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MINUTES AND AGENDA FOR RESTORATION ADVISORY BOARD MEETING HELD 9
DECEMBER 2010 NAS SOUTH WEYMOUTH MA
12/09/2010
NAVAL AIR STATION SOUTH WEYMOUTH



Naval Air Station South Weymouth, MA Restoration Advisory Board (RAB) Meeting Minutes December 9, 2010

1. INTRODUCTIONS/ APPROVAL OF PRIOR MEETING MINUTES

John Goodrich, RAB facilitator, opened the meeting at approximately 7:00 PM. He requested that all attendees, including RAB members, regulators, and audience members, introduce themselves. He noted that the meeting agenda, handouts, and the sign-in sheet were available on the table by the door. The sign-in sheet for the meeting is provided as Attachment A. J. Goodrich asked if everyone had time to read the minutes from the September 2010 RAB meeting and if there were any comments. There were no comments on the minutes.

J. Goodrich reviewed the guidelines for the meeting and reminded everyone that the focus of the meeting is cleanup issues. Any issues and/or comments not related to base cleanup will be noted and referred to the appropriate agency or organization. He reminded the participants when asking questions to wait to speak until they are acknowledged, to state their names and affiliations, and to speak clearly or into the microphone when they have questions.

He then reviewed the agenda for the meeting. The meeting agenda and the action item tracking list are provided as Attachment B. In accordance with the agenda, the presentation and discussion would be followed by the updates and action items portion of the meeting. The minutes, agenda and action items for the meeting are posted on the BRAC PMO website: <http://www.bracpmo.navy.mil/>.

2. PRESENTATION

J. Goodrich introduced D. Barney to give the presentation on perfluorinated compounds (PFCs). D. Barney noted that at the September RAB the presentation planned for December was the Solvent Release Area (SRA) Feasibility Study. After discussions between Navy and the regulators, the group agreed to postpone the SRA presentation until additional work and discussions about the various remedies were completed. Selected slides from the PFCs presentation are provided as Attachment C.

D. Barney stated that there have been no prior RAB discussions on PFCs or Aqueous Film Forming Foam (AFFF). PFCs are a component in AFFF. Therefore, background information on PFCs as well as the investigations at the Base will be discussed. The objectives of the presentation are shown on Slide 2.

PFCs are anthropogenic (man-made) and do not occur naturally. DuPont was an early manufacturer; PFCs have been around since the 1940's. PFCs have unique properties that help make products stain resistant, water repellent, slippery, and long lasting. There has been an effort to voluntarily limit the manufacturing of PFCs due to implications of related health effects. PFCs are no longer manufactured in the US, but are still manufactured in other countries.

The chemistry of PFCs is presented on Slide 3. PFCs are very stable in the environment and they do not break down. There are over 20 individual PFCs, with the two most common being perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS). PFOA and PFOS are the most studied PFCs and most of the available published information concerns PFOA and PFOS. The individual PFC compounds have been found to behave differently, i.e. some dissolve in groundwater and some adhere to the soil particles. PFCs are fairly ubiquitous and are used in many products (Slide 4).

There is limited information on the health impacts of PFCs (Slide 5). Although they are used in many products, there are no known human health effects. There have been very limited health studies to date. PFCs are found in wildlife globally, indicating they are very widespread. The PFCs are not part of the standard TAL/TCL list that is typically used for sample analysis during environmental investigations because they are considered an emerging contaminant, e.g., there are no established regulatory standards. Very few laboratories are certified by the Navy to analyze for these compounds.

The investigation conducted at the Base only included PFOA and PFOS in groundwater. At the time of sampling the available laboratories had the required DoD certification for just those two PFCs. There is a laboratory in Colorado that is now certified to perform analysis for 16 to 18 PFCs in all media. Minnesota has taken the lead in research and sampling for PFCs in the environment because 3M had a large manufacturing presence there. There are some state and EPA provisional values for PFOA/PFOS in drinking water; a soil value can be calculated based on the assumptions used for calculating the drinking water values. There are many conservative assumptions built in to the calculations; these values may still be adjusted. PFCs have been on a watch list since about 2005, but are not on to the list of hazardous substances.

Slide 6 presents a table of provisional state and EPA values for PFOA/S in drinking water. The various agencies develop the values using specific assumptions, so different values are to be expected. PFOA and PFOS are the only PFCs with provisional values. EPA plans to update the Provisional Health Advisory Values for PFOA and PFOS. EPA Region I has calculated risk-based screening levels for PFOA/PFOS in residential soil. MassDEP is not currently developing any PFC regulatory values.

AFFF is one of many types of fire fighting foams and is used to extinguish flammable liquid fires. Military specifications mandated the use of fluorochemical surfactants to protect the equipment and materials. It

creates a foam blanket that looks like a bubble bath, and cuts off the flow of oxygen to the fire. AFFF was manufactured by a variety of manufacturers; containers found on the Base suggested 4 or 5 different manufacturers were used. AFFF was first used at the Base in the early 1980s. Base records were reviewed and data sheets for the AFFF used on the Base were studied to determine the components. AFFF includes glycol ethers, a compound on the hazardous substance list (very volatile), which have been included in the analyte lists used for investigations on the Base. PFCs were noted as proprietary fluorinated compounds on the data sheets and the relative percent was minimal. Navy was not able to determine the exact AFFF products that were used.

During the EBS process reports of the use and releases of AFFF at the Base were documented. EBS Review Item Area (RIA) 11 was established to address the inadvertent releases of AFFF. AFFF was stored in Hangar 1 in large storage tanks and used for fire training exercises at the FFTA (Slide 7). Slide 8 shows a schematic of Hangar 1, indicating the location of the storage tanks and the dispensing system (turrets). The equipment inside Hangar 1 was red for fire safety (Slides 9 and 10). The AFFF concentrate (3% or 6% solution) was mixed about 1 part solution to 100 parts water. The piping to dispense the system was under the slab, therefore there is a potential for releases to the subsurface.

During Base closure activities the fuel ASTs (for pump) were removed from Hangar 1 and the lines were cleaned out. As RIA 11, AFFF has been evaluated since about 1996-1997. The Navy planned to close RIA 11 with No Further Action since there were no hazardous compounds in AFFF. After discussions with the regulators, an agreement was reached in 2009 to perform an investigation for PFOA/PFOS in groundwater. The objective of this investigation was to confirm the presence or absence of PFOA/PFOS. This was a focused investigation at the probable source locations, Hangar 1 and FFTA, and locations downgradient of both of these areas.

The PFC field program targeted existing wells so they were inspected and re-developed prior to sample collection. Groundwater level measurements were collected to prepare groundwater contour maps. Samples were collected from 18 wells (plus QA/QC) (Slide 11). The laboratory detection limit was 0.0002 µg/L. PFOA and PFOS were detected in most locations and concentrations in many of the samples exceeded the EPA provisional values (Slide 12). The higher concentrations were located within the FFTA and Hangar 1. There were also exceedances in the near downgradient locations, but the periphery wells (TLF, TACAN, and south of the runways) did not have any exceedances of the provisional values. The results indicated that PFOA/S concentrations in groundwater are not a base-wide problem.

Since PFCs were found in these two areas, an expanded investigation is being planned. Collection of additional groundwater samples is planned, as is collection of surface water, sediment, and soil samples. Soil samples within Hangar 1 will be collected, targeting the piping, to better assess the source area. The draft SAP will be issued in December and the sampling planned for early 2011. The goal of this

additional investigation is to identify presence/absence of PFCs in soil, surface water and sediment and delineate the extent of contamination in groundwater. The Navy will use the information to support property transfer considerations.

H. Welch asked where the cleanup materials after the big spills end up. D. Barney stated that the foam from the turrets was squeegeed into the floor trenches and the floor hosed off into the trenches, which were connected to the sanitary sewer system. When the releases occurred a phone call was made to the MWRA to notify them of the foam in the sanitary system.

J. Cunningham asked if this investigation was experimental, is the government in general interested in these results. D. Barney responded that Navy is interested but there is not a lot of guidance out there right now on these compounds. The results of this investigation will be looked at on a larger scale. P. Marchessault stated that other investigations are being conducted and evaluated by the EPA; it is not just Navy sites.

M. Parsons asked why the MassDEP was not looking into this. D. Barney stated that the DEP has participated with the DoD in looking at this and the development of the emerging contaminant list. M. Parsons then asked about the cleanup associated with this and if anything is going to happen since there are so many unknowns. D. Barney noted that at other bases where fire fighting training areas have groundwater issues (which Weymouth does not) there are operating treatment plants that have been running for some time focused on other issues (like VOCs). Those bases are now looking to see if the treatment system needs to be adjusted to include PFCs. The groundwater can be treated for PFCs similar to treatment for VOCs (has been done in Canada). Whether the groundwater at Weymouth will be treated in this manner will have to be discussed after the additional information is gathered from this investigation.

M. Bromberg asked if the groundwater elevations impact the concentrations seen. D. Barney responded that he did not think so, especially since the wells were re-developed, but if the water table rises there may be some transfer to the soil that could potentially impact the soil.

H. Welch asked how it was spreading in wildlife worldwide. D. Barney referred to a research paper (DuPont) which stated that there is a lot of atmospheric dispersion, likely from manufacturer's plant emissions. H. Welch asked if the foams spilled on the Base, wouldn't it be released to the atmosphere. D. Barney responded that the PFCs on the Base would have stayed in the foam (solution) and would not evaporate and become airborne. PFCs do not partition well from the foam to vapor.

M. Bromberg asked why the EPA recently came out with the health advisory. K. Keckler stated that it was an emerging contaminant and EPA is now looking at it. Since PFCs have been found at South

Weymouth, they are now increasing the investigation. D. Chaffin added that there is some tentative evidence of health issues associated with PFCs, but not enough is known yet.

A. Hilbert commented that the location of the PFCs in wildlife seem to correspond with coastal/water areas and developed countries. The PFCs are generally found in developed countries and near coastlines.

H. Welch asked about the probability of AFFF being used on the runways if there were fires in the area. D. Barney stated that the fire department records had been checked, and there were very few notations of use of foams on runways. Over about 25 years, only six records noted that foam was used and they were not specific about the locations where it was used. There was a slight exceedance in a well near the runway that could be associated with the Hangar, but it could also be associated with use on the runway. D. Chaffin stated that the Navy was also looking at the worst case scenario by targeting the known source areas. It is not expected that such severe conditions will be found near the runways.

H. Welch commented, wouldn't the most likely place to use the foam be the runways. D. Barney stated that it was used for practice in a limited area at the FFTA. There was a protocol to use foam if a plane crashed, but this happened very infrequently and it would be difficult to pinpoint the locations that should be targeted. Remote locations along the runways were targeted during the first groundwater investigation. D. Barney added that he checked information in Minnesota, which had requested that fire departments throughout the state evaluate the areas where fire training was conducted. The locations from the responses were not considered in Minnesota's research because they were not of great concern. It is an emerging issue and they are still learning about it.

M. Parsons asked how often the surrounding towns did training at the FFTA. D. Barney stated he is uncertain how helpful that information would be. He cannot recall any reports where the surrounding towns trained at the FFTA.

S. Ivas asked how the AFFF got to the FFTA. D. Barney stated that the AFFF was mixed in a truck at the FFTA.

M. Bromberg asked if there will be any impact on FOST'd land. D. Barney stated that it will have to be looked at when they are ready to transfer based on the signed FOSTs.

M. Parsons asked if the property will be transferred before the next PFC work will be completed. D. Barney stated that an evaluation will need to be completed that the assertions made in the signed FOSTs are still valid after the information is gathered during the PFC investigation. With the new information the FOSTs will be revisited. For example, the FFTA has been closed out under two different programs, and

the FOST was written based on the knowledge at the time. The FOST has to be examined based on the new information gathered, and this new information will be considered when it is time to transfer the property.

3. UPDATES AND ACTION ITEMS

Action Items: None.

MassDEP Update: None.

IR/EBS Program Site Update: D. Barney stated that RI/FS process for Building 81, Building 82 and SRA continues. There is additional field work being planned at SRA. At Building 82, some maintenance actions and excavations have been completed and there are the soil piles that need to be removed.

The STP work plan for more soil delineation is nearing completion. Long term monitoring continues at the RDA, and a report on the landfill soil gas is expected soon. The first round of long term monitoring at Small Landfill was completed recently.

There is a table in the bottom of the RAB update that summarizes the status of the IR sites.

The Main Gate removal action will likely begin mid-January to February. An Industrial Operations Area (IOA) SAP is underway to collect additional samples around the broader industrial area facility. An outstanding RIA 111 report is pending that will form the basis of future discussions.

The signed FOSTs need to be looked at to determine if the decisions are still current and valid, when the property is ready for transfer.

M. Bromberg asked what the IOA site is. D. Barney stated that it is a merging of many sites (south of Building 81 down to the Hangar, the runway on the east side, and the East Mat on the west side). It is a broader and comprehensive investigation of the area to address the general impact of base industrial operations.

R. Kenyon gave an update on the construction of the landfill cap at WGL. Some photos of the capping activities are included in Attachment D. The final design was submitted in September, but work began in early August on site prep. The approval came in late September, so the ground breaking began. The debris from the fringes was pulled into the center of the landfill; the debris encountered was nothing out of the ordinary, mostly construction materials. Environmental samples were collected after the debris was removed, to ensure that further excavation was not necessary. Some of the smaller vegetation was

pushed to the sides for wildlife (similar to AOC 55C). After the waste was consolidated, the wetland area was backfilled. A clean sand layer (custom made wetland topsoil), similar to that used at AOC 55C, was used. All of the off-site fill materials were tested for chemical and geotechnical purposes.

The AOC 55C/STP soils were brought into the center of the cap as part of the landfill. For the most part they were placed right in the center of the landfill. The location of these soils will be documented. Stockpiles of common fill have been brought in to keep the project moving. The common fill was laid over the compacted and consolidated debris. The gas collection system has been installed. The gas venting layer will be completed; they will take a holiday break and then begin work on the geomembrane and liner installation. The 16-inch fill layer and 6-inch topsoil layer is scheduled to be installed in February 2011. The drainage system and completion of the gas vents and gas monitoring wells is scheduled for March 2011. The access road and post/rail fencing will be installed in April, as will completion of the seeding/planting/restoration (finish work). He noted that there have been many days lost due to rain and more debris was encountered that needed to be removed, so they are a little behind the original forecasted schedule.

M. Parsons stated her concern about the plan for an access road at WGL. R. Kenyon stated that there have been no issues at Small Landfill with dirt bikes since the beginning of the construction. There has been no evidence of dirt bikes at the WGL. They do not want to drive vehicles directly on the cap, therefore a road needs to be built for monitoring and landfill inspections.

D. Chaffin stated that there will be operations and maintenance inspections to check if any trespassers are entering the landfill. M. Parsons and H. Welch stated that they are concerned about the road and felt it had not been previously discussed. D. Barney stated that it is not being put there for public use or access, but more as a utility for access during long-term monitoring (LTM). If during the LTM process it becomes clear that the road is compromising the integrity of the cap then steps will be taken to modify and alter the access road.

M. Parsons asked about the use limitations on the WGL. D. Barney said there are no motorized vehicles, bike, etc, but recreation is ok. Nothing that causes a disturbance will be allowed. The slope of the landfill is no more than 5 percent.

Conclusion/Next Meeting

J. Goodrich wrapped up the meeting. The next RAB meeting will be the second Thursday in February (February 10, 2011). The meeting will again be held at the New England Wildlife Center, 500 Columbian St., Weymouth, MA.

Suggestions for topics for the next meeting include:

- SRA FS
- RDA landfill gas report
- B82 RI Addendum
- Main Gate update
- Building 81 RI
- Small Landfill LTM



AGENDA

Naval Air Station South Weymouth, MA

Restoration Advisory Board (RAB) Meeting Agenda

December 9, 2010

New England Wildlife Center, Weymouth, MA

7:00 PM

<i>Agenda Items</i>	<i>Item Lead</i>	<i>Projected Time</i>
1. Introduction, Review of Meeting Notes	Facilitator	7:00 – 7:15
2. Perfluorinated Compounds	Navy	7:15 – 8:15
3. Updates and Action Items	Navy	8:15 – 8:30
4. Questions, Agenda Items, Next Meeting	Facilitator	8:30 – 9:00

Facilitator: John Goodrich, Massachusetts Office of Dispute Resolution & Public Collaboration

Restoration Advisory Board (RAB) Members:

Abington: James Lavin, (Alternate: Steve Ivas); Phil Sortin (Alternate: Beth Sortin)

Hingham: no current representation

Rockland: no current representation

Weymouth: James Cunningham (Community Co-Chair); Ken Hayes; Dan McCormack; Steve White

Navy: Dave Barney (Navy Co-Chair)

EPA: Kimberlee Keckler (Alternate: Bryan Olson)

MA DEP: David Chaffin (Alternate: Ann Malewicz)

BRAC Cleanup Team (BCT) Points of Contact:

Navy: Dave Barney, BRAC Environmental Coordinator, Base Realignment and Closure, Program Management Office, Northeast (617) 753-4656
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Brian Helland, Remedial Project Manager, Base Realignment and Closure Office, Program Management Office, Northeast (215) 897-4912
Email: brian.helland@navy.mil

MassDEP: David Chaffin, Environmental Engineer, Federal Facilities (617) 348-4005
Email: david.chaffin@state.ma.us

EPA: Kimberlee Keckler, Remedial Project Manager, Federal Facilities Section (617) 918-1385 Email: keckler.kymerlee@epa.gov

Paul Marchessault, Remedial Project Manager, Federal Facilities Section (617) 918-1388 Email: marchessault.paul@epa.gov

MassDEP Ombudsman: David DeLorenzo (617) 292-5774, Email: david.delorenzo@state.ma.us



ACTION ITEMS

Naval Air Station South Weymouth, MA Restoration Advisory Board (RAB) Meeting

December 9, 2010 – Next RAB Meeting

<i>Action Item</i>	<i>Item Lead</i>	<i>Deadline</i>
ACTION ITEMS		
None.		Next RAB
UPDATES		
RAB Administrative Actions	D. Barney	Each RAB
MassDEP Update	D. Chaffin	Each RAB
IR Program Sites Update	D. Barney	Each RAB
EBS Review Item Areas/ Various Removal Action Update	D. Barney	Each RAB
FOST/FOSL Update	D. Barney	Each RAB
SSTTDC Update	J. Young	Each RAB
RECENTLY COMPLETED ITEMS		
What is the half life of TCE? (10/10)		
What is the source of NNPA at Building 82? (10/10)		
Turtle nesting info/follow up on the turtle monitoring at Small Landfill (7/10)		
Status on option to use STP/AOC 55C soils at WGL (7/10)		
Provide EBS reports to the TAG's consultant (7/10)		
Evaluate possible methods to solicit new RAB members (3/10)		
Review of metals uptake by AOC 55C wetland trees (3/10)		

RAB information is posted on the BRAC PMO Website: <http://www.bracpmo.navy.mil/>

Perfluorinated Compounds (PFCs)

Restoration Advisory Board
Meeting

December 9, 2010

Dave Barney



Objectives of Tonight's Presentation

- Provide background information on PFCs
- Describe uses and properties of PFCs
- Discuss impacts of PFCs on health and the environment
- Describe use of PFC-containing materials (e.g, AFFF) at NAS South Weymouth
- Summarize PFC investigations at NAS South Weymouth
- Present next steps

What are PFCs?

- These compounds are NOT naturally occurring in the environment; they are man-made.
- PFCs were developed by 3M in the late 1940s. Also manufactured by other companies (Dupont, Dyneon).
- Used to make products stain resistant, water repellent, slippery, and long lasting.
- 3M voluntarily discontinued manufacture of PFCs in 2002.
- PFCs are no longer manufactured in the US, still manufactured in other countries.

PFC Chemistry

- A PFC is a molecule consisting of a carbon backbone with fluorine atoms attached.
- There are many different types of these chemicals differing in the number of carbons as well as the terminal ends.
- This structure makes them very stable.
- Two of the most common perfluorinated compounds are perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS).
- There are over 20 individual PFCs; most studies and attention is focused on PFOA and PFOS.

Where are PFCs Used?

- PFCs are used in many everyday products:
 - Fast food wrappers and popcorn bags
 - Coatings for paper and cardboard packaging
 - Stain resistant & water repellent clothing
 - Carpeting
 - Aqueous Film Forming Foam (AFFF)
- AFFF is used at military bases, airports, petrochemical plants.
- PFOA is used to make polymers used in aerospace, automotive, semiconductor, textile, chemical processing and building construction industries.

Properties of PFCs

- Not much is known about these chemicals.
- They are persistent, e.g. they do not easily breakdown in the environment.
- They haven't been studied for very long, research is being done on the toxicity of the various PFCs.
- They are considered emerging contaminants (e.g., no regulatory standards established).
- Focus of research (state and EPA) on PFOA and PFOS in drinking water.

PFC Health Impacts

- EPA began investigation of PFOS in 1999 and PFOA in 2000.
- EPA has not indicated any health concerns with the use of consumer products containing PFCs.
- PFCs have been detected in animals, fish, and birds worldwide. Routes of exposure are not known.
- Toxicological studies are underway on laboratory animals; delays in growth have been seen.
- Studies in the US (MN, NC), Japan, Germany.
- Few studies of human health effects. PFCs have been found at very low levels in humans; no known health impact to humans.

Locations Where PFCs Have Been Detected in Wildlife



PFCs in the Environment

- PFCs are not routinely included in environmental investigations; not on the CERCLA hazardous substances list.
- Few laboratories are certified to analyze for these compounds.
- Minnesota has taken the lead in research and sampling for PFCs in the environment.
- New Jersey, North Carolina and EPA have developed provisional values for PFOA/PFOS in groundwater used for drinking water.
- No EPA or state levels developed for other media (soil, surface water, sediment).

Current EPA/State Levels

[for groundwater used as drinking water]

Groundwater ($\mu\text{g/L}$)		
	PFOA	PFOS
EPA Provisional Health Advisory (2009)	0.4	0.2
NJ (2009 guidance value)	0.04	NA
Minnesota	0.3	0.3
North Carolina (draft)	0.9 – 1.6	NA

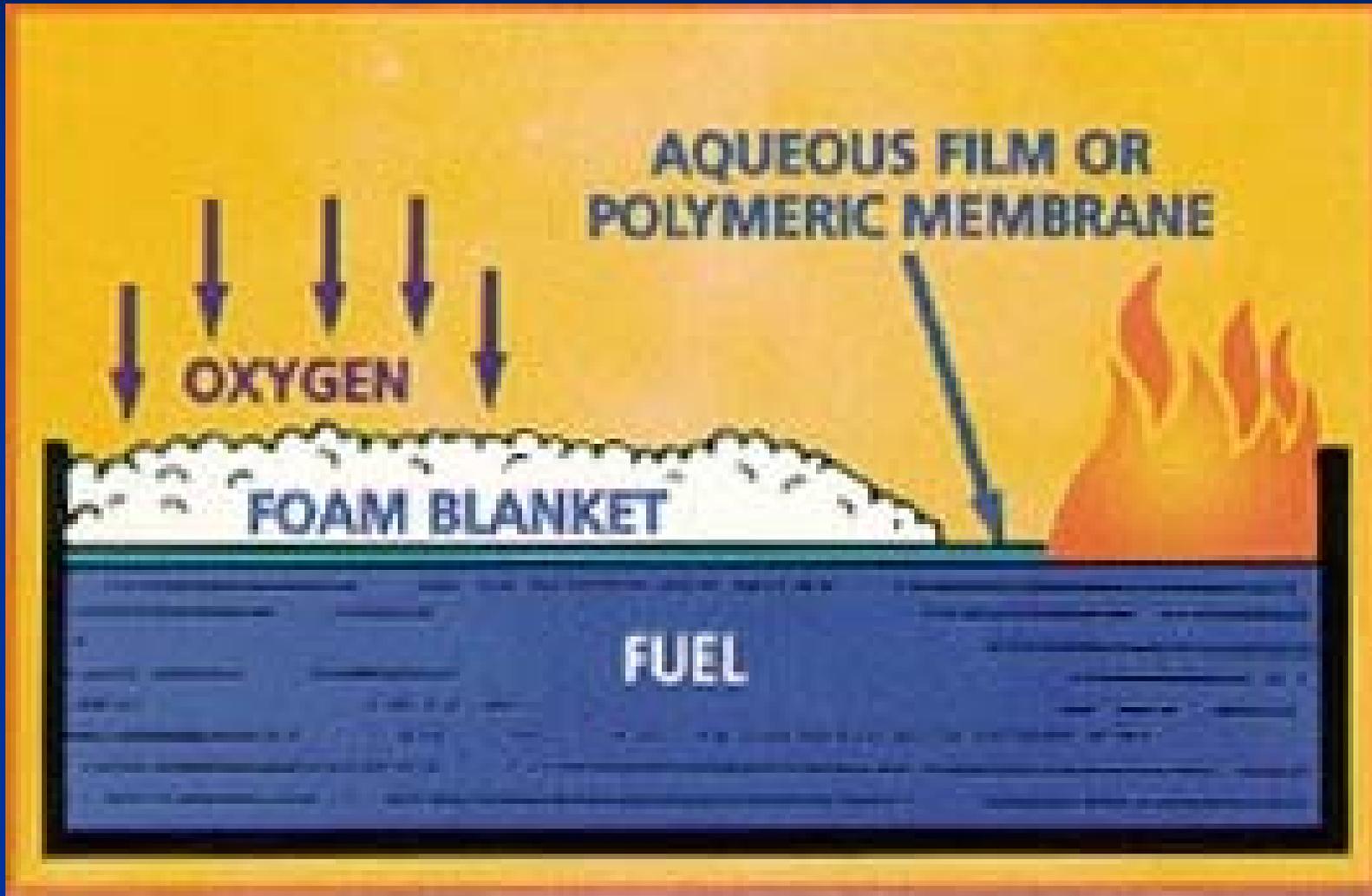
Regulatory Status

- EPA plans to update the Provisional Health Advisory Values for PFOA/PFOS.
- EPA Region I has calculated risk-based screening levels for PFOA/PFOS in residential soil.
- MassDEP is not currently developing any PFC regulatory values.

What is AFFF?

- Aqueous Film Forming Foam (AFFF); one of many types of fire fighting foams.
- Used to extinguish flammable liquid fires (hydrocarbon-based fires).
- Military specifications mandated the use of fluorochemical surfactants in order to:
 - Lower the surface tension to allow formation of foam
 - Seal in chemical vapors to prevent fire
 - Allow water to form a layer on lighter fuels to cool the fire

How Does it Work?

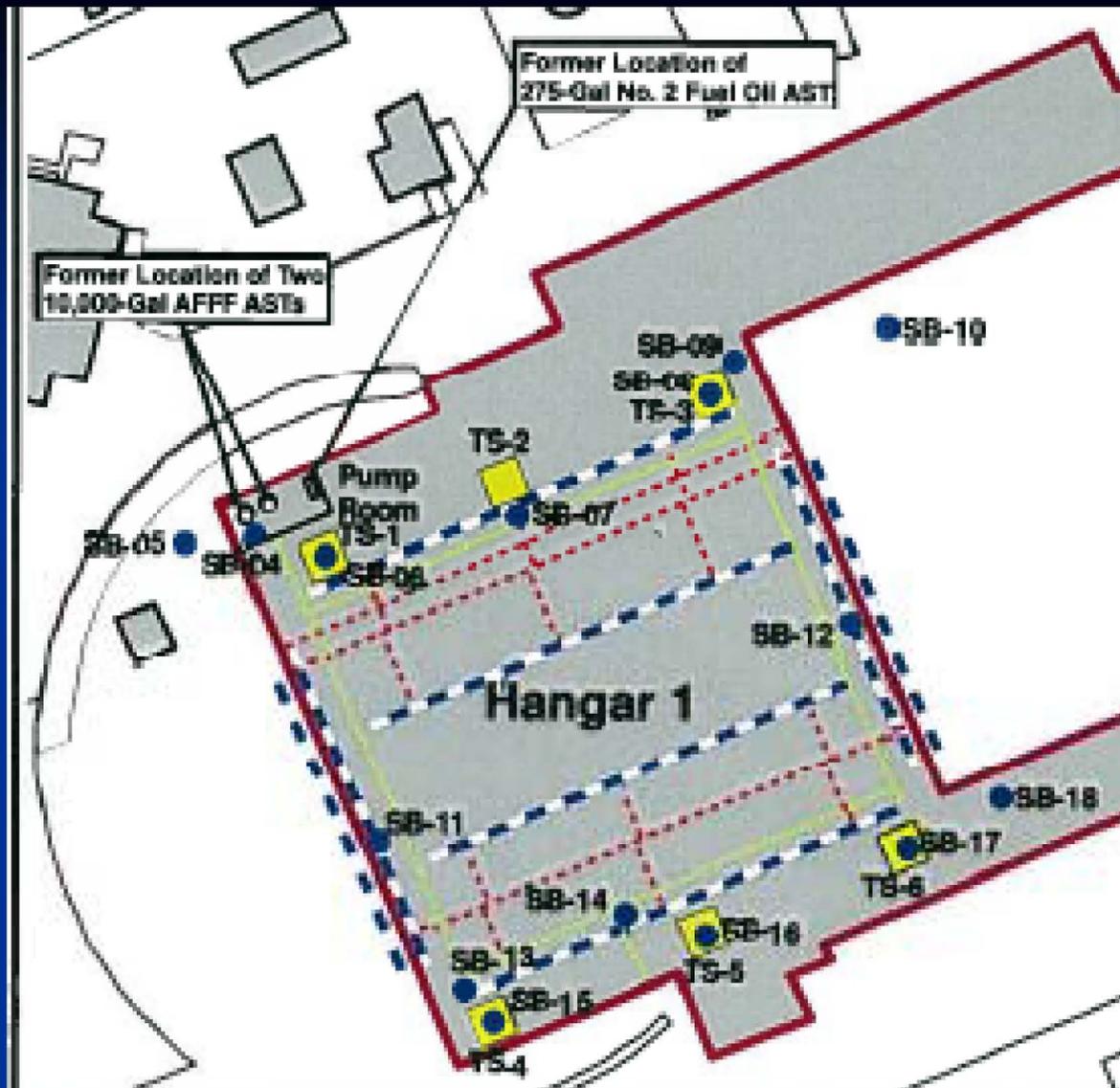


Type of AFFF Used at the Base

- AFFF first used at the Base in early 1980s; before then protein foams were used.
- Base records research was performed; exact AFFF products used were not determined.
- AFFF meeting military specifications included glycols, ethers, proprietary fluorinated compounds (e.g. PFCs).
- AFFF used in fire fighting is: 98.94% water, 0.49% solvents (glycol ethers), 0.52% surfactant (PFCs), and 0.52% other.

Where was AFFF Used at NAS South Weymouth?

- At Hangar 1, AFFF stored in two 10,000-gallon above-ground tanks inside the hangar.
 - Accidental release of 5,000 – 10,000 gallons inside Hangar 1 on October 21, 1987.
 - Other inadvertent releases were reported.
 - RIA 11 was established under the EBS program to address releases of AFFF.
- AFFF used at the Fire Fighting Training Area (FFTA).
 - Used in training exercises.
 - Released to surface soil during training activities.



Hangar 1 Plan View: Note AFFF ASTs and sub-slab piping. TS = Turret Stations



10,000-Gallon AFFF Storage Tank in Hangar 1



**AFFF Mixing Station – 1 of 3 inside Hangar 1
[AFFF solution is mixed with water and then piped to
discharge locations (e.g., turrets)]**



**Turret Stations for Discharge of AFFF
[1 of 6 Turret Stations inside Hangar1]**



AFFF Mixing Station Piping
[Note Floor Penetration to Sub-Slab Distribution Piping]

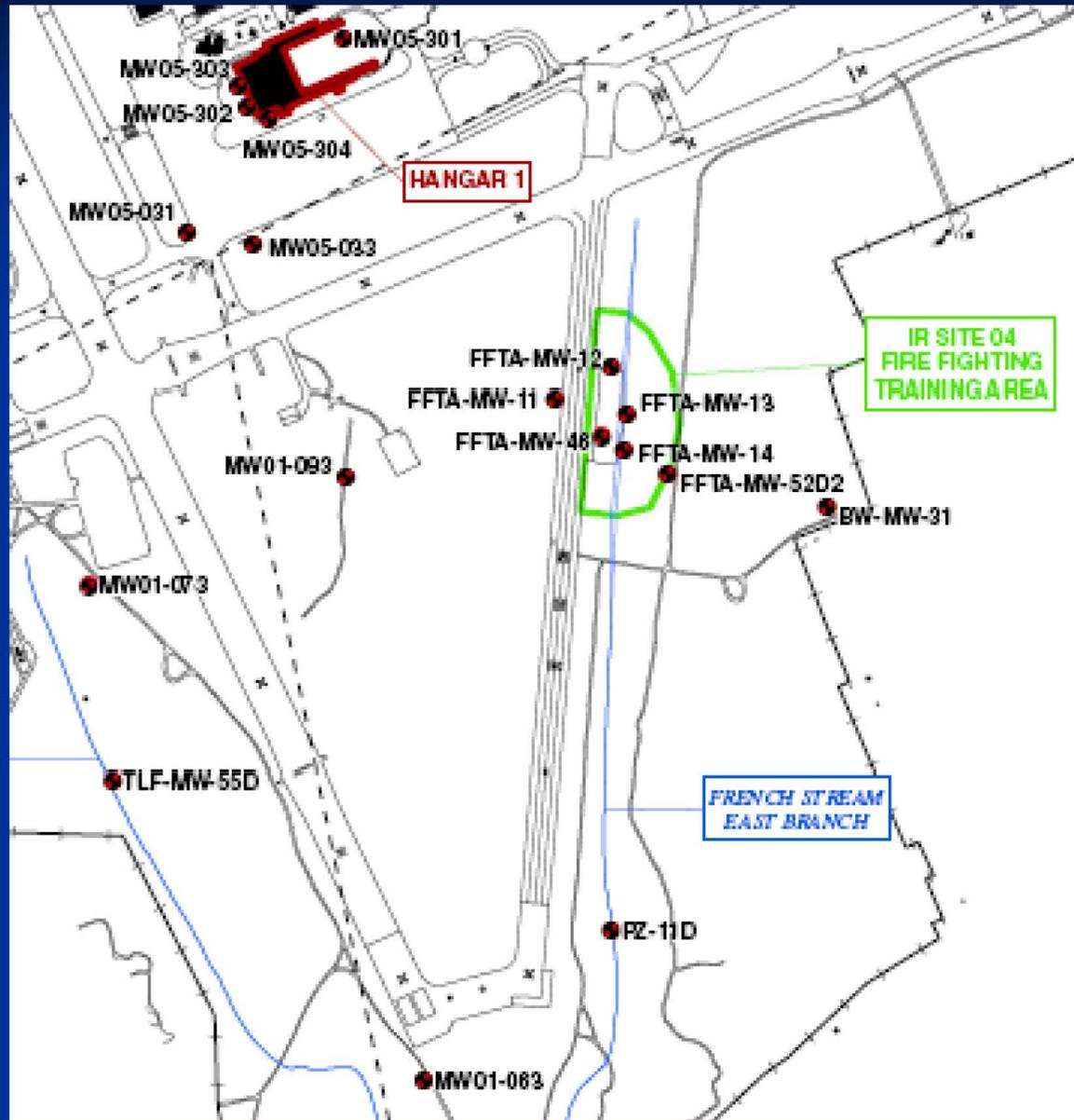


Gas-Driven AFFF Pump and Associated Piping

Development of PFC Investigation

- Navy completed additional research on AFFF in 2009 and identified analytical laboratories certified for the analysis of PFOA/PFOS.
- In early 2010, Navy completed a SAP to collect groundwater samples for PFOA/PFOS analyses, and determine their presence by screening the data against the EPA provisional health values.
- Shallow groundwater samples were collected from existing monitoring wells located around Hangar 1 and FFTA and downgradient of both areas.

Wells Sampled for PFOA/PFOS



PFC Field Program

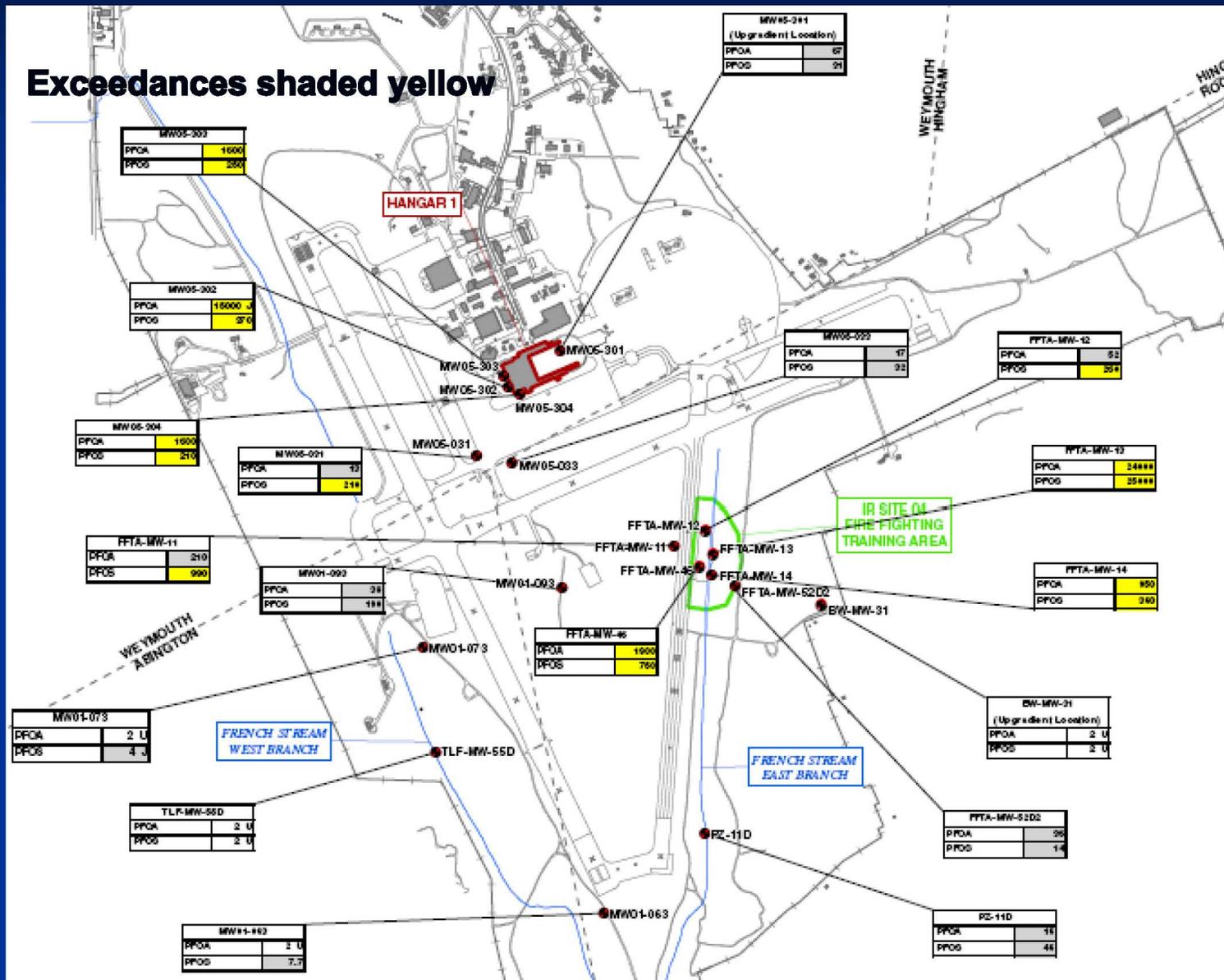
- All wells were inspected and found to be in good condition with no obstructions.
- The wells were re-developed to ensure representative samples were collected.
- Water level measurements were collected on April 20, 2010; groundwater flows south-west from Hangar 1 and west from FFTA.
- Groundwater samples were collected from 18 wells, plus QA/QC. All data were validated.
- The analytical detection limit was 0.0002 µg/L given the screening criteria of 0.4 µg/L (PFOA) and 0.2 µg/L (PFOS).

PFC Investigation Results

- PFOA & PFOS detected in many samples; exceedances of the EPA provisional health screening values at both sites.
- Highest concentrations of PFOA and PFOS from wells within FFTA operations area.
- Exceedances in downgradient wells in the area around Hangar 1 and FFTA operations area.
- No exceedances in wells south & downgradient of both areas (e.g. TLF, TACAN, south of runways).
- Groundwater project report issued in September 2010.

PFOA/PFOS Groundwater Data

Exceedances shaded yellow

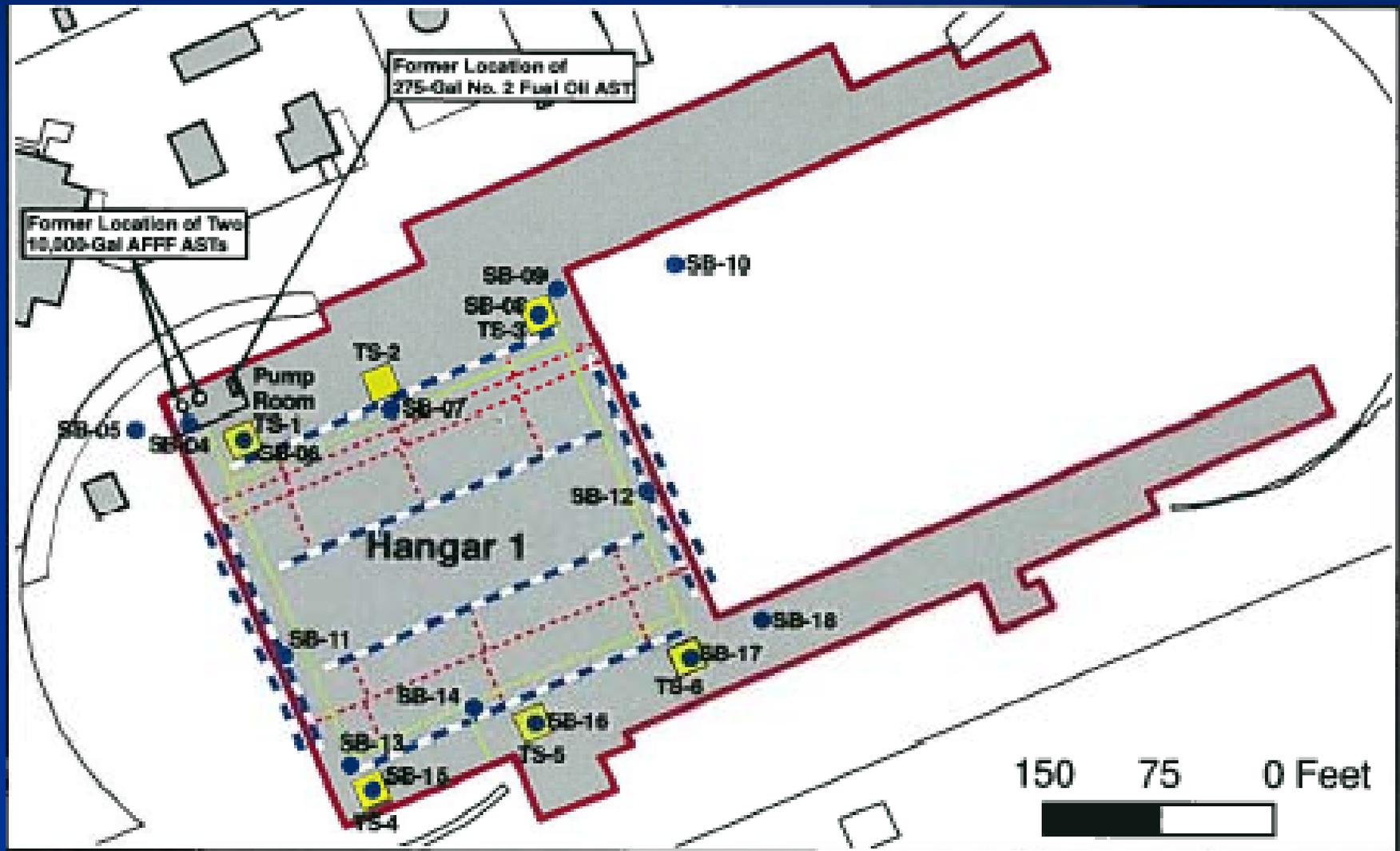


Expanded PFC Investigation

In response to discussions with EPA and MassDEP, Navy is developing an expanded investigation to collect:

- Additional groundwater samples to delineate the extent of contamination.
 - Compare data to EPA provisional health values.
- Soil samples near monitoring wells, beneath Hangar 1 slab, and FFTA source area.
 - Compare data to soil values calculated by EPA.
- Surface water and collocated sediment samples.
 - No values for comparison; evaluate presence/absence in these media.

Proposed Hangar 1 sub-slab soil samples ['SB' locations]



Next Steps

- Draft Sampling and Analysis Plan to be issued in December.
- Anticipate field work in winter 2011.
- Goal of investigation is to identify presence/absence of PFCs and delineate the extent of contamination.
- Navy will use the information to support property transfer considerations.