Joint Base Cape Cod Cleanup Team
Building 1805
Camp Edwards, MA
May 14, 2014
6:00 – 8:00 p.m.

***Draft* Meeting Minutes**

Member:	**Organization:**	**Telephone:**	**E-mail:**
Ben Gregson	IAGWSP	508-968-5821	benjamin.p.gregson.nfg@mail.mil
Lynne Jennings	US EPA	617-918-1210	Jennings.lynne@epa.gov
Len Pinaud	MassDEP	508-946-2871	Leonard.pinaud@state.ma.us
Rose Forbes	AFCEC/MMR	508-968-4678	Rose.forbes@us.af.mil
Dan DiNardo	JBCCCT/Falmouth	508-547-1659	ravensnests1@live.com
Wade Saucier	JBCCCT/Sandwich	508-833-6002	wdjsaucier@aol.com
Diane Rielinger	JBCCCT/Falmouth	508-563-7533	rielingerlegault@gmail.com
Bill Winters	JBCCCT/Falmouth	508-548-7365	Hydrates92@comcast.net
Facilitators:	**Organization:**	**Telephone:**	**E-mail:**
Ellie Donovan	MassDEP	508-946-2871	Ellie.donovan@state.ma.us
Attendees:	**Organization:**	**Telephone:**	**E-mail:**
Pam Richardson	IAGWSP	508-968-5630	pamela.j.richardson.nfg@mail.mil
Lori Boghdan	IAGWSP	508-968-5635	lori.p.boghdan2.nfg@mail.mil
Doug Karson	AFCEC/MMR	508-968-4678	Douglas.karson@us.af.mil
Mark Hilyard	CH2M Hill	508-968-4670	mhilyard@ch2m.com
Glen Kernusky	CPED (PAO)	548-958-2838	Glen.kernusky.mil@mail.mil
George Seaver	Cataumet resident	508-564-4404	g.seaver@verizon.net
George Brennan	Cape Cod Times	508-548-9300	gbrennan@capecodonline.com

Handouts Distributed at Meeting:

1. Presentation handout: Fire Training Area (FTA) – 2 Update and Proposed Plan
2. Presentation handout: Petroleum Fuels Storage Area Update and Proposed Plan
3. Presentation handout: Impact Area Groundwater Study Program Overview

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Agenda Item #1. Introductions, Late-Breaking News, Approval of February 12, 2014 JBCC CT Meeting Minutes

Ms. Donovan convened the meeting of the Joint Base Cape Cod Cleanup Team (JBCC CT) at 6:05 p.m. The team members introduced themselves. The meeting summary from the February 2013 meeting was approved, as written.

Ms. Donovan introduced Mr. Bill Winters, a former member of the cleanup team. Mr. Winters talked about his education and work experience and asked to be reinstated as a team member. There were no objections.

Ms. Forbes explained the two Air Force Civil Engineer Center (AFCEC) presentations for tonight are related to ongoing public comment periods for Proposed Plans for Fire Training Area-2 (FTA-2) and the Petroleum Fuel Storage Area (PFSA). She noted these two sites are very similar because both have

source areas (soil contamination) and groundwater contamination and are following the same CERCLA path.

These sites were recently reviewed as part of AFCEC's fourth Five Year Review, which recommended that AFCEC continue to monitor the groundwater and complete the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process for these sites. The Focused Feasibility Study portion of the process has been completed and the sites are currently in the Proposed Plan phase. The final phase will be a Record of Decision (ROD) amendment, amending the soil ROD to include the groundwater component.

Agenda Item #2. FTA-2 Update and Proposed Plan

Mr. Hilyard showed the location of the FTA-2 site on a figure and reviewed the prior use as a fire training site. As a result of fire training activities, it became a site in the early 1990s. In 1996 the Remedial Investigation of the site was completed and petroleum contamination was identified in the soil, at the water table. Specifically, ethylbenzene and xylenes were present in soil at concentrations that posed a leaching threat to groundwater. At the time, there was no unacceptable risk to soils for an occupational (worker) exposure scenario. Due to the depth, there was no unacceptable risk to ecological receptors and no impacts to groundwater were identified at that time.

However, because of the higher levels in soil that could pose a potential leaching threat to groundwater, cleanup of soil at FTA-2 was conducted. In 1998, a Feasibility Study was completed to assess soil remedial alternatives. Biosparge/Soil Vapor Extraction was selected as the remedy.

In 1998 the Record of Decision was issued with the Remedial Action Objective (RAO) to "Prevent organic compounds in soils from being a source of groundwater contamination." Clean up levels for the contaminants of concern (COCs) in soil were ethylbenzene at 700 µg/kg and total xylenes at 10,000 µg/kg.

The Remedial Action involved the installation and operation of a biosparge/soil vapor extraction system within the footprint of FTA-2, which operated from 2001-2003 until influent concentrations in the air showed no VOCs detected. Soil sampling in 2002 and 2003 indicated that the goals of the remedial action were met. Xylenes and ethylbenzene in soil were below cleanup levels and they were not detected in groundwater.

At that time, MassDEP requested that soil and groundwater also be characterized using the Extractable Petroleum Hydrocarbon/ Volatile Petroleum Hydrocarbon (EPH/VPH) approach, which was not available at the time of initial site characterization. Also at that time, trimethylbenzenes (TMBs) were added to the groundwater monitoring program due to detections first noted as part of the nearby Western Aquafarm groundwater monitoring program.

The results of the sampling showed no ROD COCs or EPH/VPH carbon ranges detected in soil above applicable standards. However, EPH/VPH in groundwater exceeded the MCP Method-1 GW-1 groundwater standards. TMBs in groundwater exceeded a calculated risk-based concentration (RBC). Therefore, monitoring for VOCs (including TMBs) and EPH/VPH in groundwater has been ongoing at FTA-2 since 2004.

Mr. Saucier asked if the Western Aquafarm site was a commercial-based program that harvested food. Mr. Hilyard explained it was an area on base with several underground storage tanks (USTs). Mr. Hilyard showed a figure with the monitoring network for the plume. He also showed a cross-section of

the plume, which is delineated at the groundwater table. He pointed out where the USTs and the former fire training area were located. A Conceptual Site Model figure was also shown.

Mr. Hilyard noted that FTA-2 was located on the base and largely within the Landfill-2 (LF-2) area and it is highly unlikely that any groundwater supply wells would be installed in the area so there is no potential exposure to contaminated groundwater. He noted the downgradient area is also included in a private well/land use control area that was established as part of the CS-10 plume. There are no private wells in the area. He added that the monitoring program is ongoing and will be augmented, as outlined in the Proposed Plan he will discuss further in the presentation.

Ms. Jennings asked why the source of the plume is considered to be FTA-2 and not the Western Aquafarm. She noted that her interpretation is that the FTA-2 plume could be a contributing source but the contamination is primarily from the Western Aquafarm. She pointed out the higher levels of contamination upgradient of the FTA-2, which seemed to be coming from the Western Aquafarm and flowing under the FTA-2.

Mr. Hilyard explained it was a co-mingled source and acknowledged the highest concentrations are just downgradient of the Western Aquafarm, which is most likely the origin, but the petroleum activities at FTA-2 were contributing to the overall amount of contamination. He explained that, for administrative purposes, the entire area of groundwater contamination is managed under the FTA-2 site.

Ms. Jennings asked why the site isn't called the Western Aquafarm area if the source is upgradient of FTA-2. Ms. Forbes explained that, as summarized in the third Five Year Review, the Western Aquafarm site was closed and the decision was made to conduct additional investigation and cleanup for the contamination under FTA-2. Ms. Jennings stated that the site could be re-opened. Ms. Forbes replied that AFCEC is managing the contamination under FTA-2 and it is not being ignored. Mr. Pinaud asked Ms. Jennings if the site name was important for an administrative reason. Ms. Forbes noted that the regulators knew about the contamination when the decision was made. Ms. Jennings asked why the site had been closed if the contamination was there at that time. Ms. Forbes said it was closed after the USTs were removed and there was no soil contamination and she surmised that the site closure was probably done to simplify things. She noted that AFCEC and the agencies agreed to close the site, as documented in the third Five Year Review. Ms. Donovan asked if Western Aquafarm was reviewed as part of the fourth Five Year Review. Ms. Forbes stated it was not because it had been closed.

Ms. Jennings stated the EPA "has a statutory obligation to actually not close it if there is contamination remaining." She asked what year it was closed and Mr. Hilyard replied that it was 2004. He added that TMBs were not a COC associated with Western Aquafarm so the monitoring being done for that site was showing the plume had dissipated. TMBs were identified in 2003-2004, which is why they were added to the FTA-2 site.

Ms. Jennings noted that as part of the Performance-Based Contracting (PBC) efforts, potential contractors were asking if they can merge sites and then consider one of the sites to be "closed," so that they can get credit for a closure. She commented that they would get a bonus for each site closure. She stated that she had explained to those contractors that the site wouldn't be considered closed because the contamination was still present and naming it something else did not accomplish site closure. She stated that EPA is "emphatically against that for a lot of reasons" and that she didn't like the idea of closing a site for an "administrative bookkeeping exercise."

Mr. Saucier commented that maybe there had been a financial incentive for the closing of Western Aquafarm and Ms. Forbes replied that was not the case. She explained that the situation Ms. Jennings is referring to is under a new contracting process that hasn't been put into place yet. Ms. Jennings clarified

that she did not think the Western Aquafarm site closing fell under the strategy the potential contractors were proposing.

Ms. Forbes assured the team there was "nothing controversial with financial economics associated with that decision. It was an administrative decision and it was agreed to by all parties and documented in the Five Year Review." Ms. Jennings commented that it might have been based upon the information available at the time but she wondered if the parties were all aware of the existence of a plume.

Mr. DiNardo suggested that maybe the testing available at the time was unable to detect the contamination and the site was closed. He suggested that as sampling methods developed, a plume was detected. He questioned if the Western Aquafarm site could be re-opened and Ms. Jennings replied that it could. She also added that the site name could be changed to include Western Aquafarm in the title.

Mr. Pinaud noted that the Administrative Record should be very clear as to how the decision was reached to close the Western Aquafarm site. He proposed that this be researched and the information could be brought back to the team.

Ms. Rielinger asked if there were deeper well screens to define the plume and Mr. Hilyard replied that groundwater vertical profiling was completed at several locations in the area of FTA-2, many in support of the former SD-5 North plume, which also occupied the area. Vertical profile results indicated that petroleum contamination in groundwater is constrained to the upper 20 feet of groundwater. Mr. Winters asked what the rate of groundwater flow was in the area. Mr. Hilyard responded that one foot per day serves as a general approximation for groundwater flow rates.

Ms. Jennings asked what was used in fire fighter training that resulted in petroleum contamination. Mr. Hilyard replied that, similar to other Fire Training Areas on the JBCC, spent AVGAS and jet fuel were the primary constituents used as FTAs.

Mr. Hilyard then went on to explain that the findings of the fourth Five Year Review stated, "The remedy for the FTA-2/LF-2 source area is protective of human health and the environment in the short-term under the current land use scenario. For the remedy to be protective in the long-term, it is recommended that additional remedial actions be implemented to address petroleum-related contamination in groundwater that was not directly addressed by the selected remedy presented in the ROD."

As part of the Focused Feasibility Study, there was a Human Health Screening-Level Risk Assessment Comparison of groundwater data against the most conservative of available drinking water standards (MCLs and MMCLs) or MCP Method 1 GW-1 groundwater standards or, if no standard exists, a calculated RBC. A risk of potential future residential exposure to FTA-2 groundwater exists due to the presence of select EPH/VPH carbon ranges and 2-methylnaphthalene at concentrations greater then MCP GW-1 standards and 1,2,4-TMB, 1,3,5-TMB at concentrations greater than RBCs. An Ecological Risk Screening Evaluation was not needed because contaminated groundwater is approximately 40-60 feet below ground surface and is not expected to discharge to nearby receptors (i.e., Ashumet Pond).

Mr. Hilyard reiterated the RAOs for FTA-2 Groundwater: to prevent residential exposure to site groundwater with EPH/VPH concentrations greater than the MCP Method 1 GW-1 (residential) cleanup standards; prevent residential exposure to site groundwater with TMB concentrations greater than the RBC of 19 µg/L; prevent residential exposure to site groundwater with 2-methylnaphthalene concentrations greater than the MCP Method 1 GW-1 standard of 10 µg/L; and restore usable groundwater to their beneficial use wherever practicable, within a time frame that is reasonable given the particular circumstances of the site.

Mr. Seaver asked about the boundaries of the plume and inquired if the trailing edge of the plume was adequately characterized, which based on his own recollection, has not been the case at other IRP plumes. Mr. Hilyard displayed a figure for clarification and stated that unlike some other IRP plumes, the locations of the sources of the FTA-2 plume are known. The trailing edge of the FTA-2 plume boundary is defined by data from several monitoring wells. COCs have not been detected at concentrations above cleanup standards at a monitoring well located within the former Western Aquafarm site, to the north of the plume boundary, but a monitoring well located just downgradient, at the southern boundary of the Western Aquafarm, has COC detections above groundwater standards.

Mr. Saucier asked how deep the contamination was and if it will travel under the bog. Mr. Hilyard responded that the contamination is at the water table and is not expected to migrate much farther beyond its present extent. The downgradient extent of the contamination at FTA-2 is located on the base, near South Outer Road. However, because concentrations of one COC at the southern-most monitoring well fluctuates to either just above or below the groundwater standard, an additional downgradient monitoring well will be installed. Vertical profiling of the upper 30 feet of groundwater will be completed and based on a review of the data, a screen setting for the monitoring well will be selected. The plume is not expected to migrate any distance nor is it expected to travel under the bog.

Mr. Winters clarified that while groundwater is moving at a foot per day, the contamination is not moving with it; it is staying in place and degrading in one spot. Mr. Hilyard replied that the monitoring data indicate that the plume appears to be degrading in place and that maximum concentrations at in-plume monitoring wells do not appear to be high enough to result in the further migration of the plume significantly downgradient of its current southern extent. Mr. Winters asked if he was confident about the southern edge of the plume. Mr. Hilyard replied that groundwater monitoring data indicate that the downgradient extent of the plume is near South Outer Road. It is recognized that concentrations of one COC, the C_5-C_8 Aliphatics (no other petroleum compounds are detected), fluctuates just above or below the MCP GW-1 standard of 300 µg/L. The latest sampling results at this well report a C_5-C_8 aliphatic concentration of 302 µg/L. An additional downgradient monitoring well will be installed to serve as a downgradient monitoring point. Mr. Winters suggested the well being installed at the base boundary should be moved farther north. Mr. Hilyard agreed, however the area to the north is heavily wooded and is difficult to access with a drill rig. The proposed location, along Sandwich Road, will achieve the objective of providing a monitoring point that is downgradient of the FTA-2 plume.

Ms. Jennings expressed concerns about depth of the wells and would like to see confirmation sampling and additional monitoring wells installed before the Proposed Plan is finalized. She is not certain the plume is in a steady-state and wants more evidence to back it up. Ms. Jennings asked why AFCEC is pushing to finish the ROD without filling in this one data gap.

Ms. Forbes stated that the well will be installed within a couple of weeks. She explained that there was a site visit with Henry Cui from MassDEP and it was his recommendation to put the well in the specified location. Ms. Forbes explained that this location was then added to the long term monitoring plan, which was approved by the regulators and then went into the Proposed Plan, which was approved by the regulators. Ms. Jennings expressed concern about the decision. Ms. Forbes noted the site had been through a Focused Feasibility Study with draft and final versions, and a comment period and stated she was confused as to why Ms. Jennings was asking questions at this point.

Ms. Jennings stated she was not comfortable with this final decision at this time and would like to wait for additional data. Ms. Donovan made a recommendation that this be discussed at a technical meeting and noted that the regulators had previously agreed to the decision prior to this Proposed Plan stage.

Mr. Saucier asked if there was a plan to treat the water "Or are you just going to follow the groundwater contamination until it disappears into Nantucket Bay?" Mr. Hilyard stated that is not expected to migrate

any further south. The plume has not expanded since monitoring began, and in general, the COC concentrations within the plume are lower or similar to historic maximums observed back in 2004.

Mr. Saucier noted that the well will be installed to monitor the contamination, not clean it up. Mr. Saucier commented that "it seems like a long time and putting the well onto the property that's causing the pollution makes a lot more sense than going off the property line into some other property ownership where they now have to be burdened with construction, wells, having the contamination go onto their property. I think the point of this, with the military base cleaning up, is keeping it on the property. It's bad enough we have the pollution, and none of us contributed to it, but when you have the pollution going off the property to another property, ownership, private ownership, that's a problem. I mean, the groundwater is owned by Massachusetts but the land above it is not and you need the land to get to monitor the groundwater and it just sounds like all you are going to do is monitor it, watch it. I mean, that's kind of like a useless funding…I think it's useless. If I was living around there, I'd think my property value was going down, I'd be pretty upset and if I can't put a well in my house, can't use drinking water, irrigation would be out…."

Ms. Forbes pointed out that AFCEC has plumes that are off-base and they are monitored. She cited the downgradient portion of LF-1, which has no treatment on it and stated there is a LUC just to make sure people are not at risk from drinking the water. She explained that is how this particular situation would be handled. She noted they have also done ROD amendments and Explanation of Significant Differences (ESDs) and explained that once a decision is in place, it does not mean it is an "end all."

Mr. Saucier then said that might have been the case when the contamination was already found to be off-base but, in this case, we shouldn't let it go off the base. Ms. Forbes replied that it is uncertain that has happened. She noted that AFCEC has been monitoring the area for ten years and it hasn't migrated further. She said this plume was an excellent example of "plume stability." The concentrations are not high enough to drive it, its naturally attenuating in place. Mr. Saucier expressed his opinion that one of the wells isn't deep enough to detect the contamination. Mr. DiNardo commented that the well is being potentially diluted by the water table.

Mr. Saucier said he has talked to people in neighborhoods in Sandwich and a lot of them have wells and just chose not to tell anybody. He added that people don't want to tell the government anything and that many people are unaware about the problem with contamination. Mr. Saucier stated that is the reason he feels the contamination should be kept on the base and he thinks the money is well spent to monitor it to keep it on the base.

Mr. Pinaud asked who owned an area in the vicinity of FTA-2. Mr. Hilyard replied that the property is controlled by the JBCC. Mr. Pinaud asked why Mr. Hilyard thought access would be difficult to get. Mr. Hilyard stated that the area is heavily wooded and would likely require clearing of trees to access with a drill rig. Mr. Pinaud said, "We do that all the time with Camp Edwards." He then noted that there was an ongoing public comment period and asked if the oral feedback provided at this meeting would become part of the comments for the record, or if the team members would have to make the comments separately. Ms. Donovan explained that the team meeting is held during the public comment period for that reason and written comments from the team members are not necessary. Mr. Pinaud confirmed that these comments made tonight would be part of the public record.

Ms. Rielinger asked if the concentrations in the plume had decreased. Mr. Hilyard replied that concentration trends in the plume are generally stable to decreasing. Ms. Rielinger then asked if the concentrations near the source haven't changed that much, how long would MNA take. Mr. Hilyard replied the concentration trends are stable to decreasing. Ms. Rielinger asked, "If the MNA option was chosen, how long would it take?" Mr. Hilyard replied that MNA is expected to take approximately 20

years, based on trends observed and generally accepted rates of degradation of petroleum compounds in an aerobic sandy aquifer, such as the one at FTA-2.

Mr. Winters commented that there are a lot of plumes with a lot of history on the base and noted that he agrees with Mr. Saucier, that the plume should be contained. He cited the Ashumet Valley plume and explained that it a decision was made to let it go at a specified point but it then needed treatment on a cranberry bog. He then asked if there are other plumes where MNA has occurred and the extra work hasn't been needed. Ms. Forbes replied that Eastern Briarwood attenuated on its own and is now closed. She added that LF-1 has degraded and diluted. Mr. Hilyard added that monitoring of TMBs at FS-13 indicate that they have not migrated.

Mr. DiNardo suggested an action item for a review of the site model to see if installation of a third monitoring well makes sense.

Mr. Hilyard continued the presentation by explaining the Focused Feasibility/Proposed Plan for FTA-2 evaluated three options: Alternative 1 - No Action, Alternative 2 - Monitored Natural Attenuation (MNA) with Land Use Controls (LUCs), and Alternative 3 - In-situ treatment (e.g., in situ chemical oxidation) with MNA and LUCs.

Mr. Hilyard explained that Alternative 2 relies on processes of monitored natural attenuation and LUCs will be enforced to restrict activities (installation of water supply wells) that may result in exposure to contaminated groundwater through a drinking water scenario. He added that a private well verification survey will be completed.

For Alternative 3, Mr. Hilyard explained that injections of an oxidizing agent through the landfill material into the groundwater would target the core area of the plume, while MNA would continue for the lower concentration peripheral areas of the plume. The same LUCs will be enforced as described for Alternative 2.

Alternative 2 is the preferred alternative, as outlined in the Proposed Plan because it prevents exposure to FTA-2 Plume, is expected to meet RAOs in reasonable timeframe, is a common alternative that has been selected for other JBCC plumes, there is less disturbance of landfilled material (less drilling and no injection), there is less risk to on-site workers (less drilling and no injection), and there is a lower cost.

Mr. Saucier stated, "Looking at Alternative 2 for the twenty years and the cost….you're not putting in any additional wells we talked about; also you are not putting any type of money at all, if it does go off the property line…." Mr. Hilyard interjected to explain the costs and risks associated with installing and sampling the additional downgradient monitoring well were included in the evaluation of Alt. 2. Mr. Saucier added, a "slight risk to workers" shouldn't be included because there aren't wells being drilled or trees being cut down.

Mr. Saucier asked where the injections would be located under Alternative 3. Mr. Hilyard replied that the injections would be focused within the core area of the plume, where COC concentrations are the highest.

Mr. Saucier asked about the slide that said "Private well verification would be completed" and indicated he thought it had been completed. Mr. Hilyard clarified that a private well survey for the area beyond the JBCC boundary has been completed as part of the CS-10 plume private well verification survey in 2013. While the presence of existing water supply wells in the area of FTA-2, which is on the JBCC, is very unlikely due to its use as an air field and/or heavily wooded land, AFCEC will verify with all on-base entities that have water supply wells in this area.

Mr. Saucier asked if well drillers in Massachusetts had been contacted to let them know about the prohibition on well installation. Mr. Hilyard provided an overview of existing land use controls that are in place to ensure water supply wells are not inadvertently installed or reactivated within areas of plume contamination (state water supply regulations, municipal well installation regulations). Additionally, AFCEC is a member of the Dig Safe Program, and is notified of any digging or construction activities that occur within or near an IRP plume footprint. AFCEC also meets annually with the Boards of Health for each of the four surrounding municipalities to review the status of the plume cleanups. Mr. Saucier commented that he was pleased to hear about these communication efforts. He asked if the Boards of Health have a well permitting process. Mr. Hilyard responded that they do.

Mr. Winters asked why pump and treat was not an option at this site. Mr. Hilyard replied that the Focused Feasibility Study completed for FTA-2 groundwater in in April 2014 focused on known presumptive remedies for petroleum contamination in aerobic aquifers. The alternatives evaluated are commonly applied technologies for small plumes of dissolved phase petroleum contamination that have had sources removed, are stable to degrading in place, and represent a low risk to human health and the environment.

Ms. Rielinger asked for the data summary table associated with FTA-2. Ms. Forbes stated it could be found in the Focused Feasibility Study and is available in the Administrative Record. She also agreed to send a direct link to the information.

Mr. Hilyard explained how comments can be made during the public comment period.

Agenda Item #3. Petroleum Fuels Storage Area Update and Proposed Plan

Mr. Hilyard reviewed the outline for the presentation and showed the site on a figure, noting the location is primarily on base, south of the flight line area. He explained the site was a storage and distribution center for jet fuel and aviation gasoline from 1950's-2009. It includes aboveground storage tanks, underground tanks, pump houses, and associated piping. All infrastructure was removed by 2011.

Mr. Hilyard explained that because of the prior use, there were historic releases of petroleum products at or near the ground surface. In 1996, the Remedial Investigation was completed. Petroleum contamination was identified in soil at the water table (45-50 feet below ground surface) at PFSA. Ethylbenzene and xylenes were present in soil at concentrations that posed a leaching threat to groundwater. There was no unacceptable risk to soils for an occupational (worker) exposure scenario, due to depth of contamination. There was no unacceptable risk to ecological receptors and no impacts to groundwater identified at that time.

Mr. Hilyard stated the cleanup of soil at PFSA was driven by potential for future leaching of ethylbenzene and xylenes in soil to groundwater. From 1997-1998, a Feasibility Study was completed to assess soil remedial alternatives. Biosparge/Soil Vapor Recovery was selected as the remedy. In 1998, a Record of Decision was issued with the RAO to "prevent organic compounds in soils from being a source of groundwater contamination." The biosparge/soil vapor recovery system operated from 2001-2010.

Soil sampling was completed between 2005 and 2007 to monitor remedial progress. Mr. Hilyard noted only 4 of the 23 soil locations sampled in 2007 had COC concentrations greater than cleanup levels for soil. COCs were not detected in groundwater at concentrations greater than the MCL.

Mr. Hilyard noted that MassDEP requested that soil and groundwater also be characterized using EPH/VPH approach, which was not available at the time of initial site characterization. Also,

trimethylbenzenes (TMBs) were added to the groundwater monitoring program at PFSA (similar to FTA-2). The EPH/VPH concentrations in soil at 7 (out of 23) locations were greater than the MCP Method 1 S-3/GW-1 soil standards. EPH/VPH in groundwater exceeded MCP Method-1 GW-1 groundwater standards. TMBs in groundwater exceeded a calculated RBC. Monitoring for VOCs (including TMBs) and EPH/VPH in groundwater has been ongoing at PFSA since 2005.

Mr. Hilyard showed a plume map, a cross-section, and a Conceptual Site Model diagram. He explained that there is no current risk of exposure to contaminated groundwater and noted the groundwater monitoring network in place (shown on Figure 7). He added that the current network will be augmented with additional downgradient monitoring well(s). The land downgradient of PFSA is generally undeveloped woodlands owned by Mashpee Conservation Commission or Orenda Wildlife Trust.

Ms. Jennings asked how the plume boundary was defined. Mr. Hilyard replied that not all COCs are detected in each well, so the plume is defined by the exceedances of any COC detected at a monitoring well. Ms. Jennings noted that it appeared the plume is being defined mostly by concentrations greater than 19 µg/L.

Mr. Saucier asked why all of the well screens were at the same depth. Mr. Hilyard replied that vertical profiling completed during the RI indicates that the petroleum contamination is located at or near the water table, which is consistent with groundwater petroleum contamination that is at, or immediately downgradient of, the source. This plume does not appear to have migrated beyond the limits of historic soil contamination (its source) and therefore an accretionary wedge, similar to what has been observed at other IRP plumes that have traveled several miles, is not observed. Mr. Saucier asked if the future wells would also be at the same depth. Mr. Hilyard replied that the future wells are expected to be at a similar depth, however vertical profiling of the upper 30 feet of groundwater will be completed at each location and final screen settings will be selected based on a review of the data.

Mr. Hilyard continued the presentation and noted the findings of the fourth Five Year Review were as follows: "The remedy for the PFSA source area is protective of human health and the environment in the short-term under the current land use scenario. For the remedy to be protective in the long-term, it is recommended that additional remedial actions be implemented to address petroleum-related contamination in groundwater that was not directly addressed by the selected remedy presented in the ROD." He added that like FTA-2, PFSA is following the CERCLA process and AFCEC finished a Focused Feasibility Study for groundwater in April. A Proposed Plan is now available for public comment. The next step is an amendment to the existing ROD to incorporate a groundwater remedy for the PFSA site.

Mr. Hilyard explained that there Human Health Screening-Level Risk Assessment as part of the Focused Feasibility Study. A risk of potential future residential exposure to PFSA groundwater exists due to the presence of select EPH/VPH carbon ranges and 2-methylnaphthalene at concentrations greater then MCP GW-1 standards and 1,2,4-TMB, 1,3,5-TMB at concentrations greater RBCs. Ecological Risk Screening Evaluation was not needed because contaminated groundwater is approximately 45-50 feet below ground surface and is not expected to discharge to nearby receptors (i.e., Johns Pond).

Mr. Hilyard outlined the RAOs for PFSA Groundwater: Prevent residential exposure to site groundwater with EPH/VPH concentrations greater than the MCP Method 1 GW-1 (residential) cleanup standards; prevent residential exposure to site groundwater with TMB concentrations greater than the RBC of 19 µg/L; prevent residential exposure to site groundwater with 2-methylnaphthalene concentrations greater than the MCP Method 1 GW-1 standard of 10 µg/L; and restore usable groundwater to its beneficial uses wherever practicable, within a time frame that is reasonable given the particular circumstances of the site.

AFCEC evaluated the following Remedial Alternatives: Alternative 1 - No Action, Alternative 2 - MNA with LUCs, and Alternative 3 - In-situ treatment with MNA and LUCs. Mr. Hilyard explained that Alternative 2 relies on processes of MNA and enforcement of LUCs to restrict activities (installation of water supply wells) that may result in exposure to contaminated groundwater through a drinking water scenario. A private well verification survey will be completed.

He then explained that Alternative 3 includes injections of a slow release oxygen agent and nutrients into the groundwater to promote biological degradation in the core area of the plume, while MNA would continue for the lower concentration peripheral areas of the plume. The same LUCs, as described for Alternative 2, would be enforced

Mr. Saucier asked about an area of land "defined in yellow" shown on the figure on slide 20. Mr. Hilyard explained that this area represents the private well verification LUC area that will be established for the PFSA plume. The area encompasses several large parcels of undeveloped land owned by either the Mashpee Conservation Commission or Orenda Wildlife Trust. AFCEC will contact the owners of each parcel in this LUC area and verify that there are no water supply wells on their property.

Ms. Rielinger asked about the property owner for the land where the direct push drilling would take place. Mr. Hilyard replied that Orenda Wildlife Trust is the owner. Ms. Forbes added that a real estate agreement with the Orenda Wildlife Trust is under review right now. Orenda has signed it and Air Force management review is underway. She noted that a payment to Orenda would be made for allowing the Air Force to use the property for this purpose. Mr. Hilyard commented that the proposed drilling locations are accessible with the rig, based on site walk.

Ms. Jennings asked if it was Mr. Hilyard's opinion that this plume was in a steady state and not migrating any farther downgradient. She also asked if plume trends had been analyzed to support the opinion. Mr. Hilyard replied that based on a review of available data, it appears that the EPH/VPH plume has not migrated beyond the limits of historic soil contamination. Highest concentrations in groundwater appear to be focused to the north/central area of the eastern portion of the plume, and decrease at monitoring wells located within the plume that are downgradient of the high concentrations. Short term increases in concentrations have been observed but are thought to be the result of historically high water table elevations observed in recent years, which places groundwater in contact with petroleum impacted soil that is typically in the vadose zone, above the water table. These increases in COC concentrations in groundwater are expected to be short-lived as water table elevation returns to normal and petroleum contaminants in groundwater and soil continue to degrade in place.

Ms. Jennings asked about the schedule for the well installation. Ms. Forbes noted the real estate agreement needs to be finalized before the work can begin. Ms Jennings asked Ms. Forbes to provide her best estimate and Ms. Forbes stated, "this summer." Mr. Saucier asked if the agreement was a "real estate rental or real estate purchase." Ms. Forbes replied that it was a lease.

Mr., Hilyard continued the presentation and explained the PFSA Proposed Plan preferred alternative is Alternative 2 – MNA with LUCs. Mr. Hilyard reiterated that this prevents exposure to the PFSA plume and is expected to meet RAOs in reasonable timeframe (while site is expected to be used as an airfield). He noted this is a common alternative and there is less disturbance to private property (less drilling and no injection), less risk to on-site workers (less drilling and no injection), and a lower cost.

He outlined the ways comments could be submitted during the public comment period.

Agenda Item #4. Impact Area Groundwater Study Program Overview

Mr. Gregson explained that tonight's presentation was intended to be a brief update on the status of some of the projects and the upcoming activities.

He showed the JBCC plume map and pointed out the IAGWSP plumes, treatments systems, and source work areas. He noted that the plumes with treatment are Demolition Area 1, J-1 Range Southern, J-1 Range Northern, J-2 Range Northern, J-2 Range Eastern, J-3 Range (interim system), and the Central Impact Area. He noted the J-3 system is an interim system that was put in 6-7 years ago to get a head start on cleanup. The Remedial Investigation/Feasibility Study process is currently underway. The groundwater and soil data is being reviewed and the effectiveness of the current system is being evaluated. A final remedy will be then proposed, which might include the existing system or some alteration of it.

The plumes with long-term monitoring are Northwest Corner, L Range, Western Boundary, Demolition Area 2 and Former A Range. These are utilizing the MNA process. He noted that NWC has perchlorate and RDX. Perchlorate is just about down to the cleanup level of 2 ppb and only seen in a few wells above 2 ppb. He added that RDX is taking a little longer to attenuate and recent drilling seems to have located the upgradient edge and it will be monitored as it moves downgradient.

He stated that L Range was predicted to be cleaned up last year but there are a few wells with low levels of contamination that require continued monitoring. He explained the Western Boundary plume was predicted to be cleaned up in 2009 but it is believed the last detection above the standard was seen in 2008. Monitoring is continuing in this area to see if contamination is detected in a downgradient well in the future.

Mr. Gregson stated the Demolition Area 2 plume is nearly entirely attenuated with RDX only visible in one well above 0.6 ppb. He noted the Former A Range does not have a plume associated with it but because of the uncertainties with the source area, several wells are still being monitored and subject to the next Five Year Review to determine if that monitoring needs to continue indefinitely.

He reviewed the important statistics of the program to-date and noted that 15,000 acres have been investigated. These are grouped into 14 operable units. He stated that 1,200 monitoring wells have been installed in 600 locations. He added that 100,000 groundwater and soil samples collected and 120,000 tons of soil have been excavated and treated. There are 12 groundwater plumes (RDX & perchlorate) and 15 treatment systems constructed for 7 of them. Currently, 3.7 million gallons of groundwater are treated per day and 5.7 billion gallons have been treated to date. There have been ~300 acres partially cleared of Unexploded Ordnance and 560 tons of munitions-related scrap has been recycled.

Mr. Gregson showed a figure with the IAGWSP plumes and the locations of treatment systems with specific statistics associated with those systems.

Mr. Gregson explained upcoming activities for 2014. He noted negotiations are in process for the installation of an additional treatment system for Demolition Area 1 so an off-base system can be constructed.

He explained that a third extraction well, treatment, and reinjection system is going to be installed and brought on-line for the CIA plume. He noted that the Phase I Source Removal for UXO is completed and Phase II has begun. He added this is a five year project (currently in year 2).

Mr,. Gregson stated that initial investigations in the Training Areas indicate that many of the sites have minimal munitions/pyrotechnic use and widespread contamination is not expected; however, some sites

will be require additional investigation. An Investigation Report/Decision Document (DD) will be issued in 2014 and there will be a Public Comment Period for the DD.

Mr. Gregson reiterated that a draft RI/FS for the J-3 Range was issued to agencies in April. He added that a DD will be issued in 2014 and there will be a Public Comment Period on the DD.

He noted the Small Arms Ranges Decision Document will be issued soon. He explained that there will be monitoring and some soil investigation/removal at certain ranges. The post-DD fieldwork is being scoped.

Mr. Gregson said the IAGWSP second Five Year Review will be completed in 2016 to evaluate the remedies and verify that the exposure assumptions, toxicity data, and RAs are still valid and determine if there is additional information that calls into question the original decision.

Mr. DiNardo asked if the real estate actions could change the timeframes for Demo 1 and further delay the cleanup. Mr. Gregson replied that is not the case.

Agenda Item #6. Final Discussions, Adjourn

Mr. Saucier asked if geothermal power would be a future topic at the JBCC CT meetings. Ms. Forbes replied that there is not enough energy in the groundwater to drive a turbine. She noted that the US Coast Guard does have geothermal units in place to heat and cool their hangar.

Ms. Donovan stated that the next meeting has not been scheduled at this time and the team will be notified when a date has been selected. Mr. DiNardo commented that he is less concerned with frequency of the meetings and would prefer to meet when topics are timely and prepared. Mr. Winters indicated concurrence.

The meeting was adjourned.