 above.

Comment 10

Section 2.2 (Phase 2: Soil Sampling and Temporary Well Installation), page 10 of 18 states, “[s]urface soil samples will be collected at five locations within the OW-63 area based on Phase 1 groundwater data and site topography, as identified on Figure 1-1.” Address the following:

- a) It appears that the PFAS detected from well OW-63 are likely to have been released from the Fire Training area. Therefore, it is necessary to collect additional surface soil samples directly within the boundary of the Fire Training area to evaluate for surface soil contamination. Include this provision in the revised Work Plan.
- b) Since the exact location(s) where firefighting foams were used is unknown, three additional surface soil samples must be collected from the areas where sediment accumulation and drainages are identified within the OW-63 area. Include this provision in the revised Work Plan.

Comment 11

Section 2.2.2 (Subsurface Soil Sampling), page 10 of 18 states, “Trihydro field staff will prepare continuous boring logs of soil samples to the water table, recording lithology and appearance of the boring, and performing field screening of the soil cores using a photoionization detector (PID).” NMED agrees with the use of a photoionization detector (PID) for field screening

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because soil and groundwater in the area where the investigation takes place may be contaminated with petroleum hydrocarbons. Evaluate whether there is an effective field screening method for PFAS and if so, propose to use that method in the revised Work Plan.

Comment 12

In Section 3.0 (Analytical Methods), page 13 of 18, the Permittee states, "PFAS analysis will be conducted by a laboratory with PFAS-specific experience, using method 537.1 or equivalent." Table 2-3 (Proposed Groundwater and Soil Sample Constituent List) presents PFAS analytes proposed to be included in this investigation. NMED notes that the proposed analytes are consistent with the PFAS listed in Table 5-2 of the NMED's October 2022 *Risk Assessment Guidance* (RAG). The 2022 RAG currently lists the SLs and SSLs for 12 PFAS species in Appendix A; however, six (6) species (i.e., perfluorobutanesulfonate, perfluorohexanesulfonate, perfluorononanoate, perfluorooctanoate, potassium perfluorobutanesulfonate, and potassium perfluorooctanesulfonate) are not included in Table 2-3. Propose to include these six PFAS species as analytes to better assess potential risks associated with PFAS in the revised Work Plan, if practicable. In addition, include the values of SLs and SSLs and reporting limits (e.g., limit of quantitation) for each analyte in Table 2-3, where applicable.

Comment 13

Table 2-3 (Proposed Groundwater and Soil Sample Constituent List) indicates that the target analytes are only PFAS for this investigation. Since the soil and groundwater samples collected for the investigation may also be contaminated with petroleum hydrocarbons, the Permittee must propose to include total petroleum hydrocarbons (TPH) analysis as well in the revised Work Plan.

The Permittee must address all of the comments in this letter and submit a revised Work Plan. Two hard copies and an electronic version of the revised Work Plan must be submitted to the NMED. The Permittee must also include a redline-strikeout version in electronic format showing where all revisions to the Work Plan have been made. The revised Work Plan must be accompanied with a response letter that details where all revisions have been made to the Work Plan, cross-referencing NMED's numbered comments. The revised Work Plan and response letter must be submitted to NMED no later than **September 29, 2023**.

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

Sincerely,

Ricardo Maestas

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Ricardo Maestas
Acting Chief
Hazardous Waste Bureau

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