



NAVAL AIR STATION JOINT RESERVE BASE (NAS JRB) WILLOW GROVE Restoration Advisory Board (RAB) Meeting Minutes RAB Meeting No. 43

Meeting Date: September 29, 2010

Meeting Time: 6:00 p.m.

Meeting Place: Horsham Township Public Library

	<u>Name</u>	<u>Organization</u>
Attendance:	Rick Meyers (R)	RAB Member
	Liz Gemmill (R)	RAB Member
	Jim Vetrini (R)	RAB Member
	Bill Walker	Horsham Township
	Bob Lewandowski (R)	Navy, BRAC PMO
	Jeff Dale (R)	Navy, BRAC PMO
	Bill Heil (R)	Navy, Willow Grove
	Marty Schy	Navy, Willow Grove
	Hal Dusen (R)	Navy, Willow Grove
	Charles Clark (R)	PADEP
	Jessica Kasmari (R)	PADEP
	Richard Frattarelli	PA Air National Guard
	Lisa Cunningham (R)	EPA
	Scott Shaw	Tetra Tech
	Russ Turner	Tetra Tech
	(R) Designates RAB Member	

Bob Lewandowski opened the meeting, thanking everyone for coming to the 43rd Restoration Advisory Board (RAB) meeting.

Mr. Lewandowski mentioned that the Navy has no formal announcements tonight and it looks like the meeting won't be terribly long. Everyone here is probably aware that the Base will be operationally closing next year. However, our work in the BRAC (Base Realignment and Closure Office Northeast) will continue beyond that. The Navy BRAC office will still be here continuing to do our cleanup, working with our partners at EPA and PADEP continuing to get this facility cleaned up and ready for transfer.

With the change in the facility disposal plan after the Pennsylvania governor dropped plans to take over the Base for the proposed Horsham Joint Interagency Installation, the property disposal process is a bit behind schedule. The Navy just recently published the public notice of availability of approximately 892 acres of property. That triggered the process for the Horsham Land Reuse Authority (LRA) to begin their planning process. Now the Horsham LRA will develop a formal reuse plan so the Navy can perform activities and prepare documentation such as the EIS (Environmental Impact Statement) required under the National Environmental Policy Act. So there is a pretty long time frame ahead and things that will be needed in addition to the

cleanup realm we have been involved in for years. In a way, that is good because it takes the pressure off of us a little bit as we continue to move forward. Hopefully, if everything works out right, we should be completing our Base cleanup-type work about the same time the other property transfer efforts and documentation reaches the finish line. Are there any questions or comments about Base closure or anything?

Ms. Gemmill asked if how clean the Navy has to leave the land depends on what the LRA decides to do with the land? Mr. Lewandowski replied that in past rounds of BRAC, it was established that the government would clean up to the level required by the reuse plan that was supposed to have been developed by the Reuse Authority in conjunction with the Navy or other service. For the current round, BRAC 5, the law was changed to say that the services can clean up to whatever standard applied according to prior land use. For example, if the land was in industrial-type use, the service can clean up to an industrial standard. But really what we hope is that we'll be able to work with the LRA when they are putting together their plan to make good common sense decisions. For instance, if you want to keep some open spaces, we could say this (location) would be a great place to do it, because this (location) is probably not a good place environmentally that you would want to put houses. So if we work together, I think hopefully we can come up with a good integrated plan that will make everyone happy. Mr. Meyers asked if any of our RAB members are also part of the LRA? Are we sharing knowledge for quasi-togetherness so each group knows what the other is talking about? Now is the chance for the township to not to worry about the zoning in Warrington anymore. Ms. Gemmill agreed that would be a win-win situation in her personal opinion if TEVA were to come here. Ms. Gemmill and added that she and Joanna Furia (also a RAB member) are both part of the LRA environmental subcommittee, but they really haven't had any meetings because of the governor's plan for the Base. Mr. Lewandowski concluded when the land reuse process begins, he hopes we can contribute a lot to that effort and inform the LRA of the condition of the property so that good sound decisions can be made that will benefit all involved. Mr. Meyers asked about the land to be transferred. Is it the entire Base minus the Army (reserve center under construction) and the (PA Air National) Guard? Mr. Lewandowski and Jeff Dale explained that several parcels were removed from disposal through the federal screening process. Rich Frattarelli explained that the parcel requested by the Air National Guard includes 20 or 30 acres adjoining their property: including the land adjacent to the Air Force ramp for ATF and setback, a triangular piece including the Navy Child Care center, the Navy main gate entrance and traffic circle, the water treatment plant, the sewer plant, and the public works facilities along Seasprite Avenue. Mr. Lewandowski added that about 20 acres have already been transferred to the Air Reserve for use by the Army to construct the new Army Reserve Center stipulated by BRAC. Mr. Meyers asked if there is anything about the liquid oxygen (Lox) facility, remaining in operation in the Army Reserve construction area, which will require looking into? There's not going to be any findings of any problems there in the groundwater, nothing going on? Mr. Lewandowski explained that there were two sites in that vicinity, Site 1 – Privet Road Compound and Site 10- the old Navy fuel farm. At Site 1, there was a PCB contamination in soil that was removed a number of years ago. There was a No Further Action ROD signed for Site 1 soil in September of 2007. There was also an interim ROD signed for Site 1 groundwater that

requires periodic monitoring by the Navy because the contamination is under Navy property. Groundwater contamination was actually coming from off of Navy property, so the monitoring of groundwater will be shifted to someone else as part of the larger remediation scheme for the off-Base property source. That will be discussed by EPA later. The Navy had done a remediation at the Navy fuel farm and obtained PADEP approval for no further action as long as the fuel farm was in place. Now that the Army decided to take over the site, the Army has been dealing with the Pennsylvania DEP to see if any additional sampling is needed to be done as those facilities were being demolished. We thought that everything was cleaned up there, but could never confirm it because we didn't want to damage the containment structures. Jessica Kasmari mentioned that PADEP has reviewed some soil samples, but not under the tanks. Now we believe that the tanks are gone, but we have not seen any (new soil) results from under the tanks yet. Mr. Meyers asked if we, the Restoration Advisory Board, are going to be here after next year? Mr. Lewandowski explained that the RAB will continue. We've said from the beginning after BRAC that there would be a purpose for the RAB for some time after closure of the Base. Mr. Dale added that we are still meeting with the Warminster RAB, and that Base closed in the (mid-) 1990's. Mr. Frattarelli added that RAB members might be interested to note that under the new construction at the Army Reserve site, the Privet Road compound landfill basically has been almost completely removed. It is now a storm water retention basin. In the process of excavating for the retention basin, the contractor excavated out all of that debris that was under that very large area and has removed it in roll-off dumpsters for disposal off the site. So it's probably cleaner that it ever was. Mr. Lewandowski asked if there were further questions then introduced Lisa Cunningham of the EPA to discuss the first Agenda item, the Site 1 off-Base groundwater source investigation.

Ms. Cunningham mentioned that after a partnering meeting of the project managers in June, she requested to be placed on this RAB meeting agenda to talk about the (Site 1 off Base source investigation) document. Unfortunately she just received the document and has not had a chance to review it. However, EPA has made copies of the report for anyone who wants one; it's the reassessment report for the (former) Kellett Aircraft Corporation. The last page of the report includes a summary and conclusions of the report; I would like to make copies and distribute those. Copies of the report on compact disk are on the table by the door. I will distribute these copies tonight. If anyone has questions, they can give me a call or I will refer them to the RPM (EPA remedial project manager) assigned to the site, Charlene Creamer. If anyone wants a copy, and they are all gone before the end of the night, just give me your name and I can e-mail it or I can send you a copy on DVD. Mr. Lewandowski and Mr. Dale added that the summary and conclusions from the reassessment report could be added to the meeting minutes as an attachment.

Mr. Clark mentioned that he had just received the report also, and had forwarded a copy to the PADEP project officer, and asked if they (the report authors) came to any conclusions or is there any further work to be done? Mr. Turner mentioned that he had read the report and concluded that it seems to confirm expectations of an off-Base groundwater contamination source. Mr. Lewandowski and Ms. Cunningham agreed that it does seem to confirm what we suspected all along. Ms. Cunningham added that she

will be reviewing the document along with her hydrogeologist and toxicologist from EPA. If anyone else has comments, send them in. Ms. Cunningham will forward the comments to the EPA RPM for the Kellett site. Ms. Cunningham concluded by stating that we've only had the report a week or so. We'll look at it, provide comments and recommendations, and at the next RAB meeting I'll be able to tell you what happened.

Mr. Lewandowski mentioned that the next agenda item is the Site 1 remedial design for land use controls for Site 1 groundwater. If you recall, it was about a year ago, we signed the ROD for Site 1 groundwater. And we mentioned a few minutes ago that we didn't believe that the contamination was originating from the Navy; that it was actually originating off-Base; but because it exists under our property, we had to take an action. Fortunately for us, the action at this point, because the levels are low, is monitoring and also making sure that the groundwater is not used untreated. So we prepared this document, which we call a remedial design. It used to be called a land use control implementation plan. It has two components; groundwater use restrictions to prevent use of untreated groundwater in an area that was established in the ROD; and the second component is review of the site conditions every five years to ensure that the land use controls are still effective. Also required by the ROD, although not in the land use control remedial design, is biennial groundwater monitoring. Every two years the Navy is responsible for monitoring the groundwater and reporting those results. We already did our first groundwater monitoring last September. So two years from last September we'll be due for our next groundwater monitoring event.

The land use remedial design requires us to annually provide an inspection report on whether or not the land use controls are still protective. We did the first annual inspection in July of this year and obviously they are still effective. So we'll be putting out an inspection report every year on that. Any questions? (No response.)

Mr. Lewandowski stated that in previous RAB meetings, the Navy informed the group that EPA and the Navy agreed to a no further action ROD for Site 2 we were getting ready to sign. PADEP concurred, so the document was signed by the Navy, followed by EPA on June 17th this year. The Navy is required to publish a public notification that will appear next Wednesday in the Intelligencer advising that the ROD has been signed and that it's available for review. The notification of ROD availability should be similar in format and location, placed in the general news section as our RAB meeting notices, so you'll recognize it when you see it.

Mr. Lewandowski introduced Jeff Dale to give a summary of Site 5 bioremediation. Mr. Dale began by summarizing some of the procedures underway in the groundwater pilot test that we've discussed in past RAB meetings. We injected sodium bicarbonate to adjust the aquifer conditions and sodium lactate to provide food for bacteria. As we reported in the past, we were able to get the conditions right for biodegradation, but the population of bacteria that are particularly able to destroy these contaminants, were not increasing as we had hoped. The next step we discussed at the last RAB meeting was that we were going to inject bacteria. We injected a mixed culture of bacteria that we call DHB (dehalobacter) and DHC (dehalococcoides) on July 14th. Eric Lindhult who is not here tonight is interested in knowing the supplier of the bacterial suspension. It was purchased from a company called Sirem, located in Canada. The product is called KB-1 Plus. The "Plus" is specifically this DHB bacterium that degrades the

particular contaminant that we have. We injected about 26.5 liters of the bacterial suspension into the recirculation cell in the same manner that we injected the food, and we let it sit for five days with no recirculation according to the suppliers recommendation to allow the bacteria to get used to their new home before beginning recirculation within the test cell July 19th for about two weeks. Groundwater samples were collected August 16th to evaluate results.

Mr. Dale presented a series of slides (copies attached) and gave a detailed summary of the results showing that things seem to be going very well. In some wells, concentrations of the primary contaminant, TCA (trichloroethane) went down as its first daughter product went up. We see that not only in the test cell, but also in adjacent wells. So we know we not only distributed the sodium lactate food well, but we spread the bacteria around well also. A similar trend can be seen in many of the wells. Our big concern at the site was that the TCA inhibited the function of the other bacteria that needed to break down daughter compounds. Referring to the projected slides, Mr. Dale summarized how the Navy collected groundwater samples and put them through a very fine filter and sent samples to the lab, like CSI, to look at the DNA and calculate the corresponding population of bacteria. As the TCA is consumed, the bacteria that eat it become less prevalent and the concentration of bacteria that prefer the TCA daughter compounds increases. We think that trend is very positive and we're thinking the pilot test is a pretty good success. The process seems to be occurring a little slower than I've seen at other sites, but it's mostly due to the fact that we have a relatively large test cell and the contaminant concentrations are relatively low. I've conducted these tests in much smaller areas where you get faster results, but we really think it's going to work.

We just got these slides together yesterday. So this is the first EPA and the state have seen these slides. We will share the results with EPA and PADEP, and hopefully they will agree that the pilot test is successful and will degrade these compounds. Then we can move to formalizing the preferred remedy in a proposed plan and record of decision. That's our plan to move forward. Mr. Dale asked if anybody has questions?

Mr. Lewandowski added, so the contamination breaks down from one compound to the next, then a different set of the bacteria take over? Mr. Dale replied yes, for the new (daughter) compound that's created. As Kevin Kilmartin pointed out at the last RAB meeting, there was one important specific gene called the VC (vinyl chloride) reductase gene missing before addition of the new bacterial strains. Now that gene is present and is destroying the vinyl chloride that was created. So the bacteria are thriving and doing their job. Mr. Clark mentioned that Jessica Kasmari had asked if you have seen a lot of VC already? Mr. Dale replied that very limited amounts of VC had been detected. Mr. Clark added you're still very early on in the process, so that it is a good sign. That looks good. From what I've seen on other sites, it looks like you guys are working in the right direction. (There were no further comments.)

Mr. Lewandowski announced that our next presenter is Scott Shaw from Tetra Tech. He's going to be giving an update on the Air Force's petroleum cleanup. Mr. Shaw used the projected slide to remind the group of the site location on the northern border of the Base near where the stream goes down through Graeme Park. We are here to talk about work at the POL site, the compliance groundwater monitoring program, operation of our biosparge system, and some

confirmation soil sampling we've done. Our current groundwater monitoring facilities include 12 monitoring wells. As a reminder, the leak, took place in the late '70s. It's been a persistent issue at the Base since then. Over the last year, beginning let's say in October of last year going through June this year, we detected none of the petroleum constituents of concern in groundwater above the statewide health standards. Last fall was we had a number of groundwater sampling events where we detected some lead in a couple of the monitoring wells. The Air Force installed three new wells to measure background concentrations of lead. Tonight we can report that since then, we started taking lead samples there and out in the POL area, we haven't detected lead anywhere. When we were detecting lead previously, it was slightly above the statewide health standard at 5 parts per billion. We had a few 6s and few 7s, just enough to provide some concern about lead. But since this sampling program for lead began, we haven't found any dissolved lead at all.

Our current treatment system is what you call a biosparge system. You inject oxygen into groundwater to stimulate growth of natural bacteria in the ground to degrade hydrocarbons. The injection wells are basically very small wells with bubblers at the bottom to provide a constant stream of air into the treatment unit to increase the dissolved oxygen in groundwater and to stimulate destruction or mineralization of petroleum hydrocarbons. Throughout that network of wells, we monitor water levels to make sure our wells aren't above the water table. Referring to a projected slide, Mr. Shaw called attention to the fairly steady decline in the water table anywhere from 6 to 8 feet across that field from March to mid-September. Treatment areas were designated A, B, C, D, through H. The tanks are to the south. We have completed treatment in Area H and Area G. We are at the end of the nine-month treatment period in Area D and we just started treatment in Area E. In that process, we collect groundwater samples approximately every month for the first three months, again at six months, and again at nine months should we feel at the six-month period that additional treatment is necessary. Groundwater is flowing in a direction pretty much to the north, north-northwest. And by and large, most of the water discharges to the creek.

The thing that's consumed a lot of our time in the last six months has been the preparation of a report associated with the right-of-way remedial action that was carried out in the fall of 2008 and the summer of 2009. In March of 2010, we prepared a report and submitted it to PADEP for review. In May, we received comments back on that report and then requested some additional confirmation soil sampling from the area that we excavated. We were asked to collect soil from the sidewalls of that excavation area. To do that, we prepared a work plan, and received review and approval from PADEP on that work plan. The work plan included installing soil borings and collecting soil samples, two soil samples from each boring. The borings were done using a portable drill rig. Each of the 40 borings was lithologically screened and the conditions were logged. Right now the results of our sampling effort are under review by the Air Force. We expect to submit a report to PADEP by the end of October 2010. Mr. Shaw finished by using a series of slides to summarize the treatment, excavation and sampling efforts performed and asked for questions.

Mr. Meyers asked if they replaced all of the gas lines that were supposedly deteriorating (from the contamination). Mr. Clark clarified the question, saying he thought the question was about the contaminants in the area (from the Air Force), adding that he

didn't think the contaminants were ever connected to the degradation of the piping, were they? Mr. Shaw replied that the answer to that question has not been given to us, but it has been implied. Mr. Dale asked about the groundwater samples. Samples from all twelve monitoring wells currently met the standard but treatment is only started in certain areas. Does that mean that groundwater is clean, but there just might be some residual product in the soil? Mr. Shaw agreed, saying that back in 2001, we completed a site wide characterization sampling of approximately 100 soil borings across the POL area, off-Base and on-Base. By that time the spill was already 20 years old, we found at approximately the center of each of these areas evidence of free product and associated contaminated groundwater. One of the other things that's happened over that now 30 years is we've gone through cycles like this past summer, where you have normal groundwater conditions for some time, and then because of lack of rain it plummets and then it's going to go up again and goes down again. You get that free product smeared over this zone. Another thing that can happen is it can stop at one level for quite a while. If there's free product there, you can have a zone where it's held in place for a while and then it can become trapped below the water. So the idea that the contamination is everywhere across that site is shown not to actually be the case in that you can actually go out to a few locations where contamination was found, as in the instance of these borings (referring to an earlier slide), then move over a hundred feet and not have anything. For every one of these borings (showing contamination), there were five or six more borings (that did not encounter contamination). Mr. Shaw added that each one of these treatments areas has a monitoring well in it. We have noticed in each of these areas reduced quality of groundwater, to a certain extent above MSCs. We do not stop treatment until those concentrations have dropped below the MSCs.

Mr. Lewandowski mentioned that Air Force presentation wraps up the planned presentations for the night.

Bill Walker introduced himself as the new Horsham Township Manager, mentioning that he hopes to be coming to these meetings, and that since earlier in the meeting, there were some questions about the LRA (Land Reuse Authority), he wanted to give an update (on LRA status). With the Navy's declaration of surplus recently published in the newspaper, the LRA members are starting to get busy again. We were just over at the Base on September 15th meeting with Marty Schy. Marty gave the whole LRA board another tour of the Base on the 15th. It had been about four years since they had a tour of the Base. So then, as you're all aware, on September 16th the Navy declared a surplus. The LRA is working on their advertisement for their outreach meeting and NOI (notice of interest), which is due to the LRA by March 16th. And it looks like they're trying to nail down locations, times, and dates for their outreach meeting, which will probably be held in December sometime. As I mentioned, the LRA members are getting active again. In October, there will be one of what will be routine monthly public meetings on the third Wednesday of each month, at 3 o'clock p.m. in the township building. When there's a reason to, for instance an issue or a topic where a lot of the public would like to be coming out to the meeting, they will have evening meetings, most likely at our community center behind the Township Building. Also, the Horsham LRA website is becoming more active again now. If you haven't signed on, www.hlra.org, there is a

location on there where you can sign up for e-mail alerts. So they've had some interest the last few days. They've been publicizing all their meetings, advertisements, and what's going on via the Web site. So that's a good way to keep in contact with what the LRA is doing. Mr. Lewandowski replied that sounds great. We appreciate you coming to our meeting and we're looking forward to being able to contribute to the reuse planning and certainly are willing to sit down with you or the Horsham LRA at any time. When the process begins, we'd be happy to sit down and spend some time and go through with your planners basically what our situation is here and try to come up with a plan that's going to be the best for all of us. Mr. Walker responded that as was mentioned earlier, it is a long process. We look at this whole process to be two or three years and probably most likely won't have a consultant planner on board until December or January 2011. Mr Lewandowski summed up saying, certainly anything that the Navy can contribute in the meantime, please feel free to call on us. We'll be happy to do that.

Mr. Lewandowski requested input to set the date for our next RAB meeting. In the Agenda, the proposed date is September 2010. That's a little bit soon. After discussion considering individuals personal preferences and availability, January 19, 2011 at 6:00 p.m. here in the Horsham Township Public Library was selected for the next meeting.

Mr. Clark spoke up before the meeting adjourned to mention that this will be his last RAB meeting. He has transferred to a biologist position within PADEP. It has been a pleasure working with everybody here. I honestly couldn't think of a better group to be doing this sort of work. Lots of good work gets done here. It has been a pleasure. Tim Sheehan, our unit supervisor, who has been responsible for this site before, will be taking over, at least temporarily, probably until a new project officer can be named. Mr. Lewandowski thanked Mr. Clark, saying we enjoyed working with him and that we really appreciate everything he had brought to the team. Mr. Lewandowski thanked everyone, wished all a good night and reminded everyone to drive carefully. The meeting adjourned.

**NAS JRB
WILLOW GROVE**

**RESTORATION
ADVISORY BOARD
(RAB)**

September 29, 2010
Meeting Number 43

Agenda

- Welcome Community RAB Members/Announcements
- Site 1 Off-Base Groundwater Source Investigation
- Site 1 Remedial Design for Land Use Controls
- Site 2 – Record of Decision Signed
- Site 5 – Fire Training Area Groundwater Pilot Investigation Update
- Air Force Petroleum Storage Tank Clean-Up Status
- Closing Remarks

Site 1 – Off-Base Groundwater

US ENVIRONMENTAL PROTECTION AGENCY
LISA CUNNINGHAM

**Site 1 – Remedial Design for
Land Use Controls**

- Annual inspections are required by the interim ROD for Site 1 Groundwater
- Groundwater sampling and analysis is required every two years
- RD for LUC Work Plan was approved by all parties and distributed in August 2010
- First inspection performed this summer – No noncompliance issues were found
- Inspection report will be distributed

**Site 1 Land Use Control
Groundwater Monitoring**

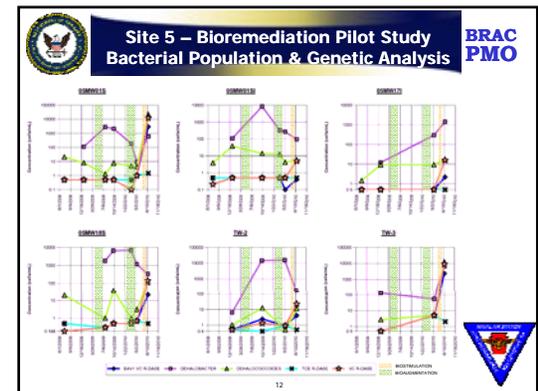
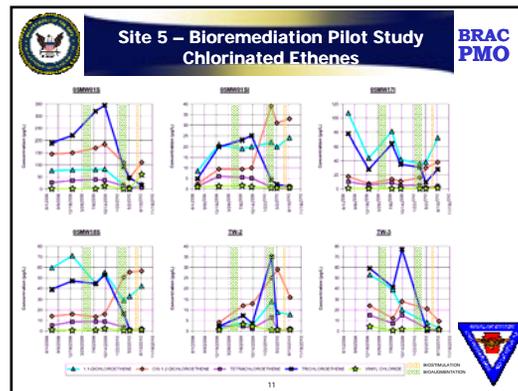
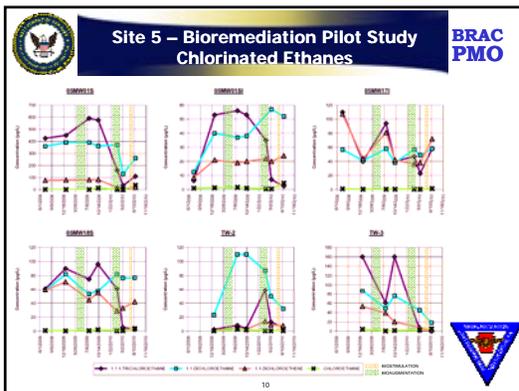
SITE 1 - PRIVET ROAD COMPOUND

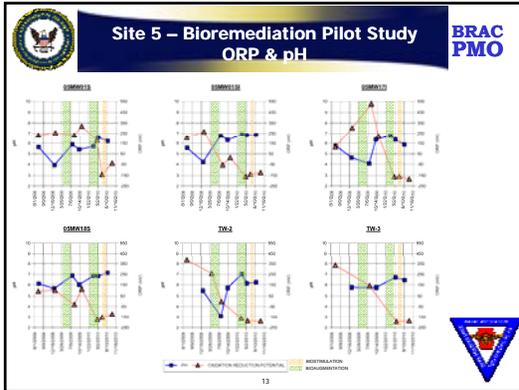
**Site 2 – Antenna Field Landfill
Record of Decision**

SITE 12
SITE 2



- Site 5 – Fire Training Area Groundwater Pilot Investigation Update**
- Bioaugmentation phase underway July 14th, 2010
 - Mixture of bacteria Dhb and Dhc added to "reactor unit"
 - Reducing conditions persist
 - Neutral pH
 - Very low dissolved oxygen
 - Negative ORP
 - First post-injection monitoring event August 16th, 2010
 - Preliminary data looks promising
 - Absence of VC reductase gene corrected





Air Force Reserve
Petroleum Clean-UP

BRAC PMO

POINT OF CONTACT

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- NAS JRB Willow Grove**
RAB Meeting 43
- BRAC PMO
- Closing Remarks
 - Questions or Comments From The Community?
 - Next Meeting Date (Proposed Date December __, 2010)
- 15

NAS JRB Willow Grove
RAB Meeting 42

BRAC PMO

THE END

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Willow Grove ARS, PA
Restoration Advisory Board Meeting
Air Force Reserve Command- POL Site (ST-01)

Wednesday September 29, 2010




Overview

- Compliance Groundwater Monitoring Program
- Biosparge System Operation
- Confirmation Sampling

Compliance Groundwater Monitoring Program

- Groundwater Sampled from 12 Monitoring Wells
- Results of the Last Four Quarterly Sampling Events
- October 2009 – June 2010 No Detection Above State-Wide Health MSC
- Lead Background Results



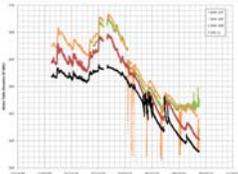
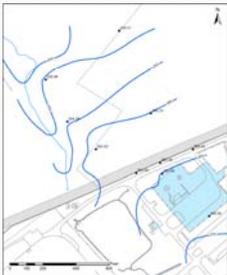
Biosparge System Operation

- Site-Wide Characterization Event (2001)
- System Designed to Address Dissolved Groundwater Contamination
- Provide Oxygen to Native Microorganisms that Degrade Petroleum Hydrocarbons




BioSparge System Progress

- Treatment Complete in Areas H and G
- Treatment Wrapping-Up in Area D
- Treatment Underway in Area E
- Performance Monitoring
- Water-Level Monitoring

Confirmation Sampling Event

- Completed as a Follow-up to the Right-of-Way Remedial Action
- Prepared PADEP (Act 2) Approved Sampling Plan
- Collected Soil Samples from the Side Walls of the Excavation Areas
- Two Samples at each Location
 - PID Screen of Entire Soil Column
 - Surface Soils (<2 ft)
 - Deeper Soils (>2 ft)
- Lithologically Logged Soil Conditions
- Results Currently Under Review by the Air Force
- Expect Submittal to PADEP by the end of October

Confirmation Sampling Event



Questions

7.0 SUMMARY AND CONCLUSIONS

The former KAC site is located at 1250 Easton Road (a/k/a State Route 611) in Horsham Township, Montgomery County, Pennsylvania, immediately to the east of the former Willow Grove Naval Air Station. The KAC facility produced aircraft components from 1956 to 1988.

Two drinking water wells located at the former WGNAS/JRB and the nearby Horsham public supply well No. 10, have historically contained detectable concentrations of PCE and TCE. Previous investigations of the WGNAS/JRB property have confirmed that these compounds originate from an off-site source. An analysis of groundwater flow and bedrock orientation conducted by USGS for WGNAS/JRB and the surrounding area indicated that the groundwater flow direction is in the northerly direction from the site.

The purpose of this RA was to determine whether the former KAC facility is a potential source of the groundwater contamination identified in the nearby WGNAS/JRB wells. To make this determination, HGL collected groundwater, surface water, sediment, soil, and soil gas samples from locations at the property based on past site use, site reconnaissance observations, and inspection of historical aerial photographs. The sampling plan also included sampling of private drinking water wells in the immediate vicinity of the site; however, the downgradient private well which has historically contained TCE and PCE contamination was not sampled because the property owner did not grant HGL access for the sampling event.

During the RA soil samples were collected from 14 potential source areas. At six soil boring locations where groundwater was encountered, a groundwater sample was collected. At the other eight soil boring locations, a soil gas sample was collected. Two off-site background soil and soil gas samples were collected. Additionally, two upgradient drinking water well samples and two collocated surface water samples and one sediment sample were collected. Appropriate QA/QC samples including field blanks, MS/MSDs, trip and equipment rinsate blanks were collected. All samples were shipped to the appropriate CLP laboratory for VOCs, SVOCs, and metals analyses.

Analytical soil results have identified residual PCE contamination east of the detention basin and near the former roofed drum storage area. Cis-1,2-dichloroethene, a daughter product of PCE and TCE, also was detected in the sample collected east of the detention basin. Moreover, PCE was detected in a soil gas sample at an elevated concentration exceeding 39000 $\mu\text{g}/\text{m}^3$ from the former spill area located behind the building along the northeast corner indicating that this area may be a potential source at the site. TCE was not detected in any of the subsurface soil samples but along with PCE was detected across the site in the soil gas samples indicating potential off-gassing from groundwater. Based on the subsurface soil analytical results there appears to be limited VOCs soil contamination remaining on the site. Based on the 2009 RA subsurface soil and soil gas analytical results the site can not be definitively excluded as a source of PCE and TCE contamination in the WGNAS drinking water wells. A VOC groundwater release from an on-site source also may be occurring;

however, further groundwater sampling would need to be conducted to verify that an on-site release is evident or an upgradient VOC source is yet to be identified.

Based on the on-site historical information, hydrogeological conditions, and the on-site analytical results the primary receptors of concern appear to be municipal and private wells located in a northerly direction (downgradient) from the Kellett site. The aquifer of concern in the site and vicinity is the Stockton Formation and is the potable water source for the several municipalities, WGNAS/JRB, and local residents in the site area. The Stockton Formation is composed of three members and all are thought to be interconnected with wells throughout the site area drawing water from one or more of these members. The formation is composed of well-developed joints and is highly faulted, thus allowing contamination where it exists to move both laterally and vertically across the area and potentially contaminating drinking water wells. It has been documented that the WGNAS/JRB wells and other downgradient municipal wells are contaminated with PCE, TCE and their daughter products. Based on this information the groundwater pathway is the major pathway of concern.

Based on available data a minimal threat is thought to exist for the surface water pathway because of the lack of ecological receptors and the one known surface water intake that exists along the Neshaminy Creek is greater than 10 miles downstream of the site. A potential food chain threat may exist at the downstream Hankin's pond if edible fish are consumed. PAH and metal contamination has been identified historically and during the 2009 RA that may be transported to the pond during major storm events.