



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10**

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OFFICE OF  
ENVIRONMENTAL  
CLEANUP

**MAR 17 2014**

Colonel Brian P. Duffy  
Commander  
Joint Base Elmendorf-Richardson (JBER)  
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JBER, Alaska 99506-2200

Dear Colonel Duffy:

The U. S. Environmental Protection Agency Region 10 has reviewed the Fourth CERCLA Five-Year Review report for Superfund sites, specifically for Operable Units (OU) 1, 2, 4, 5, 6 and DP98 associated with Elmendorf Air Force Base on Joint Base Elmendorf-Richardson, Alaska. The conclusions in this letter are based on the draft report from November 2013 and revised Response to Comments, Summary Form, and Sections 8 and 9 which were received by the EPA on March 12, 2014. The EPA reviewed the report for technical adequacy, accuracy, and consistency with the National Contingency Plan and EPA guidance. The document provides a summary of the status and protectiveness for OUs for which Records of Decisions (RODs) have been completed and are not determined as No Further Action. It also identifies actions to be taken that ensure protectiveness of the selected remedies and on-going remedial actions and documents a schedule for completion of the recommended actions.

The following are the EPA's protectiveness determinations for these OUs and the overall Site protectiveness that will be reported to Congress in the EPA's annual report. Also included are additional recommendations and follow-up actions necessary to address issues raised in the Five-Year Review that affect or could affect protectiveness. In general, the EPA concurs with the protectiveness determinations in this Air Force report. Each OU is discussed individually below.

**OU 1**

The EPA concurs that the remedy for OU 1 is currently short-term protective of human health and the environment through implementation of Land Use Controls. Short term protectiveness is appropriate for this remedy where residential use of the site is not permitted and access to groundwater and subsurface debris is restricted through land use controls.

For OU1 to be protective in the long term, EPA agrees additional investigation is required to evaluate source areas for the chlorinated solvent plume observed in monitoring wells OU1LF-19 and LF05GW-2B. This OU contains a number of landfills, many which have previously been closed under CERCLA and transferred to monitoring under the State of Alaska Solid Waste compliance program. Compliance monitoring data for groundwater wells OU1LF-19 and LF05GW-2B contains concentrations of

trichloroethene (TCE) above federal drinking water standards. The source of this contamination and the plume boundary have yet to be defined. The EPA agrees with the recommendation to pursue further investigation into the source and extent of groundwater contamination impacting these wells.

## **OU 2**

The EPA concurs that the remedy for OU 2 is currently short-term protective of human health and the environment because Land Use Controls are preventing exposure to contaminated groundwater and soil. Groundwater contaminants at site ST41 (4 Million Gallon Hill) are showing decreasing trends, but the levels will not meet cleanup goals within the 21 year timeframe (by 2016) as specified in the ROD for OU2. In order for the remedy of to be protective in the long term, the EPA agrees alternative remedies should be evaluated through the process established in the Federal Facilities Agreement (FFA), including the contingent remedy that was developed in the ROD.

## **OU 4**

The EPA concurs with the deferred protectiveness determination for OU 4 pending additional sampling to address the potential for vapor intrusion at occupied buildings in proximity to the contaminated chlorinated groundwater plumes. The vapor intrusion evaluation will prioritize buildings with the most vulnerable populations (child care centers, schools, homes or offices occupied by women of childbearing age) and is expected to be completed for all occupied facilities by 2015.

In addition, benzene contaminated groundwater at Site SD25 remains at least one order of magnitude above cleanup levels and exceeded the predicted cleanup date of 2008. Land Use Controls for OU4 prohibit access to contaminated groundwater as a source of drinking water. The EPA agrees with the recommendation to evaluate alternative remedies using the process established in the FFA to accelerate attainment of cleanup levels in groundwater at SD25.

An addendum to determine the protectiveness of OU 4 will be prepared by December 31, 2016.

## **OU 5**

The EPA concurs with the deferred protectiveness determination for OU 5 pending additional sampling to address the potential for vapor intrusion at occupied buildings in proximity to the contaminated chlorinated groundwater plumes. The vapor intrusion evaluation will prioritize buildings with the most vulnerable populations (child care centers, schools, homes or offices occupied by women of childbearing age) and is expected to be completed for all occupied facilities by 2015.

In addition, a benzene contaminated seep at OU5SP-02 remains above cleanup levels, and the source contributing to this contamination is undefined. Natural development of biofilm on the gravel at the seep collection area prevents exposure to ecological receptors. The EPA agrees with the recommendation to define the source of contamination of the seeps.

The third Five Year Review (2008) for OU5 recommended further investigation and delineation of the contaminated groundwater plumes. The Air Force acted on the recommendation with the 2011 ST37 TCE Source Area Investigation Report, but has not finalized the report at the time of this review. The EPA agrees with the recommendation in the Fourth Five Year Review (2014) to utilize the findings from this groundwater investigation and continue delineation of potential source areas and plumes at OU5. Many of the groundwater plumes at OU5 show decreasing concentrations of contaminants, but will not

achieve cleanup levels in the timeframe estimated in the ROD by 2025. Land Use Controls for OU5 prohibit access to contaminated groundwater as a source of drinking water. The EPA agrees with the recommendation to evaluate alternative remedies under the process established in the FFA to accelerate attainment of cleanup levels in groundwater at OU5.

An addendum to determine the protectiveness of OU 5 will be prepared by December 31, 2016.

## **OU 6**

The EPA concurs that the remedy for OU 6 is currently short-term protective of human health and the environment because Land Use Controls are preventing exposure to contaminated groundwater and soil. Groundwater contaminants at sites LF04 South, WP14, and SD15 are not showing decreasing trends, therefore the levels will not meet cleanup goals by 2020 as specified in the Record of Decision (ROD). In order for the remedy to be protective in the long term, the EPA agrees alternative remedies should be evaluated under the process established in the FFA to accelerate attainment of cleanup levels in groundwater at OU6.

Additionally, 2-methylnaphthalene was detected in the groundwater at WP14 at a maximum level of 630 micrograms per liter (ug/L) in sampling prior to the ROD, however a cleanup standard for this compound did not exist at the time of the ROD in 1997. A cleanup level for 2-methylnaphthalene of 150 ug/L was established in groundwater by the State of Alaska under 18 AAC 75, Table C Groundwater Cleanup Tables in 2009. Land Use Controls for OU6 prohibit access to contaminated groundwater as a source of drinking water. The EPA agrees with the recommendation to assess current concentrations of 2-methylnaphthalene in groundwater at WP14, and to discuss the results of groundwater concentrations with the EPA and Alaska Department of Environmental Conservation to determine if additional action is warranted.

## **DP98**

The EPA concurs with the deferred protectiveness determination for DP98 pending additional sampling to address the potential for vapor intrusion at occupied buildings in proximity to the contaminated chlorinated groundwater plumes. The vapor intrusion evaluation will prioritize buildings with the most vulnerable populations (child care centers, schools, homes or offices occupied by women of childbearing age) and is expected to be completed for all occupied facilities by 2015. DP98 should be a high priority for the vapor intrusion evaluation given the shallow depth to groundwater contaminated with high concentrations of chlorinated solvents, and the presence of an occupied building at the site. The EPA is concerned with the high concentrations of TCE measured in groundwater at this site, including the most recent result of 570 ug/L in August 2012 in the Five Year Review. When this groundwater concentration is input into EPA's Vapor Intrusion Screening Level (VISL) Calculator, Version 3.1, June 2013, and adjustments are made for average JBER groundwater temperature of 8° C instead of the default of 25° C, the calculated indoor air concentration exceeds 95 ug/m<sup>3</sup>. The screening level for occupational air exposure to TCE for women of childbearing age is 8.4 ug/m<sup>3</sup>. The screening value is a short term, noncancer, not to be exceeded, average 21 day exposure to women of reproductive age to prevent fetal heart malformations. The potential for vapor risk from chlorinated solvents at DP98 should be evaluated as soon as possible, and if the sampling indicates levels of concern, the Air Force should take immediate steps to mitigate the exposure.

Although not an issue that affects current or future protectiveness during this Five Year Review, monitoring data for groundwater at DP98 indicate variable conditions for breakdown of groundwater

contaminants through the natural process of reductive dechlorination. The assessment of the natural attenuation remedy at this site has been in place for 10 years following the 2004 DP98 ROD. The EPA agrees with the recommendation to further evaluate natural attenuation conditions before the next Five Year Review to better understand reducing conditions in groundwater. This information will support future remedy evaluations and track progress towards attainment of cleanup levels.

An addendum to determine the protectiveness of DP98 will be prepared by December 31, 2016.

### **Sitewide – Elmendorf Air Force Base**

The remedial actions at OU1, OU2, and OU6 have been implemented and are currently protective of human health and the environment but require follow-up actions as documented in the report and this letter to ensure they remain protective into the future. The remedial actions at OU 4, OU5, and DP98 have been implemented, however protectiveness is deferred due to the potential for vapor intrusion at buildings in proximity to the groundwater plume. The EPA encourages the Air Force to start the vapor risk evaluation in 2014 due to the potential impact of low level, short term TCE exposure on fetal development. Additionally, groundwater plumes at OU2, OU4, and OU5 require optimization or alternative remedy evaluation under the process established in the FFA to reduce contaminant concentrations within reasonable timeframes. Overall the site protectiveness is deferred, and the follow-up actions need to be performed to ensure they remain protective in the long term.

Consistent with EPA's August 1, 2011 memorandum "Program Priorities for Federal Facility Five-Year Reviews", the Five-Year Review Guidance Section 1.3.3 has been superseded and the future Five-Year Review dates will be based on the completion date for this review to assure that the due dates will not change if the reports are early or late. The due dates for the subsequent Five-Year Reviews are March 17, 2019 and March 17, 2024.

Finally, the August 1 Program policies memorandum also calls for a summary of the EPA Superfund Sitewide Environmental Indicator Status for Sites undergoing Five-Year Reviews. The Environmental Indicators for Elmendorf AFB are posted on the EPA website at Superfund Site Progress Profile Elmendorf Air Force Base. (<http://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=1000155>)

The Superfund Sitewide Human Health Exposure Indicator status will be changed to "Insufficient data to determine human exposure control status." Due to uncertainty regarding exposures to vapor intrusion from OU4, OU5, and DP98, the EPA cannot draw conclusions as to whether human exposures to trichloroethene vapors are controlled in the occupied buildings in proximity to contaminated groundwater plumes.

The Superfund Sitewide Contaminated Groundwater Migration indicator status will be changed to "Insufficient data to determine migration control status." The EPA cannot draw conclusions as to whether the extent of contaminated groundwater plumes is defined at OU1 and OU5 as monitoring data suggest uncontrolled source areas at these OUs which contribute to plume instability.

Thank you for the Air Force's hard work in completing the Fourth Five-Year Review. I want to commend your staff on addressing EPA comments on earlier drafts and the efforts your project team demonstrated in finalizing the document. We feel the EPA and JBER project teams have an excellent working relationship and look forward to continuing this cooperative effort as the work moves forward.

If you have questions concerning this letter, please contact the site manager, Sandra Halstead, at (907) 271-1218 or by email to [halstead.sandra@epa.gov](mailto:halstead.sandra@epa.gov).

Sincerely,



Cami Grandinetti  
Program Manager  
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cc: Gary Fink, JBER, Chief, Natural Resources  
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