NAVAL AIR STATION JOINT RESERVE BASE (NAS JRB) WILLOW GROVE
Restoration Advisory Board (RAB) Meeting Minutes
RAB Meeting No. 57

Meeting Date: June 10, 2015
Meeting Time: 2:00 p.m.
Meeting Place: Horsham Township Public Library

	Name	Organization
Attendance:	Bill Walker	Horsham Township
	Willie Lin (R)	Navy, BRAC PMO (Co-Chair)
	Brian Helland (R)	Navy, NAVFAC
	Marty Schy	NAS JRB Navy Caretaker's Office
	Jim Rugh	NAS JRB Navy Caretaker's Office
	Lisa Cunningham (R)	EPA
	Bruce Beach (R)	EPA
	Karen Johnson	EPA
	Colin Wade (R)	PADEP
	Jessica Kasmari (R)	PADEP
	Andrew Frebowitz	Tetra Tech
	Lt Col Jackie Siciliano	Horsham Air Guard Station
	Keith Freihofer	Air National Guard
	Richard McCoy	Air National Guard
	MSGT Chris Botzum	PA Air National Guard
	Mike Geiger	United States Army Reserve
	Tina O'Rourke	Horsham Water and Sewer Authority
	Mark Marotta	Montgomery Media
	Eric Stahl	Weston Solutions
	Carl Maxiell	Resident
	Drew Penglase	Resident
	Steve Boymel	Resident
	Daniel DeCosta	Resident
	Rich Garber	Resident
	Mike Cirilo	Atlantic American Fire Equipment Co.
	Shawn McLaughlin	Resident
	Carol Harding	Resident
	Chester Kratz	Resident
	John Mola	Resident
	Arnold Hagerty (R)	Property Owner
	Jackie Suchodolski	Resident
	Nicole Taylor	Resident
	William P. Morrison	Resident
	Tim Frederick (R)	Property Owner
	Joan Humphreys	Resident

Sue Mitchell	Resident
Mary Liz Gemmill (R)	Community Co-Chair
Lori Cervena	Resident
Jim Ventrini (R)	Resident
Leo Palau	Atlantic American
Lynn Davis	Resident
Marie LeFebvre	Resident
Debra Clauser	Resident
Leigh Birkbeck	Resident
Marguerite Birkbeck	Resident
Ana Prieto	Interested party
Harvey Coon	Resident
Tim Ward	Rep. Todd Stephens Office
Shannon Johnson	Resident
Katie McMahon	Resident
Kevin McNeil	Resident
Amber Eberz	Resident
Bill Rothert	Resident
Carl Polichetti	Resident
Dan Myers	Resident
Colleen Parese	Resident
Joe Fanelli	Resident

(R) Designates RAB Member

Willie Lin, the Navy's Base Realignment and Closure (BRAC) environmental coordinator and RAB Co-Chair, opened the meeting by greeting the attendees. Mr. Lin acknowledged Mary Liz Gemmill (RAB Co-Chair) and Dick McCoy (Air Force/Air National Guard) as present. Mr. Lin indicated that announcements for this meeting were mailed out in May 2015 and posted in the local newspaper, the Horsham Land Redevelopment Authority website, the Horsham Township website, and the Navy's BRAC website.

Mr. Lin asked RAB members to introduce themselves. Mr. Lin then introduced Bill Walker (Horsham Township manager); Keith Freihofer (Air National Guard); Brian Helland and Andy Frebowitz (Navy project team); and Lt. Col. Siciliano (Horsham Air Guard Station).

Mr. Lin indicated the minutes from the last RAB meeting from June 2014 were mailed to all members in August 2014, posted to the BRAC website, and placed in the information repository at the Horsham Township Library, including online and in hard copy in the library.

Mr. Lin stated that he had some announcements to make before starting the formal meeting presentation. The Record of Decision (ROD) for the final Environmental Impact Statement (EIS) for the disposal and reuse for NAS JRB Willow Grove was signed on May 26, 2015. The Federal Register notice was published this morning (June 10, 2015), and Alternative 1 was selected as the preferred alternative. The Finding of Suitability of Transfer (FOST) has been prepared for the former Shenandoah Woods housing area. This 55-acre parcel is located in Warminster Township

and has been proposed for redevelopment starting later this summer. Mr. Lin asked if there were any questions on these items and there was no response.

Mr. Lin started the formal presentation by first going through the agenda. The first item was an update on the radiological assessment. A Historical Radiological Assessment (HRA) was completed in July 2013. The HRA looked at all potential areas where radiological impacts may have occurred at the Base. Following the HRA, a Basewide Radiological Management Plan (BRMP), which provides a plan for how to investigate and study impacted areas, was prepared. After the BRMP was completed, 18 specific plans were developed to specify how to conduct the radiological scoping surveys at the potentially impacted areas. The scoping surveys are an initial evaluation to identify if radionuclide contamination exists. Surveys were conducted at some building footprints. These are locations of buildings that have been demolished. The surveys included dose rate assessments, surface scans and soil sampling. The surveys for the landfill sites (Sites 1, 3, and 12) will be completed in June 2015 and the results for Sites 3 and 12 will be used to complete the feasibility studies for remedial alternatives at those sites. In addition, surveys were completed at a number of buildings. Mr. Lin referred to a slide which showed the equipment used to conduct the scans/surveys and soil sampling. The next slide showed the locations of the 18 potentially impacted sites and buildings where surveys were conducted. The survey reports are in preparation and the Navy will provide them to the regulators for review later this summer.

Mr. Lin asked if there were comments or questions about the radiological studies. There were no comments pertaining to the radiological work and questions about other issues were asked to be deferred until those agenda items were discussed later in the meeting.

Mr. Frebowitz presented an update on Site 5, the fire training area. Groundwater contaminated with volatile organic compounds (VOCs) is present in the area and is currently undergoing treatment by bioremediation. The remedy selected by the ROD in September 2012 called for in-situ treatment of groundwater by anaerobic bioremediation, monitored natural attenuation in the less contaminated portion of the plume, and implementation of land use controls (LUCs). LUCs include preventing the extraction of untreated groundwater for potable use and to evaluate exposure or mitigate vapor intrusion in buildings over or near the plume if they are to be constructed or used before the groundwater remediation goals are met. The remedial designs (RDs) for LUCs and upgrades to the existing treatment system were completed. The original treatment system was constructed as part of a pilot test to determine if anaerobic bioremediation would be an effective technology. After it was determined that this would be the remedy, the RD was prepared that called for additional injection/monitoring wells in the area of the highest concentrations of VOCs. The RDs for LUCs and the system upgrades were finalized in May 2013.

Installation of the new wells was completed in July 2013 and the wells were sampled. A Remedial Action Completion Report (RACR), which documents that the actions required in the ROD were completed, was prepared and signed by the Navy and Environmental Protection Agency (EPA) in September 2014. The treatment system has continued to operate while an Operation and Maintenance (O&M) Plan was developed. The O&M Plan also includes a Long-Term Monitoring (LTM) Plan. These plans serve as a guidebook for operating the system and

sampling requirements for monitoring the groundwater. The O&M Plan was finalized in May 2015.

Mr. Frebowitz referred to a slide which showed the treatment system layout, the area with highest levels of VOCs, and explained how the treatment system operates. Groundwater is extracted from wells and reinjected into other wells (shown on the figure). Before the groundwater in reinjected, amendments including bacteria and Lactoil®, a food supply for the bacteria, are added to the groundwater which subsequently treats the plume. The bacteria are what break down the VOCs into less toxic compounds. In January 2015, sampling results for VOCs and parameters which provide an indication of system performance such as pH, oxidation-reduction potential (ORP), and dissolved oxygen (DO) was conducted and indicated that, while conditions were still suitable for bioremediation, they were not as good as the last round of sampling. Therefore, it was determined that additional injection of Lactoil® and buffering solution for pH control was necessary to maintain an optimal anaerobic environment. The injections were completed in May 2015 and groundwater monitoring to evaluate the effectiveness of the injections is in progress. Mr. Frebowitz provided some details of the monitoring requirements and presented a series of charts that showed historical trends for VOC compounds in several wells. Decreasing levels of the VOC parent compounds were shown on the slide which provide evidence of the effectiveness of the system.

Mr. Lin asked if there were any questions. Chester Kratz asked about the locations of the wells that were sampled at Site 5 and the depths of the shallow wells. Mr. Frebowitz stated that the wells are all within the immediate vicinity of Site 5 and are all on the base. The depths of the shallow wells are about 30 to 40 feet. Eric Stahl asked about the estimated duration for cleanup. Mr. Frebowitz replied that it will still be some time; perhaps 5 or more years, but the trends are good and many of the downgradient wells are already at levels below the remediation standards set for the site. Carl Polichetti asked if the Horsham Township wells were affected by the site. Mr. Frebowitz replied that samples collected during the investigations prior to the Site 5 remedy did not show off-base VOC contamination. Mr. Frebowitz went back to the slide showing the system and well layout and showed that the downgradient wells between the site and the Base property line did not contain VOCs and that VOCs have not migrated to the township wells. Mr. Polichetti asked about the township wells which were taken out of service and Mr. Lin replied this was not due to VOCs and would be discussed during the presentation regarding perfluorinated compounds (PFCs). William Morrison asked if the wells at Site 5 are potable for human consumption. Mr. Frebowitz explained that the wells are just monitoring wells and not production wells and are not for consumption, but the levels in the monitoring wells in the source area are above drinking water standards and are not fit for consumption.

Ms. Gemmill asked if a history of the site could be presented since there were many first-time attendees at the meeting. Mr. Frebowitz provided a site history: the area was used to train Base personnel to extinguish fires. Various fuels, including solvents containing VOCs, were ignited in a burn pit in the area. The burn area and storage area became the source of the VOC contamination either through leaks, spills or during the actual burning and that is what impacted the groundwater.

Nicole Taylor asked what are the impacts to private wells near the Base property. Mr. Frebowitz reiterated that sampling results show the VOC contamination has not migrated off the property and the levels are declining; therefore, off-Base impacts are not expected. Ms. Taylor asked if there would be follow-up testing and Mr. Frebowitz replied that the LTM Plan calls for monitoring of the on-Base downgradient wells. If contamination were to be detected in those wells, the monitoring program could be expanded, but at this point in time, there is no expectation that the contamination will migrate off-Base. Ana Prieto asked for clarification of the downgradient wells and if there were any off-Base. Mr. Frebowitz replied that the monitoring wells downgradient of Site 5 were still on the Base property and there were no monitoring wells in a downgradient location off the property. Drew Penglase asked if the EPA or Navy is going to tell the community when it is safe to drink their well water. Mr. Lin asked if that question could be deferred for a few minutes until the PFC discussion. Mr. Lin stated that the Site 5 presentation is solely on a specific site with VOC contamination and he will be discussing the PFC issue in detail. In addition, Mr. Lin stated that after the RAB meeting there are subject matter experts available to answer specific questions. Shawn McLaughlin asked to define the term "volatile". Mr. Frebowitz explained that VOCs were a class of organic compounds that include common solvents such as trichloroethylene (TCE) and tetrachloroethene (PCE), which was used as a dry cleaning solution. Volatile means, that under certain conditions such as temperature and air pressure, the liquid could become airborne by evaporation. There were no other questions regarding Site 5.

Mr. Lin began the presentation regarding PFCs. PFCs are emerging contaminants that have been recently detected at NAS JRB Willow Grove. They were also found in a nearby station, Naval Air Warfare Center Warminster and have been found at other installations. Emerging contaminants are something new that have not previously been known to be of concern. The primary PFCs are perfluorooctane sulfate (PFOS) and perfluorooctanoic acid (PFOA). They are man-made chemicals that break down slowly. They are used in many different products, such as Teflon cookware, water repellents, and firefighting foams. The EPA has established provisional health advisory (PHA) levels of 0.2 parts per billion (ppb) for PFOS and 0.4 ppb for PFOA.

Mr. Lin asked if there were any questions. Mr. Polichetti asked if for an explanation of "provisional" and what that means and how it affects the investigation. Mr. Lin introduced Karen Johnson who is in the drinking water protection department of EPA. Ms. Johnson explained that for many contaminants such as VOCs and bacteria, EPA has maximum contaminant levels (MCLs) which are enforceable by the state and EPA. But, there are thousands of chemical which do not have regulatory numbers. Often, when there is a chemical that is identified in the environment, EPA makes a determination and conducts risk studies, gathers information from industry and health studies from employees, and tries to develop health advisories. As of now, EPA has not developed a long-term health advisory for PFOS or PFOA and has no numbers for the other four PFCs that drinking water companies are looking for in their supplies, as not enough information is available. EPA has been working with DuPont and 3M since 2000. In 2009, a PHA was set by the National Office of Water for 0.2 ppb for PFOS and 0.4 ppb for PFOA. Action has been taken with drinking water systems to eliminated consumption of water above those levels.

Ms. Johnson stated that it wasn't until 2014 that any of the drinking water suppliers started to look for these emerging contaminants. EPA has an Unregulated Contaminant Monitoring Rule (UCMR) that requires water systems to look for up to 30 new chemicals every five years, and PFOS, PFOA, and the other four PFCs were all included in the new rule. Larger communities like Horsham, Warminster, Warrington, and Northampton just started sampling for these chemicals in 2013 or later and will continue going through 2016. This is the first time that sampling for these chemical was required because there wasn't even lab capability to identify it. That is why these are emerging contaminants and why EPA is taking action at the PHA level to try to limit consumption of this water. EPA is working toward a long-term health advisory which is nearing completion. Shannon Johnson asked about current health concerns related to exposure. Karen Johnson replied that there isn't a lot known about the chemicals. Some say it may be carcinogenic, but it seems to act differently in rats, mice, and primates than it does in humans. Therefore, EPA is trying to be protective and limit consumption.

Mr. Lin stated that at the prior public meetings there were representatives present from the Agency for Toxic Substances and Disease Registry (ATSDR), a division of the Centers for Disease Control (CDC), who are toxicologists and health experts. There will also be experts at the back of the room after the meeting and if there are still questions, we can take contact information and have representatives from ATSDR contact you.

Mr. Lin continued with the next slide that discussed the UCMR and asked if there were questions regarding UCMR. There was no response. Mr. Lin continued with a discussion of PFCs in groundwater near the Base. Horsham Water and Sewer Authority (HSWA) sampled their wells under UCMR in July 2014. Two of the wells, No. 26 which is located more on the western side of the base, and No. 40 which is located on the northern side, had PFC levels above the PHA, and were subsequently shut down. HWSA issued approximately 10,000 notices to all their public water consumers. The Navy signed an agreement with EPA to conduct private well sampling. Sampling started in the vicinity of wells 26 and 40 and expanded based on the results. Residences with private wells with results above the PHA were provided bottled water for drinking and cooking.

In October 2014, the first open house public meeting was held at the Horsham Community Center and over 300 people attended. Representatives from the Navy, EPA, ATSDR, CDC, Pennsylvania Department of Environmental Protection (DEP), Montgomery County Health Department, Air National Guard (ANG), HWSA, and others were present to answer questions regarding PFCs and drinking water.

In November 2014, Warrington Township began sampling their public supply wells and three wells were found to have PFCs above the PHA. These wells were removed from service and EPA began sampling nearby private wells. In February 2015, two public open house sessions were conducted for residents in Horsham, Warrington, Warminster, and any other townships, residence or boroughs that had questions or concerns. The same agencies and representatives of the counties and water authorities were present at the meetings. Approximately 150 people attended these sessions.

Currently, over 250 private wells in the vicinity of NAS JRB Willow Grove have been sampled; 45 wells have PFCs at levels at or above the PHA levels. These residences have been provided bottled water. Drew Penglase asked about the duration that he will be receiving bottled water and when a permanent solution would be coming. After confirming that the residence in question was in Horsham Township, Mr. Lin replied that the Navy is finalizing an agreement with HWSA to provide treatment at the public supply wells as well as perform connections to the public water system for affected residents. The agreement should be finalized soon and the Navy hopes to connect as many homes as soon as possible, but some may take longer if water mains need to be constructed. Mr. Lin indicated that representatives of HWSA and the Navy would be available after this meeting to discuss specifics. Nicole Taylor stated that she lives in Horsham, has levels above the PHA, and has bottled water, but was told she would not be able to connect to the public supply. Ms. Taylor and Mr. Lin agreed to discuss this at conclusion of the meeting.

Shawn McLaughlin asked if any new wells with contamination have been found since February 2015. Mr. Lin replied that, without having specific data readily available, there may have been a small number of wells identified. These may be more recently sampled since there may have not been a reply to the initial request for sampling. Mr. Lin informed attendees that if they know anyone who has not been sampled and is near where contamination has been detected, to have them contact the project team to arrange for sampling. Elizabeth Smith added that her well, located in Warrington Township was sampled in April 2015. William Morrison asked Mr. Lin to clarify a slide (add Warminster Township in the third bullet on Slide No. 18).

Susan Wilson stated they are receiving bottled water and when they tried to sell the home, they had to add a contingency to pay for a connection to the public supply. Ms. Wilson wanted to know if there was a way to recover those costs. Mr. Lin indicated he could not answer that question at this time.

Dan Myers asked if his well will be tested again as it has already been sampled twice. He also wanted to know if there was a map that showed the locations of the 45 wells with levels above the PHA. Mr. Lin replied that wells that are close to the PHA are being retested and will continue to be tested to make sure the levels are below the PHA. If the levels would exceed the PHA, than drinking water would be provided. As of now, until more data is available, quarterly testing will be performed. Mr. Lin also indicated there was a map in the back of the room showing the wells where PHA levels have been exceeded.

Colleen Parese stated she lives in Warminster on the border with Warrington and wanted to know why Horsham was being addressed by the Navy and connections to public water are going to be provided, but other locations are going to be addressed by the ANG. Mr. Lin responded that there were different areas of responsibility and Warminster is closer to the ANG station. Ms. Parese said she was told by the ANG at the public meeting that they may not have been liable for the PFCs in groundwater. Mr. Lin asked Ms. Parese to hold that question for the ANG when they present later in the meeting.

Ms. Wilson asked how some wells could be contaminated while some next-door or a couple houses away are not. Mr. Lin replied that groundwater movement is complicated and that is why testing is being conducted to make sure that everyone has a safe supply of drinking water. Jackie

Suchodolski stated she lives in Warrington Township. She received a letter that says Warrington water is contaminated, but is not sure in what areas; but she has been spending money buying bottled water. The letter was vague and she wanted to know if she should expect some clarification in the near future. Mr. Lin replied that if sampling was conducted by the Navy and EPA, results would be sent in a letter. If a letter from Warrington Township was received, Mr. Lin believes that was a general letter to all their service users. Warrington's water is safe for drinking and cooking; the impacted wells have been removed from service.

Mr. Lin asked if there were any more questions and there was no reply. Mr. Lin introduced Mr. McCoy to present for the Air National Guard. Mr. McCoy provided a brief summary of his background and introduced Mr. Freihofer who will serve as the ANG program manager for site cleanup including PFCs. Mr. Freihofer will be coordinating with Lt. Col. Siciliano who is the environmental manager for the Horsham Air Guard Station.

Mr. McCoy discussed the ongoing cleanup at the petroleum tank farm that was part of the former Air Force Reserve. A biosparge system is continuing to operate. The system forces air into the groundwater and the bacteria present break down the fuel. The system operated partially on Base and partially on an adjacent property. The Air Force Civil Engineering Center (AFCEC) is evaluating additional injection of chemicals that could expedite the breakdown of the fuel remaining in groundwater. The tanks are going to be dismantled by the Department of Defense. Lynn Davis asked if the location of this area could be shown. Mr. McCoy replied that it is on a map in the back. Lt. Col. Siciliano added that it's located right off the old flight line.

Arnold Haggerty stated that he is the owner of the adjacent property and expressed concerns over the length and method of cleanup, presence of free-product, as well as potential damage of the fuel to the gas pipeline that runs through the property. Jessica Kasmari, the PADEP geologist assigned to the site, indicated that she had recently met with consultants for the pipeline. Soil around the pipeline has been removed and there was no damage to the pipeline due to the fuel leak. The pipeline has also been recoated. Ms. Kasmari also stated that the contamination has been delineated and there is no longer free-product, which is why a chemical injection is being considered. Installation of additional wells has also been requested by PADEP. Elizabeth Smith asked if the chemicals to be used for groundwater treatment are safe. Ms. Kasmari replied that, although she did not have the specifics of the chemical agent proposed, they are typically benign and should pose no additional risk. Ms. Smith asked if the community will be told what chemicals will be used and Ms. Kasmari replied that the information will be in reports that are public information. Mr. McCoy added that the Air Guard will obtain the specific information and it can be added to the meeting minutes. Mr. McCoy will contact AFCEC for the information. Mr. Lin stated that the information will be included in the minutes which will be available on the Navy's BRAC website. (Note that this information has been included as an attachment to the minutes.)

Mr. McCoy then began the briefing on the Privet Road Compound Site at the ANG property. This is a small parcel that was transferred from the Navy. The main contaminant of concern is TCE. Prior to transfer, the Navy took actions to clean the site and implement a groundwater monitoring program in accordance with the ROD and the ANG has continued monitoring. Sample results have been below the levels required in the ROD and the ANG has asked EPA if

the site can be closed. A determination is pending. Mr. McCoy asked if there were any questions and there was no response.

Mr. McCoy then provided an update on PFCs in groundwater. PFCs have been detected in two drinking water wells on the ANG property. Bottled water was provided and the ANG is in the process of retrofitting the treatment plant with carbon filtration to address the PFCs. The design and construction of the plant is under a cooperative agreement with HWSA so HWSA is actually doing the design and will oversee construction while the government will pay for this work.

Mr. McCoy stated that on May 29, 2015, EPA issued an Administrative Order to the Air Force and ANG to address the PFC contamination in Warrington Township. The work will include the similar procedures as has been conducted by the Navy in neighboring areas. A meeting is scheduled with Warrington Township to discuss their needs. Mr. McCoy and Carol Harding had a discussion regarding public supply connections on the border of Warminster and Warrington. Ms. Harding's residence is in Warrington and she cannot connect to the Warminster main which runs down her street. Mr. McCoy indicated he would discuss with Warrington Township during their meeting. Mr. Morrison also asked for clarification and Mr. McCoy and Mr. Lin indicated specific questions for individual homes should be addressed on a case-by-case basis after the meeting using the maps available in the back of the room.

An unidentified speaker asked about the timeframe for connection to public water for those homes not in Horsham Township. Mr. McCoy replied that it could take some time because the first step is to develop a plan. Under the Administrative Order, ANG has 60 days to develop a plan and apply to EPA for review and approval. There will then have to be agreements with Warrington Township to be negotiated; therefore, the best guess it could take up to six months, but ANG will work as quickly as possible.

Ms. McLaughlin asked if homes that have contamination below the PHA levels would be connected to the public supply. Mr. Lin replied that they would not be connected if they are below the PHA. Mr. Polichetti stated that he disagreed with this decision. Property values have declined. The government needs to take action to assure that there is no financial burden or safety concerns with living in these properties due to something the government did to the environment. Also, based on the uncertainty of the PHA, that is not a good dividing line whether public water should be provided or not; public water should be provided to everyone. Mr. Lin acknowledged the comment and stated that if the PHA would change each individual location would be re-evaluated.

An unidentified speaker asked a question if VOCs or radiation have been tested off-base or if they have migrated off-base. Mr. Frebowitz replied that the remedial investigation conducted in the early to mid 2000's did include off-base testing and no VOCs were detected. Mr. Lin confirmed this and added that the radiological studies have not shown any indication of off-base impacts.

Several attendees questioned the 2:00 pm start time and indicated that there would be a larger turnout in the evening. Mr. Lin indicated the meetings have been held at 2:00 for a while based on input from attendees at prior meetings which were held in the evenings and had low attendance. Mr. Lin asked if 6:30 pm would be an acceptable start time for the next meeting.

Several attendees stated that this is the first meeting they have heard about and why they have not been notified about previous meetings. Mr. Lin responded that meeting notices are published in the local paper and on websites; however, due to the PFC issues in groundwater, potentially impacted residents were mailed the meeting notice. Mr. Lin also referred attendees to the Navy BRAC and the Horsham Township Library websites for additional information and meeting notices. The agenda has the website addresses. Bill Rothert mentioned that if you go onto the Horsham Land Redevelopment Authority (HLRA) website, they will provide notification of all meeting dates and agendas.

Mike Cirilo asked for clarification of the status of cleanup at the base, particularly at Site 5, and how it relates to the PFC issues in drinking water. Mr. Lin stated that the investigations at Site 5 conducted in the past were for VOCs, while PFCs are an emerging contaminant requiring new investigation. A comprehensive investigation to identify sources of PFCs is starting now. Mr. Cirilo asked why a more permanent solution, such as providing carbon filters to individual homes instead of bottled water, isn't being considered. Mr. Lin replied that each individual case is being evaluated.

Ms. McLaughlin asked when the agreement between the Navy and HWSA will be finalized. Mr. Lin replied that it's very close to being finalized, but because it's contractual he can't be more specific. Joe Fanelli asked for details regarding the agreement with HWSA. Mr. Lin replied that HWSA will prepare the design, engineering, and permitting for the new water mains and connections and the Navy will reimburse HWSA. The Navy will not be performing the work. HWSA still must go through the design and bid process.

Leigh Birkbeck expressed concerns about the planned development at the Base, the potential impacts of development on the water supply, springs emerging from his property, and scheduling of HLRA meetings. Mr. Lin replied these are issues with the HLRA and asked if there was a private well at the property. Mr. Birkbeck replied that he was on public water but still had concerns. Mr. Lin offered appreciation for the comments.

Mr. Lin asked if there were any other questions. There was no response. Mr. Lin stated there was time for specific questions and discussion in the back of the room after the meeting is adjourned and informed attendees that the next RAB meeting will be on September 9, 2015 at 6:30 pm at the Horsham Township Library. A suggestion was made to hold the next meeting at a larger room such as at the Horsham Community Center. Mr. Lin indicated he would take that under advisement. A question was asked if the township will take possession of the Base property after the environmental issues are resolved. Mr. Lin acknowledged this would be the case.

Meeting adjourned at 3:27 pm.

EOS Remediation, LLC

EAS®	**PRODUCT INFORMATION SHEET** Electron Acceptors Family

Description

EAS® provides sulfate to stimulate anaerobic degradation of hydrocarbons in groundwater under sulfate-limiting conditions.

EAS® benefits:

- Aqueous solution for easy injection and distribution
- Nutrient-enhanced
- Increases pH
- Exceptional for remediating sulfate-depleted, anaerobic hydrocarbon plumes
- Technology published and proven by BP, Arcadis, Parsons, Antea Group
- Highly effective for toluene, ethylbenzene, and xylenes

EAS® applications:

- Direct Injection: Inject into the contaminated zone through temporary/permanent injection wells or direct push rods under gravity feed or low pressure.
- Excavations: Apply to the base of an excavation that penetrates the water table.
- Surface Application: Apply to unpaved permeable surface areas for infiltration to shallow groundwater.

Chemical & Physical Properties

Electron Acceptor: EAS®	**Typical**
Solutions of sulfate salts (% by wt.)	30
Nutrients (% by wt.)	1
Electron acceptor equivalents per lb.	4.5

Packaging

Shipped in 55-gallon drums, 275-gallon IBC totes or bulk tankers (40,000 lbs.)

Handling & Storage

For best performance, use EAS® within 90 days of delivery and store at a temperature between 40°F (4°C) to 100°F (38°C).

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Environmental Solutions

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In Situ Chemical Oxidation

Product Sheet

The Field Proven and Versatile ISCO Solution to Address Soil & Groundwater Contamination

Klozur® persulfate is the oxidant of choice for *in situ* chemical oxidation (ISCO), because of its ability to treat a wide range of contaminants including chlorinated solvents, petroleum and PAHs. Klozur persulfate is ideal for contaminated source zones and hot spots that require rapid treatment. When properly activated, Klozur persulfate provides an unmatched combination of oxidative power, versatility, and control that can be delivered both safely and cost effectively.

Successful field applications of Klozur activated persulfate have been performed globally. These applications demonstrate the ability of Klozur activated persulfate to treat diverse organic contaminants of concern including: chlorinated ethenes (TCE, PCE, DCE and vinyl chloride), chlorinated ethanes (TCA and DCA), chlorinated methanes (carbon tetrachloride and methylene chloride), BTEX, MTBE, polyaromatic hydrocarbons (PAHs), petroleum hydrocarbons (TPHs, GRO, DRO), 1,4-dioxane and pesticides.

Examples of Contaminants of Concern
CHLORINATED SOLVENTS PCE, TCE, DCE, VC, TCA, DCA, Methylene Chloride, Carbon Tetrachloride, Chlorobenzene
PETROLEUM TPH, BTEX, DRO, GRO
PAHs Creosote, MGP residuals 1,4-dioxane, MTBE, TBA, energetics, Chlorinated pesticides

The benefits of Klozur Persulfate

When used with PeroxyChem's proprietary activation methods, Klozur persulfate provides a powerful multi-radical attack for the rapid destruction of recalcitrant compounds.

$$S_2O_8^{-2} + \text{Activator} \rightarrow SO_4\bullet^-, OH\bullet^-$$

Multiple activation options and methods of delivery provide for a flexible and custom solution based on site conditions. With a solubility limit of up to 40 wt%, Klozur can be applied as a fully soluble solution. Klozur persulfate is a remarkable stable oxidant given its high oxidation potential, with a typical active lifetime in the subsurface of 3-6 months, providing an extended radius of influence. Klozur persulfate is safe to handle with PeroxyChem's recommended use guidelines; does not generate heat or gas.

The sound science of Klozur Activated Persuflate

Klozur activated persulfate has a long history of documented success. Site and laborortory data prove successful treatment of some of the most recalcitrant compounds, such as chlorinated ethanes, and emerging contaminants, such as 1,4-dioxane and PFOS/PFOA.

Application methods

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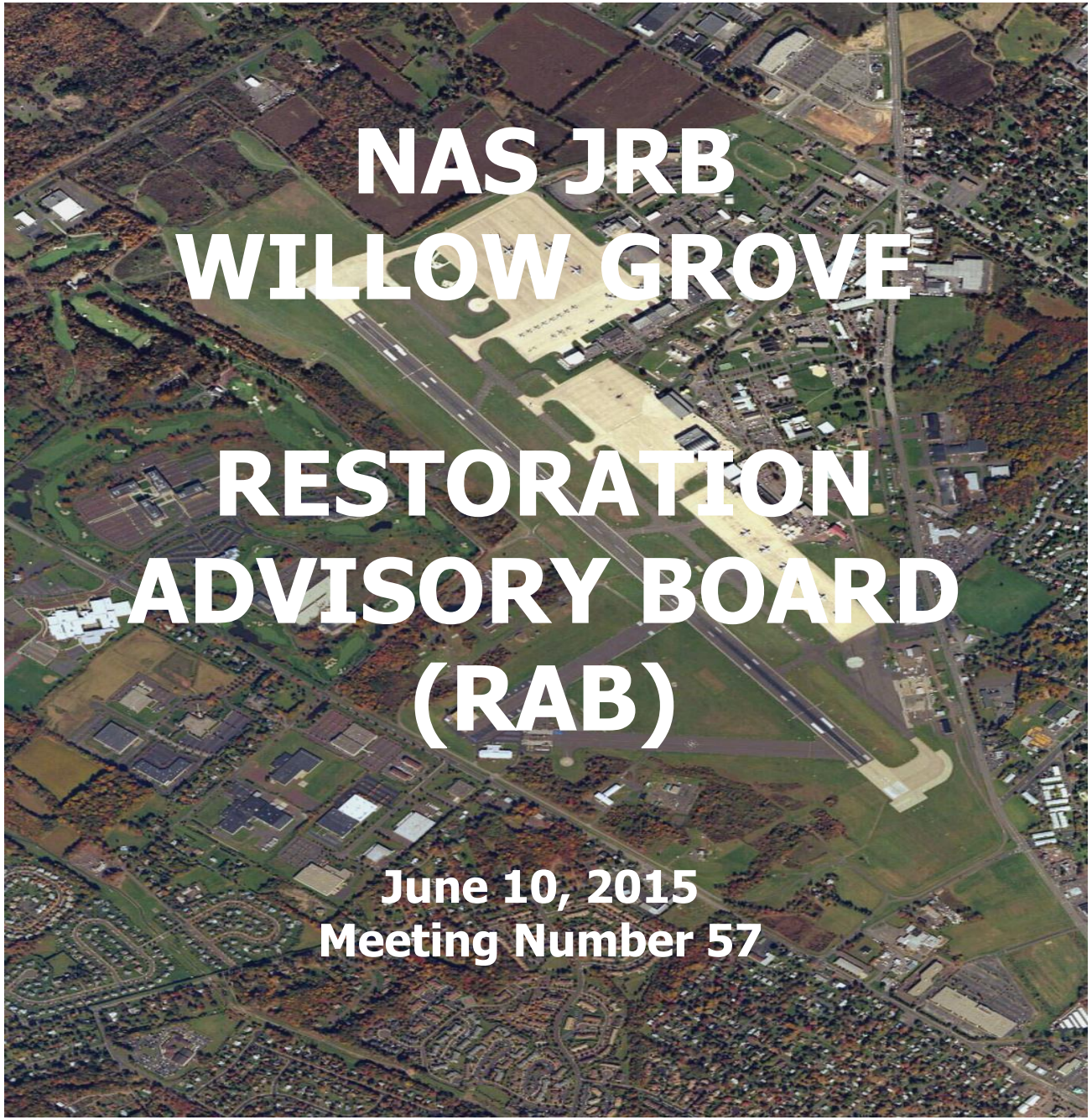


NAS JRB WILLOW GROVE

RESTORATION ADVISORY BOARD (RAB)

June 10, 2015
Meeting Number 57

Agenda

- Welcome Community RAB Members
- Radiological Update
- Site 5 – Fire Training Area Groundwater Remediation Status
- Perfluorinated Compounds Update
- Air Force RAB Presentation
- Closing Remarks

Radiological Update

- Historical Radiological Assessment (HRA)
  - HRA is a file review for potential radiological impacts
  - 18 sites identified (Landfills, Buildings, Building Footprints)
  - Final HRA completed 18 July 2013

- Basewide Radiological Management Plan (BRMP)
  - Provides overall plan for investigating HRA impacted sites.
  - Navy submitted final BRMP to EPA/PADEP on 19 March 2014.
  - Individual Task Specific Plans (TSP) for Scoping Surveys were developed for each site.

Radiological Update

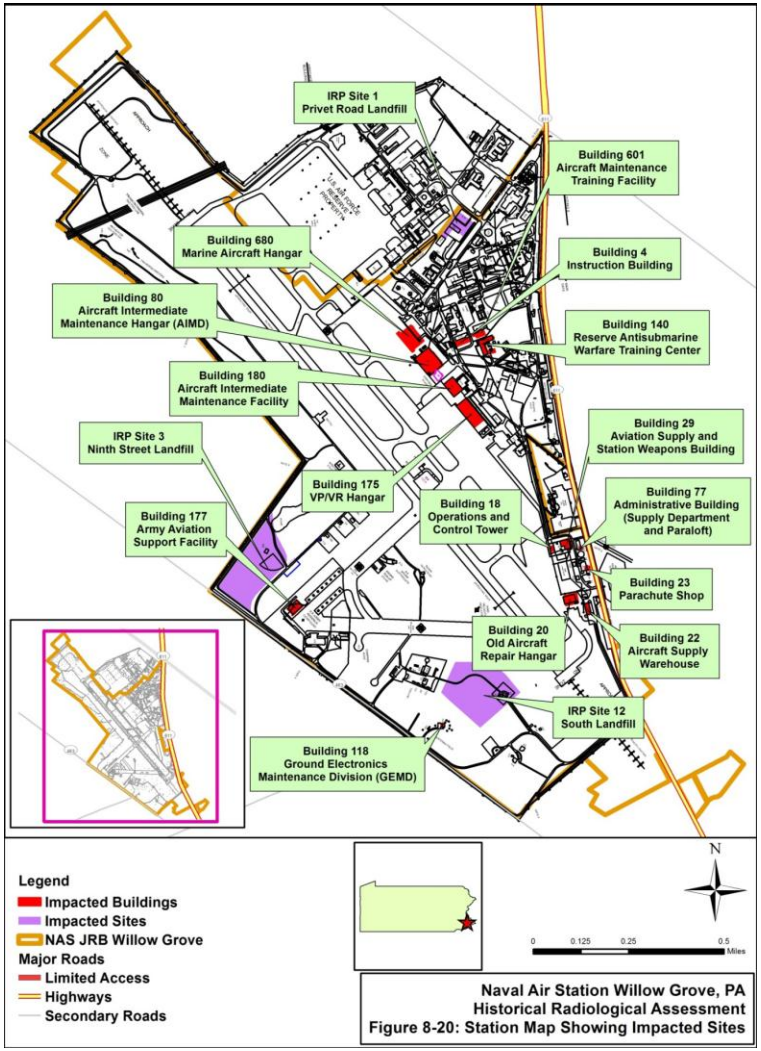
- Scoping Surveys : Initial evaluation to identify if radionuclide contaminants exist
  - Landfill Sites 1, 3, and 12 and footprints of Buildings 4, 18, 20, 23, and 77
    - Soil sampling at all sites completed
    - Dose rate assessments and surface scans completed for building footprints
    - Survey completed at Site 1
    - Sites 3 and 12 surveys to be completed in June 2015
      - Results for Sites 3 and 12 will also be used to complete the Feasibility Studies to select remedial alternatives
  - Building Surveys completed
    - Dose rate assessments and scans at Buildings 22, 29, 80, 118, 140, 180, 175, 177, 601, and 680

Radiological Update

Building Surveys Using
The Surface Contamination
Monitor (SCM)

Direct-Push Technology (DPT)
Soil Sampling of the
Building 20 Footprint

Radiological Investigation Potentially Impacted Sites



Radiological Update

- Reports for building surveys are in internal (Navy) review prior to submittal to EPA/PADEP

- Landfill and footprint survey reports scheduled for Summer 2015

Site 5 – Fire Training Area Groundwater

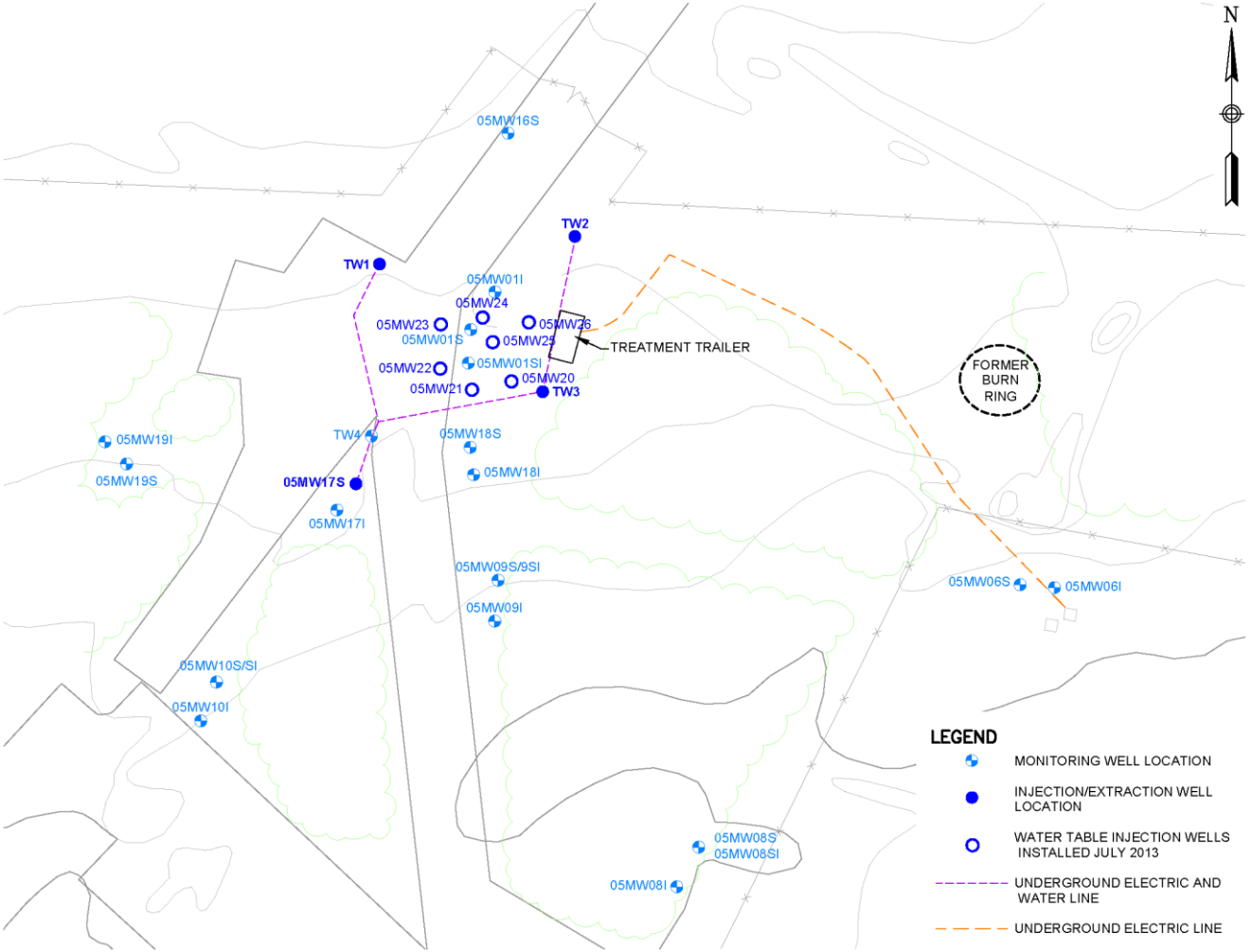
Site 5 Groundwater Selected Remedy

- Record of Decision signed September 2012
  - In-situ treatment of groundwater by anaerobic bioremediation in and around the former drum storage source area
  - Monitored Natural Attenuation
  - Implementation of Land Use Controls to preclude use of untreated groundwater and require that future buildings are constructed to mitigate the potential for vapor intrusion of VOCs from the subsurface into the buildings

Site 5 Groundwater Remedial Design/Remedial Action

- Remedial Designs Finalized May 2013
  - Remedial Design for Land Use Controls
  - Remedial Design for Additional Injection Wells
- Remedial Action
  - Well Installation Completed July 2013
    - 7 new injection/monitoring wells (figure on next slide)
  - Final Remedial Action Completion Report (RACR) signed by EPA/ Navy in September 2014
- Operation, Maintenance, and Monitoring (OM&M) Plan and Long-Term Monitoring (LTM) Plan
  - OM&M Plan finalized in May 2015

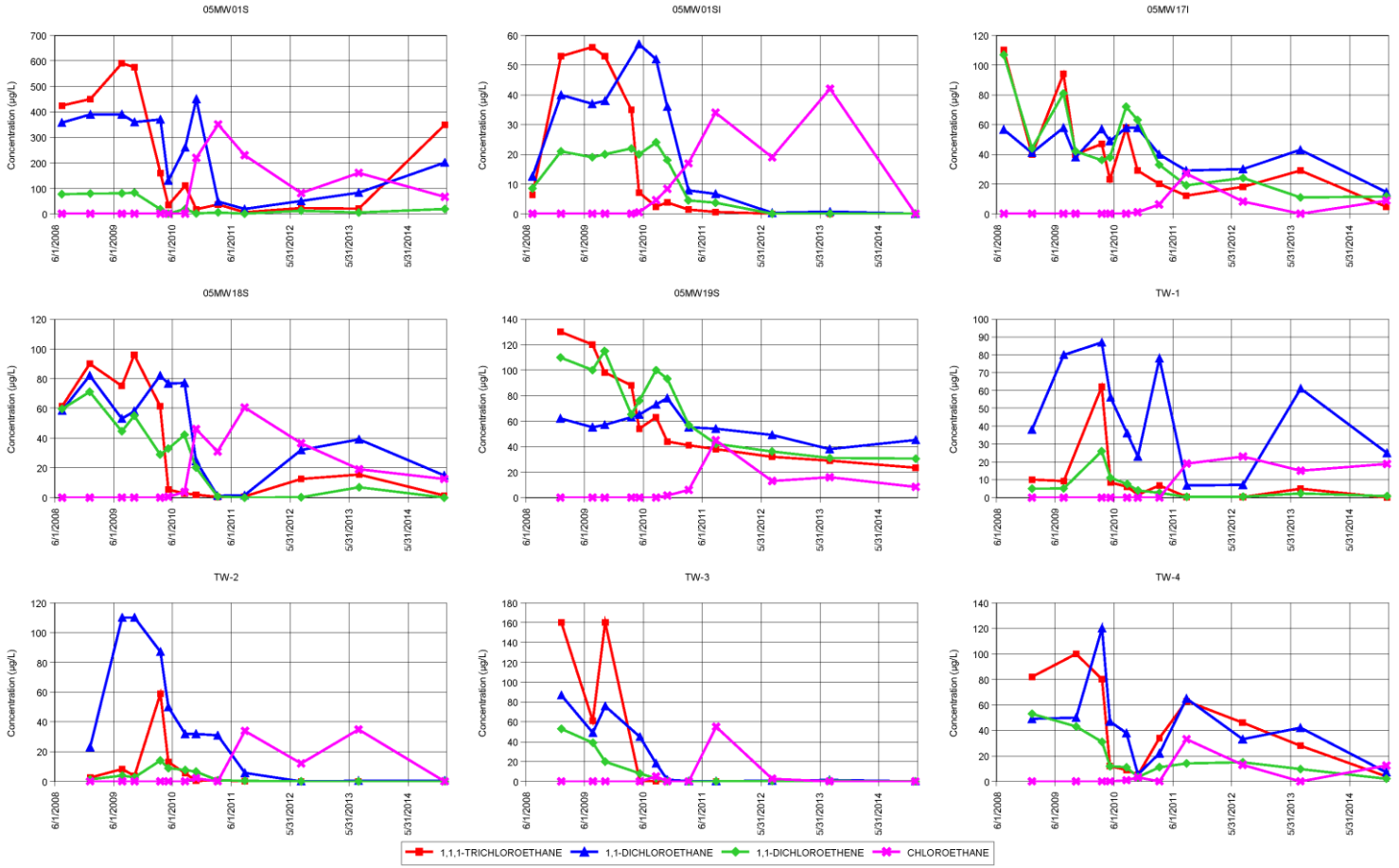
Site 5 – Fire Training Area Groundwater



Site 5 Groundwater Current Conditions

- Samples collected in January 2015 included field parameters and VOCs
  - Results showed relatively good conditions for reducing environment
    - Negative, but rising ORP, low DO, and optimal pH in treatment area
    - Generally decreasing levels of parent VOCs, but some rebound in shallow wells
      - » Results indicated additional biostimulation was needed
- Biostimulation event conducted late March to early May 2015
  - Injection of Lactoil and sodium bicarbonate
  - Groundwater monitoring in progress
    - pH, ORP, DO
- Additional injections will be conducted based on monitoring results
- Performance monitoring to be conducted in accordance with OM&M Plan

Site 5 – VOC Results
Chlorinated Ethanes



NASJRB Willow Grove PFCs

- Emerging contaminants known as perfluorinated compounds (PFCs) have been found recently at NASJRB Willow Grove.
- PFOS and PFOA are man-made chemicals, break-down slowly, and are used in many different products including cookware and fire-fighting foams.
- Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA) have provisional health advisory (PHA) values established by EPA.
  - PFOS: 0.2 µg/L (parts-per-billion)
  - PFOA: 0.4 µg/L (parts-per-billion)

PFOA / PFOS Background
(Information presented at Public Meetings)

- **PFOS, PFOA and other emerging contaminants are unregulated contaminants that are being sampled for the first time in Public Water Systems. EPA uses the Unregulated Contaminant Monitoring Rule (UCMR) program to collect data for contaminants suspected to be present in drinking water.**
  - ✓ **UCMR Monitoring is required for public water systems serving greater than 10,000 persons.**
  - ✓ **UCMR Data collection runs from 2013 through 2015.**
  - ✓ **EPA is working to improve its understanding of the prevalence and toxicity of these chemicals to determine if safe drinking water regulatory limits are needed.**
  - ✓ **The PHA values are reasonable health based hazard concentrations, above which actions should be taken to reduce exposure. PHA values include many safety factors to protect vulnerable populations (e.g., children).**

NASJRB Willow Grove PFCs

- In July 2014, Horsham Water and Sewer Authority (HWSA) sampled public water wells under the UCMR program. HWSA wells 26 and 40 were shut down due to exceedance of PFOS and a public notice was issued.
- In September 2014, EPA, on behalf of the Navy, initiated private well sampling and provision of interim bottled water, as needed. Private well sampling started near HWSA wells #26 and #40, but the area expanded as more information became available.
- On October 7th, 2014, open house public meeting held at Horsham Community Center, over 300 attended. ATSDR, EPA, Navy, Air National Guard, PADEP, Montgomery County Health Department, and HWSA participated.

NASJRB Willow Grove PFCs

- In November 2014, PFC found in adjacent Warrington Township. Three public wells were removed from service and a public notice issued. Private wells in Warrington Township now being sampled for PFCs.
- On February 24 and 25, 2015, an open-house public meeting was held for residents of Horsham, Warrington, Warminster and other local townships and boroughs. Approximately 150 in attendance. All agencies and local water suppliers participated.
- Currently, over 250 private wells around NASJRB Willow Grove have been sampled. 45 wells are at/above the provisional health advisory and those water users are provided bottled water for drinking and cooking purposes.

NASJRB Willow Grove PFCs

- **The Navy is finalizing an agreement with HWSA on public and private wells in HWSA's service area that are at/above the PHA levels for PFOA or PFOS. The Navy will reimburse for treatment systems at public wells, and connect private wells to public water.**
- **The Navy and EPA can answer questions about your individual Horsham Township private well after the RAB meeting.**
- **PFC actions at public and private wells in Warrington Township and specific locations will be addressed separately by the Air Force/Air National Guard.**

Restoration Advisory Board
Horsham Air Guard Station

Richard McCoy
Chief, Environmental Restoration
Air National Guard Readiness Center
Andrews AFB, MD

Air Force ST-01

- Former Air Force Reserve Petroleum Tank Area
  - Off base biosparge remediation continues
  - Injections to replace the biosparge system
    - Developing a network of injection points
  - Petroleum tanks to be dismantled

AIR NATIONAL GUARD Former Navy Privet Road Site

- Sampling was completed last October
- Results sent to EPA Region 3
- Air Guard has met the requirements in the Record of Decision and have requested No Further Action from EPA

Horsham Air Guard Station

- Received an Administrative Order from EPA Region 3
  - Requires us to install carbon filters on Air Guard wells (already in design)
  - Performed a Preliminary Assessment of potential Perfluorinated Compound release sites
  - Develop a plan to:
    - Assist Warrington Township in replacing water lost in contaminated well
    - Take over costs for providing bottled water in Warrington Township
    - Provide alternate water source for households on private wells that have been impacted

AIR NATIONAL GUARD

QUESTIONS?

NAS JRB Willow Grove
RAB Meeting 57

- Closing Remarks
- Questions or Comments From The Community?
- Next Meetings
  - September 9, 2015 @ 2:00 pm
  - December 9, 2015 @ 2:00 pm

Meeting Adjourned