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MINUTES FOR RESTORATION ADVISORY BOARD (RAB) MEETING HELD ON 11 JUNE  
2015 NAS SOUTH WEYMOUTH MA (PUBLIC DOCUMENT)  
06/11/2015  
RESOLUTION CONSULTANTS



# Naval Air Station South Weymouth, MA Restoration Advisory Board (RAB) Meeting Minutes June 11, 2015

## 1. INTRODUCTION

John Goodrich, RAB facilitator from the Massachusetts Office of Public Collaboration, opened the meeting at approximately 7:00 PM. He requested that all attendees sign-in. The sign-in sheet for the meeting is provided as Attachment A. RAB members provided introductions and affiliations for the record. RAB minutes from the February 12, 2015 meeting were accepted without comment or question.

The June meeting presentation focused on the post-injection groundwater results at the Building 82 site and the on-going pre-injection characterization at the Solvent Release Area (SRA), presented by Paul Dombrowski of Resolution Consultants (Resolution).

## 2. PRESENTATION

Mr. Dombrowski began the presentation with the site background and history. Results from the Remedial Investigation (RI) and RI Addendum identified trichloroethene (TCE) as the primary contaminant of concern in groundwater with a maximum concentration of 25 µg/L detected. Additional contaminants requiring Remedial Action (RA) in groundwater included n-nitroso-di-n-propylamine (NNPA) and 1,1-dichloroethane (1,1-DCA). The NNPA and 1,1-DCA areas were smaller area than the detected TCE plume. In-situ chemical oxidation (ISCO) was the selected remedial action, per the Record of Decision (ROD), in combination with interim Land Use Controls (LUCs) and monitoring of groundwater until remedial goals (RGs) are met.

RA activities commenced in December 2013 with the installation of thirty-one injection points and sixteen monitoring wells focused on the areas of highest TCE concentrations. Baseline sampling was conducted in February 2013 to determine the pre-injection concentrations of TCE. Nineteen locations sampled during the baseline had TCE concentrations below the RG. The maximum concentration detected was 14 µg/L. Concentrations had decreased from the RI to the pre-injection baseline indicating that natural attenuation was occurring in the aquifer. Additional groundwater sampling was also conducted in the areas impacted by NNPA and 1,1-DCA. Groundwater results were below RGs in both the NNPA and 1,1-DCA areas.

Post-injection sampling was conducted 1.5, 4, 6, and 11 months following injection. Additional direct-push groundwater sampling was conducted in April 2015 to further refine the TCE plume and eliminate data gaps. Results indicated that TCE concentrations decreased in the months after the injection, but slightly increased above RGs in the 11-month post-injection sampling event as residual TCE released from the soil back into the groundwater. Current concentrations range between 6-8 µg/L with pockets as high as 13 µg/L. Over the course of 2014-2015 sampling, nine monitoring wells exceeded the RG; however, TCE was detected below the RG in at least one of the monitoring events for eight of these nine wells. Furthermore, TCE concentration trends continue to attenuate and are trending towards the RG. Since the initial sampling conducted during the RI, the average TCE concentration decreased from 11.6 µg/L to 5.1 µg/L and the plume has shrunk from 40,210 ft<sup>2</sup> to 15,930 ft<sup>2</sup>.

The next steps at Building 82 include the completion of a Remedial Action Completion Report (RACR). The purpose of the RACR is to document that permanent injection wells have been installed, ISCO injections have been performed, and monitoring is currently underway. Further actions include a comprehensive

groundwater sampling event at Building 82 in July 2015 and a finalized Land Use Control Implementation Plan to implement temporary LUCs across the site.

**RAB Member:** For clarification, does the Building 82 plume extend beneath Buildings 39, 40, and 41? Is there a second plume beneath Building 15?

**D. Barney:** *There is no plume or contamination associated with Building 15. To the east of Building 15, there is a plume associated with Building 81 which migrates to the west in the direction of Building 15. However, the latest round of data indicates the plume does not extend past Shea Memorial Drive.*

**RAB Member:** Approximately what volume of potassium permanganate (KMnO<sub>4</sub>) was used during the injections?

**P. Dombrowski:** *Approximately 2,000 gallons were injected at ten or eleven injection points. This volume was derived in part from total oxygen demand measurements (in soil) taken prior to the injections. Oxidation is still occurring within the subsurface and may reduce groundwater concentrations to RGs without additional injections.*

**RAB Member:** What are the proposed temporary LUCs?

**P. Dombrowski:** *The LUCs would prevent the installation of any groundwater extraction wells. Also any dewatering plans would have to be approved by EPA and MassDEP. These would remain in place until RGs are met.*

**D. Barney:** *The developer has the property right to use the hangar area. The temporary LUCs would not interfere with potential future use of the physical structure.*

**RAB Member:** Is there an estimate of when RGs will be met at Building 82?

**PD:** *Potentially within 1-3 years. Concentrations are currently 6-8 µg/L and are fluctuating in and around the 5 µg/L RG. It is likely, that natural attenuation over time will reduce concentrations below the RG.*

**D. Barney:** *As a side note, this project is past the investigation phase. The CSM indicated that a release occurred at the transportation garage and entered the storm drain. The storm drain has been cleaned and no longer contributes to the plume. Since the removal of the source, there has been a 50% reduction in groundwater concentrations of TCE.*

**RAB Member:** Is it possible that the property will be transferred before RGs are met?

**D. Barney:** *That is a possibility; however, the Navy has to be certain that RGs will be met in the near future.*

Mr. Dombrowski began the presentation on the Solvent Release Area (SRA) with the site background and history. The SRA is an undeveloped portion of land on the eastern portion of the Base historically used for recreation. Results from the RI identified tetrachloroethene (PCE) as the primary contaminant of concern in both the overburden and bedrock aquifers. The ROD was signed in September 2013 and included several technologies for the remedial action. Enhanced bioremediation was chosen to address the PCE sources in the overburden and bedrock, as well as, permeable reactive barriers to address the downgradient plume. In addition, permanent and temporary LUCs will prohibit residential groundwater use and the installation of supply and irrigation wells. Lastly, long term monitoring will be included to evaluate the effectiveness of the remedial action.

Mr. Dombrowski provided a brief explanation of bioremediation which included a discussion of dechlorination, anaerobic respiration, and the application of carbon substrates. Generally, anaerobic bacteria remove chlorine atoms of PCE and convert them to non-toxic end products. Carbon substrates act as the food source for anaerobically respiring microbes and fuel the dechlorination process.

The source area remediation has been broken into several phases. The Phase I Remedial Design/Remedial Action Work Plan (RD/RAWP) focuses on the northern half of the overburden Target Treatment Zone (TTZ)

and the bedrock TTZ. In a phased approach, Resolution collected site-specific information to pre-characterize the area and then will carry out a two phase injection (sodium lactate and emulsified vegetable oil [EVO]). The sodium lactate is currently being injected and the EVO will be injected six to nine months after afterwards.

**D.Barney: What is the purpose of the six to nine month interim period between injections and what do we hope to occur?**

***P.Dombrowski: Groundwater quality parameters such as dissolved oxygen (DO) and oxidation-reduction potential (ORP) will be monitored to evaluate oxygen consumption, ie: anaerobic environment. Groundwater sampling for total organic carbon, sulfate, and PCE daughter products (TCE, DCE, VC) will be performed at each monitoring well to determine the distribution of the sodium lactate, anaerobic conditions in the TTZ, and effect on dechlorination. The interim period will answer questions as to whether the groundwater conditions, contaminant concentrations, or microbial communities changed. All this information will be used to determine the final design for the second phase of the injections (EVO).***

Twenty-three overburden injection wells and six bedrock injection wells were installed in the TTZs. Competent bedrock was located at depths ranging from twenty feet to over sixty feet below ground surface (bgs). The large difference was likely due to the presence of a fault. Bedrock investigations were conducted (bedrock coring, borehole geophysics, packing sampling, and pump testing) to determine the connectedness of bedrock fractures. Mr. Dombrowski spent several minutes pointing out the exact location of the potential fault on maps and pictures taken from the site.

**RAB Member: Is the water contaminated in wells within the fault?**

***P. Dombrowski: Yes. These wells are part of the TTZ and will be used for injection or monitoring the effectiveness of the injection.***

**RAB Member: Is there a geophysical technology that could further delineate the fault?**

***Curt Weeden: Resistivity geophysical surveys have been conducted at the SRA. Based on the results of the survey, it is estimated that the fault is fifty feet wide (east to west) and extends further south than originally thought.***

Two permeable reactive barriers (PRBs) will be installed within the historic pistol range to intercept and remediate the contaminant plume. The Draft PRB Remedial Design/Remedial Action (RD/RA) Work Plan was submitted in October 2014 and the Draft Final is in the final stages of completion. The PRBs will be installed to top of bedrock and be approximately 145 to 180 feet long and 4 feet wide. The PRB will be backfilled with 50% mulch, 40% pea gravel, and 10% granular activated carbon. The mulch will act as a slow release carbon source and the granular activated carbon will sorb contaminants that flow through the PRB. The installation of the PRBs is tentatively scheduled for summer 2016. The complete SRA remediation schedule is found in the presentation handout in Appendix B.

**RAB Member: How much soil is expected to be removed during the PRB installation?**

***P. Dombrowski: The exact details are still in the design process; however, the basic schematic shows 180'x13'x4'. The PRB installation will be done in segments where small sections are excavated and backfilled. At no point will a 180' trench be left open.***

**RAB Member: The developer is anticipating building walking trails in and around the SRA area. Will this impact the remedial work at the TTZs or the sites of the PRB?**

***P. Dombrowski: The land that encompasses SRA is still Navy property and most likely will not be included in the design of the trails. Prior to the start of any excavation, the Navy will secure the site to prevent trespasser access to the SRA. Trenching activities related to the installation of the PRBs is more of a safety hazard than risk of chemical exposure.***

**RAB Member: Is there an exposure risk for people accessing the trails?**

**PD: Chemical products created during the dechlorination process do not pose any greater risk to residents accessing the area than the current contamination present at the SRA.**

**RAB Member: Will the building of these walking trails impact the location of monitoring wells across the SRA? Will monitoring wells be abandoned if they are in close proximity to the walking trails?**

**D. Barney: The Navy will speak with the developer and ask to review their plans for the trails and any other work in and around the SRA area. Based on this discussion, the Navy will evaluate the scope of work and will likely plan to secure the site. At the present time, the Navy does not plan on abandoning any wells in the SRA.**

**RAB Member: Is the Navy aware of a potential Scout camp being built on-site?**

**D. Barney: If the land has not been transferred, the town, developer, or others will not be able to develop on it.**

**DB: What will the impact be to the land once the PRB is installed at the SRA?**

**P. Dombrowski: A slight mound will potentially be observed and wells will be installed for future carbon injections. Future installed wells will likely be stick-ups.**

## **4. UPDATES**

**Building 81:** The Navy has completed the Draft RD, but is working with EPA and MassDEP to address residual concerns prior to the start of the RA. Many of these concerns relate to the interaction of contaminant flow and subsurface utilities across the site. There were additional comments regarding bedrock fractures which are being addressed in the RA Work Plan.

**Building 82:** This site was the subject of the technical presentation

**Rubble Disposal Area (RDA):** The Navy is attempting to re-FOST the land, but there are still exceedances of methane concentrations from several areas. The Navy would like to further evaluate these gas concentrations before transferring the land.

**RAB Member: The gas vents at the RDA are unsightly. Is there any way to camouflage the well vents?**

**D. Barney: The Navy has no plans to refurbish the well vents.**

**Sewage Treatment Plants (STP):** The main discharge ditch that received contaminated water from the pipes has been excavated, the drainage pipes have been cleaned out and removed, and the site fully restored. The last stockpile of sediment and soil will be shipped off-site next week.

**RAB Member: How far was the ditch excavated?**

**DB: Approximately 50-100 feet was excavated. The Navy will prepare a ROD Amendment based on the changes to the original ROD since some contamination will be left in place and LUCs will be included in the site remedy. The revised wetland boundary, based on the most recent delineation, changed the CSM in the original ROD and was one of the deciding factors in changing the remedy. As part of the LUCs, a monitoring program will be instituted to verify that groundwater and sediment do not become impacted from the disturbances caused by the implementation of the remedial action. Furthermore, sediment and soil in the upland portion of the site, where contamination is present at depth, will be restricted from being disturbed without an approved soil management plan in place.**

**Small Landfill:** Results from the inspection report did not indicate exceedances. Part of FOST 6A1 will be executed shortly.

SRA: This site was the subject of the technical presentation.

West Gate Landfill (WGL): Tree saplings were treated with an insecticide to prevent winter moth damage. The WGL will be included as part of FOST 6A2.

#### Environmental Baseline Survey Sites

AOC 55C: Similar to the WGL, tree saplings were treated with an insecticide to prevent winter moth damage. The removal of the invasive species Multiflora Rose was also conducted during the insecticide treatment.

RIA 11 (AFFF sites): Another round of sampling was completed at the FFTA and a Draft Final Remedial Investigation (RI) Work Plan is being prepared to study the PFC contaminants around Hangar 1. The field work is anticipated to start before road construction for the Parkway road extension begins. Information is being shared with the developer to address construction concerns while still obtaining data needs.

Industrial Operations Area (IOA): The Remedial Action Public Meeting/Public Hearing is scheduled for July 7<sup>th</sup> at 7:00 PM. The work is planned to be a series of discrete excavations and not a large scale excavation.

Old Hangar 2: No additional work is currently planned for the Old Hangar 2.

**RAB Member: Is there a potential the community will need to cross over with the East Mat Ditch using a bridge?**

***P. Dombrowski: It shouldn't be a problem with any of the anticipated work at the SRA.***

**The next RAB is scheduled for October 8<sup>th</sup> at 7:00 PM**