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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

April 1, 2014

Mr. Ed Riege  
Environmental Manager  
Western Refining, Southwest Inc., Gallup Refinery  
92 Giant Crossing Road  
Jamestown, New Mexico 87347

**RE: DISAPPROVAL  
INVESTIGATION REPORT  
SOLID WASTE MANAGEMENT UNIT (SWMU) No. 1  
AERATION BASIN AND SWMU No. 14 OLD API SEPARATOR  
WESTERN REFINING SOUTHWEST INC., GALLUP REFINERY  
EPA ID # NMD000333211  
HWB-WRG-13-001**

Dear Mr. Riege:

The New Mexico Environment Department (NMED) has reviewed the *Investigation Report Solid Waste Management Unit (SWMU) No. 1 Aeration Basin and SWMU No. 14 Old API Separator* (Report), dated February 2013, submitted on behalf of Western Refining Southwest Inc., Gallup Refinery (Permittee) and hereby issues this Disapproval with the following comments.

**Comment 1**

In Section 4.4 (Monitoring Well Construction and Groundwater Sampling), the Permittee repeats the soil descriptions from Section 4.3.1 (Aeration Basin Soil Investigation) and Section 4.3.2 (Old API Separator). Instead of repeating the soil descriptions, describe the well development and groundwater sampling conducted during this phase of work. Include descriptions of the volume of water purged, field parameters measured and the results, identify the unit from which

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water was sampled, and discuss any other details which may aid in understanding the groundwater at the site. In the revised Report, remove the repetitive soil descriptions and include the additional groundwater-related information.

**Comment 2**

The Permittee calculated a site-specific dilution attenuation factor (DAF) for soil screening purposes. In Section 5 (Regulatory Criteria) the Permittee states that “[a] review of site conditions indicates that a DAF of 1.0 is overly conservative, thus a site-specific DAF value was calculated). The site-specific DAF was calculated as 461.” In the same section the Permittee goes on to state, “[t]he screening levels included in Table 7 and 8 are based on residential and non-residential land use and include a screening level to evaluate the potential for constituents to migrate to groundwater using a site-specific DAF.” The purpose of calculating DAF is to determine whether or not soil screening levels (SSLs) are protective of groundwater. Because groundwater in the area is affected by contamination, it is inappropriate to calculate a DAF for the site. Revise the Report to remove the calculation of site-specific DAF and all associated soil screening assessments (text, tables, and figures). A more appropriate screening level for soil are the NM SSLs (or EPA Regional Screening Levels as appropriate) as outlined in NMED’s Risk Assessment Guidance.

**Comment 3**

In Section 2.1 (SWMU No.1 Aeration Basin) include references to the historical reports (title, date, section or page number) when discussing prior site investigations. Include similar references in Section 2.2 regarding the Old API Separator (OAPIS) as well.

**Comment 4**

In Section 2.1 (SWMU No.1 Aeration Basin) the Permittee must note that groundwater monitoring wells GWM-2 and GWM-3 were installed as dry wells to detect leakage from the Aeration Basin. Revise the Report as necessary.

**Comment 5**

The soil descriptions in Section 4.3 (Exploratory Drilling Investigations, Soil Sampling and Boring Abandonment) and descriptions of hand auger refusal in gravel at about 0.5 feet below ground level (ft bgl) in borings around the aeration basin indicates that the berms surrounding the aeration basin contain a significant percentage of gravel which may have facilitated seepage into the surrounding soils. Revise the Report to provide a description of the design and composition of the berms, if available.

**Comment 6**

In Section 4.3.1 (Exploratory Drilling Investigations, Soil Sampling and Boring Abandonment), the Permittee describes “odor” and “discoloration” as part of the soil boring descriptions. In the

revised Report, include additional details regarding the odors and colors observed (organic odor or petroleum odor, organic discoloration or petroleum discoloration).

**Comment 7**

In Section 5 (Regulatory Criteria), the Permittee states, “[t]here are no soil screening levels for gasoline range organics and the individual compounds listed for groundwater (gasoline range criteria) are included in the list of analytes used for site samples. As there could have been a variety of petroleum types (e.g., crude oil or various refined products) going to the OAPIS and Aeration Basin, the screening level for “unknown oil” was selected for comparison to the diesel range soil and groundwater analytical results. The laboratory analyses for motor oil range organics only report results for >C28 to C35. Since the motor oil range results only include hydrocarbons greater than C28, it is not appropriate to compare the results against screening levels for product types that have lower hydrocarbon 50 ranges (e.g., diesel fuel – 60% C11-C22 aromatics and 40% C9-C18 aliphatics). The only product type in Table 6-2 that contains the >C28-C35 carbon range is “waste oil”, which includes C19-C36. Therefore, the motor oil range organic soil analytical results are compared to the “waste oil” soil screening levels. The NMED guidance specifies the inclusion of “petroleum-related contaminants” as the groundwater criteria for waste oil instead of a motor oil range screening level and these constituents are included in the list of reported analytes in Tables 9 and 10.” Because the refinery has handled the full range of petroleum products and all of those products have more than likely passed through the OAPIS and potentially leached into the soils are the aeration basin, the Permittee must use “unknown oil” from Table 6-2 for all comparisons. Unknown oil covers the full hydrocarbon range and is the most conservative standard. Revise the Report to use unknown oil as the screening level.

**Comment 8**

In Section 7.1 (Conclusions), the Permittee states, “[a] cumulative risk evaluation for soils is presented in Table 13. Because the Aeration Basin and OAPIS are located adjacent to each other, the cumulative risk evaluation combines the data for both SWMUs. The evaluation was conducted by taking the maximum reported soil concentration of each detected constituent and dividing by the residential screening level and non-residential screening levels as shown in the equations below. These calculations are separated for carcinogenic and non-carcinogenic constituents. The cumulative carcinogenic risk is  $1.4 \times 10^{-3}$  assuming residential land use and  $9.3 \times 10^{-5}$  for non-residential land use. The hazard index for residential land use is 1.5 and for non-residential land use is 0.41.” The Permittee may find that it makes more sense to separate the Aeration Basin and the OAPIS for cumulative risk calculations. Separate cumulative risk calculations may be of use for future corrective action at both sites. Either SWMU may positively or negatively affect the outcome of the calculation. Additionally, see Comment 9 regarding “non-residential” land use.

**Comment 9**

In Section 7.1 (Conclusions) the Permittee states for soils that, “[t]he cumulative carcinogenic risk is  $1.4 \times 10^{-3}$  assuming residential land use and  $9.3 \times 10^{-5}$  for non-residential land use. The hazard index for residential land use is 1.5 and for non-residential land use is 0.41.” For groundwater the Permittee states, “[t]he cumulative carcinogenic risk level is calculated to be  $2.2 \times 10^{-3}$  and the hazard index is 909.53.” Typically, a hazard index (HI) is calculated for soil and not for groundwater. Draft RCRA Permit Section IV.D and the Bloomfield Order Section VII both describe the groundwater cleanup policy used by the Hazardous Waste Bureau. In the revised Report, remove the calculation and discussion of a HI for groundwater. For the calculation of the soil HI, the “non-residential soil screening level” is based on several different standards: NMED Industrial Occupational Screening Level, NMED Construction Worker Screening Level, EPA Industrial Screening Level, and EPA Industrial Screening Level x 10. Based on current and future land use NMED assumes that the most appropriate screening level is the Construction Worker Screening Level (SSL); however, the Permittee may develop a site specific conceptual model and determine which SSL is most protective of human and environmental health. Revise the Report to use the Construction Worker SSL or the SSL of the Permittee’s choice, but do not use multiple SSLs. In the revised Report, discuss the calculation of site risk and the HI for soil based on the selected SSL.

**Comment 10**

In the Executive Summary, and throughout the Report, the Permittee refers to “screening levels.” For example in Section 7.1.1 (Aeration Basin) the Permittee states, “[f]our organic constituents (1,2,4-trimethylbenzene, 1-methylnaphthalene, benzene, and naphthalene), and DRO were detected in three soil samples at concentrations exceeding their respective screening levels.” At the end of the soil discussion section, the Permittee writes, “[o]verall, there were few exceedences of the screening levels in the soil samples collected around the Aeration Basin. Only 3 out of 103 soil samples collected around the Aeration Basin exceeded screening levels.” Revise the Report to state specifically which screening levels analytes are being referenced.

**Comment 11**

In Section 7.1.1 (Aeration Basin) under the groundwater discussion the Permittee states, “[w]hile there are detections of seven organic constituents and DRO in groundwater samples collected immediately surrounding the Aeration Basin, the concentrations are not significantly above the screening levels (i.e., generally less than one order of magnitude above the screening level). The saturated intervals in most locations consist of clayey sand, which was found to not be very productive during sample collection activities. The clayey sand intervals do not appear to be laterally continuous at most locations based the inability to correlate zones between most of the soil borings completed around the perimeter of the Aeration Basin. It also appears that the source of recharge to the saturated intervals found in the borings around the Aeration Basin is the wastewater, which has been maintained in the Aeration Basin. As the Aeration Basin is removed from service and the liquids are removed, it is probable that the saturation observed in borings

SWMU 1-2, SWMU 1-3, SWMU 1-4, SWMU 1-5, SWMU 1-6, SWMU 1-7, SWMU 1-8, SWMU 1-24, and SWMU 1-37 will dissipate.” Revise the Report to discuss the specific constituents and soil screening levels being discussed. The clayey sand interval is likely a component of sand-stringers. While not continuous, the sand stringers are potential migration pathways for contamination throughout the site, aiding in the movement of the wastewater from the aeration basin to the surrounding area. Once the aeration basin is dry, groundwater levels must be checked and reported to NMED.

**Comment 12**

In Table 6 (Groundwater Screening Levels), the Permittee lists analytes and NMED (WQCC Standards, NMED Tap Water) and EPA (EPA Screening Levels Tap Water, MCL) standards. Revise the table to follow the NMED Guidelines and list only the standards which are applicable, not all of the standards. Also, ensure that all of the footnotes are defined.

**Comment 13**

In Table 7 (Aeration Basin Soil Analytical Results Summary) the Permittee lists “non-residential soil screening level” which encompasses several soil screening standards (industrial, construction worker, etc.). Revise the table to show one non-residential screening level based on the site conceptual model. In addition include units for all standards. See also Comment 9.

**Comment 14**

Figure 30 (SWMU No. 1 & No. 14 – Metals October 2012 Groundwater Results) depicts metals concentrations in soil borings around the aeration basin and the OAPIS; however, the results are not labeled; only numbers are shown. Figure 31 (SWMU No. 1 & No. 14 – Organics October 2012 Groundwater Results) also does not list the types of organics in the callout box, only results are listed. In the revised Report, provide the analytes and the corresponding results in the callout boxes in the figures. For all figures, ensure that figures clearly display the analytes and laboratory results.

**Comment 15**

In the revised Report, there is no need to provide a hard copy of the laboratory results, submitting laboratory results as electronic files on disc is adequate.

**Comment 16**

In the Executive Summary and in Section 7.2 (Recommendations), the Permittee discusses potential further investigation to delineate the horizontal extent of contamination at the site. In Section 7.2 (Recommendations), the Permittee states, “[a]n additional soil boring to the north of the Aeration Basin near soil boring SWMU 1-6 could be completed to provide full delineation of both soil and groundwater impacts to the north of the Aeration Basin. Also an additional boring to the southwest of location SWMU 1-37 could provide additional control in this area for potential groundwater impacts. The area between the OAPIS and the Aeration Basin is relatively

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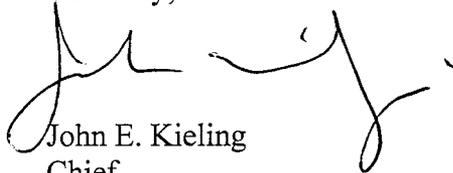
small and does not warrant additional investigation to determine if there is possible separation of impacts sourced from the two different SWMUs. An additional soil boring could be installed east of the OAPIS near SWMU 1-23 to provide full delineation of soil impacts observed in this area. Additional soil data to the southwest of SWMU 14-6 could be used to better define soil impacts observed in this area of the site.” The Permittee must delineate the contamination around the aeration basin in order to complete the site investigation. This information will be used to support the Corrective Measures Evaluation for corrective action at the Aeration Basin.

In order to complete the delineation of potential contamination, the Permittee must submit a work plan proposing to conduct further soil and groundwater investigation in the vicinity of the Aeration Basin. The work plan must be submitted on or before **August 4, 2014**.

The Permittee must address all comments in this Disapproval and submit a revised Report on or before **July 1, 2014**. The revised Report must be accompanied by a response letter that details where all revisions have been made, cross-referencing NMED’s numbered comments. In addition, the Permittee must submit a redline-strikeout version that identifies all changes and edits to the Report (the red-line strikeout may be an electronic copy) with the response.

If you have questions regarding this Disapproval, please contact Kristen Van Horn of my staff at 505-476-6046.

Sincerely,



John E. Kieling  
Chief  
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB  
N. Dhawan, NMED HWB  
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A. Hains, WRG  
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J. Dougherty, EPA

File: Reading File and WRG 2014 File  
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