Restoration Advisory Board (RAB) Meeting
Conference Center
U.S. Army Soldier Systems Center
September 28, 2006
DRAFT Meeting Minutes

I. Attendance

RAB Members Present:

Robert Campbell	Massachusetts Department of Environmental Protection (MADEP)
Joel McCassie	Co-Chair, Environmental, Safety and Health Office (ESHO), U.S. Army Soldier System Center (SSO)
John McHugh	Restoration Officer, ESHO SSC
Dr. Kannan Vembu	Representative of Natick Board of Selectmen
Christine Williams	U.S. Environmental Protection Agency (EPA)
Marco Kaltofen	Co-Chair, Community Member
A. Richard Miller	Community Member
Elizabeth McCoy	Employee Member, SSC
Steven Lubic	Representative of Natick Board of Selectman
Neil Osgood	Community Member, Lakewood Association
James Fitzgerald	Community Member

RAB Members Absent:

Dr. Charles Czeisler	Community Member, Lakewood Association
Sid Gantman	Community Member
James Straub	Massachusetts Department of Conservation and Recreation (DCR)
Dr. Harlee Strauss	Community Member

Others in Attendance:

Darren Gainer	Environmental Consultant, ECC
Fred Santos	Environmental Consultant, ECC
Erin Healy	Environmental Consultant, ICF Consulting
Jerry Whitaker	ESHO, SSC PAO
Stacey Greendlinger	U.S. Environmental Protection Agency (EPA)
Jeffrey Pickett	Environmental Consultant, MACTEC Engineering
Steve Reichenbacher	Environmental Consultant, ICF Consulting
Kevin Palaia	Environmental Consultant, ICF Consulting
James Connolly	ESHO, SSC
Michelle Bonanca	ESHO, SSC
Kathy Messom	ESHO, SSC
Ann Marie Desmarais	Environmental Consultant
Maureen Dooley	Regenesis
Debi Heims	Recorder, H&S Environmental

SDMS DocID 505572

II. Handouts:

Agenda
Meeting Minutes from January 19, 2006
Meeting Minutes from April 20, 2006
Federal Facility Agreement

III. Meeting Minutes:

Mr. McCassie called the meeting to order at 7:20 pm and asked if there were any comments, changes or revisions to the April 2006 RAB Meeting Minutes.

The minutes were accepted without amendment.

General Comments:

There were no general comments.

Federal Facility Agreement – Mr. James Connolly

Mr. Connolly provided an update on the status of the Federal Facility Agreement (FFA). The FFA is an agreement between the United States Environmental Protection Agency and the United States Department of the Army for the Soldier System Center (SSC). Mr. Connolly explained that the FFA is a "process document" which sets out a procedure through which policy decisions are developed between the EPA and the Army for Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) sites. The proposed FFA would be referenced and incorporated into any corrective action in any future, or any hazardous waste treatment, storage or disposal permit issued to the SSC. The complete electronic copy of the FFA proposal was sent to the RAB members as a PDF document via email in August 2006.

The FFA sets out the roles, responsibilities and authorities of the parties (or signatories to the agreement) to investigate, develop, select and implement Response Actions for all Releases or threatened Releases of Hazardous Substances, contaminants or pollutants at the Soldier System Center. The FFA includes provisions for dispute resolution, enforceability and reservation of rights. The FFA also includes a Site Management Plan for implementation of cleanup activities, including target dates and enforceable deadlines. The Site Management Plan is reviewed at least annually and modified as required.

Current status of the proposed FFA:

Signed by Garrison Manager on 05 June 2006
Signed by Mr. Davis – Deputy Assistant Secretary of Army on 23 July 2006
Signed by the USEPA Regional Administrator on 02 August 2006

A Public Comment Period is required prior to finalizing the FFA. A Public Notice was published on 03 September 2006 both in the Boston Globe and the Metrowest Daily News. A copy was also provided to the RAB email list electronically. This began the 45-day public comment period. The proposed FFA, including the Site Management Plan, is available for review at Repositories. A second opportunity to review the FFA was this Restoration Advisory Board meeting 28 September 2006. The Public Comment Period closes on 18 October 2006 at 5:00 PM EST.

Mr. Kaltofen asked if the members of the RAB received the copy via email and the response was in the affirmative.

Procedure for Public Comment: Any interested person may submit written comments regarding the proposed FFA during a forty-five (45) day comment period. All written comments on the proposed FFA should include all reasonably available references, factual grounds, and supporting materials. Comments must be received on or before 18 October 2006 at 5:00 PM EST. Written comments are to be sent to:

FFA Comment
U.S. Army Soldier System Center
Environmental Health & Safety Office
IMNE-SSC-EN
Kansas Street
Natick, MA 01760-5049

The SSC has twenty-one days after the close of the public comment period to assemble comments and send them to the EPA. Within 30 days of transmittal, the Army and the US EPA will review all comments and decide either that the FFA shall be made effective without any modifications or the agreement shall be modified in accordance with FFA Section 35 prior to being made effective. If the Army and the USEPA agree then the FFA will be made effective without any modifications. The USEPA will transmit a copy of the signed FFA to the Army and will notify them in writing that the FFA is effective. The effective date of the FFA is considered the date of receipt of the signed FFA from USEPA. If, however, the Army and the USEPA agree that modifications are needed, FFA requires that both parties shall agree upon the modifications and amend the Agreement by mutual consent within sixty (60) days after the expiration of the public comment period. The EPA in consultation with the Army will determine whether the modified agreement requires additional public notice and comment pursuant to any provision of CERCLA.

There were no comments at this time.

Remedial Optimization Study in the T-25 Area Interim Update- ICF Consultants Erin Healy

Handout

Ms. Healy began by stating that the objective of the Remedial Optimization Pilot Scale Study was to evaluate the effectiveness of in-situ biological enhancement for groundwater cleanup.

Status of the investigation: The first task was a microbial survey. It was done to determine if there was a natural presence of the microorganism Dehalococcoides in the aquifer. Dehaloccoides plays a vital role in breakdown (dechlorination) of PCE and TCE. The next step was a preliminary groundwater sampling event to understand what current contamination conditions exist in the study area. Ms. Healy commented that the 1996 and 2000 historical data was presented at the April RAB meeting. In order to get current data, six new small diameter wells were installed in the area where the highest concentrations for PCE and TCE data existed from the MW 96B area. Ms. Healy showed two graphics around the MW96B demonstrating the areas of the PCE and TCE contamination. The results from this latest groundwater sampling even demonstrated that the up-gradient results were significantly lower then the 1996 and 2000 data.

The injection of Hydrogen Release Compound (HRC®) program began the week of September 25, 2006 and was estimated to take one week. The injecting program took into consideration slight penetration into the lower silt layer. The injection gallery covers 1,600 square feet with 24 injection points. The injecting program covers the vertical interval of 87 to 107 msl which is the elevation where the contamination is found in the T25 area. This is approximately fifty feet below the water table, with clean water above. A shallow water table monitoring well was installed between the HRC® injection area and nearby residences (to the east) to monitor for vinyl chloride. MW96B extraction well, between the injection zone and residences, will be turned off during the study. There will be quarterly monitoring at the 9 shallow and deep wells following the HRC® injection.

Mr. Vembu asked how the dosage of Hydrogen Release Compound (HRC®) was determined.

Mr. Steve Reichenbacher of ICF responded that the dosage was determined based upon a few factors including the mass of chlorinated solvents, the sulfate and nitrate content of the soil matrix and HRC® being an electron donor. The goal was to be sure there was enough coverage for well distribution.

Ms. Maureen Dooley of Regenesis added that after the evaluation of the chemistry data, there was more then enough electron donor and lymphatics to reduce the amount of volatiles present. She added that there was probably more product injected than was absolutely needed to reduce the chlorinated solvents.

Ms. Healy continued with the second portion of the presentation: The Evaluation of Vinyl Chloride. Vinyl chloride is an intermediate byproduct in the reductive dechlorination of TCE and PCE. It is degraded by microbial action under oxygenation into ethane. At the T25 area, the concentrations for TCE and PCE are low. HRC® is being injected fifty feet or more below the elevation of the water table. The water table is approximately 32 feet below grade. The nearest residences are approximately 140 feet east of the HRC® injection gallery. The residences are hydraulically upgradient during the test conditions.

The Fate and Transport of vinyl chloride was evaluated. Ms. Healy commented that if vinyl chloride is formed in groundwater, it will be hydraulically downgradient of the HRC® injection gallery. Residential homes are located approximately 140 feet hydraulically upgradient of the HRC® injection gallery. So if any vinyl chloride was produced in groundwater at the injection gallery, and if it migrates in groundwater, it would migrate away from residences. It would also be captured in the capture zone of the extraction wells where it will be treated. Therefore, vinyl chloride should not migrate in groundwater from the injection gallery upgradient to the residences.

If vinyl chloride is present in groundwater, it may enter the vapor phase and move into the vadose zone, which is the unsaturated zone above the water table. It would migrate vertically upward along the pathway of least resistance. As the sands and silts get coarser as you approach the ground surface, the preferential pathway would be vertically upward for any vinyl chloride gas produced. Thus, The Fate and Transport Analyses indicates that vinyl chloride will migrate vertically through the increasingly course sands of the vadose zone and vent into the atmosphere.

Mr. Miller asked if vinyl chloride only travels with the water rather then through the water.

Ms. Healy responded yes.

Mr. Kaltofen commented that the first portion of the presentation was reasonable on the migration of the vinyl chloride in groundwater but the vinyl chloride in the soil-vapor interface is not reasonable because it will follow path of least resistance for a gas. It doesn't have to follow the groundwater path.

Mr. Miller asked if there was a tendency for it to dissipate, for example into standing water.

Ms. Healy responded no.

Ms. Healy commented that a comparison was also made to MaDEP GW-2 Standards which are set to be protective of potential vapor intrusion into structures. She commented that the standard applies to ground water contamination located within 30 feet of a structure with a depth to ground water less than fifteen feet. In this case the residences are approximately 140 feet from the potential source area and at the residences, the ground water is approximately 32 feet below the grade. The GW-2 Standards would not be applicable to this situation.

Mr. Kaltofen asked if the GW-1 Standards would apply.

Mr. Campbell of MaDEP stated that with regard to vapor intrusion, the GW-2 standards are specific to looking at penetrations into vadose spaces and their proximity of contaminates to dwellings. He also commented that there could be more than one standard that could apply under some circumstances.

Mr. Kaltofen asked if there were more than one, would that include GW-2?

Mr. Campbell responded affirmatively.

Ms. Healy stated that there are the following precautions in place: The extraction well network capture zone will contain and treat any vinyl chloride that is produced in the HRC® injection area and also downgradient of the injection area. The ground water will be monitored for vinyl chloride at the nine wells on a quarterly basis following HRC® injections. An additional, shallow well was installed at the water table between the HRC® injection gallery and the closest residences.

Dr. Vembu asked how did you figure the concentration of vinyl chloride in water at the vapor phase intrusion worst case scenario?

Ms. Healy said that they did some calculations, running it through the Johnson and Ettinger (J&E) model to look at risk of vinyl chloride as vapor intrusion and there was no significant risk. There was no model done to model the vapor phase concentrations.

Mr. Kaltofen commented that looking at two vectors of movement for vinyl chloride; it seems that soil vapor transfer is more likely than ground water transport. So if soil vapor transport is more likely, why are they not doing monitoring of the soil vapor concentrations?

Ms. Healy responded that a Fate and Transport Evaluation was performed and the results of the evaluation indicated that the chances of vinyl chloride migrating either by soil-gas or water are extremely slim.

Mr. Kaltofen added that the transport soil gases would be upward where as groundwater is opposite and away from the residences. Soil vapor monitoring is clearly less expensive then modeling. The soil vapor tests are more integrated and less likely to have errors or omissions. He commented that the soil vapor analyses get a larger measurement and is cheaper then putting in the monitoring wells.

Mr. Fitzgerald stated that this was brought it up at the last meeting.

Mr. McHugh stated that the vapor phase sampling might be cheaper but the laboratory analysis of vapor samples is not. Mr. McHugh also questioned the accuracy and repeatability of vapor-phase sampling.

Ms. Healy commented that one of the unknown factors is that they don't know if there will be any measurable levels of vinyl chloride in the aquifer. There are wells both upgradient and down gradient of the injection zone where they will be sampled for vinyl chloride. Vinyl Chloride will be apparent initially in the aquifer before it can migrate.

Mr. Campbell stated that at his last staff meeting he did raise concerns about the soil gas. But then they looked at all of the parameters, including the low concentrations of TCE found in the source area in the ground at the present time. They took into consideration the generation of vinyl chloride from the low TCE concentrations, and the time of travel, and decided that the risk was not significant. The conclusion was that most of the vinyl chloride that would be generated will dissipate within the vadose zone very close to the injection gallery verses migrating.

A RAB member was concerned that it was not the GW-1 Standards.

Mr. Campbell stated that the GW-1 standards are not relevant to risks associated with soil vapor and indoor air. The GW-2 standards are mentioned because they are risk based accepted concentrations in this state. The results are derived in part, by following the concentration of the flow of something in groundwater into a joined area. The GW-1 standard is not necessarily risk based and is applicable to drinking water and not applicable to superfund sites. He commented that if it did show up in the extraction well around 30 for PCE and 22 for TCE and it all converted to vinyl chloride it would pose a risk. If we see it we will do something. There is a QA Plan that has been reviewed and approved.

Mr. Kaltofen requested that soil vapor be tested.

Mr. Fitzgerald added that there are a lot of homes in the area.

Mr. Connolly said that the work plan included requirements to periodically sample groundwater. If vinyl chloride were detected in groundwater, SSC then would evaluate additional sampling, including possibly sapling of soil gas.

Mr. Kaltofen asserted that groundwater sampling has a negative bias error.

Mr. Connolly stated in order for vinyl chloride to show up in soil vapor 140 away, it would need to first show up at significant concentrations in the intermediate groundwater, in concentrations far above the non-detect level.

Ms. Healy said that ICF ran a EPA-approved J&E model that takes into consideration the concentrations of vinyl chloride in the groundwater, the distance to the receptor and its potential

risks, the model indicated that the quantity of vinyl chloride needed to be about 250 mg/l in groundwater before the vinyl chloride would pose a risk to indoor air. This concentration in groundwater is readily detectable by the methods proposed in the work plan. Also, this concentration is higher than the highest concentration of TCE and PCE detected in the study area.

Mr. Connolly amplified that even if the total mass of TCE and PCE in the study (currently at concentrations less than 100 ug/L) were instantaneously converted to vinyl chloride, the J&E model indicated that the resultant vinyl chloride concentration in groundwater would be well below the concentration required to pose any risk in indoor air. He also noted that the HRC provides a nutrient source for a slow biological degradation process, and that instantaneous conversion to vinyl chloride was highly unlikely. Also, the biological degradation was occurring in the B-level of the aquifer and that the shallow water table aquifer above this area was not contaminated. In order for vinyl chloride to reach the vadose zone, it would have to diffuse upward and eastward, at least partly against the flow of groundwater in the shallow water table aquifer in significant concentrations and diffuse through the vadose zone. The shallow water table well at the fence line was intended to be an earlier and more sensitive monitoring location for vinyl chloride. Finally, Mr. Connolly reiterated that SSC has the ability to restart MW-96B recovery well and rapidly terminate the optimization study by pumping the HRC and vinyl chloride out of the ground should there be any indication of a problem.

Mr. Kaltofen expressed continued concern about the laboratory's ability to detect vinyl chloride in groundwater.

Ms. Williams suggested that EPA laboratory provide a quality assurance spike sample to be analyzed by the laboratory to verify their ability to detect relevant concentrations of vinyl chloride.

Mr. McHugh agreed to have such a sample analyzed.

Mr. Kaltofen will await the results of the analysis with interest.

Building 14 and Former Building 13 Removal Action- ICF Consultants Kevin Palaia

Handout

Mr. Palaia presented a status update of Building 14 and Former Building 13 Removal Action. He said that Building 14 and former Building 13 are in the southwest corner of T25 Area. Mr. Palaia's handout included an aerial photograph of Building 14 and the Former Building 13 locations. Former Building 13 remains are a ten foot by ten foot concrete pad. The photograph also demonstrated the soil boring locations, surface soil sampling locations and monitoring wells that were installed over a number of years.

History of the buildings:

Building 13 was built in 1954. It was used in the past as an incinerator for classified paperwork. Other uses were pesticide mixing, vehicle washing. It was closed in the 1980's and dismantled.

Building 14 was built in 1954. It was used for vehicle and equipment maintenance. Other uses were heavy equipment storage, vehicle refueling, metal parts and brush cleaning. The upper levels were used for administrative office space.

Site Status: In 2003 and 2004, the Army performed a site investigation (SI). Geophysical surveys were completed to identify underground utilities, sewer lines, steam lines, 14,000 volt electrical line, and storm sewer lines. There was on-site field screening analysis performed for petroleum hydrocarbons in soils. Twenty-six soil borings were installed and eighty-two sub-surface soil samples and seventeen groundwater screening samples were collected from the water table and sent for off-site laboratory analyses for a full suite of analyses including volatiles, semi-volatiles, metals analyses, pesticides, PCBs. Twenty-six surface soil samples were collected ranging in depth from 0-6" to 3 ½ feet. As a result of the groundwater screening samples, three additional permanent monitoring wells were installed and surveyed and are currently being sampled on a quarterly basis as part as the site-wide groundwater sampling program. As a result of the site investigation, contaminated surface and subsurface soils were discovered. The Army prepared an Action Memorandum in September 2005 which stated the Interim Removal Proposal for the excavation of soil. A Final Removal Action Work Plan was prepared in July 2006.

The Planned Removal Action: An initiate start date is planned in October 2006. The removal action clean up level is the MCP S-1/GW-1 Standards which are soil standards based upon residential exposure. There are two separate areas to be excavated:

- Surficial soil at Former Building 13, one foot deep approximately 175 cubic yards determined by analytical results. The contamination in this area is primarily PAHs with some pesticide and metal contamination.
- Subsurface soil south of Building 14, up to fifteen feet deep or approximately 600 cubic yards. The contamination in this area is primarily PAHs.

The Former Building 13 concrete foundation will be demolished and removed. Confirmatory soil samples and waste characterization sampling will be performed as part of the removal action to ensure that the S1/GW-1 clean-up goals are met. If there are areas of soil that continue to exceed those levels, then more excavation will occur. The waste characterization sampling will be done to determine the disposal characteristics of the soil and demolition debris. All excavated soils/debris will be transported to an off-site treatment and disposal facility. The type of facility will depend on the waste characterization sampling. There is no reason currently to believe that it is hazardous waste. The concentrations of contamination do exceed the S1 criteria but not to the degree of hazardous amounts. The final step will be to backfill each of the excavations with clean soil and to restore site to its original state which is either repaving or reseeding. Following the completion, a Removal Action Completion Report will be written.

Mr. Campbell asked if the plan is to excavate until meet the clean up goals.

Mr. Palaia responded yes.

Mr. Connolly clarified the response, commenting that the area was heavily lined with utilities and the excavation would continue as far as it could be done safely.

Proposed Groundwater Remediation ESD - Status Update – ECC Darren Gainer

Mr. Gainer identified himself as the Project Manager for ECC. ECC is teamed with MACTEC for the groundwater treatment project. The objective is to contain the two previously identified plumes and to connect them with the existing groundwater treatment system. The scope consists

of containment. The groundwater extraction system that is currently in use at T-25 will also be used at these two additional areas.

Overview: Mr. Gainer showed a graphic discussing two areas of concern, the Buildings 2 and 45 area and the Buildings 36 and 22 area. He also pointed out the T25 area on the diagram. He commented that PCE concentrations have been detected near the Lake and beneath Building 36.

Mr. Gainer described the second area Buildings 63, 2 and 45 had a more defined plume of VOCs near the shore of the lake. Additional monitoring wells are proposed to monitor the effectiveness of the existing extraction wells.

Mr. Gainer stated that they plan to use the same extraction well plans as before following the path of least resistance, but due to the street being full of utilities, the proposed design/piping will be re-routed. The plan is to run piping along the outside parameter of the buildings following the contour of the shore line but back far enough from the water to for the most part avoid the 100 foot buffer zone. He commented that there is an Erosion Control Plan that has been approved and is in place.

Mr. Gainer showed a graphic discussing Buildings 22 and 36. He said that they are currently obtaining new data from the existing extraction wells. Mr. Steve Young of Tsunamic Technologies, who did the original groundwater model, will provide a new model to help capture of plume for placement of the new extraction wells. He commented that they have re-routed the piping around the outside edge of the buildings to avoid the dense utility network in the road to get back to the T-25 area and to the existing groundwater treatment plant in Building 94. The schedule work for extraction wells should begin in October 2006 with the system working scheduled for February 2007.

Mr. Vembu asked if the system was designed to handle that much piping.

Mr. Gainer responded that piping was not an issue but that the system is designed to handle the anticipated volume of additional water flow. He commented that all the seven proposed extraction wells would add a cumulative additional flow of about 35 gpm. Currently, the existing system is running about 60 gpm but is designed to treat about 135 gpm. He stated that if necessary, there was also money in the budget to upgrade the system to handle any additional flow.

Mr. Fitzgerald asked when you are digging, are you testing for any soil samples?

Mr. Gainer responded that the planned route for the pipes was not identified as a source of contamination, but they would be keeping visual observations. There also will be the appropriate OSHA protocols such as measuring the organic vapors within the breathing zone, and trench safety.

There were no additional questions or comments.

Public Comment Section

Mr. Miller commented that in the spring it was discussed that floating circulators can be used as one alternative for combating the E. Milfoil in South Pond. The Massachusetts DCR has historically been treating the lakes with chemicals to combat the milfoil problem. For years, there has been a group opposing chemical treatment in Lake Cochituate. He commented that the

drinking water comes from the north end of South Pond. The Natick Conservation Commission took action and placed restrictions on the State. There will be a Quarterly Report on November 2, 2006.

Mr. Miller explained that there are two different versions of the floating circulators. The Canadian floating circulators are smaller and have been on three dozen ponds with good success. The state was offered two free circulators from each company. SolarBee was accepted by the state and the expected installation date was October 18, 2006. He stated that one circulator would go in South Pond on the west side of the lake, and the other would be placed in Middle Pond. Measurements are currently under way comparing data before, during and after the circulators are installed and operating. Both manufactures state that they can set their system so it won't affect the sediment. The State has hired an independent peer review group from Tufts University who will study, measure and provide an overview on the circulators. He stated that Dudley Pond, north of Lake Cochituate, has had a longer history of this same problem. At the Fall Wayland Town Meeting, they will be asked to buy the other smaller size circulator from Canada to utilize it at Dudley Pond.

Mr. Miller continued that the other alternative for this problem are the milfoil weevils which are tiny aquatic insects that eat and kill Milfoil. The data indicates that they are indigenous to approximately ½ the native lakes including lakes in Canada. One of the Canadian Scientists believes that the circulator actually may increase the growth rate of milfoil weevils. The study team from Tufts University was trying to get an idea where the milfoil weevils populate. The State has cut this study out of the budget but has asked Cochituate Sate Park Advisory Committee if they would fund it.

Mr. Miller concluded with the comment that the lake looked low. Besides from low rain fall, the upper Cochituate dam had been opened. It was a mistake and he was concerned that it may have some ramifications on some of the Natick measurements or groundwater sampling.

Mr. McHugh requested to set dates for upcoming meetings. The proposed dates are as follows:

Thursday, November 30th –RAB Meeting
Thursday, January 18, 2007 – RAB Meeting
Thursday, April 12, 2007 – RAB Meeting

Meeting was adjourned at 8:50 pm