

Marine Corps Base Camp Lejeune (MCB CamLej) Restoration Advisory Board Meeting Minutes

RAB Meeting: February 24, 2011

ATTENDEES: Charity Rychak/MCB CamLej Thomas Mattison/ RAB Member
 David Lundquist/MCB CamLej Leonard McAdams/RAB Member
 Dave Cleland/NAVFAC Mid-Atlantic Amy Poe/RAB Member
 Bryan Beck/ NAVFAC Mid-Atlantic Karen Sota/RAB Member
 Gena Townsend/EPA Region 4 Chris Holman/RAB Member
 Beth Hartzell/NCDENR Steven Thompson/RAB Member
 Marti Morgan/NCDENR Chris Bozzini/CH2M HILL
 Laura Bader/RAB Co-Chair Kim Henderson/CH2M HILL
 Tess Sanders/RAB Member Matt Louth/CH2M HILL
 Michael Curtis/RAB Member Scott Powell/Rhea

FROM: Kim Henderson/CH2M HILL

DATE: March 16, 2011

LOCATION

Coastal Carolina Community College, Business Technology Building, Room 102 in
Jacksonville, North Carolina

MINUTES

I. Welcome and Introductions

Ms. Rychak began the meeting and reviewed the agenda.

II. IR Site 78 Hadnot Point Industrial Area (HPIA)

Objective: The purpose of this agenda item was to provide the RAB with an update of the ongoing environmental work in the HPIA. This discussion was led by Mr. Bozzini.

Overview: Mr. Bozzini provided an overview of the 690-acre HPIA area that was developed in the early 1940s and currently has roughly 75 buildings and facilities. For environmental investigation purposes, the HPIA is divided into 3 main areas, Site 78 North, Hadnot Point Fuel Farm Area, and Site 78 South. There are 6 active and 80 inactive release sites, including 35 Resource, Conservation, and Recovery Act (RCRA) sites, 5 Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites, 2 Military Munitions Response Program (MMRP) sites, and 44 Underground Storage Tank (UST) sites. Mr. Bozzini reviewed the timeline of investigation activities from 1984 to present and the current conceptual site model. The groundwater beneath HPIA is impacted with volatile

organic compounds (VOCs) and the groundwater plume changes over time were reviewed for 3 time periods (1995 to 1997, 2001 to 2004, and 2008 to 2010). The changes in the plumes overtime are resulting from remediation, natural attenuation, installation of additional monitoring wells, and groundwater flow direction.

At Sites 78 North and South, VOC plumes are present in the shallow aquifer and the concentrations are stable based on long-term monitoring (LTM) results. Active groundwater extraction and treatment system to treat VOCs and control migration is ongoing. Land use controls (LUCs) are in-place to prevent exposure from intrusive activity and prevent aquifer use extending 1,000 feet from the groundwater plume.

The Hadnot Point Fuel Farm (HPFF) is a UST site where Air Sparging/Soil Vapor Extraction (AS/SVE) and biopulse systems are ongoing to treat benzene, toluene, ethylbenzene, and xylene (BTEX) in groundwater.

Downgradient from HPIA, there is a separate low concentration VOC plume (Site 96) that is still being delineated and a Remedial Investigation (RI) and Feasibility Study (FS) is planned.

A basewide vapor intrusion evaluation was conducted and in the HPIA, 55 buildings within 100 feet of the groundwater plumes were initially identified. Based on the first step of screening, 24 buildings were identified for sampling. Based on the analytical results, the recommendations were as follows:

- No further action at 18 buildings
- Monitoring every 5 years at 3 buildings
- Continue vapor mitigation at 6 buildings
- Install vapor mitigation systems at 3 buildings

The path forward for the HPIA is as follows:

- Continue Site 78 groundwater treatment and LUC inspections
- Modify LUCs and groundwater LTM to reflect current plume extents
- Continue HPFF biopulsing for groundwater treatment
- Evaluate treatment plants to optimize efficiency and mass removal
- Evaluate alternative treatment technologies
- Conduct pilot study testing using in situ chemical oxidation (ISCO) to reduce elevated concentrations in Site 78 North and South
- Install and maintain vapor intrusion mitigation systems

A RAB member asked about the old motor transport, Motor T trucking outfit that was located right off of Holcomb Blvd where releases had occurred. A map was reviewed and that location is within the area treated by the HPFF biopulse system.

A RAB member questioned the source of trichloroethene (TCE). Mr. Bozzini noted that chlorinated solvents were used for degreasing throughout the industrial area and there is not one specific source.

III. IR Site 35 Former Camp Geiger Fuel Farm

Objective: The purpose of this agenda item was to provide a remedial action (RA) update for Site 35. The discussion was led by Mr. Bozzini.

Overview: Operable Unit 10, Site 35 is the former Camp Geiger Fuel Farm that was in operation from 1945 until 1995. There were five 15,000-gallon aboveground storage tanks (ASTs), a pump house, and a fuel unloading pad present. The area is currently used by the Camp Geiger School of Infantry and armory for operations. A Record of Decision (ROD) is in-place to address VOC contaminated groundwater using air sparging with a horizontal well. Groundwater LTM will be conducted to monitor the plume and LUCs were put in-place to prevent exposure to groundwater.

As part of the RA implementation, the existing sparge trench was removed and a horizontal air sparge well was installed in July/August 2010. Baseline monitoring was conducted and the system was started up in August 2010. The first rounds of quarterly LTM were completed in October 2010 and January 2011. The results to-date indicate that trichloroethene (TCE) is starting to degrade to cis-1,2-dichloroethene (DCE) and vinyl chloride (VC) is observed, indicating breakdown of the TCE.

The aquifer use control boundary was implemented to prohibit human consumption of groundwater from the surficial and Castle Hayne aquifers underlying Site 35 and extends beyond the groundwater plume boundary.

IV. IR Site 88 Former Base Dry Cleaning Facility

Objective: The purpose of this agenda item was to provide a summary of the recent treatability study field work. The discussion was led by Mr. Bozzini.

Overview: Operable Unit 15, Site 88 was a dry cleaning facility used from the 1940s until 2004. Perchloroethene (PCE) and its daughter products are present in groundwater and future treatment may be challenging based on the high concentrations present at depth. Treatability studies were implemented in 2010 for use in support of the FS to address the contamination. Permanganate, ISCO, and enhanced reductive dechlorination (ERD) studies were conducted in 3 zones based on differing depths and concentrations.

A RAB member asked how the high concentrations got so deep in locations where there weren't high concentrations in the shallow zone. Mr. Bozzini explained that the contamination originated at the former dry cleaner and beneath the shallow aquifer, a clay layer exists and impedes vertical migration and that clay layer pinches out further downgradient with the direction of groundwater flow and the contamination was able to migrate vertically in the deeper aquifer where the clay layer pinches out.

Mr. Bozzini reviewed the study implementation and results as follows.

- **Permanganate Study** - Clarkson University and the Colorado School of Mines conducted a study with injection of permanganate and additional substrate to test

enhancing distribution and minimizing manganese precipitation. The field activities were completed in December 2010 and the results of their study will be published.

- **ISCO (40 to 60 feet below ground surface)** - 184,400 gallons of permanganate (KMnO_4) solution and flush water were injected in November/December 2010. The preliminary results indicate that the radius of influence appears to be 12 to 15 feet whereas a 20 feet radius was expected. The results indicate that where the permanganate was present during initial follow-up monitoring, the results were good and degradation of PCE was observed. Microbes, necessary for the degradation process, were detected. Follow-up monitoring is planned through October 2011.

A RAB member asked what happens to the permanganate that doesn't reach the contamination. Mr. Bozzini indicated that it degrades to manganese dioxide, a non-hazardous substance.

A RAB member asked how microbe counts are detected and why they are needed. Mr. Bozzini indicated that the microbes help degrade the solvent by using it as a food source. They are analyzed by a laboratory that sends a filter for collection and when water is run through the filter media that the microbes attach to it and the laboratory conducts a cell count per milliliter.

- **ERD (40-60 feet below ground surface)** - 19,750 gallons of 3DMe and flush water and 51.5 gallons of microbes were injected in October/November 2010. The radius of influence appears to be 20 feet and based on preliminary results, one monitoring well was influenced which is as expected based on the longevity of the ERD process (1-2 years). Follow-up monitoring is planned through October 2011.
- **ERD (90-100 feet below ground surface)** - 123,170 gallons of SRS and flush water and 47.9 gallons of microbes were injected in November/December 2010. The radius of influence appears to be 10 feet and based on preliminary results, one monitoring well was influenced which is as expected based on the longevity of the ERD process (1-2 years). Follow-up monitoring is planned through October 2011.

A RAB member noted that in his experience that petroleum contamination can be treated by fountain sparging and aerating and he questioned whether this approach was considered. Mr. Bozzini indicated that air sparging is evaluated as an alternative and it has been implemented at several sites located in fields or undeveloped areas at MCB CamLej with good results. Air sparging is not realistic in the HPIA or at Site 88 because of the dense population and potential for air issues and vapor intrusion.

A RAB member asked if we share information with other sites regarding these treatments. Ms. Rychak indicated that the Navy/Marine Corps holds an annual Environmental Restoration conference as a technology and information exchange. Mr. Bozzini noted that the team attends conferences, gives presentations and posters, and shares and implements lessons learned.

A RAB member asked whether VOC contamination at MCB CamLej will contribute to the contamination of the Castle Hayne aquifer. Mr. Bozzini indicated that Site 88 has the deepest contamination and that typically at the Base, contamination is not observed at depth in the Castle Hayne aquifer. At Site 88, we have delineated the deep contamination

vertically and there is an existing clean well installed at depth below the contamination. Ms. Rychak noted that there is a roundtable with Onwasa and local counties where they evaluate potential sources and the drinking water aquifer.

V. RAB Business

Ms. Rychak proposed the next RAB date for **Tuesday, May 24, 2011** and requested topics for the next meeting. A RAB member requested an update on what Ms. Rychak learned at the Environmental Restoration conference. Other topic suggestions may be presented to Ms. Rychak.