Former Pease Air Force Base (AFB)
Restoration Advisory Board (RAB)
March 14, 2018
6:30-8:30 p.m.
Great Bay Community College, Room 122 (first floor)
320 Corporate Drive, Portsmouth, New Hampshire

Meeting Summary

RAB members present: Andrea Amico (Portsmouth resident), Susan Chamberlin (Portsmouth resident), Ted Connors (Newington resident), Mike Daly (USEPA), Peter Forbes (Air Force and outgoing Department of Defense Co-Chair), Scott Hilton (NHDES), Peggy Lamson (Newington resident), Dennis Malloy (Greenland resident), Mark Mattson (Portsmouth resident), Kim McNamara (City of Portsmouth), Jameson "Jamie" Paine (community member and Community Co-Chair), Lulu Pickering (Newington resident), Gene Schrager (Portsmouth resident), Maria Stowell (Pease Development Authority) Roger Walton (Air Force and incoming Department of Defense Co-Chair).

Meeting support staff present: Ona Ferguson (Consensus Building Institute, RAB Facilitator), Linda Geissinger (AFCEC, Public Affairs), Scott Johnston (Sytsma Group, Air Force Public Affairs support contractor), Sam Kumasaka (Consensus Building Institute), Blake Martin (Weston & Sampson, City of Portsmouth engineering consultant), Kyle Hay (Weston & Sampson, City of Portsmouth engineering consultant), Al Pratt (City of Portsmouth), Michael Self (AFCEC, JBSA), Rob Singer (Amec Foster Wheeler, AFCEC remediation contractor).

Others attending: Elise Britton (Dover resident), Lindsey Carmichael (Portsmouth resident), Peter Clark (Senator Shaheen's Office), Chris Cross (Newington resident), Alayna Davis (Dover resident), Michael Donahue (Newington resident), Kelsey Dumville (EPA Boston), Kerry Holmes (Senator Shaheen's Office), Karen Johnson (Greenland resident), Esther Kennedy (community member) Vivien Leigh (WLSH-TV reporter), Jeff McMenemy (Portsmouth Herald-Seacoast Online reporter), Peter Sandin (NHDES), Dabra Seikenl (Dover resident), Peter Somssich (State rep, Portsmouth resident), Paige Trace (Portsmouth resident), Mike Quilan (APTIM contractor),

Next Meeting: 27 June 2018. Suggestions for future meetings: provide an update on the human exposure study, show a map on the wall of the Pease restoration sites, share information on the timeline for water treatment systems and other cleanup activities, share process for making data public, describe efforts to prevent new contamination from Pease operations.

Action Items:

- Ona Ferguson will share the Q&A document with people who attended the September Newington meeting.

Welcome, Introductions and RAB Administrative Items

Peter Forbes let participants know of a significant project-related Air Force staffing change. Roger Walton, AFCEC has become the Air Force Co-Chair and Pease Program Manager. Mr. Forbes will be stepping down from his Pease-related project activities. Mr. Forbes introduced Mr. Walton, who has 22 years with Army Environmental Restoration Program.

Facilitator Ona Ferguson welcomed everyone to the Pease Restoration Advisory Board. RAB members approved the October 2017 meeting summary. All RAB meeting materials can be found online at http://www.afcec.af.mil/Home/BRAC/Pease

Pease RAB Committee Membership

The RAB conducted its first participant changeover, welcoming three new RAB members. Ms. Ferguson thanked Dr. Courtney Carignan and Ms. Christine Miller, the two RAB members who recently stepped down, for their participation in the RAB. Five people applied to be members during the winter application period. Both the Air Force and the Community Co-Chair must approve any applicants for them to receive a seat on the RAB. The Air Force did not approve one of these applications, from Mindi Messmer, given that she lives outside of the affected community, but the co-chairs did approved the other four. The RAB welcomed new members Andrea Amico, Dennis Malloy, Mark Matteson and Lulu Pickering. They will each serve a two-year term from early 2018 to the end of 2019. Terms can be renewed.

RAB members asked that the Air Force reconsider Ms. Messmer's application to join the RAB given her technical expertise. In order to get to know each other better, RAB members then each shared what brought them to participate in the group. Their reasons were personal and professional, and often based on a long-time commitment to the region.

Current Restoration Activities

Mr. Forbes, Air Force, presented a brief overview of current restoration activities. He said that the Air Force wants to introduce the RAB to some technologies that have been employed on the site since the cleanup began back in the 1980s. He also talked about the construction of the treatment system to protect town of Newington's water, as well as one for Haven Well.

Site 8 Interim Mitigation System Update

Rob Singer, Amec Foster Wheeler, gave an update on the Site 8 Interim Mitigation System and showed photos of Site 8 construction. The extraction wells (pumping wells that will extract ground water for treatment) are installed and will be piped to the building once the building is constructed. Trenching from the extraction wells to the building is also underway. The system should be fully operational within a month. See presentation slides for images of an extraction well with its piping, the processes of trenching and drilling, pouring concrete, pipe installation and foundation footing installation. Ion exchange resin will be used for this plant to take PFAS out of groundwater. Groundwater will be monitored and sampled regularly, and to evaluate the plants effect on groundwater quality. This system will immediately remove PFAS from the water that is extracted from the ground, then reinject clean water into the ground. After a while, this cleaned water will be the water that is taken up in wells in Newington.

RAB members asked about and commented on the following topics. Answers in italics were provided by Mr. Singer unless noted otherwise:

- Is the project monitoring for new contamination near the North Ramp? *The north ramp is not a specific target of the Site 8 treatment system, however there are monitoring*

wells being sampled for PFAS up and down gradient around fire training area, some of which are between the fire training area and the north ramp.

- How long will this treatment take? *The project is still in triage mode, trying to address the immediate threat to drinking water, while also doing testing, sampling and modeling to develop an effective long-term remediation approach. No one knows yet how long it will take to complete the full remediation.*
- How much of the aquifer will be treated? *Scott Hilton replied that the project team anticipates that we will see a major effect in a decade, possibly less.*
- Is this PFAS treatment technology being used elsewhere? *No, this is the first system in the country using this technology.*
- Are wells in the Southern part of the area being treated? *The Site 8 (former fire training area treatment plant primarily addresses PFAS in north Newington. We expect the Airfield Interim Mitigation System (AIMS) discussed below will have a positive impact on wells in south Newington (none of which have PFOS or PFOA above the HA).*
- *Is the project* testing for 23 PFAS chemicals? It is *testing for the 13 that were identified as occurring routinely, which were in 95 percent of thousands of samples we took here.*

<u>Airfield Interim Mitigation System (AIMS) Update</u>

Mr. Singer gave an update on the groundwater treatment plant near the Haven well (note: this is not a drinking water treatment system). The treated water will be reinjected into the ground. The treatment plant has a large area of influence and will be pumping a lot of water out of the ground. There are five other interceptor wells further north that capture PFAS-impacted water in the airfield. Construction will begin in this spring. 700 gallons of water will be treated per minute (a lot of water). The project will use granulated activated carbon as its treatment media. The team is working with EPA to determine if there is a way to use an ion exchange system. Both ion exchange and granulated activated carbon systems take out PFAS by pumping water out of the ground and filtering it through media. Site 8 (the former fire training area), uses re-generable media, meaning PFAS get stripped off of the media and it is reused.

RAB members asked about and commented on the following topics. Answers in italics were provided by Mr. Singer unless noted otherwise:

- Are there additional contaminants coming off the runway today into the Portsmouth water supply? *Mike Daly answered that there weren't in 2016, before the Haven Well was taken offline, when the water was sampled for a whole suite of contaminants. Mr. Hilton noted that we only know about contaminants we know about, but the Haven Well is one of the most monitored and tested water supplies in the state of New Hampshire.*
- Are other contaminants being treated by this system? *This system does catch some other contaminants, for example some other plumes of fuel contamination.*
- Why is there is such a delay in sharing results from private well testing? People would like those results quickly, especially those who are worried about their own springs. *Mr. Forbes answered that one reason is many homeowners don't want their private data published, so the data cannot all be made public. Once reports are published they become public, but the analysis and writing can take several months.* A RAB member indicated that this answer was not sufficient to explain the delay in making data public. She indicated that the answer didn't seem credible given a lack of information on the process used to survey homeowners, survey timing, and survey results.

Groundwater Assessment

Mr. Singer presented on a groundwater assessment underway in Newington to better understand how groundwater moves in and around Pease. This important study will also look at potential human exposures to PFAS beyond drinking water. This is a multi-step process to look into the ways people might be exposed through different media: swimming, wading, eating fish, sediment, stream water, and shellfish. The EPA has provided guidance to the Air Force on different pathways to review. The plan is to work this summer to identify how people may be exposed to this media and sample in the fall. Sampling cannot be done in the winter. The study plan includes sampling fish and shellfish as appropriate and then comparing results to the (adult and child) exposure levels set by EPA. The Air Force is developing a work plan for this assessment, which NHDES and EPA will comment on in the next few months. A RAB member asked for those developing this workplan on human exposure pathways to consider wildlife exposure, expressing concern that eating deer and turkey meat might be a more significant exposure pathway than eating fish or shellfish, given that hunters killed 66 deer last in Newington last year.

Site Cleanup Progress at Site 39 (the Pan-Am Hangar)

Peter Forbes gave an update Site 39 Pan-Am hanger cleanup progress. The site is referred to as at Zone 3 or Site 39 or Building 227 or Pan-Am Hangar. This is a large hangar where contaminants leaked through floor, and water was pumped and treated. Vapors from the contaminants found in soil gas have been detected beneath building. The groundwater is high, only four to five feet below the floor. Some of the solvents that contaminated the water were volatile and have now been detected in the air space. In 2017, the team identified two areas where shallow groundwater was contaminated. A test of the soil vapor extraction methodology showed that approach to very effective, but there are still contaminants under the building. The team is evaluating the best technologies to use to remediate this site. The remedy in place now does not address the soil gas pathway. There will be an amended remedy decision in the future, with a public input component to the remedy selection and revision.

City of Portsmouth Update

Al Pratt (City of Portsmouth) gave a brief update on City of Portsmouth drinking water activities. The City began the demonstration filter project on the Harrison and Smith Wells in September 2016. Consultant Weston & Sampson performed a treatment pilot project and conducted additional preliminary designs and assessment of other municipal treatment systems. Follow-up piloting took place with alternative treatment technologies. The pilots were completed on the Harrison and Smith Wells and the city is currently testing the water at the Haven Well. The final treatment system design is almost half-way through an eight-month process. Bids for the construction contract are scheduled to go out in the fall of 2018. The team is also pilot testing treatment at the Haven Well and the efficacy of the filter media on Haven Well water. The city website (cityofportsmouth.com) is updated with information including the water quality data and pilot results from the different wells.

Weston & Sampson has been conducting ongoing demonstrations of filters for the Harrison and Smith Wells. Carbon filters have been very effective. Sampling is conducted approximately every two weeks depending on flow through the filters. 40 rounds of sampling have been conducted as of this RAB meeting. They are monitoring for all 23 PFAS compounds, but only seeing six

consistently. Three short chain compounds have been detected in the second filter. A scheduled change-out of the second filter has been scheduled for March 28th to ensure the compounds continue to be captured completely by the GAC. Assessments of 13 water treatment facilities around the country were completed by Weston & Sampson to ensure treatment technologies and operational parameters used by other communities are considered for the upgrade of the Grafton Road Facility. A total 21 water systems will be included in an updated assessment that will be available this summer.

ECT_2 is a contractor that is running a pilot test at Haven Well with ion-exhange resins and GAC. Prior to the tests at Haven Well, ECT2 performed pilot tests with GAC and resins for over a year with the water from Smith and Harrison Wells. These tests demonstrated that the resin media is more efficient with removal of short chain compounds and has longer, more cost effective filter run times than GAC. Pilot testing of resins at the Haven Well has been underway since October 2017. This media is the forefront treatment technology for PFAS.

The design for the Grafton Road Drinking Water Treatment Facility consists of six pairs of six-foot diameter resin filters followed by three, 10-foot diameter GAC filters. The resins are sized to remove PFAS and are configured in pairs to allow the resin media in the lead filter to be run to breakthrough. The GAC filters are necessary to ensure capture of any PFAS or other contaminant, if they occur. Prior to the resin filters, the blended water from Haven, Smith and Harrison first goes through four cartridge filters to remove particulates. The design allows flexibility in the operations with regard to media changeout and changes of filter trains. The proposed layout adds two rooms to the plant, and keeps a lower profile for the portion covering the resin and taller around carbon filters.

In February, staff from the City of Portsmouth the Air Force, EPA, DES and Wood Hole Group met to begin discussions about the reactivation of the Haven Well and monitoring that will need to be in place to ensure potential changes in the aquifer water quality are well understood and tracked.

RAB members asked about and commented on the following topics. Answers in italics were provided by Mr. Pratt unless noted otherwise:

- Could the review of other treatment systems around country be made public? *The updated assessment that is currently being prepared by Weston & Sampson will be posted on the city website as soon as it becomes available. Our design is state of the art.*
- What PFCs are breaking through the first filter? *[Answer supplied after the meeting for the summary: There have been sporadic detections of PFBA, PFHxA, and PFPeA passing through the first filter.]*
- People with private wells in Newington have charcoal filters. Are the short chain contaminants being filtered out in those wells? Do home owners know if their filters are working? *Rob Singer said none of those wells with carbon filtration (which are installed in those wells with higher concentration levels) have seen breakthrough in carbon filters. The filters, each of which has three filters vessels, are checked every three months and changed out once every two years.*

Public Comments

Members of the public had the opportunity to share thoughts with the RAB. Three people shared comments, summarized here.

Lindsey Carmichael

- In order to have complete understanding of human exposure; we need to know both the number and concentration of compounds in the wells distributing water to Pease and Portsmouth. Would the Air Force consider expanding the number of components they test for to help community members get a more complete understanding of their exposure? *Mr. Forbes answered that the Air Force would not sample public water drinking systems, which are outside of the scope of the groundwater restoration program.*

Alayna Davis

- Could the public please get information on the specific shorter chain compounds?
- To what do you attribute the reduction in PFAS at the Haven Well? *Mr. Pratt answered* that it isn't clear *if it was a reduction or a different lab was used or another factor came into play in 2014. The AIMS treatment system isn't up and running yet.*
- Is the Grafton System what will treat Haven Well? *Mr. Pratt answered that it will.*
- Is the plan for replacing filters and GAC changed from first to second filter? *Mr. Pratt answered that there is no change. The second filter media is being changed to ensure short-chained compounds do not pass into the water system. Valuable information regarding the efficacy of the GAC is being collected from the first filter, thus the media will remain in that filter and be considered for changeout later in 2018.*
- At Hangar 39, where is the source of contamination, and have you determined that the contamination there is ok? Is it beneath the slab or outside the building? What is the time frame for addressing contamination? *Mr. Forbes answered that the source of vapors is underneath the slab. There was treatment in the 1990s outside the building, and project leaders are fairly confident that what is left is underneath the building. But they will take this comment as an important reminder to make sure. The goal is to address the contamination within a year or less.*

Esther Kennedy

- What is known about the six Pease Restoration Program landfills? *Peter Forbes answered that the landfills are monitored and results are published once a year (and can be found online, he offered to point Ms. Kennedy to the results). So far, the landfills are clean.*
- What happens in terms of providing safe water when filters are flushed? Is there any backup clean water tank to hold water? What is being used to flush those filters? Is there downtime while they are being flushed? *Blake Martin of Weston & Sampson answered that changing out carbon filters is a three- to five-day process, and the used filter media is incinerated. The backwash water is from the Portsmouth water system. There are two water storage tanks with a total capacity of 1 million gallons that are part of the Pease Tradeport Water System.*

Peter Somssich

- We should work hard to be sure we are not causing additional contamination now that will be a problem in the future. How long would it take to find out things are not working in New Haven triage system? Is there a decision point if you find things are not

working? *Peter Forbes answered that he didn't have that information at hand. Scott Hilton answered that DES requires monitoring to answer that question. If it is not performing as expected, the project would go into optimization. The project has collected a large amount of water level and chemistry data from beginning to establish a baseline. There will be a report after the first year of performance monitoring.*

- Are there lessons learned here at Pease that could be used at other bases and towns to prevent contamination and harm? *Peter Forbes answered that the Air Force is working to help people research this situation and share data and results from the work being done at Pease.*

Meeting Wrap Up

A RAB member asked that the meeting be videotaped so others can benefit from the discussion and that there be an opportunity for RAB members to tour the PFAS filtration system. Someone raised the issue of the old tank of water at Pease and whether it raises public health issues (see notes from previous RAB meetings on this topic). A RAB member suggested the project should do more non-target analysis and that it should test for all PFAS chemicals in water. Mr. Walton responded that the RAB is dedicated to focusing on key groundwater remediation issues, and he'd like the group to spend its limited meeting time on related topics.

Ms. Ferguson thanked Peter Forbes for his commitment to the Pease restoration project and for his service to the RAB.