

RESTORATION ADVISORY BOARD

FINAL MEETING MINUTES

NAVAL AIR STATION FALLON

JUNE 23, 2010

Attendees

Affiliation

Mike Quesada	Naval Facilities Engineering Command (NAVFAC), Southwest
Robert Earney	NAVFAC, Southwest
Chirs Dirscherl	NAVFAC, Southwest
Raj Krishnamoorthy	Public Works Department (PWD), Naval Air Station (NAS) Fallon
Chuck Deverin	PWD, NAS Fallon
Commander Dale Seeley	PWD, NAS Fallon
Captain Michael Glaser	Commanding Officer, NAS Fallon
Captain Rinhart Wilke, IV	PCO, NAS Fallon
Zip Upham	Public Affairs Officer, NAS Fallon
Ramon Naranjo	Nevada Department of Environmental Protection (NDEP)
Scott Smale	NDEP
Steve Endacott	Emergency Management, City of Fallon, NV
Tansey Smith	Inter-Tribal Council of Nevada
Wilbur Stephens	Community Member
Kathy Monks	Tetra Tech EM Inc. (Tetra Tech)
Dave Berestka	Tetra Tech

MEETING SUMMARY

A restoration advisory board (RAB) meeting for NAS Fallon was held at the Fallon, Nevada, Convention Center at 6:30 p.m. on Wednesday, June 23, 2010.

The RAB meeting provided the public with an update of the status of the Navy's Installation Restoration (IR) program at NAS Fallon. Sixteen sites are currently closed with no further action, three sites are closed with limited action, one site is pending closure, and nine sites are undergoing remedial investigation (RI). Seven of these active sites are included in the IR program, and the other two active sites are included in the Underground Storage Tank-Restoration (UST-R) program.

The primary focus of the meeting was to (1) provide an update on the progress of the RIs, (2) summarize removal actions at Site 2 (New Fuel Farm), (3) report the results of the air sparge/soil vapor extraction (AS/SVE) pilot study to remove chlorinated solvents in groundwater southeast of Site 16 (Old Fuel Farm), (4) provide an update on recent basewide surface water and groundwater monitoring results, and (5) discuss upcoming reports and continued monitoring and maintenance for NAS Fallon landfill sites. The meeting concluded with a discussion of future IR program activities at NAS Fallon, the Navy's current and future budget for the IR program, and a brief question and answer session.

The PowerPoint presentation slides shown at the meeting are included as an attachment to these minutes.

Remedial Investigation Activities

The Navy presented a summary of recent RI activities. Soil and groundwater data obtained from 2007 through 2010 during the RI field work are being evaluated. A soil gas field investigation is being conducted during May through July 2010 in support of the human health risk assessment. The soil gas investigation is being conducted to evaluate the risk posed by migration of vapors from volatile constituents to indoor air. Human health and ecological risk assessments, in support of the RI reports, are being completed in fall 2010. The RI reports will also include Feasibility Study (FS) components to evaluate the effectiveness of remedial alternative options for each of the operable units (OUs). OU groupings for remaining RI/feasibility study documentation are as follows:

- **Northern Operable Unit (OU)** – Sites 2, 3, and 4
 - Site 6 will be included in the Northern OU; however, it will be evaluated as a stand-alone site
- **Southern OU** – Sites 1, 14, and 16
- **Petroleum Sites** – UST-R Site 1 (395) and UST-R Site 2 (800 Complex)

Site 2 Fuel Removal

The Navy summarized ongoing fuel removal at Site 2. Over 73,000 gallons of fuel have been recovered since the early 1990s with 2,120 gallons recovered since August 2009. Estimates of fuel recovered since August 2009 include 830 gallons from portable skimmer pumps used at 22 wells, 935 gallons from an eastern fuel product recovery trench, and 355 gallons from a western product recovery trench. Future fuel product removal activities include optimization of which wells are pumped and the pumping frequency, evaluation of the cost-effectiveness of installing new recovery wells in optimal fuel recovery locations, and consideration of installing additional automatic pumps in productive wells. The Navy plans to continue weekly skimming operations at up to 25 monitoring wells to optimize fuel removal over the coming year.

Site 16 – Pilot Studies, Chlorinated Solvent Plume, Status Updates

A chlorinated solvent plume was first detected in 2005 west of the E4X Drain. Chlorinated solvent plumes were further delineated in 2007 and 2008 using a passive soil gas survey, temporary wells, and permanent monitoring wells to track plume migration. Plume delineation revealed that two distinct plumes are present. The Navy has concluded that a chlorinated solvent plume in groundwater originated from a source other than historical releases from the fuel farm. The exact source of the chlorinated solvent plume is unknown; there are no known tanks, pipelines, or former solvent storage areas near the source area. The total volume released is estimated to be only 2.5 to 3 gallons of solvent.

In October 2009, the Navy conducted air sparge and soil vapor extraction (SVE) pilot tests to assess the feasibility and cost-effectiveness of a full-scale air sparge system. Air sparge is a proven technology for chlorinated solvent removal; therefore, the pilot test's primary focus was to evaluate the radius of influence of air sparge wells, the total number of wells and the well spacing required, and the air injection flow rates and pressure to obtain design parameters for a full-scale system. In support of the design, the pilot test collected information regarding the airflow rate and pressure, radius of influence (ROI) of a sparge well, and potential air emissions.

The results of the SVE portion of the pilot test indicated an ROI of only 15 feet, whereas the ideal ROI is 30 to 40 feet. A small ROI requires a greater number of SVE wells. The air emissions measured during the test were only 0.055 pounds for an eight-hour test, which is very low. These results demonstrated that because of the low emissions, soil vapor collection is not essential.

The air sparge portion of the pilot test demonstrated that a ROI of 25 feet could be maintained at a reasonable flow rate and pressure. Considering the aquifer thickness of 13 feet, the ROI of 25 feet will be cost-effective and air sparge is considered an effective treatment technology for the area. Although approximately 73 air sparge wells would be needed to treat the tetrachloroethene (PCE) chlorinated solvent plume footprint, only about 12 air sparge wells could be used to target and remediate the highest concentration (greater than 1,000 micrograms per liter [5 µg/L] of PCE) that occur near the E4X Drain.

Basewide Groundwater Investigation

The Navy provided an update to the ongoing basewide monitoring program and discussed monitoring results from 2008 through spring 2010. The Navy collected samples from 24 wells in spring 2008, 120 wells in fall 2008, 80 wells in spring 2009, and 38 wells both in fall 2009 and spring 2010. The Navy also obtains data from annual surface water monitoring from five locations along drains and quarterly data-logger downloads from 60 pressure transducers and seven velocity sensors. The entire groundwater monitoring basewide well network consists of 281 wells. This large network allows the Navy flexibility to adapt groundwater sampling and monitoring locations as necessary to changing site conditions in the future. These data serve the following purposes:

- Assess plume stability, characteristics, and trends at active sites
- Provide post-closure monitoring at closed sites
- Monitor groundwater and surface water quality near base boundaries
- Provide updates to the basewide conceptual site model.

The Navy is also preparing a well utilization plan that evaluates how the basewide monitoring well network complies with state regulations and ensures that basewide monitoring goals are achieved. A total

of 492 wells were evaluated, with 281 wells remaining in the basewide network. The plan also recommends 153 wells for abandonment that do not meet the established criteria.

Basewide hydrologic monitoring results from 2009 through 2010 indicate:

- Groundwater levels and temperature trends indicate groundwater and surface water near the drains are generally interconnected; the extent of hydraulic connection depends on sediment permeability, sediment heterogeneity, and horizontal and vertical distance from the drain.
- In the northwest quadrant, including Sites 2, 4, and UST-R Site 1, trichloroethene (TCE) was the only compound exceeding the MCL (5 µg/L) in groundwater. The maximum concentration of TCE was 19 µg/L in 2009; there were no exceedances in spring 2010.
- In the northeast quadrant, including Sites 6, 21, and 22, TCE was the only compound exceeding the MCL with a maximum concentration of 5.5 µg/L in 2009; there were no exceedances detected in groundwater samples spring 2010.
- No organic compounds exceeded MCLs in the southwest quadrant (vicinity of Site 20 and UST-R Site 2) in the 2009 and 2010 sampling events.
- In the southeast quadrant (vicinity of Sites 1, 14, and 16) several groundwater samples collected in 2009 had VOCs that exceeded the MCLs, including PCE, TCE, DCE, vinyl chloride, DCA, chloroform, benzene, and toluene. In spring 2010, only concentrations of PCE, TCE, and DCE exceeded the MCLs in groundwater samples.
- Sentinel wells indicate no IR site-related contaminants are migrating beyond base boundaries.
- Groundwater monitoring conducted from 2008 through 2010 indicates the contaminant plumes have remained stable and have not shown much movement.
- Results of annual surface water sampling indicate that surface water is not affected by IR site-related activities. Total dissolved solids (TDS) concentrations are lowest adjacent to drains and increase with distance from drains and range from about 900 to 2,600 milligrams per liter. No VOCs were detected in surface water samples in 2010.

Landfills

The Navy summarized current activities being carried out at the Sites 18, 20, 21, and 22 landfills.

For Site 18, additional surface soil sampling is planned to better characterize the landfill cover. In addition, semiannual groundwater samples will be collected in fall 2010 and semiannually in 2011 to confirm that the pesticides, aldrin and dieldrin, are not above regional screening levels downgradient of the landfill. Aldrin was detected in groundwater in 2002, however, there were no detections of aldrin when the monitoring well downgradient of the landfill was sampled and analyzed for pesticides in 2004 and 2005. Completion of decision documents, including the FS for Site 18, is planned for 2011.

The Navy will also complete 5-year reviews for Landfill Sites 20, 21, and 22. Five-year reviews evaluate whether the remedy (in this case, limited action) is functioning as designed and is protective of human health and the environment. The 5-year review inspection was conducted in spring 2009, and the report

will be completed in fall 2010. In addition, land use-control remedial design documents will also be completed in 2010. Ongoing landfill monitoring and maintenance activities will continue through 2011.

Upcoming IR Activities

The Navy presented the following schedule of upcoming activities:

- Complete RI soil gas investigation – 2010
- Complete RI/FS and Petroleum Sites reports – 2010/2011
- Incorporate and consider Site 16 pilot study results in developing remedial action – 2010/2011
- Complete record of decisions and corrective action plans – 2011/2012
- Conduct remedial actions – 2012
- Continue ongoing basewide groundwater investigation – 2010/2011

The Navy is committed to continuing the IR program over the next several years. More than \$6.7 million has been allocated over the next 5 years at NAS Fallon.

Question and Answer Session

Community participant, Mr. Steve Endacott, commented that using culverts or lining the E4X Drain would be other options to consider in mitigating the chlorinated solvent contamination, discussed in the pilot study presentation. The suggestion was noted and will be considered by the Navy.

There were no additional formal comments or questions from any RAB members or participants.