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January 3, 2012

DCN: NMED-2012-02

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

RE: Draft Technical Review Comments on *Site Investigation of Eight Sites Project Activities Work Plan*, Cannon Air Force Base, New Mexico, August, 2011.

Dear Mr. Cobrain:

Attached please find draft technical review comments on the risk assessment portion of the "*Site Investigation of Eight Sites Project Activities Work Plan*" dated August 2011.

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

Paige Walton
AQS Senior Scientist and Program Manager

Enclosure

cc: Lane Andress, NMED (electronic)
Joel Workman, AQS (electronic)
Sunny McBride, AQS (electronic)

**Draft Technical Review Comments on the**
**Site Investigation of Eight Sites Project Activities Work Plan,**
**Cannon Air Force Base, New Mexico, August, 2011**

## General Comments

1. Please not that NMED is in the process of updating the Soil Screening Guidance (SSG) and anticipates the new version to be released January 2012. Major changes to the SSG include updating the soil screening levels (SSLs) for new toxicity data and adding mutagenicity. In addition, the Total Petroleum Hydrocarbon (TPH) and the Polychlorinated Biphenyl (PCB) guidance have been included in the SSG and will no longer exist as standalone documents. It should be noted that the most recent version of the SSG should be used in the evaluation of site data and risk assessments, regardless of the citations for the NMED 2006 TPH and 2009 SSG guidance in the work plan.

2. While the work plan references surface and subsurface soil, the plan does not specifically address the soil exposure intervals to be included in the risk assessments. Please clarify the soil exposure intervals proposed for each receptor (human health and ecological).

3. The work plan (Appendix A) specifies that only invertebrate receptors will be evaluated for the ecological screening assessments at sites SS-C507 and SD-C508. Based upon the photographs provided with the work plan, it appears that plants and small wildlife (deer mouse) may exist at the sites. The plants and small mammals represent varying trophic levels of the food web that should be evaluated. Modify the work plan to include evaluation of plants and the deer mouse in additional to invertebrates in the screening level ecological risk assessments.

4. The methodology for the ecological screening assessment presented in the work plan is not in accordance with NMED guidance. As noted in Cannon Air Force Base's (CAFB), Hazardous Waste Facility Permit (No. NM7572124454), the methodology for the screening-level ecological risk assessment should follow NMED's *Guidance for Assessing Ecological Risks Posed by Chemicals: Screening-Level Ecological Assessment* (2000). According to NMED (2000) methodology, calculated exposure doses for selected ecological receptors are compared with toxicity reference values in order to estimate hazard quotients. Modify the work plan to follow appropriate NMED guidance for conducting screening-level ecological risk assessments. (In addition, the revised SSG (release anticipated for January 2012), includes more detailed discussions of how to conduct an ecological screening evaluation; the methodology is consistent with the 2000 guidance cited above.)

5. Appendix A (Work Sheet #2) indicates that the regulatory driver for this investigation is Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Note that CAFB is regulated under a Resource Conservation and Recovery Act (RCRA) hazardous

waste permit (No. NM7572124454) and that investigation of these sites should comply with the requirements outlined in the permit and with RCRA corrective action.

**Specific Comments**

1. Figure 3-1. It is agreed that site history and historical data should be used to identify COPCs; however, based upon the soil investigation, a refinement of the COPC list may be required (to remove or add COPCs). Please ensure this step will be conducted.

   Clarification is also needed on what values will be used for "other screening criteria". While it is noted that the RCRA hazardous waste permit (Condition 7.5) allows for alternative cleanup levels, the work plan should provide a discussion of what the alternative levels may be proposed. It is not clear whether "alternative cleanup levels" refers to industrial levels or site-specific screening levels.

   In addition, the ecological screening process is not included in the decision diagram. Modify Figure 3-1 to: 1) display the components of the decision diagram in the proper order, 2) include the ecological screening process, and 3) provide clarification on what values will be used for "other screening criteria".

2. Section 3.1. Text in Section 3.1 states "Chemicals of potential concern (COPCs) are defined as chemicals that are site-related (i.e., they are derived from the site and are at concentrations that exceed background levels), and that either have toxicity factors (i.e., carcinogenic slope factors or noncarcinogenic reference doses) derived by the United States Environmental Protection Agency (US EPA) or have potential toxicity that can be addressed qualitatively (e.g., lead)." There are several comments concerning this statement:

   a) COPCs are defined as those constituents deemed to be site-related. The availability of toxicity criteria has no bearing on whether a constituent should be identified as a COPC. For those COPCs without appropriate toxicity criteria, a discussion should be included in the uncertainties section of the risk assessment. Revise the text to clarify the definition of a COPC.

   b) Lead should be evaluated quantitatively in the risk assessment. Screening levels for lead have been developed using the IUEBK model. Both the NMED SSLs and RSL provide screening levels for lead (800 mg/kg for residential land use and a value of 400 mg/kg for industrial land use). While the risk to lead is typically evaluated separately, and not part of the hazard index, exclusion of a quantitative analysis is not acceptable. Revise accordingly.

   c) The text indicates that only US EPA derived toxicity data may be used in assessing risk to COPCs. Both the NMED soil screening guidance and RSL presents a

hierarchy of sources for toxicity criteria based on EPA Directive 9285.7-53, *Human Health Toxicity Values in Superfund Risk Assessments*, December 5, 2003. This guidance provides a tiered hierarchy of acceptable toxicity data, of which the third tier includes non-EPA sources of toxicity values. Further, the Air Force supports use of tier three sources (as discussed in *Identification and Selection of Toxicity Values/Criteria for CERCLA and Hazardous Waste Site Risk Assessments in the Absence of IRIS Values*, April 23, 2007, ECOS-DoD Sustainability Work Group (http://www.ecos.org/section/committees/cross_media/ecos_dod_sustainability_work_group/). Revise the work plan to include evaluation of non-EPA toxicity data as appropriate, as addressed in the above references.

3. Section 3.6.1. Text in section 3.6.1 states that SSLs and RSLs will be divided by 10 to account for noncarcinogenic additivity. This methodology is not in accordance with NMED guidance. Per NMED (2009) soil screening guidance, noncarcinogenic effects should be considered additive as a first-tier screening approach. If the hazard index is greater than the target level of one, then noncarcinogenic effects may be considered additive for those chemicals with the same toxic endpoint and/or mechanism of action. Modify the work plan to follow NMED (2009) guidance with respect to the additivity of noncarcinogenic effects. (Please note that the 2009 methodology is also consistent with the 2012 SSG to be released in January.)

4. Figures 3-2 through 3-9. While the conceptual site models (CSMs) include inhalation of COPCs in airborne soil particles, they do not include inhalation of volatiles as an exposure route in both indoor and outdoor air. Volatile organic compounds (VOCs) potentially present in subsurface soil could migrate through pore spaces in the vadose zone into outdoor air, and indoor air if buildings are present.

   The NMED SSLs and US EPA regional screening levels (RSLs) were calculated based on fate and transport models that include inhalation of volatiles in outdoor air. Utilization of the SSLs would therefore encompass this exposure route. Nevertheless, this pathway should be shown as a completed exposure pathway on the CSMs. Modify the CSMs to include inhalation of volatiles in outdoor air.

   With respect to inhalation of indoor air, residential SSLs and RSLs do not take into consideration the vapor intrusion pathway. Due to the nature of contamination at most of the sites referenced in this work plan (i.e., potential fuel spills), VOCs are likely to be present. Therefore, it must be shown that VOCs are not present at levels that would pose unacceptable risks to current/future receptors via the vapor intrusion pathway. Modify the CSMs to include this pathway, and modify the work plan to present the methodology that will be used to quantify risks and hazards from inhalation of VOCs in indoor air.

5. Figures 3-2 through 3-9. The CSMs show that ingestion of contaminated biota by residential and recreational receptors is a potentially complete exposure pathway. However, neither the NMED SSLs nor the US EPA RSLs account for this pathway in the derivation of the screening levels. The work plan does not present the methodology that will be used to address the ingestion of biota quantitatively. Modify the work plan to include the methodology that will be used to quantify risks and hazards from ingestion of contaminated biota (e.g., produce, meat, and dairy).

6. Figures 3-7 and 3-8. The CSMs do not indicate which ecological receptors are selected for evaluation in the screening level ecological risk assessment. Modify the CSMs to present the receptors that will be evaluated quantitatively. While Appendix A indicates that only invertebrates will be evaluated, as noted in the general comments, the deer mouse and plants should also be identified as potential ecological receptors.

7. Section 3.6.1. Text in Section 3.6.1 indicates that the SSLs and RSLs are based on a risk level of $1 \times 10^{-5}$ or $1 \times 10^{-6}$. NMED applies a target risk level of $1 \times 10^{-5}$. For purposes of determining whether the selected laboratory can meet risk-based action levels, the use of the RSLs based on a $10^{-6}$ level is conservative. However, when conducting the risk screening please ensure that carcinogenic RSLs are adjusted to a risk level of $1 \times 10^{-5}$.

8. Appendix A, Work Sheet #15. Footnote 1 indicates that CAFB "reserves the right to compare existing concentrations to other applicable screening levels." Clarify what other screening levels may be proposed. As noted in Condition 7.5 of CAFB's RCRA Hazardous Waste Permit, alternative levels may be used, but the levels must be approved by NMED.

9. Appendix A, Work Sheet #17. This Work Sheet references the 2006 NMED SSLs. Ensure that the most up to date SSLs are applied in the risk assessments. If the 2012 updates are not available, then the 2009 SSLs should be applied.

10. Table 8, SOP Code HMS-8290. It is noted that the table in this Standard Operating Procedure is labeled as uncontrolled and will not be modified. However, if dioxin/furans are detected at any of the investigation sites, ensure that the most recent toxicity equivalency factors (TEFs) are applied. The TEFs listed on this table are from 1989 and are out of date and not acceptable for use.

## Andress, Lane, NMENV

**From:** Paige Walton [paigewalton@msn.com]
**Sent:** Monday, January 09, 2012 10:39 AM
**To:** Andress, Lane, NMENV
**Subject:** RE: Questions on CAFB: Risk Assessment in WP for SI on Eight PST sites; CAFB-11-005

Hi Lane, Sorry about these, my responses in red, but summary:

1. Yes, please update to 2008.
2. Yes, please transpose the numbers – 400 residential and 800 industrial
3. Yes, I they are OK – just delete the comment.

Thanks again,
Paige

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**From:** Andress, Lane, NMENV [mailto:Lane.Andress@state.nm.us]
**Sent:** Friday, January 06, 2012 11:14 AM
**To:** Paige Walton; Cobrain, Dave, NMENV; Dhawan, Neelam, NMENV
**Subject:** Questions on CAFB: Risk Assessment in WP for SI on Eight PST sites; CAFB-11-005

Hi Paige,

Thank you for your review! I'm glad we have you, I sure don't know this stuff.
I have incorporated your comments into my NOD letter. I have a three questions:

**First:** To refresh your memory, your General Comment #4:

1. The methodology for the ecological screening assessment presented in the work plan is not in accordance with NMED guidance. As noted in Cannon Air Force Base's (CAFB), Hazardous Waste Facility Permit (No. NM7572124454), the methodology for the screening-level ecological risk assessment should follow NMED's *Guidance for Assessing Ecological Risks Posed by Chemicals: Screening-Level Ecological Assessment* (2000). According to NMED (2000) methodology, calculated exposure doses for selected ecological receptors are compared with toxicity reference values in order to estimate hazard quotients. Modify the work plan to follow appropriate NMED guidance for conducting screening-level ecological risk assessments. (**In addition, the revised SSG (release anticipated for January 2012)**, includes more detailed discussions of how to conduct an ecological screening evaluation; the methodology is consistent with the 2000 guidance cited above.)

The NMED website has the 2008 updated version on it: http://www.nmenv.state.nm.us/HWB/guidance.html Did you mean to reference the 2008 version or did you mean the 2000 version? I'll edit or leave the comment alone accordingly.

Yes, please update to 2008.

**Second:** your Specific Comment #2, b)

a) Lead should be evaluated quantitatively in the risk assessment. Screening levels for lead have been developed using the IUEBK model. Both the NMED SSLs and RSL provide screening levels for lead (800 mg/kg for residential land use and a value of 400 mg/kg for industrial land use). While the

risk to lead is typically evaluated separately, and not part of the hazard index, exclusion of a quantitative analysis is not acceptable. Revise accordingly.

I think you accidentally swapped the concentrations there, the Excel spreadsheet for the NMSSLs Table A-1 (2009) which contains the current NMED SSLs says: **400 mg/kg for residential soil and a value of 800 mg/kg for Industrial/ Occupational and Construction Worker Soil** Should I switch those values in the comment? Yes, please switch!

**Third:** your Specific Comment #9:

1. Appendix A, Work Sheet #17. This Work Sheet references the 2006 NMED SSLs. Ensure that the most up to date SSLs are applied in the risk assessments. If the 2012 updates are not available, then the 2009 SSLs should be applied.

Which I have amended to (making it easier to find):

**QAPP, Appendix A, Work Sheet #17 (Sampling Design and Rationale), pages 17-2, 17-3, 17- 4:**
This Work Sheet references the 2006 NMED SSLs. Ensure that the most up to date SSLs are applied in the risk assessments. If the 2012 updates are not available, then the 2009 SSLs must be applied.

They do reference the 2009 SSL's on page 17-1: The analytical data will be screened against NMED residential soil SSL (NMED 2009) or USEPA residential RSLs (USEPA 2011)
and Cannon AFB background levels (W-C 1997) presented in Worksheet #15. In addition, analytical data collected at sites SS-C507 and SD-C508 will be screened against USEPA Region 5 ESSLs (USEPA 2003) or USEPA ESLs (USEPA 2005).
The references to 2006 are found on pages 17-2, 17-3, and 17-4 and read as follows: The site related SVOC analyte list is derived from Table 3 of the NMED TPH Screening Guidelines (NMED 2006). Should I still include this comment as you presented it (with my page numbers, etc...), revise it or delete it? Sorry about this one – you may delete.

Thank you so much for your help!
Lane

**Lane Andress, P.G.**
Geologist
*NMED Hazardous Waste Bureau*
*2905 Rodeo Park Drive East Building 1*
*Santa Fe, NM 87505*
*Phone: 505-476-6059*

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**From:** Paige Walton [mailto:paigewalton@msn.com]
**Sent:** Tuesday, January 03, 2012 1:21 PM
**To:** Andress, Lane, NMENV; Cobrain, Dave, NMENV; Dhawan, Neelam, NMENV
**Cc:** 'Joel '; Paige Walton
**Subject:** CAFB: Risk Assessment in WP for SI on Eight PST sites; CAFB-11-005

Hi Dave,

Attached please find draft technical review comments on the *Site Investigation of Eight Sites Project Activities Work Plan*, Cannon Air Force Base, New Mexico, August, 2011. A hard (paper) copy of the deliverable will be sent to you via mail for your files. Please let me know if you have any questions.
Welcome back, Lane!
Paige