

Joint Base McGuire-Dix-Lakehurst (JB MDL)
Restoration Advisory Board (RAB) Draft Meeting Minutes
Meeting No. 49 – 12 March 2015

SUBJECT: Restoration Advisory Board (RAB) Meeting No. 49 – Meeting Minutes

1) Place: Edward Holloway Senior Citizen Community Center, 5 Cookstown Browns Mills Road, Cookstown, New Jersey

2) Date/Time: Thursday, 12 March 2015; 6:30 PM

3) Co-Chairs: Lt Col Ivory Carter, Deputy MSG Commander, JB MDL
Mr. Michael Tamn, Resident, Pemberton Township, New Jersey

4) Attendees:

Mr. Frank Storm	RAB Member
Ms. Theresa Lettman	Pineland Preservation Alliance, RAB Member
Mr. Tom Besselman	RAB Member
Ms. Carla Struble	US Environmental Protection Agency, Region II
Mr. Doug Pocze	US Environmental Protection Agency, Region II
Mr. Haiyesh Shah	New Jersey Department of Environmental Protection
Mr. Philip Cole	New Jersey Department of Environmental Protection
Mr. Chris Archer	JB MDL, 87th CES, Deputy Base Civil Engineer
Mr. Curtis Frye	JB MDL, AFCEC/CZO, Chief, Environmental Restoration Program
Ms. Nicole Brestle	JB MDL, AFCEC/CZO, Environmental Restoration Program
Mr. Michael Figura	JB MDL, AFCEC/CZO, Environmental Restoration Program
Mr. King Mak	JB MDL, AFCEC/CZO, Environmental Restoration Program
Tsgt. Brian Skibe	USAF
Sgt. Chris Bates	JB MDL, 87 ABW Bioenvironmental Engineering
Mr. Tim Llewellyn	ARCADIS
Mr. Tom Crone	ARCADIS
Ms. Denice Nelson	ARCADIS
Mr. Mike Bolen	Leidos
Ms. Katrina Harris	Bridge Consulting Corp./ARCADIS
Mr. Mark Tucker	CB&I
Mr. Alex Carnivale	Burlington County Resident
Mr. Tom Dobinson	PARS Environmental

5) Handouts

- JB MDL Restoration Advisory Board, Meeting No. 48, 13 November 2014, Draft Meeting Minutes
- JB MDL Restoration Advisory Board, Meeting No. 49, 12 March 2015, Agenda
- JB MDL Restoration Advisory Board, Meeting No. 49, 12 March 2015, Presentation Slides
- JB MDL Restoration Advisory Board Member Information Handout, List of Documents Provided to Mr. Tamn as of 12 March 2015

6) Call to Order:

The meeting was called to order by Lt Col Ivory Carter, the JB MDL RAB Co-Chair, who welcomed everyone to the meeting. Mr. Curtis Frye, Chief, Joint Base McGuire-Dix-Lakehurst Environmental Restoration Program, also welcomed everyone and reminded the Board that the meeting was being recorded for the purpose of preparing minutes.

7) Minutes of Previous Meeting and Review of Agenda Items:

Mr. Michael Tamn, RAB Co-Chair, asked for a motion to approve the minutes from the 13 November 2014 RAB meeting. There was a motion made to approve the minutes which was seconded and unanimously approved.

8) Review of Action Items, Update to RAB Handbook, and Program Updates:

Mr. Frye addressed an action item from the September 2014 meeting where Mr. Tamn had inquired about a plane crash in the early 1970s at the end of the McGuire runway. Mr. Frye stated Mr. King Mak had distributed information at the November 2014 meeting and had conducted additional research since that meeting. Mr. Mak distributed an article he found from the Burlington County Times dated 12 October 1970 with details of an incident fitting Mr. Tamn's description. Mr. Tamn confirmed this was the incident he remembered. Mr. Tamn asked if there had been an article in the Philadelphia Inquirer, and Mr. Mak said he would conduct additional research and update Mr. Tamn prior to or at the next meeting.

Mr. Frye advised a basewide Preliminary Assessment is being conducted for perfluorinated compounds; which EPA has identified as emergent contaminants. He noted these man-made compounds are ubiquitous and used in products such as Teflon; he said the compounds are the main component of Aqueous Film- Forming Foam (AFFF) which was used to fight fires at airfields around the country starting in the 1970s. Mr. Frye stated all DoD services are engaged in evaluating sites where AFFF was used to determine if there is an issue, most likely in groundwater. He said the assessment includes looking at former crash sites so the newspaper article just discussed will be shared with the contractor. Mr. Frye noted more information will be provided at a future RAB meeting as the assessment progresses.

Mr. Frye discussed the updating of the RAB Handbook which contains fact sheets, the Community Involvement Plan, and the RAB Standard Operating Procedures (formerly referred to as the RAB charter). He stated he would be working with ARCADIS over the next few months to update the Community Involvement Plan and would welcome any input from the Board. He said one suggestion might be to have a link on the base web site for the RAB where minutes and membership forms could be posted. He noted another item where input would be helpful would be whether to try and expand the Board's membership. Mr. Frye said a draft update would be distributed for review and input.

Mr. Frye said the RAB Charter has been in draft form for some time, and he has been working to get signatures to finalize the document. He noted in conversations with EPA, the New Jersey Department of Environmental Protection (NJDEP), and Mr. Tamn, they have decided that perhaps the best approach is to revise the title to the "RAB Standard Operating Procedures (SOP)" and

remove the signature portion. The RAB would then review the SOP and on them at a meeting so it is reflected in the minutes. Mr. Frye invited the RAB to let him know their thoughts or concerns. Mr. Phil Cole asked if a change was needed would there need to be another vote, and Mr. Frye said yes.

Mr. Frye discussed the Dix Basewide Five Year Review which is required by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) where hazardous substances or contaminants remain at a site above levels that allow for unrestricted use. He noted this would be the first Basewide Five-year review; historically the sites at Dix have received Five-year reviews individually. Mr. Frye referenced a figure in the handout showing the 12 sites which include CERCLA sites and State petroleum sites. He explained the purpose of the Five-year review is to ensure the remedy remains protective and is operating as intended, to determine if the assumptions originally used are still valid, and to review any new information that could call into question the protectiveness of the remedy.

Mr. Frye displayed tables showing all the sites and the previous Five-year reviews. He noted the State sites are required to be included in Five-year reviews per DoD and Air Force policy.

Mr. Haiyesh Shah noted that the Air Force has done biennial reviews of land use controls and asked if these would continue. Mr. Frye responded that they will continue every two years. Mr. Shah suggested where possible they be incorporated into the Five-year reviews, and Mr. Frye agreed to work with Mr. Shah on this suggestion. Mr. Frye advised the biennial reviews are being done under the ARCADIS contract, but the Air Force intentionally made a decision to have another contractor do the Five-year reviews. He noted this is a standard practice across the Air Force. Mr. Frye advised the US Army Corps of Engineers, Baltimore District, is conducting this Five-year review in-house without contractor support. He advised the Lakehurst Five-year review contract was just awarded to EA Engineering and that report is due in 2016.

Mr. Frank Storm asked if the most current regulations are used during the Five-year review or the ones in place at the time of the remedy. Mr. Frye responded generally a qualitative review of the current standards is done, and then they are compared to the remedy; if there has been a change, a risk management decision is made in coordination with EPA and NJDEP as to whether that change would affect the remedy. Mr. Doug Pocze agreed with Mr. Frye's statement. Mr. Frye noted the Record of Decision and remedial goals also are reviewed.

Mr. Frye showed a list of the major components of the Five-year reviews and noted community involvement is an important part of the review process, including interviews and newspaper notices. He advised the report would contain any recommendations for ensuring the remedy remains protective.

Mr. Frye displayed the schedule for the Five-year review with the final report scheduled for September 2015.

9) Joint Base McGuire-Dix-Lakehurst Performance Based Remediation Contract (PBR)/Potential Remediation Technologies:

Mr. Llewellyn began his presentation by stating he had given an introduction on ARCADIS and the performance-based remediation contract at the last meeting and had spoken about some of the technologies included in ARCADIS' proposal to the Air Force. He stated the presentation tonight would look more closely at those remediation technologies and why ARCADIS thought they would be applicable to the Joint Base sites.

Mr. Llewellyn gave a brief introduction to the contract.

- ARCADIS' 10-year PBR includes 104 sites across JB MDL. Request for Proposals required achievement of Minimum Performance Objectives and encouraged bidders to propose Stretch Goals to exceed the minimum objectives and drive the sites to Site Closeout or as close to that phase as possible.
- ARCADIS' technology assessment included a Plan A and a Plan B, a back-up plan, as required by the Air Force.
- ARCADIS' analysis resulted in 58 sites selected for Site Closeout (complete cleanup to unrestricted use), 32 sites selected for Response Complete (some restrictions on future land use), 13 sites that will not be taken to Site Closeout during the contract period and will require an Optimized Exit Strategy (a roadmap for the government to get the site to closure after the end of the contract), and 1 site (EPIC-8 Landfill) that will have long-term management only.
- ARCADIS' project execution plan and planned project management includes an assigned project management team and a technical specialist team. Mr. Llewellyn introduced Ms. Denice Nelson, ARCADIS' technical team leader, to discuss the proposed technologies.

Ms. Nelson discussed ARCADIS' technology evaluation process:

- The evaluation process looks at design considerations (compatibility with contaminants present at a site, site conditions, and can the technology be scaled to the site), project objectives (client objectives, regulatory drivers, and risk management), and costs (short-term and long-term). All these considerations and more go into selecting a technology for a site.
- Technology evaluation involves looking at contaminant phases, including whether there are aqueous masses, non-aqueous phase liquids, or significant sorbed mass present as these all behave differently and certain technologies will remediate better than others.
- Chemical properties are another key component in evaluating technologies including solubility, vapor pressure, Henry's Law (how likely a contaminant will leave water and get into the air), organic carbon partitioning, and speciation of metals.
- Another aspect of technology evaluation is consideration of the compatibility with the targeted compounds at a site and consideration also is given to whether it will be a

physical (air sparging), biological (degradation), or chemical (oxidation) removal process.

- For JB MDL, the general Plan A technologies proposed were air sparge/soil vapor extraction, multi-phase extraction, and natural attenuation, and the general Plan B technology was chemical oxidation.
- Soil vapor extraction addresses contaminants in the vadose zone, the part of the aquifer above the groundwater table. This technology is an example of physically removing contaminants which have a high vapor pressure. Pilot testing is important to make sure there is enough air flow and correct spacing between extraction wells. This technology also is effective at mitigating vapor intrusion.
- Bioventing is a modified version of soil vapor extraction and has a lower air flow rate. The intent is to enhance biological removal in the vadose zone and is not physical removal.
- Air sparging is sometimes coupled with soil vapor extraction. With this technology, air is pushed into a well, bubbled through the system, and stripped out of the groundwater; the vapor phase mass is remediated through the soil vapor extraction technology. This technology is proposed for several petroleum sites and several sites where chlorinated solvents are present.
- Biosparging is a variation on soil vapor extraction and involves gentler introduction of air; it is more oriented towards petroleum sites.
- Multi-phase extraction is proposed for a non-aqueous phase liquid site where trichloroethylene (TCE) is present. With this technology, an extraction well is put into the sub-surface and physically extracts the groundwater into a treatment train. ARCADIS will be doing a pilot test of this technology.
- Monitored natural attenuation is being considered for several sites and consists of a number of mechanisms including biodegradation, diffusion, dilution, sorption, and volatilization. Two lines of evidence are used when looking at whether there is natural attenuation at a site. The primary line of evidence is whether there is a decrease in chemicals in the monitoring wells which can be analyzed in several ways including plume maps over time, mass flux, and trend analysis. Mr. Shah asked what type of trend analysis would be used. Ms. Nelson responded that typically regression analysis is used, along with Mann Kendall. Mr. Shah noted Mann Kendall is EPA's preferred method, but the State of New Jersey's requirement is Mann Whitney. Geochemistry is the secondary line of evidence and considers how the contaminant is breaking down; for example, for chlorinated solvents, whether daughter products are being detected.
- In situ chemical oxidation is a possible technology which involves injecting an agent into the ground out to some radius of influence where chemical destruction will occur.
- Technologies were proposed based on contaminant properties, contaminant phase, and compatibility. Pilot testing will be conducted at several sites to verify design

parameters. The resulting data will be used to recommend final remedies. ARCADIS will work with the regulators and the community for final selection and implementation of the selected remedies.

10) BOMARC Site Update:

Mr. Llewellyn stated he and Ms. Nelson would be giving a brief update on the BOMARC Site including the proposed technology and pilot test and the schedule.

- The BOMARC Site is located on the boundary between Dix and Lakehurst, adjacent to the Colliers Wildlife Management area. The 218-acre facility is inactive. Groundwater containing TCE has moved off-site into the Colliers Mills Wildlife Management Area and there have been impacts to surface water. The Site was an anti-aircraft missile facility operational between 1958 and 1972.
- The TCE originated from two former source areas and entered the sub-surface groundwater. TCE has moved with the groundwater flow up into surface water, Success Branch, at very low parts per billion in the surface water.
- An interim action pilot test was installed in 2013, a zero valent iron barrier wall. The wall was installed downgradient to see if it would treat the TCE prior to the groundwater discharging to Success Branch. Two years of testing shows the technology is not working well. The NJDEP has commented on the Feasibility Study and indicated they have concerns about source control which has not been addressed by the remedy and receptor protection.
- ARCADIS is proposing to move away from the current technology to an air sparge barrier. ARCADIS' goal is to reach remedy in place in four years. An Optimized Exit Strategy will be needed as ARCADIS does not expect to reach Site Closeout before its contract expires. ARCADIS is planning additional investigations in the next few months and pilot testing an air sparge barrier system to meet the goals for the site.
- Mr. Storm asked if there are any plans to restrict access to the Colliers Mills Wildlife Management Area. Mr. Llewellyn said there are no such current plans as the groundwater is below the surface, and the contamination entering the surface water is below recreational risk concentrations.
- Mr. Tamn expressed concern about the contaminants moving into the stream, and the time it is taking to remediate. Mr. Llewellyn said ARCADIS has made this site a high priority and will be moving as effectively as possible. Mr. Cole added there are wetlands present, and care needs to be taken in implementing any remedy to not damage the wetlands.
- Ms. Nelson reviewed the Conceptual Site Model and Source Control. She explained it is not a traditional source in terms of a non-aqueous phase mass but absorption of the TCE onto the peat and slow dissolution off the top. ARCADIS' evaluation of the site recommended obtaining a better understanding of the dissolution of TCE back into the groundwater to more effectively predict timeframes and develop an effective remedy.

- The lithology of the site is sand under the aquifer, under which there is peat, and underlying the peat another layer of sand. The thickness of the peat varies across the site; however, previous time frame estimates for the remedy assumed the peat was the same thickness and continuous across the site.
- The remedial investigation projected the TCE to discharge to the sand from the peat for about 150 years; the Focused Feasibility Study showed a range up to 1,000 years. The existing Conceptual Site Model assumes the TCE is traveling through the peat at some flow rate which resulted in the estimated time frames. ARCADIS' evaluation showed it is unlikely the TCE is traveling through the peat and coming out into the lower sand layer; it is more likely the TCE is sorbing off the top of the peat. ARCADIS' additional investigations will provide information to better define what is occurring and to project better time frames for remediation.
- ARCADIS will be installing three new nested groundwater monitoring wells and performing vertical conductivity testing and groundwater sampling at various depths. ARCADIS conducted a site visit earlier in the day to determine the best locations for the wells where there would be least amount of disruption to vegetation by the drill rig. ARCADIS anticipates only removal of small shrubs and not any trees. Ms. Lettman asked if any roads would have to be installed, and Ms. Nelson said not for the type of rig that will be used. Ms. Lettman stated the property is not Air Force property, and any access is an impact to the land, and Mr. Llewellyn said the team was very mindful of this in internal discussions and would like to discuss further with Ms. Lettman as plans move forward.
- Mr. Storm asked if there is any radioactivity in the area. Mr. Llewellyn said he was not aware of any evidence of radioactivity. Mr. Cole stated there was a study done by the USGS in conjunction with NJDEP which determined there was no radiation in the groundwater.
- ARCADIS will be performing an air sparge pilot test. Activities will include assessing the alignment of the barrier, vertical aquifer profiling, and examining the lithology to see if there is significant peat present. The pilot test will determine the radius of influence and the optimal injection flow rate to remove the TCE from the groundwater. The pilot test will be conducted away from the current barrier so to not be influenced by the current barrier.
- ARCADIS will prepare a new draft Feasibility Study which will address applicable comments from NJDEP on the previous Focused Feasibility Study. ARCADIS will evaluate what type of source remedies is possible and move forward towards final remedy selection with the regulators and community with implementation as soon as possible.
- Mr. Llewellyn reviewed the project schedule noting fieldwork will take place in April and May. A final Feasibility Study is targeted for April 2016, followed by a Proposed Plan in October 2016 and a Record of Decision in May 2017. Mr. Pocze asked if the Proposed Plan and Record of Decision would have both the Plan A remedy and the Plan B remedy, and Mr. Llewellyn responded it most likely would include both.

- Ms. Nelson displayed a chart summarizing the field activities she had discussed.
- Mr. Tamn asked about sampling of the stream and the monitoring well on the other side of the stream. Mr. Llewellyn said the wells on the other side of the stream have been non-detect for the contaminants, and Mr. Cole confirmed the sampling shows the contaminants have not been moving pass the stream. Mr. Llewellyn said he would check on the stream sampling data and provide the information to Mr. Tamn.
- Mr. Tamn asked if anything could be done to speed up the remediation. Mr. Llewellyn reiterated the site is a high priority, but is one of the more complicated sites. He said anything ARCADIS can do to accelerate the work will be done; however, the science and engineering takes a long time and the regulatory process needs to be followed.

10) Public Comments:

- Mr. Tamn invited public comments and none were offered.

11) Meeting Adjourned:

- Mr. Tamn asked for a motion to adjourn the meeting. A motion was made, seconded and unanimously passed to adjourn the meeting at 7:56 PM.
- The next RAB is tentatively scheduled for 7 May 2015.