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(801) 476-1365  
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August 31, 2010

DCN: NMED-2010-26

Mr. David Cobrain  
New Mexico Environment Department (NMED)  
Hazardous Waste Bureau  
2905 Rodeo Park Dr. East  
Building One  
Santa Fe, NM 87505

RE: Draft Technical Review Comments on Investigation Work Plan Background Concentrations, Bloomfield Refinery, Western Refinery Southwest Inc., dated July 2010.

Dear Mr. Cobrain:

Attached please find draft technical review comments on the "Investigation Work Plan Background Concentrations, Bloomfield Refinery, Western Refinery Southwest Inc.," dated July 2010.

The Work Plan addresses the collection of surface and shallow subsurface soil and groundwater samples. It was not clear from the Work Plan whether any areas to be investigated under the corrective action program impact or potentially impact sediments either associated with the San Juan River various arroyos and/or Hammond ditch. Based on our conversation on Tuesday (8/31), it appears that off-site migration of contamination to the San Juan River has been mitigated. However, if during investigations a historical release that impacted the river is discovered, additional sampling to characterize sediments and possible up-gradient surface water may be warranted. In addition, if some of the arroyos and/or Hammond ditch are indicated as being potentially contaminated or provided as a source for transporting contaminants off-site (storm water runoff, erosion, etc.), additional data may be needed for sediments associated with these features.

The following was initially drafted; however, based upon internal emails and our conversation on Tuesday, it appears that obtaining sufficient groundwater well locations is a legitimate issue. There are concerns with the potential for limited groundwater data. First, according to the Order, Section VIII.H, statistically defensible data must be collected for background determination. The proposed wells are to be screened only in the shallow surface water, allowing for one sample per well. Two groundwater samples do not represent statistically defensible data as required by the Order and it does not seem likely that two wells would sufficiently capture the natural variability of inorganics in groundwater. Second, it is not clear how background statistics will or can be generated from only two wells. A statistical comparison of data cannot be conducted. Third, because of real potential for refusal in the proposed background locations for

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groundwater, it appears that additional investigation as to appropriate background locations may be warranted. Fourth, in the event that both of the proposed wells can be developed, it is not clear how the data quality objectives and specifically, the quality control measures with respect to duplicates, etc. will be met with only two samples. Most likely, the evaluation of groundwater will be limited to a qualitative assessment of inorganics with some limited quantitative analysis in the uncertainty section.

If you or any of your staff have questions, please contact me at (801) 451-2864 or via email at paigewalton@msn.com.

Thank you,



Paige Walton  
AQS Senior Scientist and Project Lead

cc: Hope Monzeglio, NMED (electronic)  
Joel Workman, AQS (electronic)

**Draft Technical Review Comments on Investigation Work Plan Background  
Concentrations, Bloomfield Refinery, Western Refinery Southwest Inc., dated July 2010**

1. There is no discussion as to the predominant wind direction at the facility. While refineries are regulated for air emissions, chemicals (including metals) are by-products of the various processes and are released from these facilities. The location(s) of background soil should be in a place(s) that is not significantly impacted by facility emissions, to include building and stack downwash. Discuss the location of background with respect to wind directions and potential for impact from all emission sources.
2. Soil samples are proposed for two intervals: 0-6 inches below ground surface (bgs) and 18-24 inches bgs. It appears that background is being defined based purely on depth with little emphasis on lithology. It is assumed that the use of background will be part of the risk assessments to be conducted to support closure of the solid waste management units (SWMUs) and other areas of concern (AOCs) being addressed under the corrective action program. For human health risk assessments, the residential (no further action, clean closure) and the construction worker scenarios are based upon a soil exposure interval of 0-10 feet bgs. For some ecological risk assessments, a soil interval up to 10 feet bgs may also be appropriate. In addition, as part of identifying nature and extent of contamination, soil samples will most likely be taken at multiple subsurface intervals, well below a depth of 24 inches bgs. Using the limited surface and shallow subsurface soil data as proposed in this Work Plan, it is not apparent that sufficient data will be collected to adequately allow assessment of soil below 24 inches. Clarify how the soil intervals currently defined in this Work Plan will provide sufficient data to compare to the deeper subsurface soil samples. If the 18-24 inch interval is not representative of deeper subsurface soils, additional sampling to characterize deeper subsurface soil is required. It is suggested that background soil be evaluated to a minimum depth of 15 feet bgs.
3. For the proposed background groundwater wells, the borings will be logged. It was not clear from the Work Plan if the proposed background wells are located in areas not impacted by site activities and whether any samples will be collected from the well borings to be used for background soil. These data may provide some characterization for deeper subsurface characterization.
4. Appendix B of the Work Plan contains a custom soil resource report for the site. In looking at the soil map (page 8) the bulk of the soils across the site are members of the Doak-Avalon association, gently sloping (DN), Fruitland-Persayo-Sheppard complex (FX), and hilly Fruitland-Persayo-Sheppard complex, hilly (HA) soil units. In addition to physical properties for these units, the appendix also provides profiles for these units, summarized below.

<b>Soil Unit</b>	<b>Profile</b>
<u>DN</u>	0 to 14 inches: Loam 14 to 60 inches: Loam
<u>FX</u>	0 to 4 inches: Sandy loam

4 to 60 inches: Fine sandy loam

HA

0 to 7 inches: Cobbly sandy loam

7 to 26 inches: Cobbly sandy clay loam

26 to 60 inches: Cobbly sandy clay loam

The background soil samples are proposed all from within the DN soil unit. From review of the physical properties provided for each of these three units, it appears that there may be sufficient similarity between the units to allow for samples collected from DN to be representative of samples from FX and HA soil units. However, it is not clear that soil comprised of mostly loam may be representative a soils with higher sand and/or cobble content as defined in some of the small and less representative areas at the site. In looking at the LANPL plumes defined on Figure 7, it appears that some of the sources may be located within other (not DN, FX, or HA) soil units. For example, the plume west of RW-1 and Hammond Trench is located within the Avalon loam (Ay). Additional discussion of the appropriateness of the DN soil unit for all locations is warranted, and especially for areas within some of the smaller defined soil units addressed in Appendix B.

5. The proposed soil background location is a very limited area of approximately 170 feet by 70 feet ( $\approx 0.27$  acres). Given the size of the facility that will be investigated (approximately 263 acres), it does not appear that eight samples essentially collocated in a very small area will provide sufficient representation of the natural variability of the soil across the site. Additional background soil samples should be collected from additional non-impacted areas to allow for evaluated and characterization of innate variability of inorganic concentrations.
6. Clarify whether both filtered and unfiltered groundwater samples will be collected for analysis.