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May 14, 2009

Mr. David Scruggs, Chief
Environmental Restoration Program
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**SUBJECT: NOTICE OF DISAPPROVAL: FINAL TRIAD APPROACH DYNAMIC
WORK PLAN, RCRA FACILITY INVESTIGATION, SWMU 183 -
BASEWIDE SEWER SYSTEM,
HOLLOMAN AFB, NEW MEXICO, FEBRUARY 2008
EPA ID#: NM6572124422
HWB-HAFB-08-003**

Dear Mr. Scruggs:

The New Mexico Environment Department (NMED) has reviewed the subject Work Plan from Holloman Air Force Base (the Permittee), which was submitted for the investigation of potential hazardous waste releases at Solid Waste Management Unit (SWMU) 183 – Basewide Sewer System. NMED has determined that the Work Plan cannot be approved at this time, as revisions are necessary. The Permittee must address the following deficiencies before the NMED can make a final determination regarding approval.

GENERAL COMMENTS

1. Figures/maps provided in work plans must list the coordinate system, projection, and each datum (e.g., Transverse Mercator Projection, New Mexico State Plane Coordinate System, Central Zone, 1983 North American Horizontal Datum, 1983 North American Vertical Datum). The Permittee must revise all figures to satisfy these requirements.

2. All tables provided in work plans and reports must explain all abbreviations, quality flags, and special formatting (e.g., LS, special colors used, **bold** type used to communicate specific information, J = ?, B = ?) in the footnotes. The test methods must be listed and legible, spelling errors corrected, and sample dates provided on the tables. The Permittee must revise all tables to satisfy these requirements. Refer to Comments 6, 10, 13, 23, 28, 29, 30, 31, 40, 41, 42, 44, 45, 46, and 47 for specifics.
3. The Work Plan, in places, contains complete citations and references to other pertinent documents, such as other Holloman Air Force Base (HAFB) documents (e.g., *Final Basewide Quality Assurance Project Plan (QAPP), Holloman Air Force Base, New Mexico*, November 2003), Standard Operating Procedures (SOPs), company-specific SOPs (e.g., Bhate and Stone), and methods. Many other citations are incomplete. The text must include complete citations and references (e.g., author, publisher, publication date [month, year], method number). All references, including those listed in figures and tables must be included in the References section. With regard to HAFB SOPs and company-specific procedures, the first SOP/procedure listing must include the complete title, rather than just the number. All citations and references must exactly match the listing in the HAFB QAPP. Copies of some company-specific procedures do not accompany the Work Plan; the Permittee must provide copies of all company SOPs. All methods listed in the work plan, including the tables and figures, must have complete references. For example, citation of methods from the American Society for Testing and Materials (ASTM) must include the publication year, and methods from the U.S. Environmental Protection Agency (USEPA) must specify source (e.g., SW846) and indicate the version or revision number of the method. Refer also to Comments 12, 13, 14, 15, 16, 18, 19, 20, 24, 36, and 38 for specific examples.
4. Spelling errors (e.g., augur, benzo[a]pyrene) must be corrected in the Work Plan text, figures, and all appendices.
5. The Permittee must include comparison with the soon-to-be established facility background levels, in addition to the following criteria for both groundwater and soil: appropriate values as specified by the New Mexico Water Quality Control Commission (NMWQCC), the USEPA Region 6 Maximum Contaminant Levels (MCLs), the *New Mexico Environment Department TPH Screening Guidelines* (October 2006), the *New Mexico Environment Department Technical Background Document for Development of Soil Screening Levels (SSLs)* (Revision 4.0, June 2006), the USEPA Region 6 Screening Action Levels (SALs), and the USEPA *Soil Screening Guidance for Radionuclides: Technical Background Document* (October 2000).

Because the facility background study report may not be completed before the response to this NOD is due, the Permittee must, at a minimum, include reference to the soon-to-be established facility background levels within the appropriate sections, figures, and tables of this Work Plan. The Permittee must actively use the established facility background levels in the investigation report. Refer also to Comments 10, 23, 28, and 31.

SPECIFIC COMMENTS

6. **Plates 1 and 2; Table 3-1; and Section 6.1.6, pages 6-11 through 6-13, all**

Plate 1, Plate 2, and Table 3-1 specify 252 sample collection locations for Stage 1, Sewer Release Identification. Section 6.1.6 provides the strategy employed to select the locations. The Permittee must revise the number of locations to reduce the number based upon the following location criteria:

- From sewer pipe junctions
- Down gradient from suspected or known release areas
- Down gradient from SWMUs with suspected or known releases
- From places where two pipes of different diameters or materials join

The Permittee may form combinations of criteria to limit the number of sample collection locations. The Permittee must design the sample collection plan to emphasize areas of suspected or known releases. Refer also to Comment 42.

7. **Plates 1 and 2**

Plates 1 and 2 provide incomplete and confusing information. The Permittee must revise both plates to:

- Remove from the Plates those SWMUs and AOCs that do not currently require corrective action, as listed in Table B of the facility's Operating Permit
- Clearly define the grey numbers; blue numbers; pink numbers; black numbers; and the bold-faced, black numbers; and all abbreviations

Plate 2 shows SWMU 75. However, neither Table A nor Table B of the facility's Operating Permit lists SWMU 75 because SWMU 75 is the same as the permitted Container Storage Unit and should not be referred to as a SWMU. Thus, SWMU 75 does not exist. If the Permittee intended SWMU 75 to signify another SWMU, the Permittee must correct this typographical error, provide the correct unit number, and correct the information on Plate 2. If the Permittee intended to refer to the permitted Container Storage Unit, then remove the SWMU 75 label from the plates. Refer also to Comment 13.

8. **Section 1.7, page 1-7, 2nd paragraph, 1st sentence, Section 3.1, page 3-1, 1st paragraph, 2nd sentence, and Section 5.2, page 5-1, 1st paragraph, 1st bullet point**

The Work Plan provides inconsistent information regarding the length of the sewer system, as shown in the following excerpts:

- **Section 1.7, page 1-7, 2nd paragraph, 1st sentence:** "The SWMU 183 site (see Figure 1-2 and Plates 1 and 2) is unique in that, rather than being a waste management system of limited to moderate size in a singular physical location, it is a subsurface feature comprised of approximately 22 miles of sewer line that serves the entire developed portions of the Base."
- **Section 3.1, page 3-1, 1st paragraph, 2nd sentence:** "The systems consists of over 165,000 feet [or 31.25 miles] of sewer lines, that on average, are located

approximately 6 feet bgs.”

- **Section 5.2, page 5-1, 1st paragraph, 1st bullet point:** “Approximately 22 miles of sewer line constructed of various materials”

The Permittee must revise the text to list the correct and consistent sewer system length.

9. **Section 1.7, page 1-7, 2nd paragraph, 2nd sentence and Section 5.2, page 5-1, 1st paragraph, 2nd and 3rd bullet points**

The sentences and phrases are inconsistent with respect to the number of active manholes and pumping stations, as shown in the following:

- **Section 1.7, page 1-7, 2nd paragraph, 2nd sentence:** “In addition to the sewer lines, the system includes over 800 active and approximately 100 abandoned manholes, approximately 10 lift (pumping) stations, and hundreds of variably contributing sources distributed throughout the entire Base, including direct discharges from industrial/operational facilities and domestic structures, as well as pass-through discharges from additional waste management systems such as oil/water separators.”
- **Section 5.2, page 5-1, 1st paragraph, 2nd bullet point:** “Over 500 active and approximately 100 abandoned manholes”
- **Section 5.2, page 5-1, 1st paragraph, 2nd bullet point:** “Approximately 20 lift (pumping) stations and force mains”

The Permittee must revise the text to list the correct and consistent number of active manholes and lift (pumping) stations.

10. **Section 1.9, page 1-8, 1st paragraph, entire bullet list; Section 5.2, page 5-2, 1st bullet list; Section 6.1.3.1, pages 6-3 through 6-5, including all subsections; Section 6.1.3.2, page 6-5, all; Section 6.1.3.4, page 6-6, 1st paragraph, bulleted list; Section 6.1.5.1, pages 6-8 through 6-9, all; Section 6.1.5.2, page 6-9, all; Section 6.1.5.3, page 6-10, all; Section 6.1.5.4, page 6-11, all; Figure 6-1; Table 3-2; Table 6-1; and Section 3.4, page 3-2, 1st paragraph, 1st sentence**

The listed sections, figure, and tables contain information regarding chemicals, pollutants of concern (POCs), proposed analytes, and target or Applicable or Relevant and Appropriate Requirement (ARAR) action level criteria. The Table Attachment to this Notice of Disapproval (NOD) summarizes the information. As shown in the Table Attachment, the Work Plan inconsistently lists and describes the chemicals, POCs, analytes, and target levels.

For example, sulfate appears in one section that describes released chemicals or POCs; sulfate does not appear on any proposed analyte list. In another case, the Work Plan lists moisture content as a proposed soil analyte; however, this appearance occurs in the section describing target levels and does not appear in any other part of the Work Plan.

The Table Attachment summarizes the approach to decision-making processes related to the proposed analytes, as proposed by the Permittee. The Table Attachment demonstrates the fact that the decision-making processes are not well documented. The Work Plan mentions that released chemicals or POCs are tabulated in a section or table. Some chemicals or

POCs, such as antifreeze or sulfides are briefly introduced, but the Work Plan does not discuss them any further. Rather, the Work Plan merely provides the generic, blanket proviso in Section 3.4, which states the following:

“Based on the above information [the diversity of compounds, variability in their chemical formulation, and complex and extensive intermixing environment of the sewer], and the logistical and cost impracticability of sampling and analyzing for every class of POC at every location, a subset of these POCs will be used as indicators to identify whether a release to the environment has occurred in a given location.”

This statement does not provide a reasonable, clear, discussion of the elimination of POCs. The Work Plan leaves the reader to make assumptions because it does not name POCs as analytes and because it does not establish a clear relationship between the generic POC terms (e.g., “oil and grease”) and any proposed analytes or analytical group (e.g., TPH). While NMED does not object to the use of indicator parameters, the Permittee must provide complete and sound justification for the use of each indicator parameter.

The Work Plan fails to adequately develop a clear connection between the proposed analytes and their target levels. The Work Plan refers to these as Applicable or Relevant and Appropriate Requirement (ARAR) action level criteria. The ARAR action level criteria are also referred to as trigger levels, target levels, and action levels. As shown in the Table Attachment, the Work Plan does not list or describe the target levels or ARARs for semi-volatile organic compounds (SVOCs) for either soil or groundwater, in spite of its inclusion on the list of POCs, released chemicals, and list of analytes. The Table Attachment demonstrates that the Work Plan discusses the soil geotechnical parameters within the section describing the target levels or ARARs, despite the absence of target levels for geotechnical parameters. Additionally, the Work Plan does not contain any discussion of soon-to-be-established facility background concentrations.

The Permittee must revise all relevant portions of the Work Plan to include clear, logical, consistent discussion of historical released chemicals, POCs, proposed analytes, target levels, and facility background concentrations. This discussion must include a clear map of progress from a released chemical to an analyte or analyte group to a target/action/trigger level. The discussion must include a scientific basis for the exclusion of any POC from the analyte list. Any listed POC, whether as an individual chemical or a general chemical group, must be clearly connected to the proposed analyte(s). Any proposed analyte must also have a target level and facility background concentrations, where established.

The Permittee must revise the proposed analytical suite for metals from Resource Conservation and Recovery Act (RCRA) 8 metals to the target analyte list (TAL) metals and add sulfate and chloride. The Permittee must revise the Work Plan, including appropriate tables and appendices, to include laboratory detection limits, quality assurance (QA) and quality control (QC) parameters, target levels, and facility background concentrations for TAL metals, sulfate, chloride, and any other added analytes.

Comments 5, 20, 23, 28, 29, 30, 31, 32, 36, 37, 39, 40, 41, 42, 43, 44, and 45 provide specific example on various aspects of this comment.

11. **Section 1.11.2, page 1-10, 2nd paragraph, 1st sentence**

The sentence states, “[t]he primary findings of the study were that some of the sewer exhibited system structural and hydraulic problems, but that ‘the most significant system problem appeared to be an excessive amount of steady inflow into the system’. [emphasis added]” The Permittee must revise the sentence to correct the grammatical error.

12. **Section 1.11.3, page 1-11, 1st paragraph, 1st sentence**

The sentence states, “[a]n RFI [RCRA Facility Investigation Report] Work Plan was prepared in response to a USEPA policy issuance, wherein sewer systems were to be treated and characterized as SWMUs.” The Permittee must revise the sentence to include the policy reference and must list the full reference in the list of References. Refer to Comment 3.

13. **Section 1.11.5, page 1-12, 2nd paragraph, 2nd sentence and 3rd paragraph, 2nd sentence; Section 1.11.5, page 1-12, 2nd paragraph, 3rd bullet point; Section 5.2, page 5-1, 1st paragraph, 5th bullet point; Table 1-1, all; and References**

Section 1.11.5, Section 5.2, and Table 1-1 provide inconsistent information regarding the permitted status of SWMUs.

First, a discrepancy appears in Section 1.11.5 regarding the timing of the inquiry into the permitted status of the oil water separator (OWS) SWMU sites, as shown in the following excerpts:

- **Section 1.11.5, page 1-12, 2nd paragraph, 2nd sentence:** “According to permit Table A (i.e., sites requiring corrective action) and permit Table B (i.e., sites requiring No Further Action), the following is the status of SWMU sites as of September 30, 2005.”
- **Section 1.11.5, page 1-12, 2nd paragraph:** “Table 1-1 of this Work Plan lists each of the OWS SWMU sites and their current (2007) permitted status.”

Table 1-1 lists the number of SWMUs requiring no further action and the specific number of OWS in a manner inconsistent with similar information described in Section 1.11.5 and Section 5.2. The following excerpts show these discrepancies:

- **Table 1-1:** The “Table B” portion of Table 1-1 contains duplicate listings of various SWMUs. The table indicates 38 OWS exist at HAFB and 33 SWMU sites require no further action.
- **Section 1.11.5, page 1-12, 2nd paragraph, 3rd bullet point:** “Table B: 36 sites are listed as requiring No Further Action (NFA).”
- **Section 5.2, page 5-1, 1st paragraph, 5th bullet point:** 42 OWS

The Permittee must revise Section 1.11.5, Section 5.2, and Table 1-1 to contain consistent information regarding the number of OWS sites at HAFB. If a distinction exists between

OWS sites, in general, and OWS SWMU sites, then the Permittee must provide a detailed discussion of this distinction in Section 1.11.5 and as a footnote to Table 1-1. The Permittee must also revise Table 1-1 to contain only individual listings of each SWMU. If the information to be communicated is such that duplicate listings are necessary, the Permittee must provide an explanation for this duplicate listing in the table footnotes. Furthermore, in Table 1-1, the Permittee must include definitions for all abbreviations. The Permittee must include the reference to the HAFB RCRA Operating Permit (e.g., proper title, permit number, year of publication.) in all appropriate sections, sentences, phrases, and tables. The Permittee must indicate the most recent update to the status of the permitted units (e.g., Notification letter). Refer also to Comments 3 and 7.

14. **Section 2.3, pages 2-1 through 2-3, all and Figures**

The section describes the surface water and hydrology and includes various arroyos and surface water features by name. In Section 2.3, the last sentence beginning on page 2-1 states, "HAFB is dissected by several southwest trending arroyos that control the surface drainage." However, none of the figures included with the Work Plan depict any of these features. The Permittee must revise the Work Plan to include a figure illustrating the described features. The Permittee must also revise Section 2.3 to include reference to the new figure and update the list of figures. Also refer to Comments 3 and 17.

15. **Section 2.5, page 2-4, 2nd paragraph, last two sentences and Section 4.1, page 4-1, 2nd paragraph, all**

The following sections do not contain references for the referenced guidelines:

- **Section 2.5, page 2-4, 2nd paragraph, last two sentences:** "TDS [total dissolved solids] concentrations greater than 10,000 mg/L [milligrams per liter] exceed the New Mexico Water Quality Control Commission (WQCC) limit as potable water and thus, the groundwater beneath HAFB has been designated as unfit for human consumption. Likewise, USEPA guidelines have identified the groundwater as Class IIIB water source, characterized by TDS concentrations exceeding 10,000 mg/L."
- **Section 4.1, page 4-1, 2nd paragraph, all:** "There are no supply wells on the Base because the preponderance of groundwater beneath HAFB contains water with an average TDS concentration greater than 10,000 mg/L (see Figure 4-1) which exceeds the New Mexico WQCC limit as potable water and thus, the groundwater beneath HAFB has been designated as unfit for human consumption. Likewise, USEPA guidelines have identified the groundwater as a Class IIIB water source, characterized by TDS concentrations exceeding 10,000 mg/L."

The Permittee must revise these sections and the list of References to include the policies and guidelines specified. Refer also to Comment 3.

16. **Section 2.5, page 2-4, 3rd paragraph, last sentence**

The sentence states, "[t]he only production water well, used for livestock irrigation, is located approximately 7 miles southwest of HAFB." According to the U.S. Geological Survey, 7.5

minute topographic quadrangle, "Holloman," two wells exist approximately two miles east-northeast of HAFB. The Permittee must indicate the source of the information listed in the cited sentence. The Permittee must consult additional sources of information, such as the New Mexico Office of the State Engineer, and determine the location of nearby wells. The Permittee must modify the paragraph to include the new, verified information and cite the source(s) of information. The Permittee must also include these cited sources in the list of References. Refer also to Comment 3.

17. **Section 2.6, page 2-5, 1st paragraph, last sentence and Section 2.3, pages 2-1 through 2-3, all**

Section 2.6 states, "[t]his soil type is located only across the main drainage area for the installation." Section 2.3 discusses the Surface Water and Hydrology for HAFB and the surrounding area and includes the names of various surface water features. However, Section 2.3 does not designate any of the named surface water features as the "main drainage area." Without a map showing the surface water features, the disparate pieces of information do not lead to a coherent picture of the HAFB surface water regime. The Permittee must revise Sections 2.3 and 2.6 to specify the name of the "main drainage area." Refer also to Comment 14.

18. **Section 4.4, page 4-2, 2nd sentence**

The sentence states, "[t]his information was generated in 2005 by Bhate during development of the EA [Environmental Assessment] for the wastewater utility privatization evaluation. [emphasis added]" Neither the section nor the list of References contains a citation for this work. The Permittee must revise the section and the list of References to include the reference for this work. Refer also to Comment 3.

19. **Section 4.4.2.4, page 4-4, 2nd sentence**

The section states, "[b]ird censuses are ongoing at HAFB and a complete list of birds can be found in the HAFB Integrated Natural Resource Management Plan (INRMP)." Neither the section nor the list of References contains a citation for this document. The Permittee must revise the section and the list of References to include the reference for this document. Refer also to Comment 3.

20. **Section 5.2, page 5-3, 2nd paragraph**

The second paragraph of Section 5.2 provides general geochemical information about potential contaminants. The paragraph states the following:

"Metals, SVOCs, POLs [petroleum, oil, and lubricants], and oil and grease have a low degree of mobility in the subsurface. The presence of these classes of POCs [pollutants of concern] is likely to be limited to the soils in the vicinity of the leak. Nitrate is created by the nitrification of ammonium in the sewer line where reducing conditions prevail. Nitrate is not sorbed significantly to soils and will likely only be found in the pore water in the unsaturated zone. Nitrate will be likely to migrate to the water table and then with groundwater flow if released in sufficient quantities.

Similarly, chloride is quite mobile in the environment, but chloride is naturally abundant in the natural subsurface environment at HAFB. Phosphate is highly retarded by sorption both above and below the water table is not expected to migrate far unless a sustained release occurs for a long period of time.”

This portion of the conceptual site model discussion provides a limited description of the geochemistry of the POCs. The paragraph touches on changes in redox conditions within the sewer line and outside the sewer line. The discussion focuses solely on ammonium and nitrate; however, changes in redox conditions can significantly affect other POCs. For example, sulfide can experience rapid oxidation. Indeed, using field testing methods, it is difficult to obtain a stable, reliable measurement of sulfide concentration due to the rate of oxidation, assuming that sulfide is part of the list of analytes. It seems prudent that the list of POCs should include sulfate, while keeping in mind that the natural background groundwater may already have high sulfate concentrations. The Permittee must address this issue with a thorough discussion of the changes in redox conditions, the oxidation of sulfide, and a means of determining the sulfide concentrations, with the understanding that gypsum (CaSO_4) is prevalent at the site. The description of phosphate geochemistry also reveals the absence of continuity in the list of POCs versus the list of analytes. Refer also to Comment 10.

21. **Section 6.1, pages 6-1 through 6-13, all**

The first sentence of the first paragraph (page 6-1) states, “[t]he sampling strategy for the SWMU 183 Triad RFI has been designed according to the concepts and guiding principles of the USEPA’s Triad Approach, specifically for dynamic work strategies.” The sampling strategy proposes the use of various field screening methods. However, the Work Plan did not include any contingency procedures in the event that the proposed field methods do not perform as expected and provide useful data. The Permittee must revise the Work Plan to include alternate field techniques, a discussion of testing of the field techniques prior to mobilization to determine whether the proposed technique(s) will provide appropriate data, and a discussion of environmental/chemical conditions under which a particular field technique (e.g. immunoassay) can be used with confidence. Discussion of the operating limits of various field techniques will aid in the determination of the collected analytical data usability, particularly considering that the conditions at HAFB and within the sewer system (e.g., high total dissolved solids, high ion concentrations, redox extremes) have the potential to affect the analyses and the analytical results. The Permittee must revise the section to include a pre-test period and contingency plans in the event that a chosen method does not produce reproducible and reliable results.

22. **Section 6.1, page 6-2, 2nd bullet point; Section 6.1.4, page 6-8, 1st paragraph, 1st sentence; Section 6.2.1, page 6-13, 1st paragraph, 2nd bullet point; Section 6.2.3, pages 6-16 through 6-18, all; Section 7.3.1.1, page 7-4, all; and Section 7.3.2.1, page 7-5, 2nd bullet point**

The Work Plan describes the installation of temporary monitoring wells for groundwater sampling. The following selected excerpts illustrate the planned installation and removal of temporary wells:

- **Section 6.1, page 6-2, 2nd bullet point:** “Groundwater samples will be collected from: Temporary 1-inch PVC [polyvinyl chloride] pre-pack well screens installed via DPT [direct push technology] in areas where groundwater is located less than 25 ft bgs [and] two-inch outside diameter PVC wells installed via HSA [hollow stem auger] where groundwater is located at depths at, or greater than, 25 ft bgs where the practicable use of DPT is exceeded.”
- **Section 6.1.4, page 6-8, 1st paragraph, 1st sentence:** “As indicated in Section 6.1, shallow groundwater samples will be collected from temporary 1-inch PVC pre-pack well screens installed via DPT and deeper groundwater samples will be collected from 2-inch outside diameter PVC wells installed via HAS technology.”
- **Section 6.2.1, page 6-13, 1st paragraph, 2nd bullet point:** “Groundwater: a.) DPT-installed temporary wells [and] b.) HSA-installed temporary wells.”
- **Section 6.2.3, pages 6-16, 1st paragraph, 2nd through 4th sentences:** “Groundwater samples will be collected from small diameter temporary wells installed through the DPT soil core holes or HSA soil boreholes as described in the preceding sections. In areas of the site where the depth to groundwater is less than 25 feet bgs (e.g., south of Dezonias Road) temporary wells will be installed through the outer casing of the DT325 dual tube coring tool. Where the water table is deeper than 25 feet bgs the temporary wells will be installed through the HSA auger casing advanced using a conventional rotary drill rig.”
- **Section 6.2.3.1, page 6-17, last paragraph:** “Once sampling is completed, the well will be pulled out if possible and the hole will be abandoned in accordance with the procedures described in Bhate’s SOP B-10.”
- **Section 6.2.3.2, page 6-17, last paragraph:** “Once sampling is completed, the well will be pulled out if possible and the hole will be abandoned in accordance with the procedures described in Bhate’s SOP B-10.”
- **Section 7.3.1.1, page 7-4, all:** “All soil samples collected from a temporary well boring will have the temporary well designation followed by the sample ending depth (groundwater samples will not contain a sample depth designator).”
- **Section 7.3.2.1, page 7-5, 2nd bullet point:** “A groundwater sample collected for offsite analyses, from a temporary well, at pre-designated sampling location #52: SR052-TW-OFF”

The newly constructed wells must remain in place until the NMED approves their removal. The Permittee must protect the temporary well from surface water infiltration (runon/runoff). The Permittee must alter all appropriate sections to include this information. Also refer to Comment 35.

23. **Section 6.1, page 6-2, last paragraph, last sentence; Section 6.1.5.2, page 6-9, 2nd paragraph, 1st sentence; Section 6.2.2.1, page 6-15, last paragraph, 1st sentence; Figure 6-1; Table 6-1; Table 6-2; and Section 6.3.2.1.2; page 6-23, 1st full paragraph, 1st sentence**

Together, the text in the sections, the information in the figure, and the table descriptions

inconsistently describe sample analyses. The following excerpts illustrate these inconsistencies:

- **Section 6.1, page 6-2, last paragraph, last sentence:** “Offsite analyses will be performed for additional analytes where onsite results indicate a potential release location, or at a 10% frequency for locations whose onsite results indicate no release has occurred.”
- **Section 6.1.5.2, page 6-9, 2nd paragraph, 1st sentence:** “Where onsite analytical or screening results indicate contaminants in soils at concentration levels below the applicable SSLs or nitrate trigger level, 10 percent of the samples will be submitted for offsite analysis of SVOCs, RCRA 8 Metals, and radionuclides.”
- **Section 6.2.2.1, page 6-15, last paragraph, 1st sentence:** “At 10% of the locations where screening analyses results indicate no release has occurred, samples will be collected for the full analyte suite as described in Section 6.1.5.2 of this Work Plan.”
- **Figure 6-1** indicates that the concentrations of volatile organic compounds (VOCs), nitrate, polyaromatic hydrocarbons (PAHs), and total petroleum hydrocarbons (TPH), as well as general radionuclide measurements will occur onsite. Figure 6-1 further indicates that 10% of these samples with concentrations and counts less than the reporting limit or the soon-to-be-established facility background concentrations will proceed for off-site analyses and fulfill quality control requirements.
- **Table 6-1** does not list these analytes as off-site or as definitive data. These analytes are not listed in Stage 2 – Expanded Analyte List Analysis as presented in Figure 6-1 or Table 6-1.
- **Table 6-2** does not list these analytes within the off-site laboratory parameters. For example, Section 6.3.2.1.2 states, “[a]ll samples having positive detections of PAHs above the RL, and 10% of the total PAH samples with results below the RL, will be submitted to the offsite laboratory facility for definitive analyses to identify and quantify any specific PAH compounds.” Yet, Table 6-2 does not specify PAHs in the off-site laboratory analyte list.

The Permittee must revise the Work Plan to include the off-site laboratory analyses, with definitive data, for 10% of samples with results below the RL or the soon-to-be-established Facility background concentrations (as appropriate) for all analytes of Stage 1, including VOCs, nitrate, sulfate, chloride, PAH, TPH, radionuclides, and TAL metals to verify the screening results. Refer also to Comments 5 and 10.

24. **Section 6.1.1, page 6-3, bullet at top of page**

The text for the bullet states, “[i]mplement vapor intrusion evaluation based on USEPA guidance where existing buildings or areas of planned future development might be at risk of VOC vapor intrusion.” The sentence does not indicate a reference for the USEPA guidance. The Permittee must revise the section and the list of References to include a proper citation for this document. See Comment 3.

25. **Section 6.1.5.3, page 6-10, 3rd paragraph, 4th and 6th sentences; Section 6.1.5.3, page 6-10, 4th paragraph, 1st sentence; Section 7.3.1.2, page 7-4, 1st sentence; Figure 6-2; and Figure 6-3**

Section 6.1.5.3, Section 7.3.1.2, Figure 6-2, and Figure 6-3 describe the contaminant delineation for soil and groundwater. However, the sections and figures inconsistently describe the contaminant delineation plan, as the following excerpts indicate:

- **Section 6.1.5.3, page 6-10, 3rd paragraph, 4th sentence:** “Sampling locations along each transect will be at a 50 foot spacing and will be initiated in the transect center zone, with subsequent sampling locations located horizontally toward each of the transect’s two flanks.”
- **Section 6.1.5.3, page 6-10, 3rd paragraph, 6th sentence:** “Sampling locations within the 100 foot downgradient transect will also be at a 50 foot spacing, initiated in the transect center zone.”
- **Section 6.1.5.3, page 6-10, 4th paragraph, 1st sentence:** “Soil contamination will be delineated using an orthogonal grid-based strategy, wherein, soil samples will be collected at a 50 ft spacing from locations oriented orthogonally (4 perpendicular azimuths) centered on the original pre-designated sampling location of concern.”
- **Section 7.3.1.2, page 7-4, 1st sentence:** “As described in Section 6.1 of this Work Plan, soil contamination in Identified Release Areas will be delineated using an orthogonal grid-based strategy, wherein, soil samples will be collected at a 50 ft spacing from locations oriented orthogonally (4 perpendicular azimuths) centered on the original pre-designated sampling location of concern.”
- **Figure 6-2:** According to Figure 6-2, the groundwater samples will be collected using 25-foot spacing.
- **Figure 6-3:** two flow diagram boxes in Figure 6-3 indicate the soil samples will be collected using 20-foot spacing.

The Permittee must modify Section 6.1.5.3, Section 7.3.1.2, and Figure 6-3 to state that soil and groundwater samples will be collected at 25-foot intervals.

26. **Section 6.1.5, pages 6-8 through 6-11, all and Section 6.2.2, pages 6-14 through 6-16, all**

Both sections provide information regarding soil sampling. Neither section indicates whether the logging of soils will occur during drilling activities. The Permittee must clearly state within the Work Plan that soil logs will be recorded and provide a citation to the appropriate SOP.

27. **Section 6.2.2.1, page 6-14, last paragraph, 1st and last sentences**

The Permittee must clarify whether the word “round” actually refers to “Stage,” in the following sentences:

- **First sentence:** “The first round of samples will be collected using a Geoprobe® MacroCore® soil coring tool driven by a Geoprobe Systems® 66 series rig or equivalent as described in HAFB SOP-4.”

- **Last Sentence:** “This second round of sampling will be accomplished using a Geoprobe Systems® DT325 Dual Tube Sampling System (coring tool) in accordance with the Standard Operating Procedure (Geoprobe Systems® Technical Bulletin MK3138) in the Basewide QAPP Addendum (in Appendix A of this Work Plan).”

If “round” is intended to indicate “Stage,” the Permittee must replace the words “round” with the word “Stage.” If the word “round” is intended to communicate separate activities within a particular Stage, then the Permittee must revise this section and all other relevant sections, figures, and tables to clearly communicate separate activities within a Stage.

28. **Section 6.3.1, page 6-20, 1st and 2nd paragraphs, all; Figure 6-1; and Table C-1 of Appendix C**

Section 6.3.1 and Figure 6-1 describe the process to evaluate whether a release has occurred. The Work Plan does not include comparison to the soon-to-be-established facility background concentrations, as illustrated in the following excerpts:

- **Section 6.3.1, page 6-20, 1st paragraph:** “The analytical methods outlined in Table 6-1 of this Work Plan were selected based on their ability to provide reliable results which can be used to determine whether a given contaminant (or contaminant class) is present at concentrations:
 - Above reporting limits (RLs);
 - Above RLs and below its respective ARAR action level criteria, or
 - Above its respective ARAR action level criteria.”
- **Section 6.3.1, page 6-20, 2nd paragraph:** “In several cases, laboratory method detection limits (MDLs) will be used to compare to ARARs. Concentrations that fall between the practical quantitation limits (PQL) and the MDL will be qualified accordingly. Exceptions to meeting ARARs are listed in Section 6.3.3 below.”
- **Figure 6-1:** The figure indicates that the analytical result will be compared to the reporting limit and “criteria” or the ARAR.
- **Table C-1:** The table contains the target levels for soil and groundwater as derived from the NMWQCC groundwater standards, *NMED TPH Screening Guidelines* (October 2006), *NMED Technical Background Document for Development of Soil Screening Levels* (June 2006), EPA National Priority Drinking Water Standards MCLs, and the *Soil Screening Guidance for Radionuclides: Technical Background Document* (October 2000). However, the table does not include the soon-to-be-established facility background concentrations or the method detection limits (MDLs), where appropriate.

To effectively use the data generated from the 2008 Facility Background Study, the Permittee must revise the figure, relevant portions of Section 6.3.1, Table C-1, and other applicable sections and figures to include the comparison of sampling data results to the soon-to-be-established facility background concentrations and the reporting limits. The reporting limit may be used as the target level only if no other target level (e.g., SSL, MCL) exists. Refer also to Comments 5 and 10.

29. **Section 6.1.3.1.1, page 6-3; Section 6.1.5.1, page 6-8, 4th paragraph, all; Section 6.1.5.1, page 6-9, 3rd paragraph, all; Section 6.1.5.2, page 6-9, 3rd paragraph, 2nd sentence; Figure 6-1; and Table 6-1**

The Work Plan inconsistently describes the collection and analysis of soil and groundwater samples for pesticides and herbicides. The following excerpts demonstrate these inconsistencies:

- **Section 6.1.3.1.1:** This Section states that pesticides/herbicides are included in the soil analytical suite.
- **Section 6.1.5.1, page 6-8, 4th paragraph, all:** “Soil samples will be analyzed in an onsite laboratory for VOCs using gas chromatography / mass spectrometry (GC/MS-EPA 8260) and gas chromatography / flame ionization detection (GC/FID-ASTM D6520) and nitrate (NO₃) using ion chromatography (IC) via EPA Method 300.0. Soil samples will be screened in the onsite laboratory for PAHs and TPH using field fluorometer analytical test kits as primary indicators of a potential sewer release. Soils will also be field-screened by the sampling team for the presence of radionuclides using a hand held alpha beta survey instrument (Ludlum 44-9). Additional sample volume will be collected for offsite analysis of additional analytes as described in Sections 6.2.2.1 and 6.2.2.2 of this Work Plan.” This paragraph does not discuss pesticides/herbicide analyses for soil samples.
- **Section 6.1.5.1, page 6-9, 3rd paragraph, all:** “[Groundwater] Samples collected from the two pre-designated sample locations closest to, and downgradient from, Building 374 will also be analyzed offsite for pesticide/herbicides based on its relevant and unique operational history.”
- **Section 6.1.5.2, page 6-9, 3rd paragraph, 2nd sentence:** “[During Stage 2,] Samples from the two closest pre-designated locations downgradient of Building 374 will also be analyzed offsite for pesticides/herbicides as described above.”
- **Figure 6-1:** The figure indicates the collection of both soil and groundwater samples from Building 374 for the off-site analysis of pesticides/herbicides during Stage 2.
- **Table 6-1:** The table does not list pesticides/herbicides among the Stage 1 analytes, but they do appear in the Stage 2 analytical list.

The Permittee must revise all pertinent sections, figures, and tables of the Work Plan to indicate the collection of both soil and groundwater samples for off-site analyses for pesticides and herbicides at Building 374. The Permittee must revise the Work Plan to state at which stage, either Stage 1 or Stage 2, the soil and groundwater samples for pesticide and herbicide analyses will be collected. The Permittee must include, where appropriate, discussion of analytical method, QA and QC, and detection limits; likely, these discussions occur elsewhere in the document. The Permittee must discuss the “relevant and unique operational history” for Building 374 to justify the limitation of pesticide and herbicide analyses at this location. Refer also to Comment 10.

30. **Section 6.1.3.4, page 6-6, 2nd paragraph, 1st sentence; Section 6.1.5.1, pages 6-8 through 6-11; Section 6.2.2, pages 6-14 through 6-16; Section 6.3.3, pages 6-25 through 6-27; Figure 6-1, Table 6-1, and Table 6-2**

The sentence from Section 6.1.3.4 states, “[m]oisture content data will be derived from the soil analyses performed as part of the offsite analyses portion of the investigation [using USEPA Method 160.3M].” However, the collection of soil samples for moisture content data and the laboratory analysis are not described, listed, or mentioned in other relevant sections, figures or tables (e.g., Section 6.1.5.1, Section 6.2.2, Section 6.3.3, Figure 6-1, Table 6-1, and Table 6-2). The Permittee must revise all listed sections, figures, and tables to include the collection of soil moisture content data. Refer also to Comment 10.

31. **Section 6.1.3.1.3, page 6-4, 1st paragraph, 1st, 3rd, and 4th sentences; Section 6.1.5.1, page 6-8, last paragraph, last sentence; Section 6.1.5.1, page 6-9, 2nd paragraph, last sentence; Section 6.1.5.2, page 6-9, 2nd paragraph, last sentence; Section 6.1.5.2, page 6-9, 3rd paragraph, 3rd sentence; Section 6.1.5.3, page 6-10, 1st paragraph, 1st sentence; Section 6.3.2.1.5, page 6-24, all; Figure 6-1; and Table C-1 of Appendix C**

The Work Plan inconsistently and contradictorily describes the characterization of radionuclides. The absence of a means to evaluate the radionuclide field-screening data (e.g., no target or action levels for gross alpha or gross beta) greatly affects the ability of the Work Plan to demonstrate a cohesive radionuclide characterization process, as only gross alpha and gross beta data will be collected during Stage 1. For example, on one hand, the Work Plan indicates that any exceedance of a radionuclide target level will lead to additional sample collection and off-site laboratory analyses for specific radioisotopes during Stage 2. On the other hand, the Work Plan indicates that any exceedance of a radionuclide target level will lead to a site-specific risk evaluation. Yet, the Work Plan also indicates that the only samples to be collected and submitted for off-site laboratory analyses for specific radioisotopes are 10% of those with gross alpha/gross beta results below the unlisted target level. Meanwhile, the Work Plan declares that the field screening for gross alpha and gross beta is not a useful means of detecting levels of radioactive material that are at or below the unlisted gross alpha/gross beta target level. The following excerpts describe these contradictory elements:

- **Section 6.1.3.1.3, page 6-4, 1st paragraph, 1st, 3rd, and 4th sentences:** “Table A.1 (Decay Corrected) of USEPA’s *Soil Screening Guidance for Radionuclides: Technical Background Document* (USEPA, October 2000), provides generic SSLs for 60 radionuclides in units of pico-curies per gram (pCi/g) and mg/kg, respectively. These generic SSLs are listed in Table C-1 in Appendix C of this Work Plan. If the SSLs presented in these tables are exceeded, a more site-specific evaluation will be performed to ensure that the site conditions and exposure pathways match those used to develop generic SSLs.” (emphasis added)
- **Section 6.1.5.1, page 6-8, last paragraph, last sentence:** “Soils will also be field-screened by the sampling team for the presence of radionuclides using a hand held alpha beta survey instrument (Ludlum 44-9).” (emphasis added)
- **Section 6.1.5.1, page 6-9, 2nd paragraph, last sentence:** “The presence of radionuclides [in groundwater] will be determined in the field using a hand held alpha

beta survey instrument (Ludlum 44-9).” (emphasis added)

- **Section 6.1.5.2, page 6-9, 2nd paragraph, last sentence:** “Where results indicate contaminants in soils at concentration above the applicable SSLs or nitrate trigger level, the location will be documented as an identified release location and earmarked for delineation.” (emphasis added)
- **Section 6.1.5.2, page 6-9, 3rd paragraph, 3rd sentence:** “Where results indicate contaminants in groundwater at concentrations above the applicable criteria or nitrate trigger level, 100 percent of the samples will be submitted for offsite analysis of SVOCs, RCRA 8 Metals, radionuclides, and pesticides/herbicides (Building 374-related locations only).” (emphasis added)
- **Section 6.1.5.3, page 6-10, 1st paragraph, 1st sentence:** “Contaminant delineation activities will be performed at locations where releases from the sewer have been identified and where concentrations are determined to exceed relevant criteria.” (emphasis added)
- **Section 6.3.2.1.5, page 6-24, all:** “Soil and groundwater samples will be passively screened for alpha-beta emitting radionuclides using a hand-held Ludlum 449 scintillation meter. The field-based radioactive survey is not intended to detect levels of radioactive material at or below the ARARs [emphasis added]. The survey is intended to determine if gross levels of radioactivity are present in the subsurface. Definitive radiochemical analyses will be conducted on the soil and groundwater samples where screening indicates no radionuclide presence, at a minimum frequency of 10%.” (emphasis added)
- **Figure 6-1:** The figure indicates that 100% of soil and groundwater samples with radionuclide field-screening results that exceed the radionuclide “criteria,” reporting limit, and/or facility background values will be submitted for offsite laboratory analyses. Additionally, the figure shows that 10% of soil and groundwater samples with radionuclide field-screening results that fall below the radionuclide reporting limit values will be submitted for offsite laboratory analyses.
- **Table C-1:** This table lists the applicable or relevant and appropriate requirement-based action levels (ARARs) for four radionuclides, which include carbon-14, tritium, radium-226, and radium-228. The table does not include any target levels for gross alpha or gross beta.

The Permittee must specify in Section 6.1.3.1.3 and Table C-1 a target level, and the facility background levels for Stage 1 to allow for useful evaluation of the radionuclide field-screening data results. The Permittee must specify the detection limits and/or reporting limits for the radionuclide field-screening. The Permittee must modify the listed sections, tables, and figures, as well as other relevant portions of the Work Plan to provide a consistent and descriptive process for the collection, analysis, and evaluation of soil and groundwater samples for radionuclides. Refer also to Comments 5 and 10.

32. Section 6.1.5.2, page 6-9, 2nd paragraph, last sentence and 3rd paragraph, last 3 sentences; Section 6.1.5.3, page 6-10, 1st paragraph, 1st and 2nd sentences

The Work Plan does not clearly describe the process of characterizing a soil sample location when a measured concentration exceeds a specified target level. The reader must assume, using the descriptions in Section 6.1.5.2, 3rd paragraph (groundwater samples) and Section 6.1.5.3 that the soil samples will follow similar procedures. The following indicate the description differences:

- **Section 6.1.5.2, page 6-9, 2nd paragraph, last sentence:** “Where results indicate contaminants in soils at concentration above the applicable SSLs or nitrate trigger level, the location will be documented as an identified release location and earmarked for delineation.”
- **Section 6.1.5.2, page 6-9, 3rd paragraph, last 3 sentences:** “Where results indicate contaminants in groundwater at concentrations above the applicable criteria or nitrate trigger level, 100 percent of the samples will be submitted for offsite analysis of SVOCs, RCRA 8 Metals, radionuclides, and pesticides/herbicides (Building 374-related locations only). The location will be documented as an identified release location and earmarked for delineation. The results from the Stage 2 sampling will be integrated into the data set generated during Stage 3 delineation.”
- **Section 6.1.5.3, page 6-10, 1st paragraph, 1st and 2nd sentences:** “Contaminant delineation activities [Stage 3] will be performed at locations where releases from the sewer have been identified and where concentrations are determined to exceed relevant criteria. The delineations will focus on the specific contaminants of concern identified during State 1 and/or Stage 2.”

The second excerpt provides discussion of the characterization process. At locations where contaminants exceed the target levels, 100 percent of the samples will be submitted to the off-site analytical laboratory for analyses. “Delineation” occurs during Stage 3. However, the first excerpt, which consists of a single sentence, provides the complete discussion on soil sample collection during Stage 1. Using the information from the second excerpt and the figures, the process used for groundwater samples likely occurs for soils. Neither paragraph describes whether any samples with contaminant concentrations below the target levels will be sent to the off-site laboratory for analyses.

The Permittee must explicitly and clearly describe the process of contamination characterization at both soil and groundwater sampling locations. The Permittee must provide a clearer connection between the “delineation” listed in Section 6.1.5.2 and Stage 3, as described in Section 6.1.5.3. The Permittee must specify whether “delineation” signifies Stage 3 and refer to the section that discusses the delineation strategies. Refer also to Comment 10.

33. Section 6.1.5.4, page 6-11, 2nd paragraph, 2nd bullet point, 3rd paragraph, all, and 4th paragraph, 1st sentence; and Figure 6-4

The section contains terminology without description or discussion. The following excerpts provide examples of undefined terminology:

- **Section 6.1.5.4, page 6-11, 2nd paragraph, 2nd bullet point:** “In close proximity to existing buildings or future buildings (see Primary Screening Question #2 for definition of close proximity).” (emphasis added)
- **Section 6.1.5.4, page 6-11, 3rd paragraph, all:** “To assist in the vapor intrusion evaluation beyond the primary screening steps shown in Figure 6-4 of this Work Plan, a qualified risk assessor will establish appropriate risk and attenuation factors associated with the generic, semi-site specific, and site specific (Johnson and Ettinger Vapor Intrusion Model) risk assessment stages.” (emphasis added)
- **Section 6.1.5.4, page 6-11, 4th paragraph, 1st sentence:** “Soil-gas sampling and analyses may be performed, as deemed necessary, during the initial stages of the secondary screening process.”
- **Figure 6-4:** The figure does not list Primary Screening Question #2. The figure merely states, “Perform Primary Screening” and indicates, “Perform Secondary Screening Activities, Q4 – Generic Screening [and] Q5 – Semi-Site Specific Screening.” (emphasis added) Additionally, Figure 6-4 does not define Q4, Q5, or Q-6 or provide a reference for the origination of the question and where the questions are in the reference.

The Permittee must describe and define the underlined terms in Section 6.1.5.4 and Figure 6-4.

34. **Section 6.2, pages 6-13 through 6-20, all; and Section 7.3.3.1, page 7-6, 1st paragraph, 6th bullet point**

The Work Plan provides incomplete information regarding groundwater sample collection and monitoring well location documentation. Section 6.2 does not indicate whether the collected groundwater samples will be filtered or unfiltered, which indicator field parameters will be measured, or which SOPs will be used for any of these activities. Similarly, Section 7.3.3.1 does not specify how the location of the installed monitoring well will be recorded in its description of pertinent field and sampling information. For example, the 6th bullet of Section 7.3.3.1 states, “[l]ocation of sampling (e.g., monitoring well)” will be recorded. The Permittee must indicate how the monitoring well locations will be recorded (e.g., with global positioning coordinates). The Permittee must revise the sections to provide the missing information. Refer also to Comment 22.

35. **Section 6.2.8, page 6-19, 3rd paragraph, all**

The paragraph states, “[d]econtamination and purge waters will be locally contained in 5 gallon pails and conveyed to a 1,000 gallon portable storage tank. Waters contained in the portable tank will be subsequently transported to the HAFB wastewater treatment plant for proper disposal.” The Permittee must ensure all liquid wastes (e.g., decontamination rinses, purged groundwater from development and sampling activities) are containerized and maintained until disposal through the HAFB Wastewater Treatment Plant (WWTP), pending laboratory analysis. If the laboratory results indicate analyte concentrations exist below target concentrations, the Permittee may dispose of liquid wastes via the HAFB WWTP. The Permittee must revise the section to reflect these conditions.

36. **Section 6.3.2.1, pages 6-21 through 6-24, all**

The section describes the on-site analytical program for the analysis of VOCs, PAHs, TPH, nitrate, and radionuclides. However, the section does not indicate how the on-site laboratory wastes that will be generated from sample preparation and labware cleaning will be handled. Likewise, the section does not describe the use of method blanks during sample analysis in the on-site laboratory. The Permittee must revise the section to include summary of activities associated with the collection, analysis, and disposal of on-site laboratory waste, as well as the use of method blanks. The Permittee must also provide SOP references for these activities. Refer also to Comments 3 and 10.

37. **Section 6.3.2.1, page 6-21, 1st sentence and Section 6.3.2.1.5, page 6-24, all**

The sentence states, “[t]he onsite analytical program will analyze for VOCs and nitrate, and screen for PAHs and TPH.” The section does not address screening for radionuclides, which Section 6.3.2.1.5 describes. The Permittee must revise the section to include all radionuclides. Refer also to Comment 10.

38. **Section 6.3.2.1.1, page 6-22, 2nd full paragraph, last sentence; Section 6.3.3, page 6-26, 1st and 2nd bullet points, and Section 9 (References), page 9-3, 2nd reference**

The Work Plan refers to outdated and current versions of the Department of Defense (DOD) *Quality Systems Manual (QSM) for Environmental Laboratories*, which serves as the basis for QC and QA protocols. The most recent version of the *QSM* is Version 3, dated January 2006. The following excerpts exhibit the use of the outdated version and the updated version:

- **Section 6.3.2.1.1, page 6-22, 2nd full paragraph, last sentence:** “Appendix C of the HAFB Basewide QAPP provides quality control limits for the VOC analytical program that are based on the Department of Defense (DOD) *Quality Systems Manual (QSM) for Environmental Laboratories*, Version 1, dated October 2000.”
- **Section 6.3.3, page 6-26, 1st and 2nd bullet points:**
 - “‘Self Declaration’ statement for the TAL-DEN [TestAmerica Laboratories, Denver, Colorado] and GEL [General Engineering Laboratories] facilities’ compliance with DOD QSM v.3 (Note: the statement included in the HAFB Basewide QAPP Addendum is for Severn Trent Laboratories who recently purchased TAL-DEN and TAL-LA [TestAmerica Laboratories, Los Angeles, California]. Revised statements are not currently available).”
 - “Standard Operating Procedure for TAL-LA addressing compliance with DOD QSM v.3”
- **References:** United States Department of Defense, October, 2000. *Quality Systems Manual for Environmental Laboratories*, Version 1.

The Permittee must revise these sections and the reference to refer to the updated version. The Permittee must use an off-site analytical laboratory capable of meeting the requirements of *QSM*, Version 3. Refer also to Comment 3.

39. **Section 6.3.2.1.4, pages 6-23 through 6-24, all**

The section describes the analysis of soil and groundwater to determine nitrate concentrations using IC via USEPA Method 300. To aid in determining potential matrix interferences for other analytes (e.g, PAH by immunoassay), the Permittee must include chloride and sulfate analyses by ion chromatography via USEPA Method 300.0, (*Determination of Inorganic Anions by Ion Chromatography*, Revision 2.1, 1993) to the list of analytes and revise this section and the appropriate tables accordingly. Refer also to Comment 10.

40. **Section 6.3.2.1.5, page 6-24, all; Section 6.1.3.1.3, page 6-4, all; Section 6.1.3.2.2, page 6-5, all; and Table C-1 of Appendix C**

In its discussion of on-site radionuclide field screening, the Work Plan does not describe or refer to any quality control parameters. Furthermore, the Work Plan does not discuss detection limits, except to say in Section 6.3.2.1.5 that “[t]he field-based radioactive survey is not intended to detect levels of radioactive material at or below the ARARs.” The Permittee must revise all pertinent sections of the Work Plan to include a discussion of QC parameters and detection limits for radionuclides. Refer also to Comment 10.

41. **Section 6.3.2.3, page 6-24, 1st paragraph, all and Tables 6-1 and 6-2**

The paragraph states, “[r]equirements for sample container types, holding times, and preservation chemicals are included in Table 6-1 of this Work Plan.” Table 6-2 contains the listed information. The Permittee must revise the section to refer to Table 6-2 because Table 6-1 does not list this information.

42. **Section 6.3.3, page 6-26, last paragraph with two bullet points and Section 6.1.3, pages 6-3 through 6-7, all**

The Work Plan provides the target levels for four specific analytes in Section 6.3.3, which discusses Offsite Analytical Methods, rather than in the sections discussing the target levels or ARARs (Section 6.1.3). According to Section 6.3.3, the proposed laboratory cannot meet the listed target levels, as shown in the following excerpt:

- **Section 6.3.3, page 6-26, last paragraph, with two bullet points:** “As noted previously, for several compounds, MDLs will be used to meet the respective ARARs. Where concentrations fall between the PQLs and the MDLs, the data will be qualified accordingly. Exceptions to meeting the ARARs include: Benzo(a)pyrene and pentochlorophenol which have federal MCLs of 0.2 ug/L and 1.0 ug/L, respectively. TAL-DEN MDLs for these compounds are 0.74 ug/L and 20 ug/L, respectively and;”
- “Radium-226 and radium-226 [*sic*] which both have ARAR values of 0.016 pCi/g (see Table C-1 in Appendix C of this Work Plan). GEL’s MDLs for these isotopes are 1.0 pCi/g and 3.0 pCi/g, respectively. According to GEL, these isotopes are typically present in background soils at values well above the 0.016 pCi/g values, therefore, the ARAR values for these isotopes may prove to be non-applicable to the DQOs [data quality objectives] for this project.”

The Permittee must obtain new, lower reporting limits from the laboratory or contract with a laboratory that can provide lower reporting limits. The Permittee must revise the first sentence of the second bullet to remove the repetitive radium-226 and replace it with radium-228. The Permittee must add the new reporting limits to Appendix A. Refer also to Comment 10.

43. **Table 3-1**

The table contains numerous problems:

- Undefined abbreviations (e.g., LS, PS, OWS, ?, ft)
- Cells with and without shading
- Six columns containing no data, except the column title. Columns include “Actual Upgradient Manhole ID,” “Actual Downgradient Manhole ID,” “Initial Siting Latitude,” “Initial Siting Longitude,” “Actual Latitude,” and “Actual Longitude”
- Undefined empty cells, such as those scattered throughout the “Segment Sequence #” column
- Truncated entries in the “Sampling Location Rationale” column
- The word “Totals” at the end of the table does not appear to be associated with anything
- The only listed definition states, “Bold boxes indicate unique lattice segments or long lengths without manholes.” The term “lattice segment” does not appear anywhere else in the Work Plan.
- Absence of page numbers
- Bold boxes encircling only four columns, seeming to exclude the other data in the row

The Permittee must modify the table as follows:

- Include definitions for all abbreviations and shading;
- Remove the columns with empty cells;
- Define the empty cells in the “Segment Sequence #” column and/or fill the cell with a phrase, (e.g., “no data”);
- Resize the cells such that none of the information appears truncated;
- Make an appropriate use of the word “Totals” at the end of the table via definition, providing a total number of unspecific totals, or delete it;
- Define the terminology “lattice segment” and use it where appropriate in the Work Plan, or remove it and use terminology consistent with the Work Plan;
- Number the pages; and
- Extend the bold boxes across all columns or define the reason they encircle only four columns.

Refer also to Comment 6.

44. **Tables 3-2, 3-3, and 8-2**

The tables contain undefined empty cells. Table 3-2 does not indicate the meaning of the dash (-). The Permittee must revise the tables to include definitions, and include a definition or explanation for the empty cells. Refer also to Comments 42 and 44.

45. **Table 5-1**

The Permittee must update the table to include all criteria as described in Comment 5. Table 5-1 contains a number of discrepancies, which include:

- Table 5-1 lists the question, “Is measurable non-aqueous phase liquid (NAPL) present?” However, NAPL does not appear anywhere else in the Work Plan. The Permittee must include discussion of NAPLs within the conceptual model of the Work Plan, as well as the groundwater sampling portion (as appropriate).
- According to Table 5-1, “TDS samples [will be collected] wherever groundwater is sampled,” yet, the remainder of the Work Plan does not reflect this strategy. The Permittee must modify all appropriate sections to include TDS analyses for groundwater in all Stages. Refer also to Comment 10.
- The Permittee must modify the table to include references to documents.
- The Permittee must revise Table 5-1 to eliminate the duplicate numbering in the “Release Information” part of the table.
- The Work Plan text does not discuss OT32 Primate Research Institute as a “Confirmed Release Location;” consequently, its appearance within Table 5-1 as the sole “Confirmed Release Location” is unexpected. The Permittee must provide an explanation for this designation.
- Table 5-1 instructs to “analyze for indicator Pollutants of Concern (POCs) in near real-time in every sample and extended list in 10% of samples.” However, the Work Plan indicates that when concentrations are measured above target levels, 100% of soil and groundwater samples will proceed for off-site laboratory analyses. Moreover, when concentrations are measured below target levels, 10% of soil and groundwater samples will proceed for off-site laboratory analyses.

The Permittee must revise Table 5-1 to correct these discrepancies.

46. **Tables 6-1, 6-2, 6-3, and 7-1**

These tables contain lists of analytes. The Permittee must revise these tables to reflect the updated analyte list (e.g, TAL metals) and define all acronyms. Refer to Comments 10, 23, 29, 30, and 41.

47. **Appendix C, Table C-1**

Many footnotes on pages 13 through 15 are irrelevant and extraneous to Table C-1 because they are not used within the table. The NMED requires use of the USEPA Region 6 criteria, as New Mexico is in USEPA Region 6. To maintain consistency with other HAFB documents, the NMED requests that the work plan include USEPA Region 6 criteria, rather

Mr. David Scruggs
May 14, 2009
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than USEPA Region 9 and Region 4 criteria. Refer also to Comments 10, 28, 31, 40, and 41.

The Permittee must submit the required information within 60 days of receipt of this letter. The response must be in the form of a revised Corrective Measures Work Plan that incorporates all the responses to the above NOD in two hard copies indicating added information in highlights, and deleted information in strikeouts, and on two CDs compatible with Microsoft Word. Further, in order to expedite review of the responses, provide a matrix of the comments and HAFB responses.

If you have any questions regarding this NOD or if you would like to discuss the comments prior to your response, please contact Dezbah Tso of my staff at (505) 222-9528, or at the above letterhead address.

Sincerely,



James P. Bearzi

Chief

Hazardous Waste Bureau

JPB:dat

Table Attachment

cc: J. Kieling, NMED HWB
W. Moats, NMED HWB
C. Amindyas, NMED HWB
D. Strasser, NMED HWB
D. Tso, NMED HWB
L. King, EPA, Region 6 (6PD-F)
File: HAFB 2009 and Reading
HWB-HAFB-08-003

TABLE ATTACHMENT
 Summary of Chemicals, Pollutants of Concern, and Analytes Discussed in the SWMU 183 Work Plan ¹

Analytes	Chemicals/ pollutants ²			Proposed Analytes by Stage and Medium, as described in Section 6.1.5, Table 6-1, and Figure 6-1, as shown below																					Target Levels by Medium Section 6.1.3				
	Section 1.9 POCs	Table 3-2 Chemical releases	Section 5.2 POCs	Stage 1 ³						Stage 2 ³						Stage 3 ³						Stage 4 ³							
				Soil			Groundwater			Soil			Groundwater			Soil			Groundwater			Soil Vapor			Indoor Air				
				Section	Table	Figure	Section	Table	Figure	Section	Table	Figure	Section	Table	Figure	Section	Table	Figure	Section	Table	Figure	Section	Table	Figure	Section	Table	Figure	Section	Table
Antifreeze	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Surfactants	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenol	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Process / Developer Chemicals	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
POLs	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Oil & Grease	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VOCs	X	X	X	X	X	X	X	X	X	-	-	X	-	-	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SVOCs	X	X	X	-	-	-	-	-	-	X	X	X	X	X	X	X	X	X	X	X	-	-	-	-	-	-	-	-	-
PAHs	-	-	-	X	X	X	X	X	X	-	-	X	-	-	X	X	X	X	X	X	-	-	-	-	-	-	-	X	X
TPH	-	-	-	X	X	X	-	-	-	-	-	X	-	-	-	X	-	X	-	-	-	-	-	-	-	-	-	-	-
Metals	XH	XH	X	-	-	-	-	-	-	XR	XR	XR	XR	XR	XR	XR	XR	XR	XR	XR	XR	XR	XR	XR	XR	XR	XR	XR	XR
Herbicides	X	X	X	-	-	-	-	-	-	X	X	X	X	X	X	-	X	X	X	X	X	-	-	-	-	-	-	X	X
Pesticides	X	X	X	-	-	-	-	-	-	X	X	X	X	X	X	-	X	X	X	X	X	-	-	-	-	-	-	X	X
Radionuclides	X	X	X	XG	XG	XG	X	XG	XG	-	-	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-	-	X	X
Carbon-14	X	X	-	-	-	-	-	-	-	X	X	X	X	X	X	-	X	X	X	X	X	-	-	-	-	-	-	-	-
Tritium	X	X	-	-	-	-	-	-	-	X	X	X	X	X	X	-	X	X	X	X	X	-	-	-	-	-	-	-	-
Radium-226	X	X	-	-	-	-	-	-	-	X	X	X	X	X	X	-	X	X	X	X	X	-	-	-	-	-	-	-	-
Radium-228	X	X	-	-	-	-	-	-	-	X	X	X	X	X	X	-	X	X	X	X	X	-	-	-	-	-	-	-	-
Iodine-125	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nitrate	-	-	X	X	X	X	X	X	X	-	-	X	-	-	X	X	-	X	X	-	X	-	-	-	-	-	-	X	-
Phosphates	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfates	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sulfides	X	-	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorides	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Dissolved Solids	-	-	-	-	-	-	X	-	-	-	-	-	-	X	-	-	-	-	X	-	-	-	-	-	-	-	-	-	-
Total Suspended solids	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Biological Oxygen Demand	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chemical Oxygen Demand	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Moisture Content	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X ⁴	-

FOOTNOTES

¹ See the list of references below for page numbers and descriptions.
² These sections and table describe historical information, listing general chemical groups and/or pollutants of concern (POCs) that have been or may have been released.
³ According to the descriptions in the document, soil vapor and indoor air sampling and analysis will only occur in Stage 4, and only soil and groundwater sampling and analysis will occur in Stages 1 through 3. The Stage 3 results will determine whether Stage 4 sampling and analysis is required.
⁴ Section 6.1.3.4 lists moisture content as the only parameter requiring sample collection and analysis during this investigation; the data for other parameters (e.g., dry bulk density, specific gravity, fractional organic carbon content) will consist of results from other investigations. See references below for additional description.

TABLE ATTACHMENT, CONTINUED

ABBREVIATIONS

-	= Indicates the section, table, or figure does not discuss or list the chemical, POC, or analyte.
ARAR	= Applicable or Relevant and Appropriate Requirements.
ASTM	= American Society for Testing and Materials.
HAFB	= Holloman Air Force Base.
Heavy	= A generic term for a category of metals.
PAH	= Polycyclic aromatic hydrocarbons.
POC	= Pollutant of concern.
POL	= Petroleum, oil, and lubricants.
RCRA	= Resource Conservation and Recovery Act.
RCRA 8	= RCRA 8 metals list includes arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver.
RFI	= RCRA Facility Investigation.
Stage 1	= Sewer Release Identification. Discussed in Section 6.1.5.1, pages 6-8 through 6-9.
Stage 2	= Expanded analyte List Analysis. Discussed in Section 6.1.5.2, page 6-9.
Stage 3	= Identified Release Areas Delineation. Discussed in Section 6.1.5.3, page 6-10.
Stage 4	= Vapor Intrusion Evaluation. Discussed in Section 6.1.5.4, page 6-11.
SVOC	= Semi-volatile organic compound.
TAL	= Target analyte list. List of metals includes aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, thallium, vanadium and zinc.
TPH	= Total petroleum hydrocarbons.
USEPA	= U.S. Environmental Protection Agency.
X	= Section, table, or figure specifies the general chemical group, pollutant of concern, and/or analyte.
XG	= Proposed analyte is gross alpha/gross beta during field screening using a hand-held instrument.
XH	= Description indicates "heavy metals."
XR	= Description indicates "RCRA 8 metals."

REFERENCES

Section 1.9	= Industrial Activities and Waste Generation: lists pollutants of concern (POCs). Section 1.9, page 1-8, 1 st paragraph, entire bullet list.
Section 5.2	= Initial Conceptual Site Model Summary Description: lists classes of POCs discharged to the sewer system. Section 5.2, page 5-2, 1 st bullet list.
Section 6.1.3	= Dynamic Use of Applicable or Relevant and Appropriate Requirements (ARARs). These are also referred to as action levels or target levels. The section does not describe the soon-to-be-established Facility background levels.
Section 6.1.3.1	= Dynamic Use of ARARs for Soils: lists only certain analytes with the reference containing the target or action level. Section 6.1.3.1, pages 6-3 through 6-5, including all subsections.
Section 6.1.3.2	= Dynamic Use of ARARs for Groundwater: lists only certain analytes with the reference containing the target or action level. Section 6.1.3.2, page 6-5, all.
Section 6.1.3.4	= Dynamic Use of ARARs for Geotechnical Parameters: lists various soil parameters and describes data compilation. None of these parameters have action or target levels. Section 6.1.3.4, page 6-6, 1 st paragraph, bulleted list.
Section 6.1.5	= Stage-Specific Activities: specifies activities of each RFI stage.
Section 6.1.5.1	= Stage 1 - Sewer Release Identification: lists analytes, some methods, describes field-screening for both soil and groundwater samples. Section 6.1.5.1, pages 6-8 through 6-9, all.
Section 6.1.5.2	= Stage 2 - Expanded Analyte List Analysis: lists analytes, some methods, describes field-screening for both soil and groundwater samples. Section 6.1.5.2, page 6-9, all.
Section 6.1.5.3	= Stage 3 - Identified Release Area Delineation: discusses sampling in transects perpendicular to the sewer line to delineate the release area. Section 6.1.5.3, page 6-10, all.
Section 6.1.5.4	= Stage 4 - Vapor Intrusion Evaluation: refers to guidance document and refers to Table 6-1 for analytes. Section 6.1.5.4, page 6-11, all.
Figure 6-1	= Triad RFI Dynamic Decision Logic: illustrates the decision-making processes, including critical decision points and proposed analytes.
Table 3-2	=Pollutants of Concern Known to Have Been Discharged to Sewer System: lists the chemicals known to have been discharged to the sewer system based on a previous industrial pretreatment study by Ecology and Environment in 1998.
Table 6-1	= Onsite and Offsite Analytical Plan: lists analytes, laboratory and field-screening methods, and data type for each characterization stage.