

Marine Corps Base Camp Lejeune Restoration Advisory Board Meeting Minutes

RAB Meeting: October 21, 2008

ATTENDEES: Bob Lowder/Camp Lejeune Matt Louth/CH2M HILL
 Robert Campbell/Camp Lejeune Kim Henderson/CH2M HILL
 Bryan Beck/NAVFAC Mid-Atlantic Laura Bader/RAB Co-Chair
 Gena Townsend/EPA Region 4 Thomas Mattison/RAB Member
 Randy McElveen/NCDENR Leonard McAdams/RAB Member
 Chris Bozzini/CH2M HILL

FROM: Kim Henderson/CH2M HILL

DATE: January 5, 2009

LOCATION

Coastal Carolina Community College, Business Technology Building, Room 106 in
Jacksonville, North Carolina

MINUTES

6:00 PM

I. Welcome and Introductions

II. Installation Restoration (IR) Site 89 Remedial Investigation/Activities Update

Objective: The purpose of this agenda item was to provide an update on the status of the non-time critical removal action (NTCRA) and baseline ecological risk assessment (BERA) currently being conducted at Site 89. This discussion was led by CH2M HILL representative, Mr. Chris Bozzini.

Overview: Mr. Bozzini reviewed the history of Site 89 which was the former defense reutilization management office (DRMO). There are high concentrations of chlorinated solvents in groundwater at Site 89. The NTCRA is being conducted to address source areas and the estimated treatment volume is 30,000 cubic yards (yd³), the area is 32,000 square feet (ft²), and the depth is 25 feet (ft). Soil mixing with zero-valent iron (ZVI)-clay addition was the selected treatment. The soil mixing is conducted in 15 10-ft diameter overlapping columns. The optimal mix consists of 2% ZVI and 3% bentonite based on results of a bench-scale study conducted prior to the NTCRA. This same technology was used and was successful at Site 88 in 2005.

Soil mixing with ZVI-clay is conducted in situ. ZVI treats chlorinated contaminants and the clay provides contaminant migration control. The clay also acts as a lubricant during mixing and creates a lower permeable zone of soil to reduce contaminant mass flux. This is a patented technology developed by DuPont (1998) and was donated to Colorado State University (2003). The RAB reviewed a 3D figure of a conceptual model of the soil mixing process before and after mixing.

As a strong reductant, ZVI consumes oxygen (O_2) and corrodes to form hydrogen and dissolved ferrous iron (Fe^{+2}). Fe^{+2} can also serve as a reductant with the hydrogen gas serving as an electron donor to stimulate biodegradation in the overall process. Given sufficient ZVI delivery the reactions are generally such that significant decreases in dissolved oxygen (DO) and oxidation reduction potential (ORP), plus increase in pH, normally occur in groundwater.

The contaminants of concern (COCs), which are volatile organic compounds (VOCs), were reviewed and the highest groundwater concentrations based on November/December 2005 data include:

- 1,1,2,2-tetrachloroethane (PCA): 250,000 $\mu\text{g/L}$
- 1,1,2-trichloroethane (TCA): 5,900 $\mu\text{g/L}$
- Trichloroethene (TCE): 440,000 $\mu\text{g/L}$
- cis-1,2-dichloroethene (DCE): 230,000 $\mu\text{g/L}$
- Vinyl chloride: 11,000 $\mu\text{g/L}$

The implementation steps for the NTCRA include site preparation, mixing and backfilling, and monitoring. Site preparation activities included clearing trees from the southwest corner of the site, sampling and abandonment of existing monitoring wells in the treatment area, excavation of the top 3 feet of overburden and berm construction, and installation of high visibility fencing around the mixing area.

The mixing was conducted from south to north which is downgradient to upgradient. Field testing for ZVI content to confirm mixing quality was conducted. Excess water and stormwater and vapor were collected and treated. For site restoration, geotextile was placed and backfilled treatment areas. Photos of the soil mixing, treated material, follow-up monitoring well installation, and the restored site were shown.

Baseline monitoring was conducted at 10 soil locations, 9 existing monitoring well locations, and 4 surface water locations. Surface water will be monitored monthly during treatment to confirm there are no impacts to the creek. The follow-up monitoring schedule includes 10 soil locations at 1, 2, 3, 6, 9, and 12 months after treatment; 10 new monitoring well locations quarterly for 1 year after treatment; and 4 surface water locations quarterly for 1 year after treatment. Slug tests will also be conducted.

The RAB reviewed the results of the baseline monitoring and completed rounds of surface water monitoring conducted during treatment. Based on the baseline results, the estimated contaminant mass treated was 31 tons total, comprising 5 tons of soil contamination, 2 tons of groundwater contamination, and 24 tons of free product. The surface water data from three rounds completed during mixing indicates fluctuating concentrations but should trend downward over the next year.

The soil mixing was completed in August 2008 followed by site restoration in September 2008. Follow-up monitoring of soil, groundwater and surface water will continue through fall 2009 and a summary report will be submitted in 2010.

Mr. Bozzini indicated that when completing the Remedial Investigation in 2007, there was a natural area identified as the "western wetland" along the western edge of Site 89. Elevated pesticides and polycyclic aromatic hydrocarbons (PAHs) were identified in one sample location (89-SD25) in this area. There was an abandoned railroad spur identified adjacent to this area and railroad ties are treated with creosote which may be a source of PAHs. Therefore, additional sediment and surface soil samples were planned for PAHs and pesticides (DDD, DDE, and DDT) analysis. Bioassay samples were also collected to be analyzed if elevated PAHs and pesticides were detected.

Eleven sediment samples, four surface soil samples, and two reference samples were collected. PAHs and pesticides were detected in all sediment and surface soil samples. In sediment, the individual PAHs ranged in concentration from 43 to 100 µg/kg and the individual pesticides ranged in concentration from 46 to 325 µg/kg. In surface soil, the individual PAHs ranged in concentration from 9 to 10,000 µg/kg and the individual pesticides ranged in concentration from 2.6 to 920 µg/kg. All sample concentrations were significantly lower than former sampling location 89-SD25 where PAH concentrations were greater than 35,000 µg/kg and pesticide concentrations were greater than 4,000 µg/kg. The results confirmed that 89-SD25 is an isolated area of elevated sediment contaminant concentration and the extent of the impacted area is unknown to the north and east of 89-SS75. A BERA Addendum was completed to document the results and identified isolated risk at locations 89-SD25 and 89-SS75. A figure of the locations was shown. The BERA Addendum recommended remedial action (excavation and offsite disposal) at those two locations.

III. Military Munitions Response Program (MMRP) Site Update

Objective: The purpose of this agenda item was to review the proposed preliminary assessment/site investigation (PA/SI) activities at the Group 2 MMRP sites. This discussion was led by CH2M HILL representative, Mr. Matt Louth.

Overview: Mr. Louth reviewed the site locations for the six Group 2 MMRP sites where PA/SIs will be conducted:

- Site UXO-02 Unnamed Explosive Range
- Site UXO-07 Practice Hand Grenade Course
- Site UXO-10 Flame Thrower and Tank Range
- Site UXO-11 Practice Hand Grenade Course
- Site UXO-12 New River 1000-inch Range
- Site UXO-14 Indoor Pistol Range and Gas Chamber

The first step in the PA/SI is to conduct an Archive Records Search to identify prior site uses. This was conducted and included document reviews and interviews. Specific locations of former site activities were not identified within the initial site boundaries; therefore, proposed sample locations distributed across each site boundary.

The background for each MMRP site, a summary of proposed activities, and sample location maps were reviewed as follows:

- Site UXO-02 is approximately 127 acres and encompasses Site 69 (14 acres) where land use controls are in-place. Supplemental sampling is planned at Site 69 pending approval of a Chemical Safety Submission. UXO-2 was identified on a 1973 map as the Unnamed Explosive Range. During the archives search, the site was identified as a red cockaded woodpecker (RCW) management area and the base natural resources will be consulted. Proposed activities include digital geophysical mapping (DGM) over 15% of the site, soil sampling (210 surface soil and 30 subsurface soil locations), sediment sampling (10 locations), groundwater sampling (30 locations), and surface water sampling (10 locations). Samples will be analyzed for explosives, metals, and perchlorate. The sampling approach may be modified due to the RCW management area.
- Site UXO-07 is approximately 2 acres and was identified as a Practice Hand Grenade Course on a 1953 range map. Proposed activities include DGM over 15% of the site, soil sampling (20 surface soil and 4 subsurface soil locations), and groundwater sampling (6 locations). Samples will be analyzed for explosives, metals, and perchlorate.
- Site UXO-10 is approximately 3 acres and was identified as a Flame Thrower and Tank Range and was used from 1970 through 1977. It has also been identified as a Small Arms Blank Ammunition range. Proposed activities include soil sampling (2 surface soil decision units and 6 subsurface soil locations), and groundwater sampling (6 locations). Samples will be analyzed for explosives, metals, perchlorate, VOCs, and semivolatile organic compounds (SVOCs).
- Site UXO-11 is approximately 1 acre and was identified as a Practice Hand Grenade Course on a 1954 range map. Proposed activities include DGM over 15% of the site, soil sampling (4 surface soil decision units and 4 subsurface soil locations), and groundwater sampling (3 locations). Samples will be analyzed for explosives, metals, and perchlorate.
- Site UXO-12 is approximately 30 acres and was identified as the New River 1000-inch Range Course used from 1942 through 1945. Proposed activities include soil sampling (120 surface soil and 20 subsurface soil locations), sediment sampling (2 locations), surface water sampling (2 locations), and groundwater sampling (15 locations). Samples will be analyzed for explosives, metals, and perchlorate.
- Site UXO-14 is approximately 2 acres and was identified as an Indoor Pistol Range in use from 1950 through 1996 and Gas Chamber in use from 1950 through 1954. Proposed activities include DGM over 15% of the site, soil sampling (20 surface soil and 4 subsurface soil locations), and groundwater sampling (4 locations). Samples will be analyzed for explosives, metals, perchlorate, and tear gas constituents.

Upon completion of PA/SI activities, data evaluation will include screening of analytical data against the following criteria, where applicable:

- EPA residential and industrial regional screening levels (RSLs)
- North Carolina soil screening levels (SSLs), groundwater standards (2Ls), and surface water human health and water supply criteria (2B)
- Ambient Water Quality Criteria (AWQC)

Human health and ecological risk screenings will also be conducted.

The schedule for PA/SI activities was reviewed. The archives search was conducted in July-August 2008 and based on the results; the Partnering Team began work planning at a meeting in August 2008. The Draft PA/SI Work Plan is planned for submittal in November 2008, the proposed field activities are planned in early 2009, and the Draft PA/SI Report is planned for submittal in mid-2009.

IV. Five-Year Review Report Update

Objective: The purpose of this agenda item was to present the objectives and process for the five-year review, discuss the site status for those under review, and provide the schedule. This discussion was led by CH2M HILL representative, Mr. Matt Louth.

Overview: Mr. Louth reviewed the purpose of the five-year review, required under CERCLA, to evaluate the implementation and performance of remedies in-place and determine protection of human health and the environment. The five-year review will be prepared in accordance with guidance and policy, including the Comprehensive Five-Year Review Guidance (EPA, 2001) and Navy/Marine Corps Policy for Conducting CERCLA Statutory Five-Year Reviews (Navy/Marine Corps, 2001). The required schedule is five years from the initiation of the first remedial action.

The process includes identifying sites where remedial actions were conducted, evaluating the protectiveness of human health and the environment, reviewing requirements in RODs, reviewing post-remedy documents and findings, confirming ARARs are met, conducting site visits and inspections to confirm land use, and completing the report. The report will identify any circumstance that may prevent a particular remedy from functioning as designed or provide sufficient protection of human health and the environment.

EPA, NCDENR, and the community are also involved in the five-year review process. Public notices were placed in local newspapers; the Jacksonville Daily news, the Globe, and the RotoVue; to inform the public that the five-year review is being conducted and of this RAB meeting presentation.

The trigger date for the five-year review for Camp Lejeune is based on the initiation of remedial action at OU 1 on September 24, 1993. The first review was finalized in August 1999, the second review was finalized in February 2005, and this next review will be drafted in December 2008.

Mr. Louth reviewed the Camp Lejeune sites under the five-year review. The sites with remedial actions completed include:

- OU 1 (Sites 21, 24, and 78)
- OU 2 (Sites 6, 9, and 82)
- OU 4 (Sites 41 and 74)
- OU 5 (Site 2)
- OU 6 (Sites 36, 43, 44, and 54)
- OU 7 (Sites 1 and 28)
- OU 8 (Site 16)
- OU 11 (Site 80)

- OU 12 (Site 3)
- OU 13 (Sites 63)
- OU 16 (Site 93)
- OU 19 (Site 84)

The sites with interim remedial actions completed include:

- OU 10 (Site 35)
- OU 14 (Sites 69)
- OU 15 (Site 88)
- OU 16 (Site 89)

The background for each site was reviewed as follows:

- OU 1 includes Site 21 (Transformer Storage Lot 140), Site 24 (Industrial Area Fly Ash Dump), and Site 78 (Hadnot Point Industrial Area). The ROD for OU 1 was signed September 1994. Based on the selected remedy identified in the ROD, soil removal actions were completed at Site 21, groundwater treatment is ongoing at Site 78, LTM is ongoing at Sites 24 and 78, and LUCs are in-place at Sites 21, 24, and 78. The last 5-year review indicated that the remedy remains protective.
- OU 2 includes Site 6 (Storage Lots 201 & 203), Site 9 (Fire-Fighting Training Pit), and Site 82 (Piney Green VOC Area). The ROD for OU 2 was signed September 1993. Based on the selected remedy identified in the ROD, soil removal actions were completed at Site 6, soil vapor extraction was completed at Site 82, groundwater treatment is ongoing at Site 82, LTM is ongoing at Sites 6 and 82, and LUCs are in-place at Sites 6, 9, and 82. The last 5-year review indicated that the remedy remains protective.
- OU 4 includes Site 41 (Camp Geiger Dump Near Former Trailer Park) and Site 74 (Mess Hall Grease Dump Area). The ROD for OU 4 was signed December 1995. Based on the selected remedy identified in the ROD, LTM was completed and LUCs are in-place. The last 5-year review indicated that the remedy remains protective.
- OU 5 is Site 2 (Former Nursery/Day Care Center). The ROD for OU 5 was signed September 1994. Based on the selected remedy identified in the ROD, LTM was completed and LUCs are in-place. The last 5-year review indicated that the remedy remains protective.
- OU 6 includes Site 36 (Camp Geiger Dump Area), Site 43 (Agan Street Dump), Site 44 (Jones Street Dump), and Site 54 (Crash Crew Fire Training Burn Pit). The ROD for OU 6 was signed July 2005. Based on the selected remedy identified in the ROD, LTM is ongoing at Site 36 and LUCs are in-place at Sites 36, 43, 44, and 54. The last 5-year review indicated that the remedy remains protective.
- OU 7 includes Site 1 (French Creek Liquids Disposal Area) and Site 28 (Hadnot Point Burn Dump). The ROD for OU 7 was signed May 1996. Based on the selected remedy identified in the ROD, LTM was completed and LUCs are in-place. The last 5-year review indicated that the remedy remains protective.

- OU 8 is Site 16 (Former Montford Point Burn Dump). The ROD for OU 8 was signed September 1996. Based on the selected remedy identified in the ROD, LUCs are in-place. The last 5-year review indicated that the remedy remains protective.
- OU 10 is Site 35 (Camp Geiger Area Fuel Farm). The Interim ROD for soil was signed September 1994 and Interim ROD for groundwater was signed September 1995. Based on the selected remedies identified in the Interim RODs, a soil removal action was completed and in-situ air sparging is ongoing for groundwater. A final ROD is planned in 2009. The last 5-year review recommended evaluation during the next 5-year review.
- OU 11 is Site 80 (Paradise Point Golf Course Maintenance Area). The no further action ROD for OU 11 was signed August 1997. The last 5-year review recommended LUCs for protectiveness based on a former removal action to industrial levels.
- OU 12 is Site 3 (Old Creosote Plant). The ROD for OU 12 was signed April 1997. Based on the selected remedy identified in the ROD, a source removal was completed, on-site biological treatment of PAH-contaminated soils was conducted, and LTM and LUCs were implemented. Pilot study was conducted in 1998 and biological treatment was determined not to be effective. Therefore, an Amended ROD was signed in June 2000. Soil excavation was completed, LTM is ongoing, and LUCs are in-place. The last 5-year review indicated that the remedy remains protective.
- OU 13 is Site 63 (Verona Loop Dump). The ROD for OU 13 was signed April 1997. Based on the selected remedy identified in the ROD, LUCs are in-place. The last 5-year review indicated that the remedy remains protective.
- OU 14 is Site 69 (Rifle Range Chemical Dump). The Interim ROD for OU 14 was signed June 2000. Based on the selected remedy identified in the ROD, LUCs are in-place and LTM is ongoing. The last 5-year review indicated that the remedy remains protective.
- OU 15 is Site 88 (Base Dry Cleaners). Soil mixing for groundwater treatment was completed in 2005. A ROD is planned in 2011. The last 5-year review recommended evaluation during the next 5-year review.
- OU 16 includes Site 89 (Former DRMO) and Site 93 (Building TC-942). At Site 89, thermal treatment of soil was conducted in 2000 and soil mixing for groundwater treatment was conducted in 2008. A ROD is planned in 2010. An Interim ROD for Site 93 was signed in October 2006 and in-situ chemical treatment was completed for groundwater, LTM is ongoing, and LUCs are in-place. The last 5-year review recommended evaluation during the next 5-year review.
- OU 19 is Site 84 (Building 45 Area). The ROD is planned for signature in November 2008. The selected remedy includes soil removal that was already completed and LUCs are in-place. The last 5-year review recommended evaluation during the next 5-year review.

The site visits were completed in September 2008 and inspections with EPA and NCDENR were conducted in October 2008. Public notices were published in local newspapers in October 2008 to notify the public that the 5-year review is being conducted and would be discussed at this RAB meeting. The draft report is planned for submittal in December 2008,

to be finalized in March 2009. After the report is finalized, a public notice will be published to provide notification that it is complete.

V. Next RAB Meeting

Mr. Lowder requested agenda topics for the January RAB meeting. The RAB voted to hold the next meeting on **Tuesday, January 20, 2009 at 6:00 PM**. Mr. Lowder will secure a location for the meeting and send the information to the RAB members.