



**Naval Air Station
South Weymouth, MA
Restoration Advisory Board
Summary of RAB Meeting – January 11, 2007**



NAS South Weymouth Website: <http://nas-southweymouth.navy-env.com>

1. INTRODUCTIONS/ APPROVAL OF PRIOR MEETING MINUTES

Mary Skelton Roberts opened the meeting at approximately 7:10 PM. She requested that all attendees, including RAB members, regulators, and audience members, introduce themselves. The sign-in sheet for the meeting is provided as Attachment A to this meeting summary. M. Skelton Roberts asked if everyone had time to read the meeting notes from the prior RAB meeting (November 2006) and the December 2006 memo cleanup update and asked for comments on them. The December summary/update was sent out with the November mailing in lieu of a December meeting.

M. Skelton Roberts reviewed the guidelines for the meeting. She reminded the participants when asking questions to wait to speak until they are acknowledged, to state their names and affiliations, and to speak into the microphone when they have questions. She also reviewed a formal set of ground rules for the meeting to better keep to the agenda and focus on cleanup issues: please ask one question at a time and give everyone a chance to speak; it is okay to disagree but please be respectful; please allow Mary to 'facilitate' the conversation. A new procedure for RAB meetings was described, using a 'parking lot' to document issues related to redevelopment of the Base. The 'parking lot' consisted of oversized sheets of paper taped to the wall; all redevelopment issues brought up during the meeting would be put into this 'parking lot.' These issues will not be discussed during the meeting, but will be documented in a letter to South Shore Tri-Town Development Corp. (SSTTDC) with a request for response. D. Barney, with RAB member assistance, will prepare the letter following each RAB meeting to be sent to SSTTDC on behalf of the RAB.

M. Skelton Roberts then reviewed the agenda and presentations scheduled for the meeting. The Agenda for the meeting and the Action Item Tracking List are provided as Attachment B to this meeting summary. In accordance with the agenda, the presentations would be followed by the Updates and Action Items portion of the meeting.

2. PRESENTATIONS

The first presentation is a Basewide Hydrogeologic Investigation Update and the second presentation is the French Stream Geochemical Investigation Update. The following paragraphs summarize the presentations and include references to selected presentation slides in Attachment C. The complete

presentations are available in color on the NAS South Weymouth web site: <http://nas-southweymouth.navy-env.com>.

D. Barney introduced Doug Simmons and John Bleiler from ENSR and summarized the objectives of the presentation (Slide 2). The last basewide update was in July 2006 after the basewide assessment field data were collected. The Hydrogeologic and Geochemical Investigation Technical Memoranda are in draft form and have only recently been submitted to the regulatory agencies. Since there has been no review by the regulators of these data and analysis yet, this presentation represents Navy's conclusions. The main focus on the French Stream Geotechnical Memo is the floc assessment and evaluation. D. Barney mentioned that the other two Technical Memoranda will be presented at future RAB meetings. A targeted human health risk assessment (HHRA) specifically for the floc should be completed in a couple of months as will an Ecological Risk Assessment Memorandum.

Basewide Hydrogeologic Investigation Update

D. Simmons stated that he was going to talk about the Hydrogeologic Investigation. This investigation compiled all the data from different sites on the Base to form a Conceptual Site Model (CSM), update and refine the previous Basewide groundwater flow assessment, and support other basewide investigations (Slide 3). The boring logs for the different sites on the Base were prepared by different consultants, so they had to be reviewed, standardized, and evaluated for geologic units basewide. Very limited data collection was performed.

There were five study components (Slide 4). 1 – Define and characterize the hydrogeologic units, which are different geologic zones or strata. 2 – Potential transmissive zones were assessed. Transmissive zones are a type of geologic zone that allows water to flow more easily than other zones. 3 - Groundwater flow was evaluated across the Base. 4 - The historical filling of the wetlands was assessed. There were approximately 600 acres of wetland on the Base and about 300 acres were filled in during base construction. 5 - A basewide conceptual site model was also developed.

Three major hydrogeological units (soil and fill, overburden, and bedrock) were identified based on analysis of the boring logs (Slide 5). The soil and fill unit has four subunits; the overburden unit, or any remaining unconsolidated material, has seven subunits; and the bedrock unit has two subunits. The bedrock has an uneven upper surface and fractures were determined by using photolineaments. Photolineaments is fracture imaging technique based on fault observations. Fractures are important because they are areas where groundwater flows through the bedrock.

The groundwater flow assessment (Slide 6) included measurements of water depth in new piezometers and staff gauges in French Stream. A synoptic water level round was performed in January 2006 and included 160 points across the Base. Groundwater flow direction was determined by preparing a map using these groundwater elevations. SSTDTC performed a pump test in February 2006 and the information from that study was also used in the groundwater flow assessment. The groundwater contours created from this assessment showed rainwater infiltrating the ground surface and discharging into the branches of French Stream.

Three different transmissive zones, where water is likely to flow, were defined during the investigation. This information was determined mainly from Massachusetts state mapping. These transmissive zones are located in the aquifer along the west branch of French Stream, a few areas in the north-central part of the Base, and Old Swamp River. A possible bedrock transmissive zone was identified near the West Gate Landfill.

The presence of filled wetlands was evaluated. Topographic maps from 1941, before construction of the Base, were compared to current conditions. These maps show French Stream followed a very different channel than its present location and that its channel has been highly altered, due to filling in approximately half of the wetlands area.

A Conceptual Site Model was developed and is explained in detail in Slides 7 and 8. Bedrock is overlain by 0 to 50 feet of overburden and fill. There are three transmissive zones and mapped aquifers in three different portions of the Base. Most groundwater recharge is from precipitation, with some infiltration from surface water. The depth to groundwater is generally shallow. The groundwater in the overburden is unconfined, meaning there is no restriction of water movement, as there would be if a layer of clay was present. French Stream is generally a gaining stream, with shallow groundwater flowing toward the stream. During Base construction some wetlands were buried and French Stream was significantly altered and channelized.

D. Galluzzo asked if there was any pattern of flow that would suggest a migration of contamination from the IR sites. D. Simmons stated that this investigation was focused on the groundwater elevations and the direction of groundwater flow, not contaminant migration. D. Barney stated that contamination migration is discussed in the Remedial Investigation (RI) reports for the IR sites. Field investigations at three more IR sites have recently been completed and migration of contamination will be included in those RI reports.

M. Bromberg asked if there was any water migration from the IR sites. D. Simmons stated that groundwater flows under the entire Base, so there is water migration everywhere. M. Bromberg asked if it

was clear that there is contamination migrating away from sites into French Stream. J. Bleiler stated that their study focused on the big picture but for details you must go to the individual site RI reports.

J. Rakers asked if contamination was moving into the other parts of the Base. D. Simmons stated that this wasn't part of the study. D. Barney stated that groundwater migration is discussed in the RI reports.

M. Parsons asked how the drainage basins interact with the water flow. D. Simmons described the basins as the edges of a bowl. Depending on where the rainwater falls, water will be channeled in one direction or another. M. Parsons asked if she was correct in thinking that any water in Old Swamp River and groundwater is flowing towards Weymouth, while French Stream is flowing towards Rockland. D. Simmons responded in the affirmative.

M. Byram asked if you could tell whether the groundwater flow direction is based on fractures. D. Simmons stated that you can predict general flow direction if you have enough wells but it is very difficult to observe changes in groundwater direction in fractures.

D. Galluzzo requested a summary of hydrogeological flow on the Base. J. Bleiler stated that the information was in the Technical Memorandum that is now being reviewed by the regulators. The document is available at the four local libraries and the information depositories, and was also distributed to the RAB town representatives. A request was made for an electronic copy or a CD. D. Barney said CDs would be made for those who request them.

S. Ivas asked if the old French Stream channel ran parallel to any fractures. D. Simmons stated that it crossed the fractures.

D. Galluzzo asked if this study information was going to be used by the developer. D. Barney stated that the information would be available to the developer.

Geochemical Investigation Update (French Stream)

J. Bleiler restated that the update is based on the Navy's conclusions and the regulators have not yet reviewed the Technical Memorandum. The most recent data collected as part of this study were presented at the July 2006 RAB meeting, immediately after the data were collected. Since then there has been no new data collected, only data interpretation.

He stated that when the word floc is used there can be three different types. One type is when the water has a red color which is interpreted as iron floc suspended in the water. The second type is where iron

precipitates and floc coats the rocks and sediment at the bottom of French Stream. The third type is bacterial growth that deposits on sticks and leaves in the stream.

The objectives of this geochemical investigation were to develop and test hypotheses regarding the composition of the floc, the source of the floc, and causes of the floc found in French Stream; evaluate whether there is a relationship between the presence of floc and disposal sites on the Base; and evaluate other explanations for the floc found in French Stream (Slide 10). There are three possibilities that lead to the occurrence of the floc: the environmental sites, the wetlands, or naturally occurring materials (Slide 11). The conceptual model of floc formation shows that both an iron source and organic matter must be present to for floc to form (Slide 12).

The field work was performed from December 2005 to May 2006 (Slide 13). Reconnaissance surveys were performed at 61 locations, the stream was characterized and floc mapped. Floc was collected from four locations and analyzed for bacterial and chemical constituents. Surface water samples were collected for chemical analysis both upstream and downstream of the four floc sample locations. Thirteen sets of piezometers were installed; water levels and water quality parameters were measured at these locations, from the surface water and groundwater, to monitor any change during the field program. The sample locations are shown on Slide 14.

Seeps were observed along the stream during the field effort. A seep is groundwater discharging out of the stream bank and flowing into the stream. As groundwater high in iron and manganese becomes oxygenated when it discharges and hits the atmosphere, the groundwater would turn red. A greater number of seeps were observed during the December 2005 and March 2006 reconnaissance surveys than during the May 2006 survey. This is due to the fact that water levels were higher in May 2006 so the groundwater seeps were not evident as the groundwater discharged directly into the water within the stream. Also in May 2006 the floc started appearing further downstream than during the previous surveys.

The chemical and bacterial analyses performed on the floc samples showed that the floc is composed primarily of iron and manganese oxides (Slide 15). There were elevated levels of certain metals found in floc but the bacteria found in the stream are common and not related to environmental sites. One septic type of bacteria was identified.

USGS has been working with the EPA and has collected floc samples at various locations around the Base, but that data is still being evaluated.

From the data, weight-of-evidence conclusions were drawn. It is important to note the uncertainties associated with each evaluation (Slide 16). Many of the Navy sites are located in historically filled wetlands; therefore it is hard to compare the data to non-filled sites. There is also no ideal upstream background wetland location that can be used as a reference location for comparison. There is evidence that suggests a regional source of iron in the groundwater. The bedrock is high in iron; floc occurrence is not specific to any environmental sites, and is found upstream of environmental sites. Groundwater that is not associated with environmental sites has similar iron and manganese concentrations to groundwater elsewhere on the Base (Slide 17). The base construction, and the filling of the wetlands during construction, may have contributed to the presence of the floc (Slide 18). There are over 300 acres of filled wetland, and the fill material may have been high in iron. The fill also covered native peat, a highly organic material, which likely aides in the formation of the floc. There are some data that suggest that the environmental sites may serve as secondary contributors to the iron and manganese in French Stream (Slide 18).

In conclusion (Slide 19), in order for floc to form there needs to be water containing iron in dissolved form that moves from a reducing to an oxygen-rich environment and there also must be organic matter in the subsurface. The various potential sources for the iron are bedrock, soils, overburden, and environmental sites. The potential sources for the organic material are wetlands, native peat, fill sites unrelated to environmental sites, and environmental sites. The Navy's conclusion is that even in the absence of a Navy site a variety of natural and historical factors could continue to contribute high levels of dissolved iron thus resulting in floc formation in French Stream.

M. Parsons asked the location of the photos in the introduction slide (Slide 9) and when the pictures were taken. The right hand picture is the upstream location, in the northwesterly corner of the Base, where French Stream enters the Base. The second photo was taken in December and is at the south end of the Base; M. Parsons thought the location was probably upstream of Spruce Street. M. Parsons stated that the floc is very bad downstream of Spruce Street. The floc is very orange in this area but further downstream it clears up just before the east branch of French Stream joins the west branch. J. Bleiler noted that the USGS did collect samples downstream.

K. Hayes stated that the data collected shows the orange floc observations beginning on the Base. D. Simmons agreed and stated that the orange floc begins upstream of any environmental sites.

S. Ivas asked if there were other locations throughout the country with peat and iron rich rock that show similar flocculation. No research has been done to see if there are similar areas.

K. Hayes asked if French Stream was impaired because of the floc. D. Simmons stated that that would be addressed in the next Technical Memorandum.

M. Bromberg asked if iron content stayed high over a period of 40 to 50 years. D. Simmons said yes. M. Bromberg also asked about a clear tributary, coming from the west side that runs into French Stream. If the iron-rich bedrock is regional why is floc only evident in French Stream? D. Simmons stated that there is a regional source of iron, not necessarily regional iron in the surface water. M. Bromberg asked if the associated metals found in the floc posed any human health risk. D. Simmons stated that will be addressed in future memos.

M. Byram asked if there was any explanation for the change in where the floc was observed over time. D. Simmons stated he thinks when there is greater flow in the stream the iron is diluted and the floc occurs further downstream.

T. Pries asked if the spring of 2006 was dry. D. Simmons answered, no. She then asked if there is higher water levels is there more floc? D. Simmons stated that the more water flow there is in the stream the further downstream the floc is found. T. Pries asked if temperature influences the formation of the floc. D. Simmons stated there was more floc observed in the spring or fall. Studies generally show more floc in spring than summer.

D. Galluzzo asked whether the IR sites are getting larger, and if the contaminants are migrating. D. Simmons stated that the hydrogeologic investigation was performed to evaluate groundwater flow throughout the Base, not contaminant migration. D. Galluzzo asked if there was a prediction on when the floc in water will leave the Base and migrate into surrounding areas, due to the fact the French Stream flows off the Base. J. Bleiler stated that there is less floc in Old Swamp River than French Stream.

M. Parsons asked the characterizations of the soil on both sides of French Stream. D. Simmons stated that on the west side of French Stream there is more filled wetland and aquifer-type materials, which are more transmissive. On the east side there is more till and peat in wetlands.

M. Bromberg noted that on the east side there are drains from the runways that run into French Stream and there are massive amounts of floc. If there is no wetland there how is the floc naturally occurring? J. Bleiler stated that there are some wetlands on the east side; they are just not as extensive as on the west side of the Base. D. Barney stated that there was some information collected just south of where the pipe joins the river but no camera has been put up the pipe. It is believed the pipe drains the lower triangle in the infield area. There is a catch basin on the west side of the taxiway in the area where that

pipe would originate. The red/orange color in the discharge from this pipe indicates that groundwater is entering the pipe at some point.

K. Hayes stated that the long-term monitoring that will be occurring at the RDA will be of interest if floc develops in Old Swamp River side of the Base over time. If floc does start to develop it could be an indication that it was caused from filling the wetland area.

A comment was made that many landfills have been put on top of peat deposits and floc is common around landfills. M. Parsons stated that the floc around landfills that she has seen is still not as bad as in French Stream.

The next steps will be two more technical memorandums that will discuss the Human Health Risk Assessment and the Ecological Risk Assessment. Hopefully these memos will answer questions about the types of risk associated with the floc and French Stream (Slide 20).

M. Bromberg asked if the new detention ponds to be constructed throughout the Base for storm water would be dug down to the water table, and if so, will the water turn orange. D. Simmons stated that the potential is there, but typically such ponds are built above the water table so they have the capacity to hold storm water, but he is not sure what is planned. S. Ivas stated that he doesn't know the location or the design of the detention ponds but assumed they would be above the groundwater table.

3. UPDATES AND ACTION ITEMS

M. Skelton Roberts asked if there were any questions on the November RAB meeting notes. There were none. She then reviewed the four action items listed on the Action Item Tracking List (see Attachment B) for this RAB meeting:

1. Provide blueprint of old STP to H. Welch - D. Barney stated he would mail the blueprint of the old STP to Harvey Welch.
2. Distribute monthly Navy program status/administrative items update – The December update has been distributed.
3. Copies of figures from Old Swamp River Study by Beta, Inc. - D. McCormack will try to locate the figures from the old Swamp River Study by Beta, Inc.
4. Check status of NAS South Weymouth website - The public website was checked. There were no construction issues.

M. Skelton Roberts asked each of the Leads to provide updates to the list of Update Items.

RAB Administrative Actions: D. Barney needs a RAB member to assist with compiling the parking lot issues which need resolutions and answers. The issues will then be addressed to the Executive Director of SSTTDC from the RAB.

MADEP Update: D. Chaffin stated there was nothing new to report on State sites.

Coast Guard Update: D. Barney received no update. K. Hayes asked if the reseeding was completed. P. Whittemore stated that it still needed to be done. K. Hayes asked if there was orange floc coming from the Buoy Depot/Coast Guard. D. Barney noted that there is typically no floc and the Buoy Depot ditch is usually dry.

IR Program Site Update: The December update was mailed out and was also available on the back table. The field programs for three RIs, Building 81, Building 82, and the Solvent Release Area are now completed. D. Barney commented that they were well coordinated field efforts and now the data will be compiled and the draft RI reports will be developed. The findings will be presented to the RAB.

MCP Update: D. Barney stated that the Response Action Outcome, the final document for the site, was submitted for Jet Fuel Pipeline Site and the site closure will occur soon. Four rounds of groundwater data were used in a risk assessment which showed no significant risk at the Site.

Excavation was completed at the Fire Fighting Training Area with two rounds of groundwater monitoring to follow. The first round has been completed and the second round is set for the spring.

EBS Update: No update.

FOST Update: D. Barney had no CDR update. The FOST 3 responsiveness summary will be completed and distributed soon. He stated that the FOST 4 revision and responsiveness summary for the initial version of FOST 4 will also be completed soon. They will be issued together so previous comments do not have to be repeated or they can be modified as necessary during review of the revised FOST 4 document.

SSTTDC Update: S. Ivas stated EDC and DDA discussions continue with LNR and Navy. The Tri-Town master lease is extended to the end of 2007. Natural Heritage has certified 8 out of 24 vernal pool identified by the SSTTDC consultant; the remaining 16 vernal pools did not have the correct

photographical evidence. Additional photographs will be taken in the spring. One of the 24 pools was certified by a private outside source.

M. Skelton Roberts requested that when discussing the SSTTDC update please try to keep the summary related to the cleanup. If there are other development issues they will be added to the parking lot.

M. Skelton Roberts asked if there was anything to add to the parking lot issues or anything to be clarified.

J. Cunningham requested a map of the 24 vernal pools, with the 9 newly certified vernal pools marked. J. Rakers asked for copies of letters regarding contamination in the vernal pools. There was a clarification that there is no water quality data for any of the vernal pools.

K. Hayes asked if the locations for the vernal pools was surveyed using GPS. Yes there were.

Possible Topics for future RAB Meetings

Due to the level of activity in the next few months D. Barney suggested having meetings in March and April. The following topics were suggested for future meetings:

- March meeting - FOST 4 and the FOST process
- April meeting – Risk assessment for the floc material (HHRA)
- M. Parsons suggested a presentation on AULs (Activity & Use Limitations) - where are they on the Base and what are the restrictions. A soil management plan is needed before construction of AUL areas.

Conclusion/Next Meeting

The meeting concluded at approximately 9:10 pm. The next RAB meeting was set for Thursday, March 8, 2007.



**Naval Air Station South Weymouth
Weymouth, MA
Restoration Advisory Board
RAB Meeting Agenda**



11 January 2007

Conference Center on Shea Memorial Drive

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. Basewide Hydrogeologic and Geochemical Study Updates	Navy	7:15 - 7:45
3. Updates and Action Items	Navy	7:45 - 8:15
4. Questions, Agenda Items, Next Meeting	Facilitator	8:15 - 8:30

Facilitator: Massachusetts Office of Dispute Resolution: Mary Skelton-Roberts

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: Patty Marajh-Whittemore (Alternate: Pamela Harting-Barrat)

MA DEP: David Chaffin (Alternate: Ann Malewicz)

BRAC Cleanup Team (BCT) Points of Contact:

Navy: Dave Barney, BRAC Environmental Coordinator, Base Realignment and Closure Office, Program Management Office, Northeast (617) 753-4656

Brian Helland, Remedial Project Manager, Base Realignment and Closure Office, Program Management Office, Northeast (215) 897-4912
Email: brian.helland@navy.mil

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

EPA: Patty Marajh-Whittemore, Remedial Project Manager, Federal Facilities Section (617) 918-1382 Email: whittemore.patty@epamail.epa.gov



Naval Air Station South Weymouth Restoration Advisory Board Action Item Tracking List



11 January 2007 – Next RAB Meeting

<i>Action Item</i>	<i>Item Lead</i>	<i>Deadline</i>
ACTION ITEMS		
Provide blueprint of old STP to H. Welch	D. Barney	Next RAB
Distribute monthly Navy program status/administrative items update	D. Barney	December
Copies of figures from Old Swamp River Study by Beta, Inc.	D. Barney	Next RAB
Check status of NAS South Weymouth website.	P. Call	Next RAB
UPDATES		
RAB Administrative Actions	D. Barney	Each RAB
MA DEP Update	D. Chaffin	Each RAB
Coast Guard Buoy Facility Update	R. Marino	Each RAB
IR Program Sites Update	D. Barney	Each RAB
MCP Release Areas Update	D. Barney	Each RAB
EBS Review Item Areas/ Various Removal Action Update	D. Barney	Each RAB
FOST/FOSL/CDR Update	D. Barney	Each RAB
SSTTDC Update	J. Lavin/ S. Ivas	Each RAB
COMPLETED ITEMS		
P. Scannell to provide the reference for the 1995 EPA study to D. Barney (11/06)		
Distribute monthly Navy program status/administrative items update (11/06)		
Were runways in the transferred land tested for fuel oil and PCBs? (11/06)		
1997 DEP letter re: non-potable drinking water source areas on the Base (11/06)		
Map showing sampling locations on the Base (11/06)		
Old Swamp River additional sample collection; data available? (11/06)		
Status of release of MDPH ALS/MS study (11/06)		
Contact Dr. Knorr regarding access to NAS South Weymouth EGIS (7/06)		
Distribute monthly Navy program status/administrative items update (7/06)		
Check availability of MDPH to give a presentation on MS/ALS data (5/06)		
Distribute monthly Navy program status/administrative items update (3/06; 4/06)		
Provide copies of SSTTDC and Mayor Madden letters re: Small Landfill CAAA to M. Parsons (2/06)		
Provide information on vernal pools to M. Byram (2/06)		
Distribute monthly Navy program status/administrative items update (2/06)		
Small Landfill CAAA Update (12/05)		
Distribute monthly Navy program status/administrative items update (12/05)		
Provide details of RDA contractor's upcoming work (10/05)		
Provide details about SSTTDC's unescorted access policy (10/05)		
Provide turtle activity update (8/05)		
Check where upcoming RAB meeting times are posted (8/05)		
Distribute monthly Navy program status/administrative items update (8/05)		