

**Final Agenda**  
**Restoration Advisory Board Meeting**  
**Naval Air Station Brunswick, Maine**  
**Wednesday, 19 March 2008**  
**Parkwood Inn**  
**7:00 to 9:00 pm**

7:00 – 7:15 Introductions (Navy)

- New Navy Representatives
- Dispute Resolution/Stipulated Penalties Issue

7:15 – 7:45 RAB Administrative Items (Navy)

- Citizen RAB Co-Chair Update
- New RAB Members
- Discussion of RAB Charter/Rules/By-Laws

7:45 – 8:10 Midcoast Regional Redevelopment Authority Update (MRRRA)

8:10 – 8:15 Site 9 Removal Action Update (Navy)

8:15 – 8:45 Status Updates

- Military Munitions Response (MMR) Program (TtNUS)
- 1,4-dioxane Investigation (TtNUS)
- Naval Exchange Service Station (NEX) (TtNUS)
- Site 17 Remedial Investigation (TtNUS)
- Site 2 Site Inspection (TtNUS)
- Spring Long-Term Monitoring Program Sampling (ECC)
- Eastern Plume Groundwater Flow Model (ECC)
- Mere Brook Fish Tissue Study (EPA)

8:45 – 9:00 Questions & Future RAB Agenda Topics

**RESTORATION ADVISORY BOARD (RAB) MEETING  
NAVAL AIR STATION BRUNSWICK, MAINE  
19 MARCH 2008  
MEETING NOTES**

**MEETING ATTENDEES**

Todd Bober, Remedial Project Manager	U.S. Navy, MIDLANT
Paul Burgio, BRAC Environ. Coordinator	U.S. Navy, BRAC PMO Northeast
Claudia Sait, Remedial Project Manager	Maine Department of Environmental Protection
Mike Daly, Remedial Project Manager	U.S. Environmental Protection Agency
Cornell Rosiu, Biologist	U.S. Environmental Protection Agency
Al Easterday, Project Manager	ECC (Navy Contractor)
Doug Heely	Environmental Strategies & Management.
Lisa Joy, Environmental Director	Naval Air Station Brunswick
Carol Warren	Brunswick Area Citizens for a Safe Environment
Victoria Boundy, Planner	Mid-Coast Regional Redevelopment Authority
Arnie Ostrofsky, Project Manager	TetraTech NUS (Navy Contractor)
Linda Klink, Project Manager	TetraTech NUS (Navy Contractor)
David Chipman, RAB Member	Town of Harpswell, Maine
Robert Gersh	MACTEC Engineering and Consulting
Jeff Pickett	MACTEC Engineering and Consulting
Seth Koenig, Reporter	Brunswick Times Record
Carolyn Lepage, Technical Advisor	Brunswick Area Citizens for a Safe Environment
Suzanne Johnson, RAB Co-Chair	Brunswick Area Citizens for a Safe Environment
Ed Benedikt	Brunswick Area Citizens for a Safe Environment
John James, Public Affairs Director	Naval Air Station Brunswick
Marty McMahan, BRAC Manager	Naval Air Station Brunswick

**MEETING LOCATION:** The Restoration Advisory Board (RAB) Meeting was held at the Parkwood Inn in Brunswick, Maine. The meeting began at 7:00 PM.

**1. INTRODUCTIONS**

Todd Bober, U.S. Navy Remedial Project Manager opened the meeting. Notes from the last RAB meeting (December 2007) are available at the sign-in area in the back.

John James, from the Naval Air Station (NAS) Brunswick Public Affairs Office, spoke on behalf of Commanding Officer (CO), Captain George Womack, who sends his apologies for not being able to attend tonight's meeting. Captain Womack will be at the next RAB meeting and will introduce the new CO at that time.

Todd Bober also introduced the Navy representatives, regulators and consultants. Other Navy representatives include John James, Lisa Joy and Mike Fagan (absent). Also present at tonight's meeting are Claudia Sait from the Maine Department of Environmental Protection (MEDEP), Mike Daly from US Environmental Protection Agency (US EPA), Carolyn Lepage, consultant to

the Brunswick Area Citizens for a Safe Environment (BASCE) citizen's group, and Victoria Boundy from Midcoast Regional Redevelopment Authority (MRRA).

Paul Burgio introduced himself as replacing Dawn Kincaid. He is new to the Brunswick Base Closure team, but not new to the US Navy. He started with the US Navy in 1985, and has worked in the environmental area for many years. He also worked for 8 to 9 years with Claudia Sait on another site in Cutler, Maine. In 2006, Paul and Todd took a 2 year assignment with the Army, but both are back with US Navy now. His main role will be environmental liaison, and he will be working with MRRA closely.

Todd Bober reviewed his professional background with other naval bases in the northeast as it related to technical work. He also did environmental compliance work for the US Army. Todd's role at NAS Brunswick as Remedial Project Manager is to work with the Brunswick stakeholder team for the protection of human health, to implement projects, and to support the property transfer process. Todd also presented a diagram which explains the Superfund Process. Todd went on to explain that Navy's Installation Restoration Process is similar to Superfund since both begin with Site Discovery and end with Operation and Maintenance. This diagram illustrated many processes that include public participation especially since the RAB itself solicits public input throughout the life of the Installation Program.

Note – All of the RAB Meeting presentations are included in Attachment B.

## **2. RESTORATION ADVISORY BOARD ADMINISTRATIVE ITEMS**

Todd announced that Tom Fusco will step down as RAB Co-Chair after many years of service in this role. Ed Benedikt nominated Suzanne Johnson as Tom's replacement. Suzanne's nomination was accepted by the group.

Carol Warren announced that the Mid-Coast Regional Redevelopment Authority (MRRA) is the new implementation authority for the redevelopment of the base. Carol Warren nominated Vicky Boundy, MRRA staff member, to be a new RAB member. Her nomination was accepted by the group.

There is a desire expressed for the RAB to develop a charter. Carol Warren spoke to this topic. BASCE members have developed a draft charter for consideration, based on a similar charter for Naval Station Newport RAB. The citizens have an EPA-funded technical advisor, and they want her role to be spelled out in the Charter (among other things). Copies of the draft Charter were given to Todd, and will also be circulated electronically.

## **3. STIPULATED PENALTIES**

The Navy, MEDEP and US EPA are still trying to resolve this issue. Suzanne Johnson asked about the penalty, and whether it had to do with monitoring wells that were not sampled. Claudia Sait explained that a number of wells were not monitored during three of the monitoring events, and they did not know about it for a long time because of late reporting. That is the primary reason for the penalty. There is a formal process that needs to be followed, and the matter has gone up many levels within the Navy, US EPA and MEDEP. This issue is now being addressed by the Secretary of the Navy, the Commissioner of MEDEP, and US EPA Headquarters. Currently, the

US EPA has asked for an extension on the penalty. The final decision is with the US EPA Administrator. The decision will be made public once it is finalized.

Ed Benedikt asked about the oil slick in the impoundment pond, and if there were penalties for that. Claudia Sait explained that MEDEP response personnel came to the base, but there was no sheen at that time. This incident is not related to the stipulated penalty.

Carolyn Lepage asked when the 60-day clock started to resolve the penalty. The response was around March 17<sup>th</sup>, 2008.

Ed Benedikt asked what the basis was for the extension to resolve the penalty. Claudia stated that the extension was due to busy schedules with EPA and DEP people. It is now at the highest level, and this is the final stop for this issue.

### **Status Items**

Todd Bober gave a brief overview of a number of status items:

Status of Sites – What’s New:

- The Navy is seeking funding to remove soil and provide clean fill for Site 9 this summer.
- There was a Technical Meeting in February 2008 to discuss the 1,4-dioxane issue in the Mere Brook/Eastern Plume area.
- There was another Technical Meeting in February 2008 to discuss groundwater quality in bedrock underlying the Eastern Plume.
- The Navy has initiated funding requests in order to start field work this summer relative to 1,4-dioxane and bedrock.
- The Navy is also planning a smaller removal action at Site 17 this summer.

Todd Bober also reviewed a 3-D bedrock map of the Eastern Plume area, based on a geophysical survey conducted by US EPA. An aerial view of the Eastern Plume area was also shown, that included Sites 1 and 3 Landfill. Todd briefly provided an overview of the Mere Brook/Eastern Plume investigation.

A question was asked about the Eastern Plume and whether 1,4-dioxane is the prime contaminant. Todd Bober said that until recently, the Eastern Plume was primarily a volatile organic compound (VOC) issue. 1,4-dioxane is considered an emerging contaminant.

Suzanne Johnson asked about the new extraction well, and when it will be on line. Todd Bober stated that they are considering several options now. He said the Navy wants to make sure the full extent of the work is known before additional wells are installed and more pipes are installed in the ground. There is a request for funding to do more work this field season.

Claudia Sait stated that the original plan was to pipe the new well to an existing well, but this plan is being reevaluated in light of new information on the extent of 1,4-dioxane in the north area of the Eastern Plume and in the Mere Brook area. The issue is that the high 1,4-dioxane levels are necessitating the need for additional treatment. Al Easterday, of ECC, discussed the upcoming

pump test of the new extraction well is to find the optimal pumping rate. This test will be completed in May to June 2008, and will evaluate 1,4-dioxane levels to see if concentrations are localized in the area of extraction well EW-5B. This work will dovetail with the other 1,4-dioxane investigation work being conducted by TetraTech NUS.

The original plans for the new extraction well, EW-5B, were to pipe water from EW-5B into EW-5 well vault and combine the discharge flows into the treatment plant. The plant does not currently have treatment capacity for 1,4-dioxane. ECC is looking at a new option to pipe water from EW-5B directly to the plant. The water would be treated for 1,4-dioxane first, and then for VOCs through the existing treatment system (air stripping and carbon). Al explained that 1,4-dioxane was not known to be a contaminant of concern for the Eastern Plume until recently. Since more wells may be needed to address 1,4-dioxane, all of the potential extraction locations need to be determined before a piping plan can be fully implemented.

Ed Benedikt mentioned that several years ago, 3 wells were contemplated. Al Easterday explained that the discovery of 1,4-dioxane has potentially changed the treatment plan for the Eastern Plume. Two new extraction wells will be utilized, and one of these is already installed (EW-5B). The Navy has agreed to expeditiously assess the remainder of the Eastern Plume for 1,4-dioxane. Ed asked if it would be beneficial to start the treatment process now while the assessment is ongoing. Al said that this process is moving forward. Todd Bober further explained that there was a meeting several weeks ago to discuss this, and that the Navy is moving as fast as possible. Treatment options for 1,4-dioxane are being reviewed by TetraTech NUS.

A question was asked if extraction well EW-5B is considered a temporary solution. Todd Bober explained that the pump test is an important step to see if 1,4-dioxane levels will be sustained in this area.

David Chipman asked about the flow capacity of the infiltration system which is currently used to discharge the treated plant effluent water. The Navy is looking at this now. Originally, there were 2 other extraction wells connected to the system, which are now shut off. The extraction wells in the Eastern Plume area produce in the range of 8 - 15 gallons per minute (gpm), so there should be available capacity.

#### **4. MIDCOAST REGIONAL REDEVELOPMENT AUTHORITY UPDATE**

Victoria Boundy gave a presentation of the redevelopment plan for Naval Air Station Brunswick. The Brunswick Local Redevelopment Authority (BLRA) is now represented by Midcoast Regional Redevelopment Authority (MRRA), which was created by the Maine Legislature. There are 11 board members and 6 staff. Victoria is one of the staff members. Carol Warren was a member of BLRA, and has been helping Victoria with understanding environmental issues. Victoria's role is to facilitate redevelopment of the NAS Brunswick property.

Ed Benedikt asked about the location of the Eastern Plume relative to MRRA's redevelopment plan. The Eastern Plume is along the eastern boundary of the base, where a golf course is proposed.

Victoria announced that the MRRA's first major tenant, Embry Riddle, has been secured.

An Environmental Impact Statement (EIS), as required by the National Environmental Policy Act (NEPA) and Airport Master Plan are two studies the MRRA is just starting. The MRRA will be working with the Navy on property disposition and remediation strategies. They are looking at the futuristic vision of the entire base, and overlaying this vision with environmental projects.

Carolyn Lepage asked about the EIS and how it fits with environmental work that the RAB is concerned with. Victoria said that the EIS looks at impacts of development, such as impact to natural resources, traffic, etc. For example, Mere Brook will be investigated and how to protect it. It was suggested to take the word “environmental” out of the EIS, since this is a study of impact to many different things.

John James said that the Navy is obligated to look at impacts proposed by the redevelopment. He said that there are many EIS meetings planned for the near future related to the potential impact of redevelopment on the community, after the base closes.

Another example of what the EIS will look at (a NEPA requirement) is native species. The RAB group had earlier discussed the fact that this is not a topic the RAB is dealing with. The Navy has hired a firm that does NEPA EIS work, and they recently had a meeting. The NEPA EIS will take approximately two years to complete. There will be legal notices and press releases; the process will be similar to processes employed by the BLRA for other projects. Lisa Joy mentioned that the Navy’s EIS consultant was technically not under contract yet.

Ed Benedikt asked what criteria constitute an environmental impact. John James explained that the EIS study looks at numerous impacts to the community resulting from the BLRA’s re-use plan, not just the environmental impact. This includes impacts such as traffic, noise, water, sewer, etc.

Suzanne Johnson asked about the impact of development related to contamination. The Navy responded that the EIS study does not specifically address issues related to contamination.

## **5. SITE 9 REMOVAL ACTION UPDATE**

Todd Bober reviewed the status of Site 9, and showed some aerial photos of the Site 9 area and former barracks (removed in 2001). The outline of the excavation area was shown to the meeting attendees. The quantity of soil removed during the excavation was much greater than originally expected. Over the next couple of months, the Navy contractor will finish the excavation and complete backfilling the excavated areas. ECC will also complete their direct push evaluation to the south of Neptune Drive. The Navy is still working on efforts to delineate the extent of ash further to the north. Todd Bober said the Navy hopes to get the major portion of Site 9 work done this summer.

A question was asked about the status of the loam and overburden material. Todd said that the Navy will be addressing the existing loam and overburden material so that the Site 9 excavated area can be backfilled and reseeded in the Summer of 2008.

## **6. STATUS UPDATES**

The Navy's contractor and consultant provided status updates to the meeting attendees.

### Munitions Response Program (MRP)

Linda Klink of TetraTech NUS presented a summary of the MRP at NAS Brunswick. The program consists of munitions constituents (MC), i.e. chemicals resulting from munitions use that may be present and munitions and explosives (MEC) i.e. unexploded ordinance. There are 3 sites that are MC only, and 3 sites that are both MC and MEC. A map with the locations of the sites was displayed, showing that 5 sites are within the base boundary. The sixth site is the old skeet range at the Topsham Annex. One work plan addresses the potential chemicals at the six MC sites. The MEC field work needs to be accomplished to clear the area of ordinance before the MC fieldwork can be safely executed. The MEC work plan was submitted draft in January 2008, and comments were received from the Stakeholders in February 2008. Currently, the Navy is responding to these comments. The MC work plan was submitted draft to the stakeholders in February 2008, and the Navy is currently awaiting comments from the regulators. Linda Klink anticipates field work starting in the Spring of 2008 and going through the Fall of 2008. The MEC work will begin first.

### 1,4-Dioxane Investigation in Eastern Plume

Linda Klink explained that the original work scope near Mere Brook was to refine 1,4-dioxane nature and extent in the Mere Brook confluence. New information from the Mere Brook groundwater study has shown 1,4-dioxane at elevated concentrations in several areas. The new extraction well (EW-5B) also showed elevated concentrations much further north than expected. A bedrock investigation has also been added to the revised work plan based on discussions held at a technical meeting held in February 2008.

A draft work plan was submitted to the stakeholders during the Fall of 2007 for a 1,4-dioxane study in the southern area of the Eastern Plume. The technical meetings held in February 2008 also addressed expanding field investigations to better understand discharge to Mere Brook and assess potential impacts to bedrock in the area. The Navy is pursuing funding for this additional work. Linda Klink anticipates field work commencing in the Summer and Fall of 2008.

TetraTech NUS is moving forward with a Feasibility Study (FS) to evaluate treatment options for 1,4-dioxane. Ed Benedikt asked about the discharge of 1,4-dioxane to one of the playing fields. Lisa Joy clarified that he was referring to the irrigation of the soccer field with treated water prior to the Navy knowing about 1,4-dioxane in the water. ECC will be doing 4 direct push points in the soccer field area, concurrent with their Site 9 investigation in the Spring of 2008.

The Eastern Plume 1,4-dioxane investigation will consist of pore water sampling and transects. Transects are also referred to as profiling, which are rows of temporary sampling points that are accomplished in an area to establish where permanent groundwater monitoring wells should be installed.

### Naval Exchange Service Station

Arnie Ostrofsky of TetraTech NUS provided a review of the Navy Exchange Service Station (NEX) site. A groundwater recovery system was installed in the 1980's, and a soil vapor extraction (SVE) system operated from 1993 to 2002. An in-situ chemical oxidation pilot test was completed in May 2002. Additional feasibility studies were done in 2004, and a new corrective action plan was developed for a bioremediation pilot study. This study concluded in 2007. Arnie Ostrofsky displayed a map showing gasoline range organics (GRO) concentrations in soil, which are still elevated above MEDEP clean-up requirements. The Navy is considering other approaches to address the persistent soil and groundwater contamination at this site. Todd Bober mentioned the reasons for trying all the previously mentioned cleanup methods rather than excavation is due to the complexity of this site. For example, the site is currently used as an active gas station, the petroleum plume extends close to or under the family services Building 27, and there are numerous buried utilities in the area. The last treatment option for this site is soil excavation and dewatering. Todd Bober stated that over the next few weeks he will write a project scope and seek funding for the excavation.

Claudia Sait stated that in-situ treatment was for one plume, but there are two plumes related to this site. The pilot study was intended to evaluate treatment of both plumes, but the Navy has decided not to go forward since it did not work. The excavation program will need to consider utilities, and will need to make sure the buildings are not damaged.

A question was asked about chemical oxidation and what other approaches were tried. Arnie Ostrofsky said that the last pilot test was for dinitrification bioremediation. Over the last 15 years, many different approaches have been tried. Dewatering and excavation is the final option to consider.

Arnie Ostrofsky also reviewed the most recent groundwater sampling data, which showed that the southern most NEX Gas Station wells (north of Site 9) were clean. TetraTech NUS is working on a revised monitoring plan, and additional groundwater sampling is planned for this fall.

### Site 17 Remedial Investigation

Arnie Ostrofsky reviewed the history of this site, showing the initial assessment in 1983 and a removal action undertaken in 1995. Most of the excavation was shallow (few feet), some areas were excavated down to 7 feet. Long term monitoring is on going at this site. This site has undergone the Data Quality Objective (DQO) process recently, and additional soil sampling work is projected for this summer.

Arnie Ostrofsky presented a slide showing a map of the area, which is relatively small. The sampling program will be a grid approach, and an additional removal action is possible later this summer.

A question was asked about the railroad tracks through the Site 17 area. These tracks are no longer there, and were probably removed in the 1990's.

ECC  
Site 2

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Arnie Ostrofsky discussed Site 2 and the area north of Site 2, just west of Mere Brook. This work area is near the contractor entrance, on the south side of the base. The Record of Decision was issued in 1998 for Site 2, after which concerns arose about the area to the north. A Data Quality Objectives meeting was held last August 2007 to review what work still needs to be done within both areas. Currently, TetraTech NUS is preparing a work plan for both areas, with possible field work to occur in Fall 2008 (depending on funding).

Suzanne Johnson asked what type of contamination is at Site 2. Arnie Ostrofsky stated that it is mostly metals, including arsenic. Claudia Sait mentioned that there are water seeps coming out of the embankment near Mere Brook. A question was asked about what the cause of the elevated arsenic is. Site 2 was the location of a former incinerator, although there is currently no information to suggest what the source of the arsenic might be. Claudia Sait stated that the seeps with arsenic aren't where you would expect them to be if contamination were to come from Site 2.

Spring 2008 LTM Program Sampling

Al Easterday reviewed the status of the long term monitoring program. The spring sampling event is coming soon, and will include wells in the Eastern Plume and in Sites 2, 7, 9, 1 and 3. Site 17 will not be included this spring because other Remedial Investigation (RI) tasks are planned for 2008. Al Easterday said that a few of the Eastern Plume wells are in the weapons area, so site access needs to be carefully coordinated.

Eastern Plume Groundwater Model

Al Easterday explained that in 2007, a work plan was developed for a groundwater model that included conducting hydraulic slug tests to obtain aquifer information for the groundwater model. These tests only measure hydraulic conductivity in a very localized area around the well so an aquifer recovery test was recommended as a much better way to estimate hydraulic conductivity data for the model. To conduct these tests, the Eastern Plume extraction wells will be shut down for 8 days, and the water table rebound will be measured. This information will be plugged into the model. This shut down will be done after the Spring 2008 Long-Term Monitoring (LTM) sampling event for the Eastern Plume is completed. ECC will measure the water table rebound and also the drawdown upon reactivation of the extraction well network. This data will enhance the model, which will be presented draft in June 2008. The final model should be ready before the October 2008 RAB meeting. The results of the model will help to cite the next extraction well as required.

Al Easterday presented some examples of the model's output showing groundwater flow, bedrock contours and clay contours. Bedrock is overlain by clay, which is overlain by the lower sand. This lower sand is the main formation that transmits most of the solvent impacted groundwater. Al Easterday believes that the Navy now has a good database on the geology in the Eastern Plume area. One important output of the model is to better define the nature and distribution of impacted groundwater in this area. Carolyn mentioned that glacial till is also part of the stratigraphy in some areas.

### Mere Brook Fish Tissue Study

Cornell Rosiu with US EPA presented the results of the fish tissue study that was done last fall (2007). The study included the collection of brook trout from Mere Brook both upstream and downstream of the NAS Brunswick runway. The samples were analyzed for metals, pesticides and percent (%) lipids. The study was done to mimic a previous study done in 1995 by the US Fish and Wildlife Service. The upstream area is considered a reference area, and the fish populations here do not mix with the downstream populations because of the long culvert under the runway. The 2008 study has assumed that trout will not pass through the kilometer long, dark culvert.

A question was asked if fish know the difference between the darkness of night time and the darkness of the culvert. Cornell said that it is not uncommon to have runways built over streams, and that culverts are typically used. New designs allow for sunlight to enter into these culverted streams, but this is not the case for Mere Brook under the NAS Brunswick runway. Sufficient studies have been done to show that long culverts are barriers to fish migration.

At Brunswick, juvenile fish were mostly caught upstream and 3 adult fish were caught downstream. More fish were found in the upstream area.

The data from this study showed a mix of results. Some of the metals showed higher concentrations in 2007 as compared to 1995, while other metals were lower in 2007. Overall, pesticide concentrations were considerably lower during this 2007 study.

Ed Benedikt said that he believed the purpose of the study was to see if the remedies at the base have been effective. He also stated that he doesn't see any improvement in concentrations except for pesticides, the use of which has also declined over time. Cornell said that his role in this study was to focus on the tissue sample results rather than correlate the results to groundwater. He also pointed out that there are only two observations – 1995 and 2007, and that it may be difficult to draw conclusions on two data sets. It is possible that additional studies will be conducted, although some of the stream areas were fished out. Cornell also noted that parasites were observed on the fish, an indication of other problems. All of the adults that were found were caught and sampled, but there are many juveniles still.

A question was asked about the arrows shown on the graphs. These arrows represent No Observed Effect Concentration (NOEC) – a concentration above which no observed effects would be expected for eastern brook trout. Some contaminants have very high NOEC's, others like zinc are low and concentrations were greatly exceeded. Since upstream and down stream levels were similar, one could conclude that zinc levels are background. NOEC's were exceeded for several metals including selenium, vanadium, nickel and zinc.

A description of vanadium was requested. It was asked if there are any other studies available from off-base which could be used to compare study results? Cornell Rosiu replied that vanadium is a naturally occurring metal, but was not analyzed for in 1995. Cornell was not aware of any other studies in this area, and definitely not from the same water body. Cornell Rosiu also pointed out that areas outside the Mere Brook watershed are subject to different influences.

Ed Benedikt said that he thought the purpose of this work was to compare the results to standards. Carolyn Lepage recalled that the data were to be compared with U.S. Geological Survey data or standards. Cornell Rosiu replied that this study was intended to compare results to a previous study, but was not a risk assessment.

The report will be distributed soon, and the distribution list will include BACSE. It is still an internal draft and is not yet ready for distribution.

## **7. QUESTIONS & FUTURE RAB AGENDA TOPICS**

Future RAB agenda topics –

Carol Warren asked for a schedule of field work, and a list of what projects are funded. John James stated that the schedule was shown on the back cover of the newsletter. Carol Warren did not think that list was very accurate, and stated that it did not distinguish between funded and non-funded work and that a list showing what is funded would be helpful.

Ed Benedikt expressed concern about the Eastern Plume and the 1,4-dioxane issue. He wants to be involved in any discussions related to the treatment plant to avoid future problems. He expressed concern over how well the plant has functioned in the past and the reasons for the mothballing of the UV oxidation system. Al Easterday clarified the concern by saying it wasn't that UVOX system didn't work, but that air stripping was deemed to be more effective treatment of chlorinated VOCs. UV oxidation was specified in the Eastern Plume Record of Decision (ROD) before 1,4-dioxane was known to be a contaminant of concern for the Eastern Plume. Ed Benedikt suggested that the DQO process be used for the design of the treatment system.

Schedule for remaining RAB meetings were stated as follows –

- 11 June 2008
- 15 October 2008, and
- 3 December 2008

**The 19 March 2008 RAB Meeting adjourned at 9:10 PM.**

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Naval Air Station Brunswick, Maine  
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**7:00 – 7:15 Introductions**

- New Navy Representatives
- Dispute Resolution/Stipulated Penalties Issue

**7:15 – 7:45 RAB Administrative Items**

- Citizen RAB Co-Chair
- New RAB Members
- Discussion of RAB Charter/Rules/By-Laws

**7:45 – 8:10 Midcoast Regional Redevelopment Authority  
Update**

**8:10 – 8:15 Site 9 Removal Action Update**

**8:15 – 8:45 Status Updates**

- Munitions Response Program
- 1,4-Dioxane Investigation
- Naval Exchange Service Station
- Site 17 Remedial Investigation
- Site 2 Site Inspection
- Spring LTM Program Sampling
- Eastern Plume Groundwater Model
- Mere Brook Fish Tissue Study

**8:45 – 9:00 Questions & Future RAB Agenda Topics**





# Restoration Advisory Board Meeting *19 March 2008*

Parkwood Inn, Brunswick, Maine  
7:00 PM



# *Introductions*

- *Navy BRAC Program Management Office Northeast Representatives:*
  - Mr. Todd Bober, P.E., Remedial Project Manager
  - Mr. Paul Burgio, BRAC Environmental Coordinator
- *Naval Air Station Brunswick Representatives:*
  - Captain George G. Womack, Commanding Officer
  - Mr. John James, Public Affairs Officer
  - Ms. Lisa Joy, Environmental Director
  - Mr. Michael Fagan, Installation Restoration Program

## *Introductions (cont.)*

- *U.S. Environmental Protection Agency Representatives:*
  - Mr. Michael Daly, Remedial Project Manager
- *Maine Department of Environmental Protection Representatives:*
  - Ms. Claudia Sait, Remedial Project Manager
  - Mr. Chris Evans, P.G., Project Geologist
- *Brunswick Area Citizens for a Safe Environment Consultant:*
  - Ms. Carolyn Lepage, C.G., Lepage Environmental
- *Midcoast Regional Redevelopment Authority (MRRA):*
  - Ms. Victoria Boundy, Planning and Environmental Manager

# *Meeting Agenda*

- *Welcome!*
- Introductions
- RAB Administrative Items (Navy)
- Stipulated Penalties Update (Navy)
- Mid-coast Regional Redevelopment Authority Update (MRRA)
- Site 9 Removal Action Update (Navy)
- Status Updates
  - Munitions Response Program (Navy/TtNUS)
  - 1,4-Dioxane Investigation (Navy/TtNUS)
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  - Mere Brook Fish Tissue Study (EPA)
- 5. • Questions and Future RAB Agenda Topics

# ***Introductions***

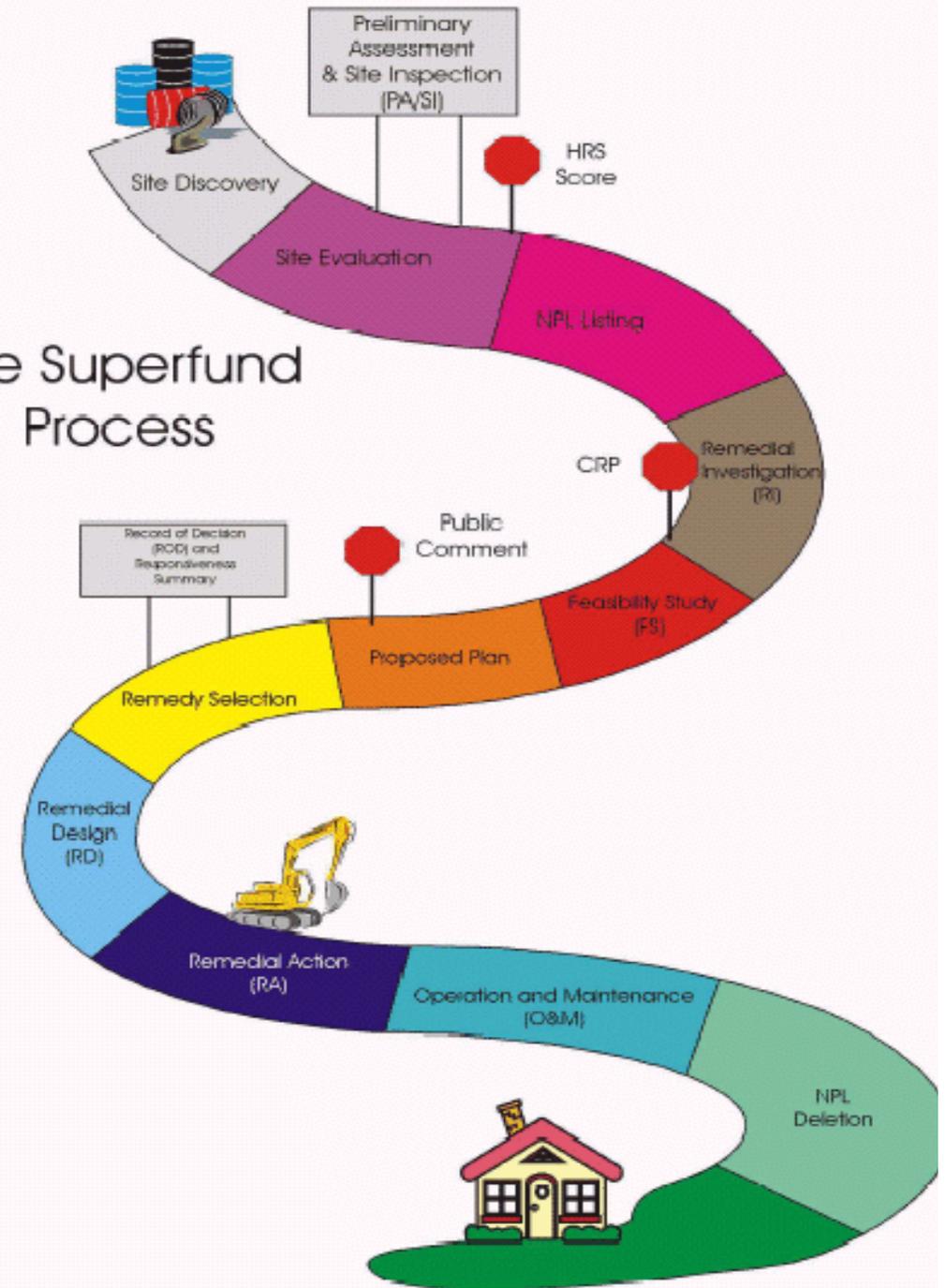
- **New NAVY Remedial Project Manager (RPM):**  
**Todd Bober, P.E.**  
**Phone No. (215) 897-4911**
  
- **New NAVY BRAC Environmental Coordinator:**  
**Paul Burgio**  
**Phone No. (215) 897-4915**

## ***RPM Role At NAS Brunswick***

- **Work with Brunswick Team to identify environmental requirements necessary to protect Human Health & the Environment**
- **Translate those requirements into implementable projects and contract actions that reinforce the above goals as well as support property leasing/transfer actions**

# Road to a Record of Decision

## The Superfund Process



## ***RAB Administrative Items***

- **Citizen Co-Chair Update**
- **New Restoration Advisory Board Member**
  - Midcoast Regional Redevelopment Authority
- **Restoration Advisory Board**
  - *Charter*
  - *Rules*
  - *By-Laws*

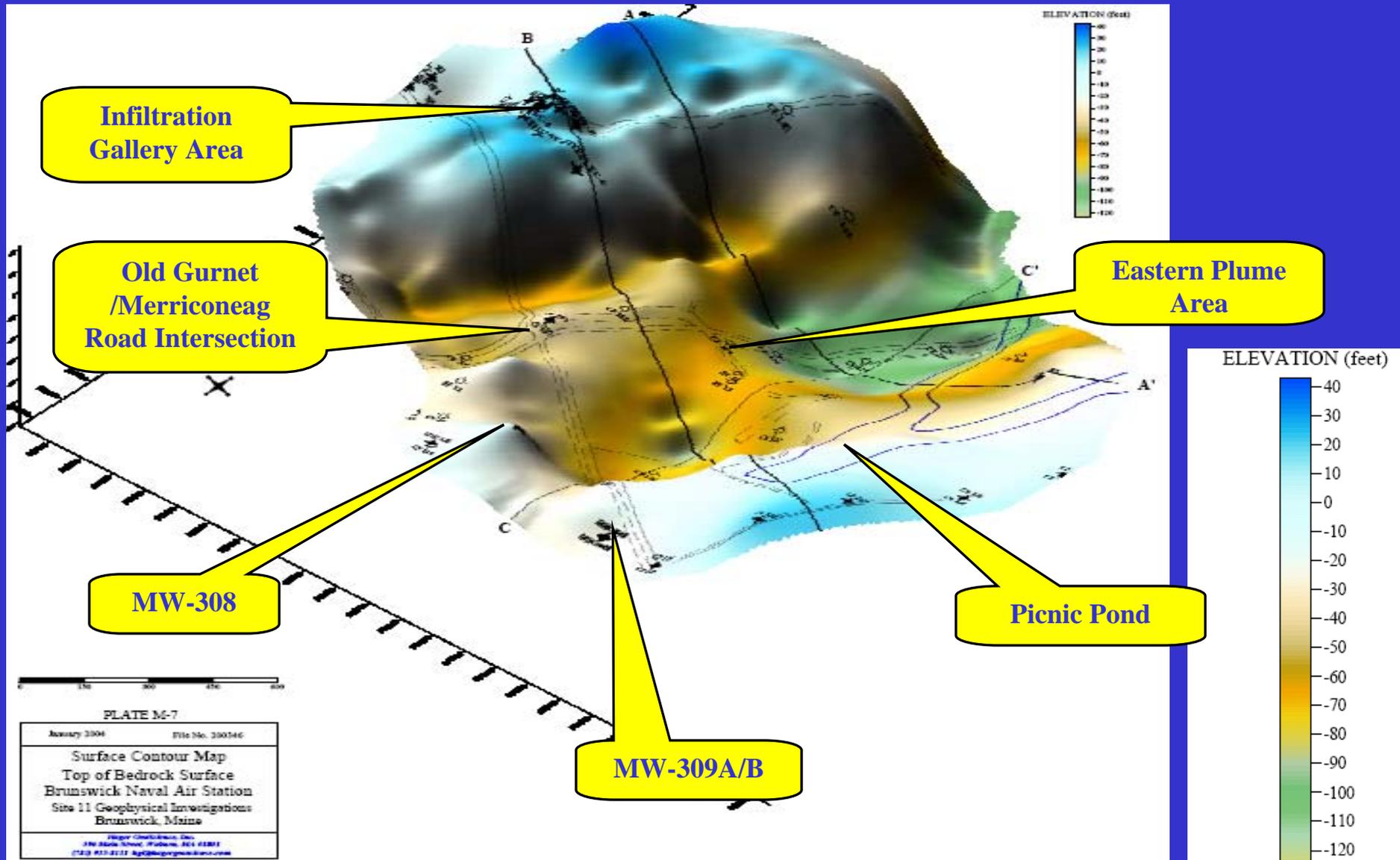
## *Stipulated Penalties Update*

- **US EPA Headquarters has requested a 60 day extension**

## *Status of Sites...What's New*

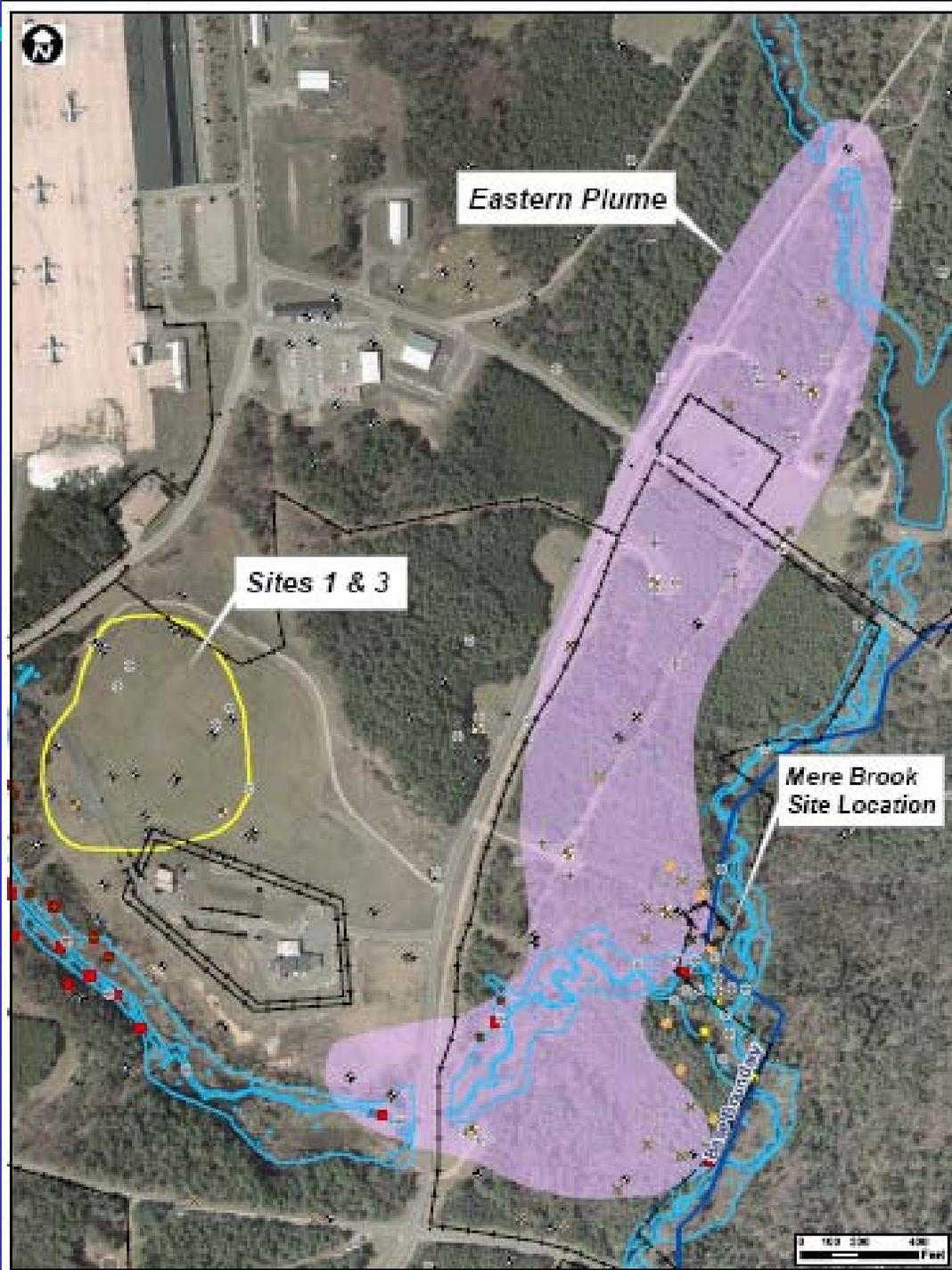
- Navy is seeking funding to remove all soil piles at Site 9 and provide clean fill in excavated areas. Navy is still planning to evaluate remaining extent of buried ash at Site 9 this field season.
- Navy is planning a small removal action at Site 17 for Pesticide contaminated soils this Summer 2008.
- Had Technical Meeting on 1,4-dioxane during February 2008 to discuss Path Forward.
- Had Technical Meeting during February 2008 to discuss how to evaluate groundwater quality in Bedrock.
- Based on team discussions from these meetings, Navy has initiated funding/contracting procedures to assess 1,4-dioxane and bedrock with a goal of Investigative Fieldwork to start in Late Summer 2008.

# 3-D Bedrock Surface Map, Eastern Plume Area



Source: Hager GeoScience - Geophysical Survey

# Eastern Plume Area



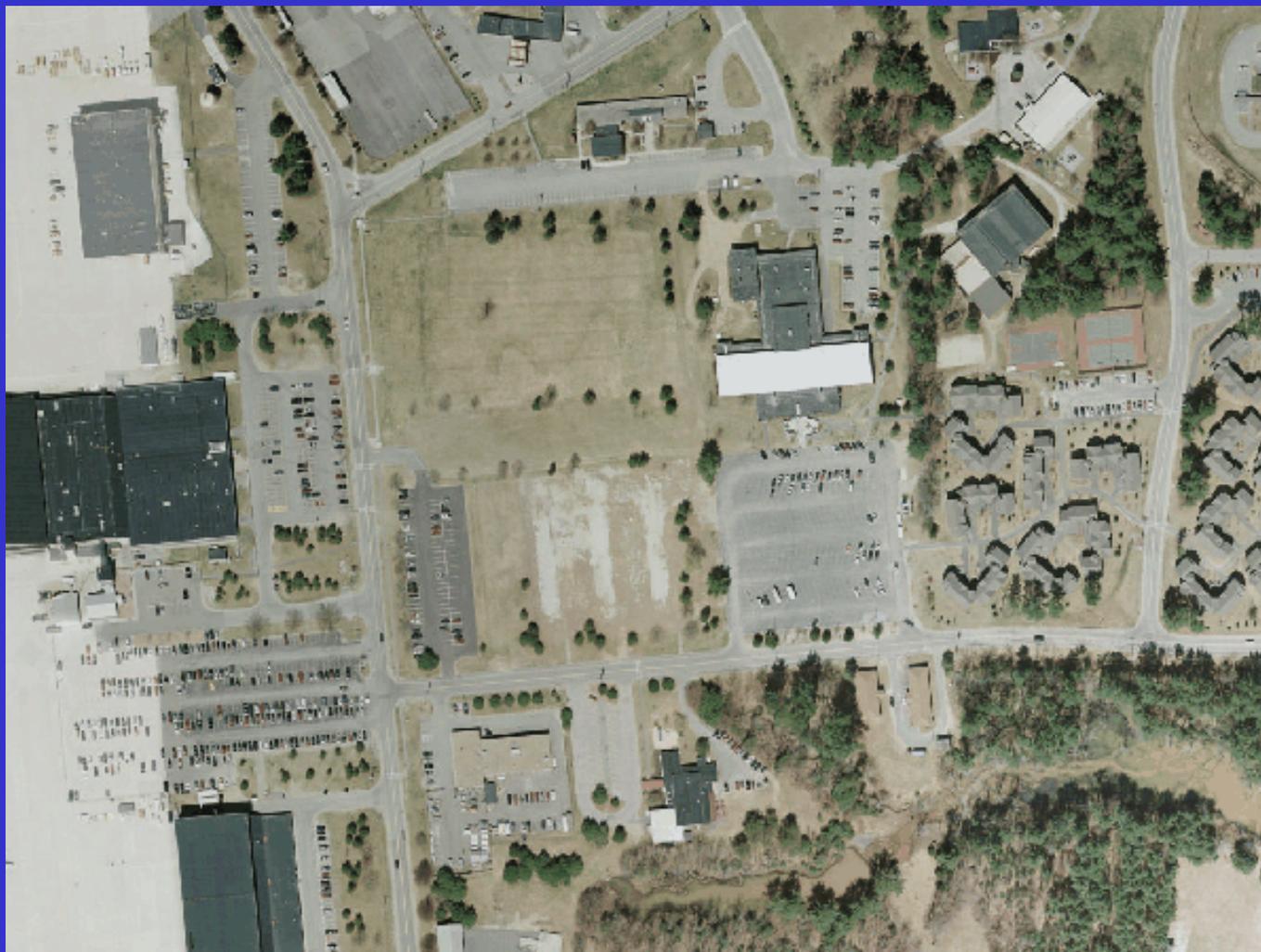
# *Midcoast Regional Redevelopment Authority*

- *Update*

# *Site 9 Removal Action Update*

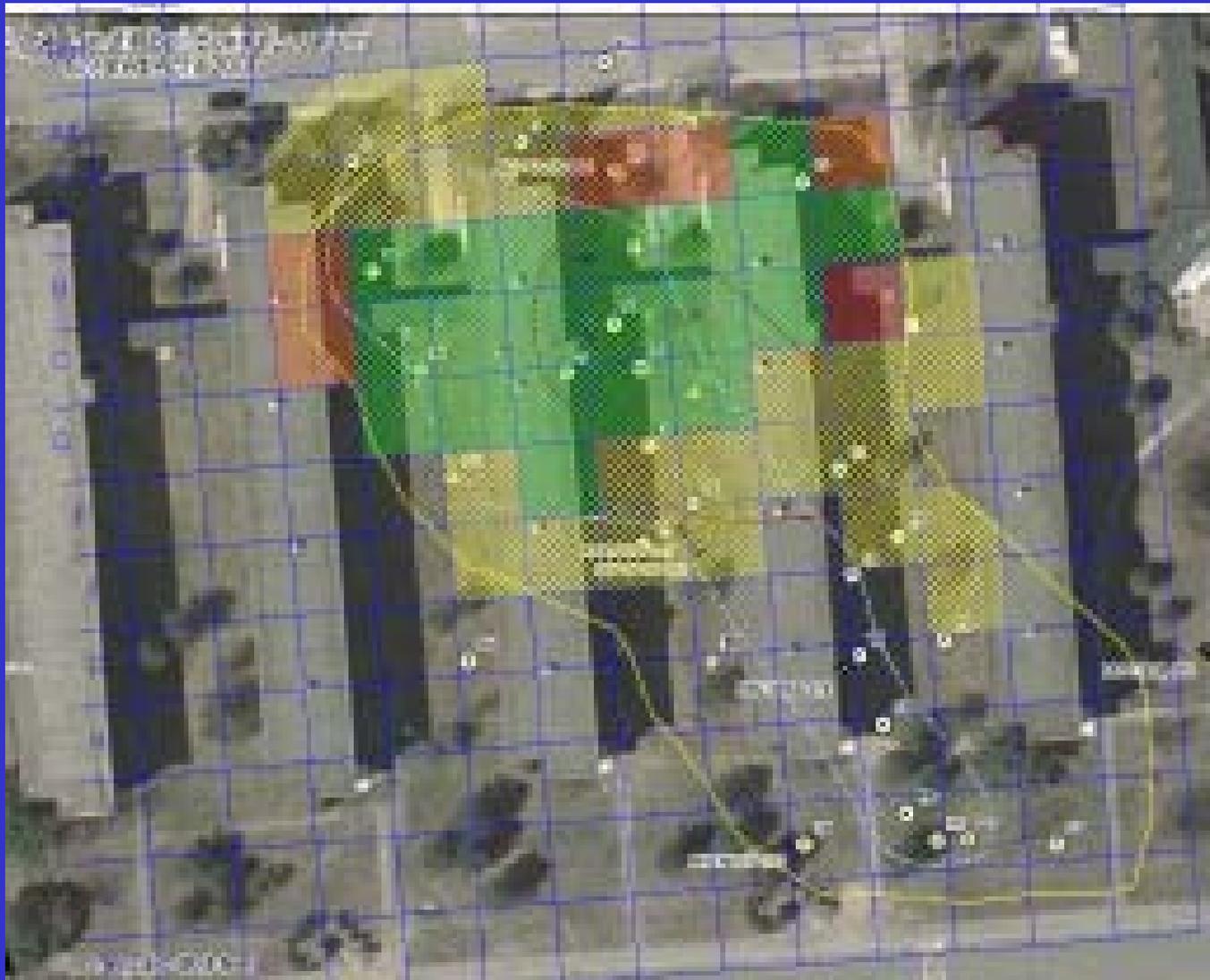


# *Site 9 Removal Action Update*



**Pre-Removal Site Conditions, April 2006, Town of Brunswick GIS**

# *Site 9 Removal Action Update*



Areas to be  
Re-excavated

Passing  
Confirmatory  
Grid

Areas to be  
Excavated

<sup>1</sup>Limits of excavation, December 2007

# *Site 9 Removal Action Update*



# ***Munitions Response Program***

***SITE INSPECTIONS***

***6 MUNITIONS AREAS***

# ***MRP DEFINITIONS***

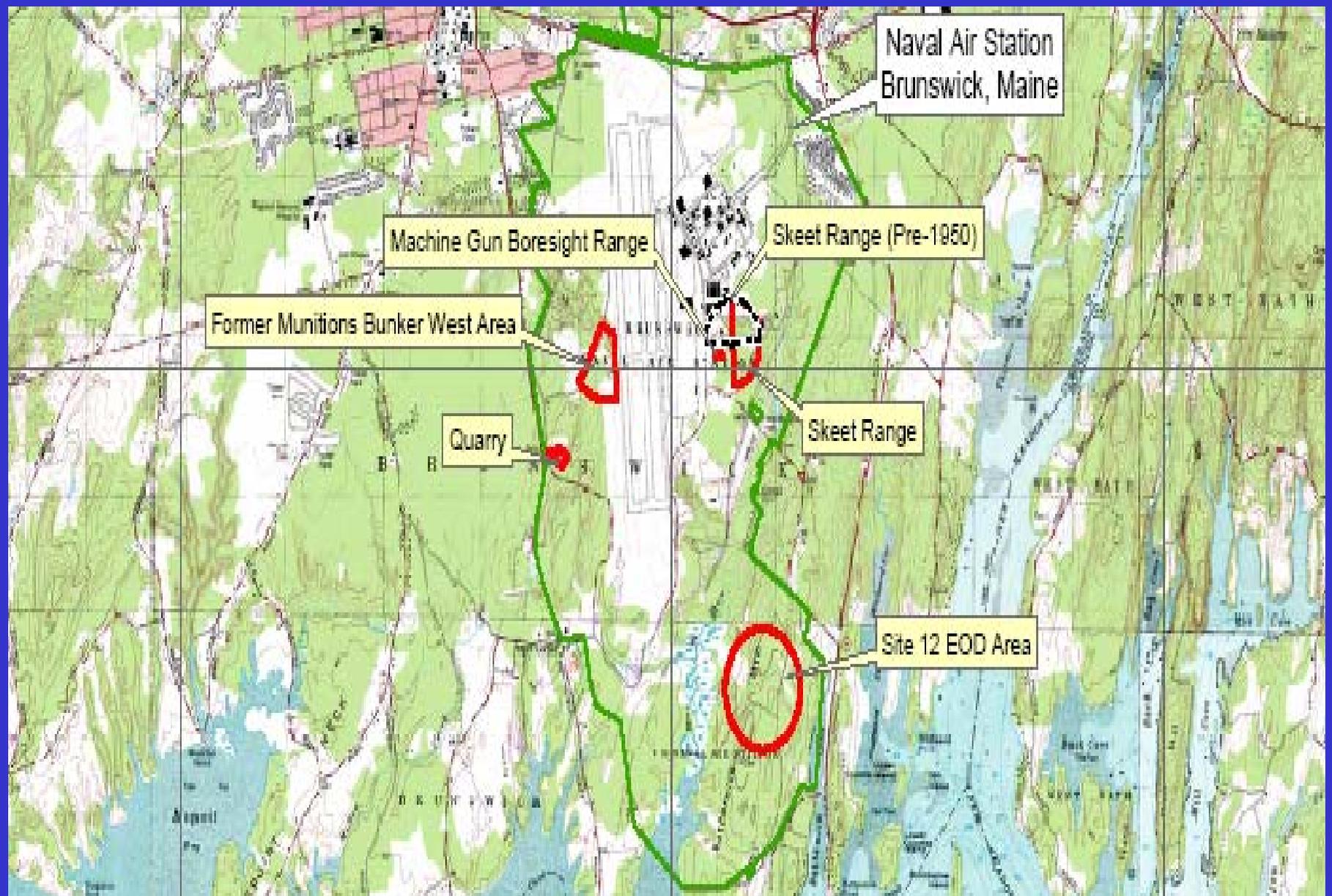
- **MC = Munitions Constituents**
  - Chemicals originating from explosive and non-explosive materials
- **MEC = Munitions and Explosives of Concern**
  - Ammunition components that may pose explosive safety risks

# ***MRP SITES***

AS DETERMINED BY PRELIMINARY ASSESSMENTS:

- **MC Sites Only**
  - Machine Gun Bore Sight Range
  - Skeet Range
  - Topsham Annex Skeet Range
- **MC and MEC Sites**
  - Site 12 Explosives Ordnance Disposal (EOD) Area
  - Former Munitions Bunker West
  - Quarry

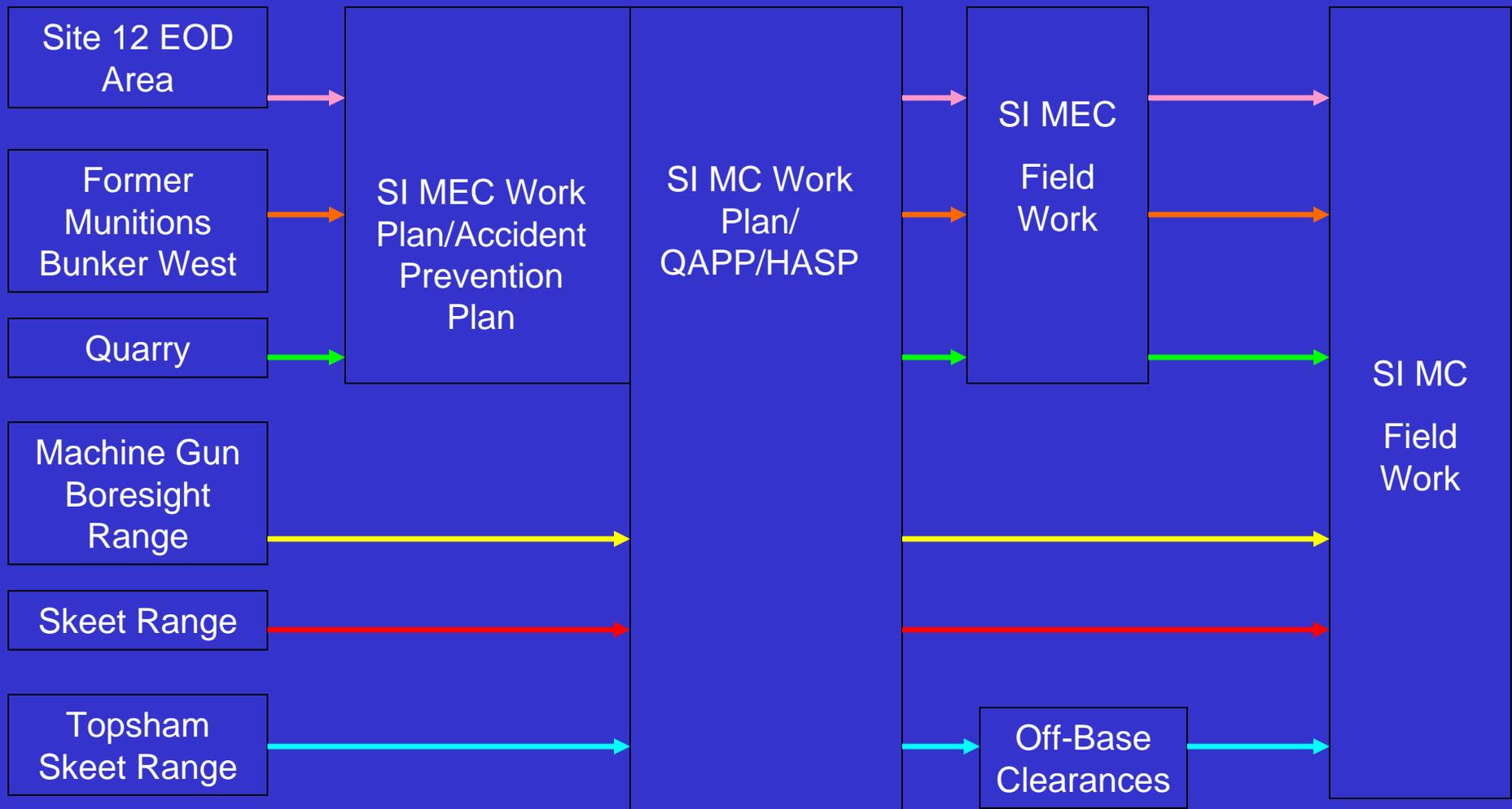
**MRP SITE LOCATIONS (except Topsham Annex Skeet Range)**



***MRP SITE LOCATION (Topsham Annex Skeet Range)***



# PATH FORWARD – PLANNING/IMPLEMENTATION



# ***STATUS***

- **MEC WORK PLAN**

- Draft to Stakeholders in January 2008
- Stakeholder Comments Received February 2008
- Navy Responding to Comments

- **MC WORK PLAN**

- Draft to Stakeholders in February 2008
- Awaiting Stakeholder Comments

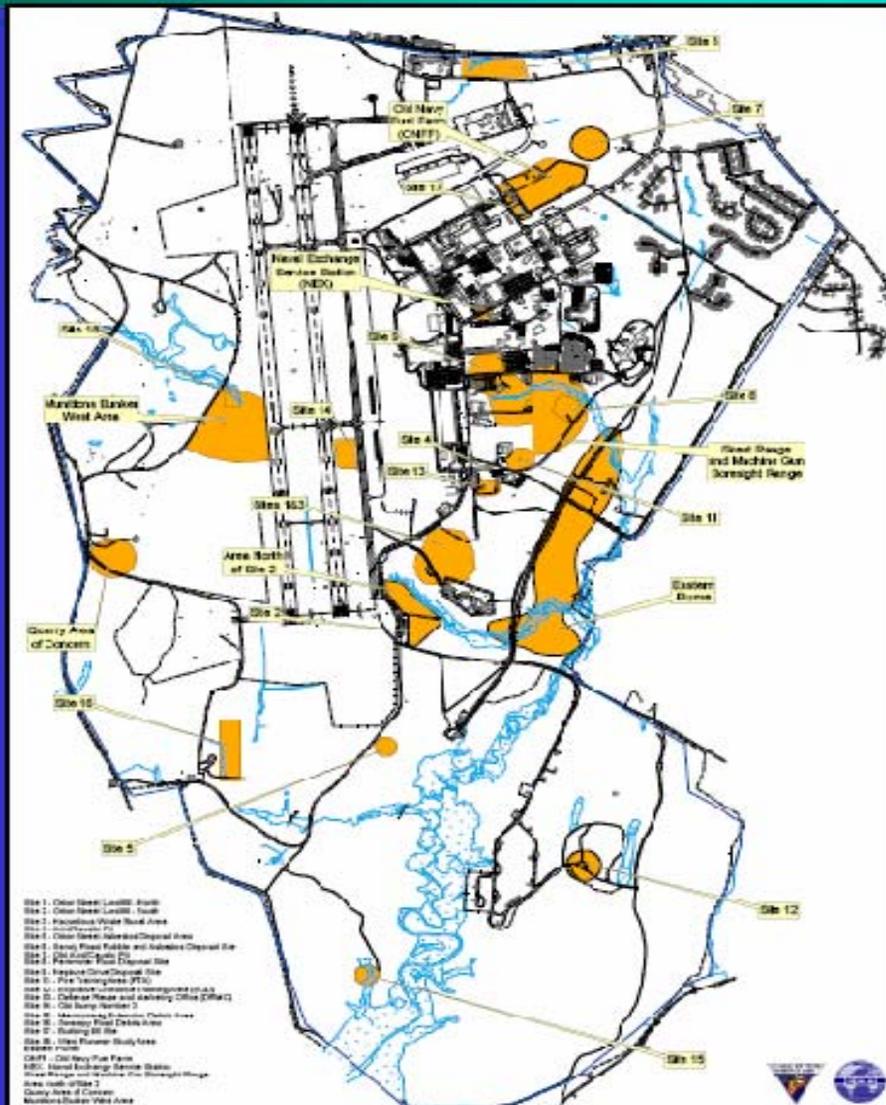
- **MEC and MC FIELD WORK**

- Anticipated Spring through Fall 2008

## *Status Updates (cont.)*

# SUPPLEMENTAL INVESTIGATION FOR THE EASTERN PLUME

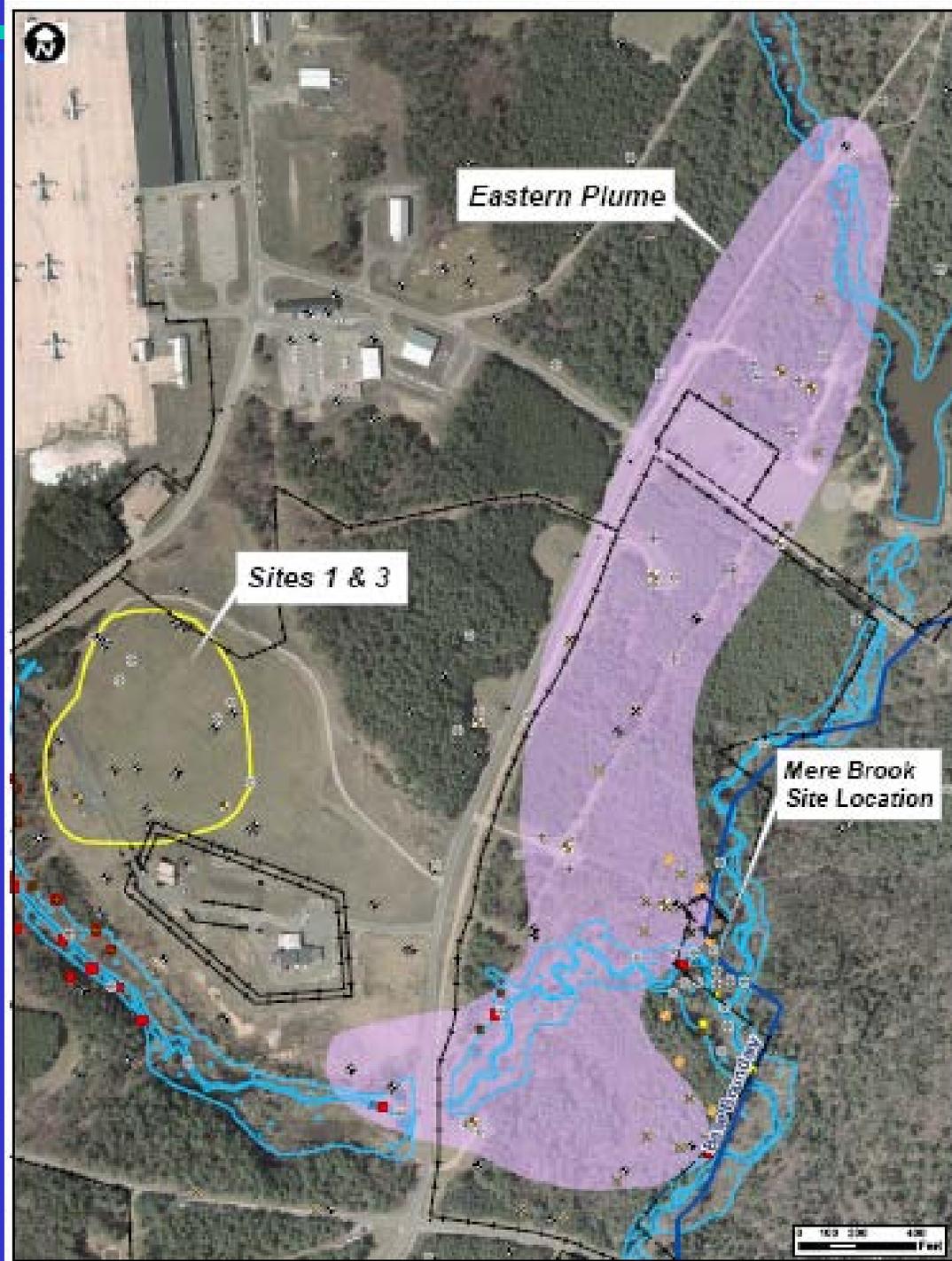
## EASTERN PLUME LOCATION



## NAS Brunswick Basewide Map – Environmental Restoration Areas

- Site 1 - Orion Street Landfill - North
- Site 2 - Orion Street Landfill - South
- Site 3 - Hazardous Waste Burial Area
- Site 4 - Acid/Caustic Pit
- Site 5 - Orion Street Asbestos Disposal Area
- Site 6 - Sandy Road Rubble and Asbestos Disposal Site
- Site 7 - Old Acid/Caustic Pit
- Site 8 - Perimeter Road Disposal Site
- Site 9 - Neptune Drive Disposal Site
- Site 11 - Fire Training Area (FTA)
- Site 12 - Explosive Ordnance Training Area (EOD)
- Site 13 - Defense Reuse and Marketing Office (DRMO)
- Site 14 - Old Dump Number 3
- Site 15 - Merriconeag Extension Debris Area
- Site 16 - Swampy Road Debris Area
- Site 17 - Building 95 Site
- Site 18 - West Runway Study Area
- Eastern Plume
- ONFF - Old Navy Fuel Farm
- NEX - Naval Exchange Service Station
- Skeet Range and Machine Gun Boresight Range
- Area North of Site 2
- Quarry Area of Concern
- Munnions Bunker West Area

# Eastern Plume Area



## ***TIME LINE***

- **OCTOBER 2007** - Draft Sampling and Analysis Plan (SAP) to Stakeholders Focusing on 1,4-Dioxane in Southern Area of Eastern Plume
- **NOVEMBER 2007** – Preliminary Results from February - September 2007 Mere Brook Investigation Indicate Groundwater Discharge to Mere Brook
- **NOVEMBER 2007** – Preliminary Results from September 2007 Sampling of New Extraction Well EW-05B Indicate 1,4-Dioxane in Northern Area of Eastern Plume
- **FEBRUARY 2008** – Technical Meetings with Stakeholders to Determine Additional Work to be Conducted
- **MARCH 2008** – Navy Pursuing Funding for Additional Work
  - 1,4-Dioxane (and VOC) Extent in Central and Northern Area of Eastern Plume
  - 1,4-Dioxane and VOCs Extent in Bedrock
- **SUMMER/FALL 2008** – Anticipated Field Work Start

*Naval Exchange Service Station,  
Site 17, and Site 2*

**Status Updates**

# ***NEX Service Station***



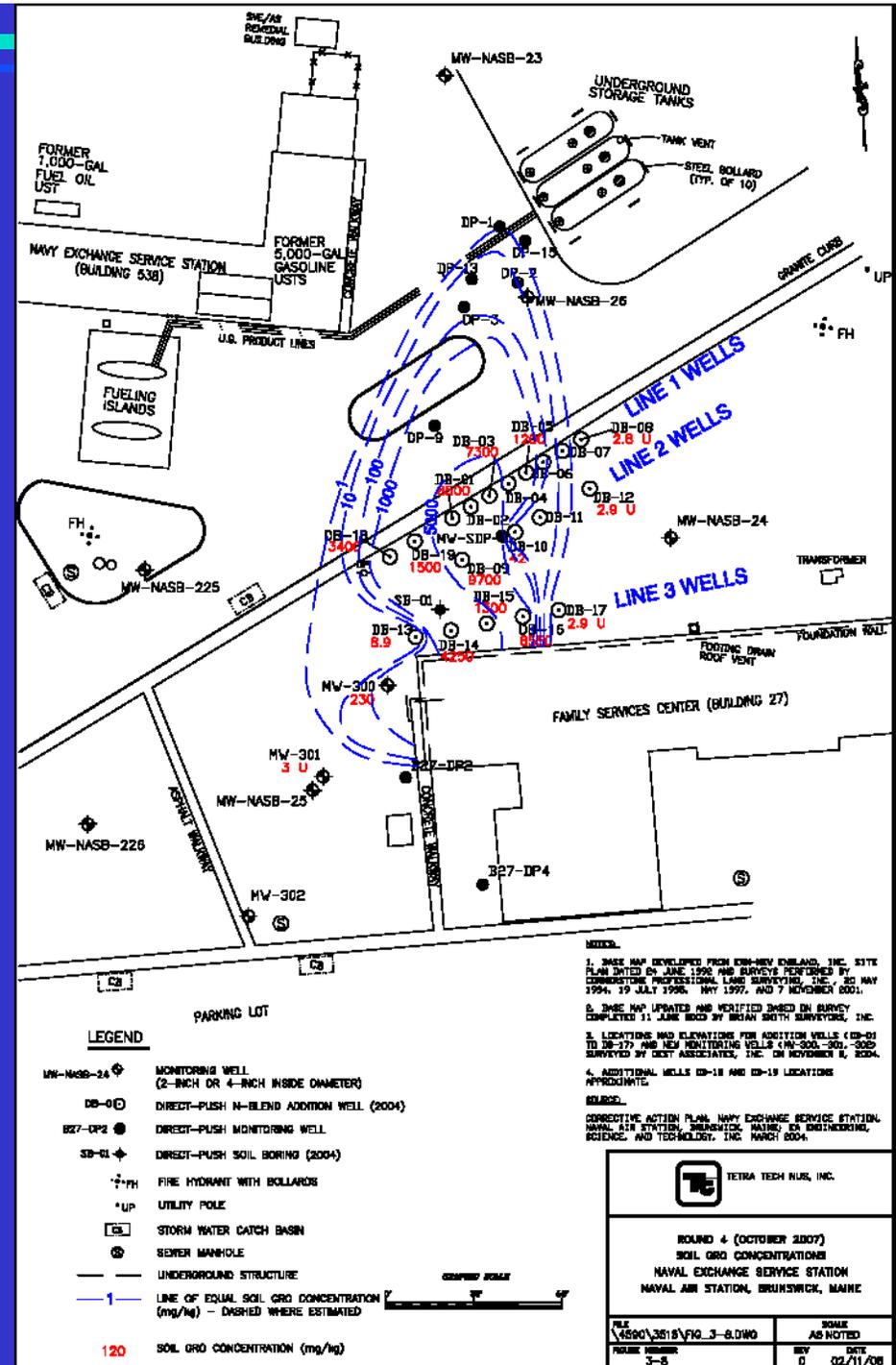
## ***NEX Brief History***

- Gasoline odors were detected at the NEX Service Station in 1981.
- A groundwater recovery system started in 1981 or 1984. Operated for about a year. This recovery system was decommissioned during 1993.
- A soil vapor extraction/aquifer air sparing (SVE/AAS) system was installed in 1993 and operated continuously until March 2002.
- An in-situ chemical oxidation (ISCO) pilot test was performed during April and May of 2002 through the direct injection of hydrogen peroxide and an iron catalyst solution

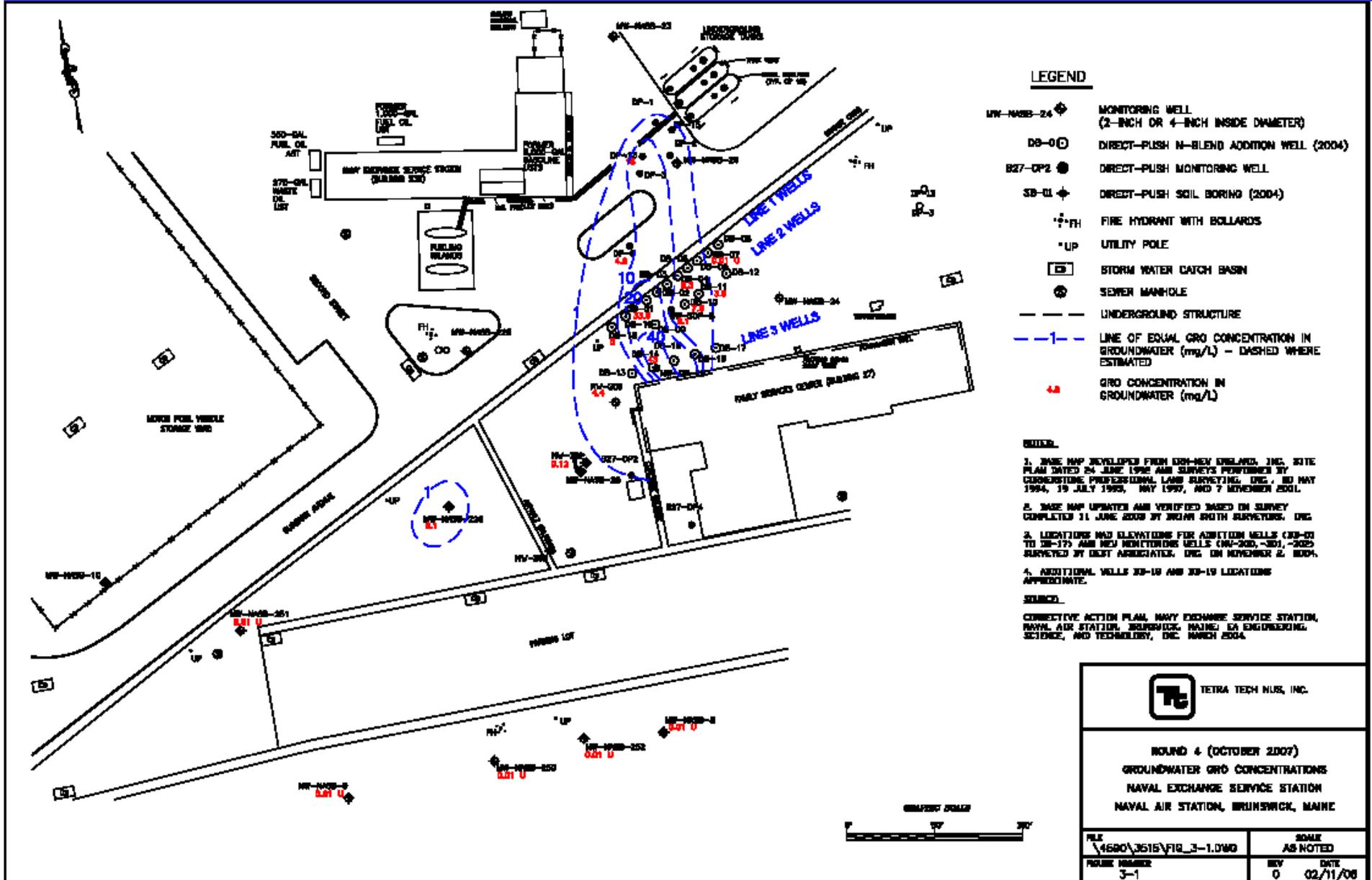
## ***NEX Brief History - Continued***

- Focused Feasibility Study (EA 2004)
- Corrective Action Plan (EA 2004)
- Denitrification Based Bioremediation Began 2004
- TtNUS completed the 4th round of sampling for the DBB October 2007.

# Soil GRO level



# Groundwater GRO Levels



## ***NEX Status***

- Completed Phase I of the pilot study
- Preparing a long term sampling plan
- Sampling planned for fall 2008

# *Site 17*



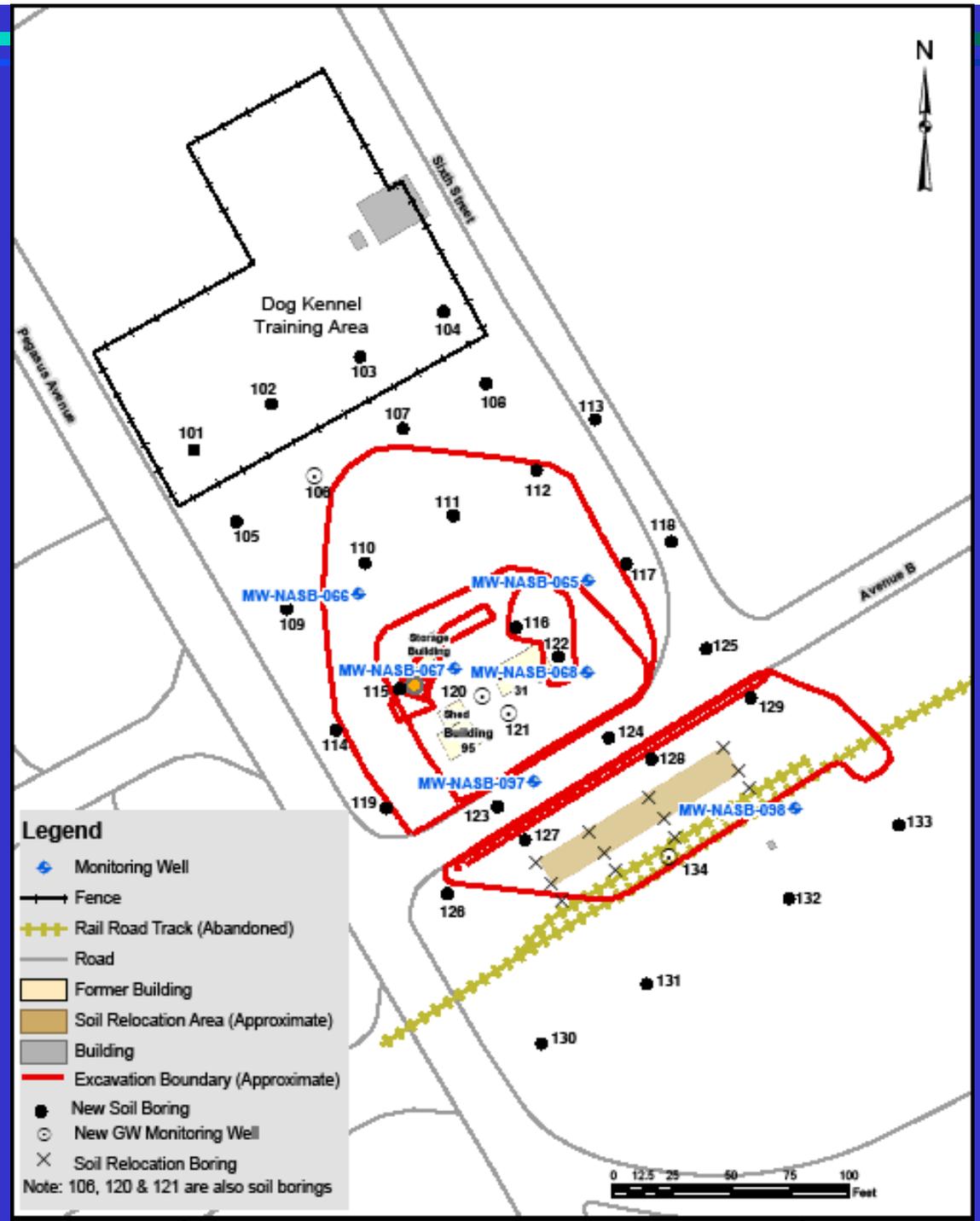
## *Site 17 –Brief History*

- Initial Assessment Study 1983
- Site Evaluation 1991
- EE/CA 1992
- Action Memorandum 1993
- Remedial Design Summary Report 1993
- Removal Action 1995
- Draft Final Closure Report 1998
- LTM ongoing

## ***Site 17 – Status***

- Submitted Draft RI Work Plan on June 18, 2007
- Received regulatory comments on August 23, 2007
- Submitted Response to Comments on September 22, 2007
- DQO Meeting November 7 -9, 2007
- Draft Final Work Plan submitted January 28, 2008
- Possible field work in summer

# Proposed Sampling Locations for Remedial Investigation



## *Site 2 and the Area North of Site 2*



## *Site Background*

- Site 2 ROD 1998
- There were concerns with the area north of Site 2
- ECC prepared a Draft WP for Area North of Site 2 March 2007
- Comments April 2007
- DQO meeting August 14-15, 2007

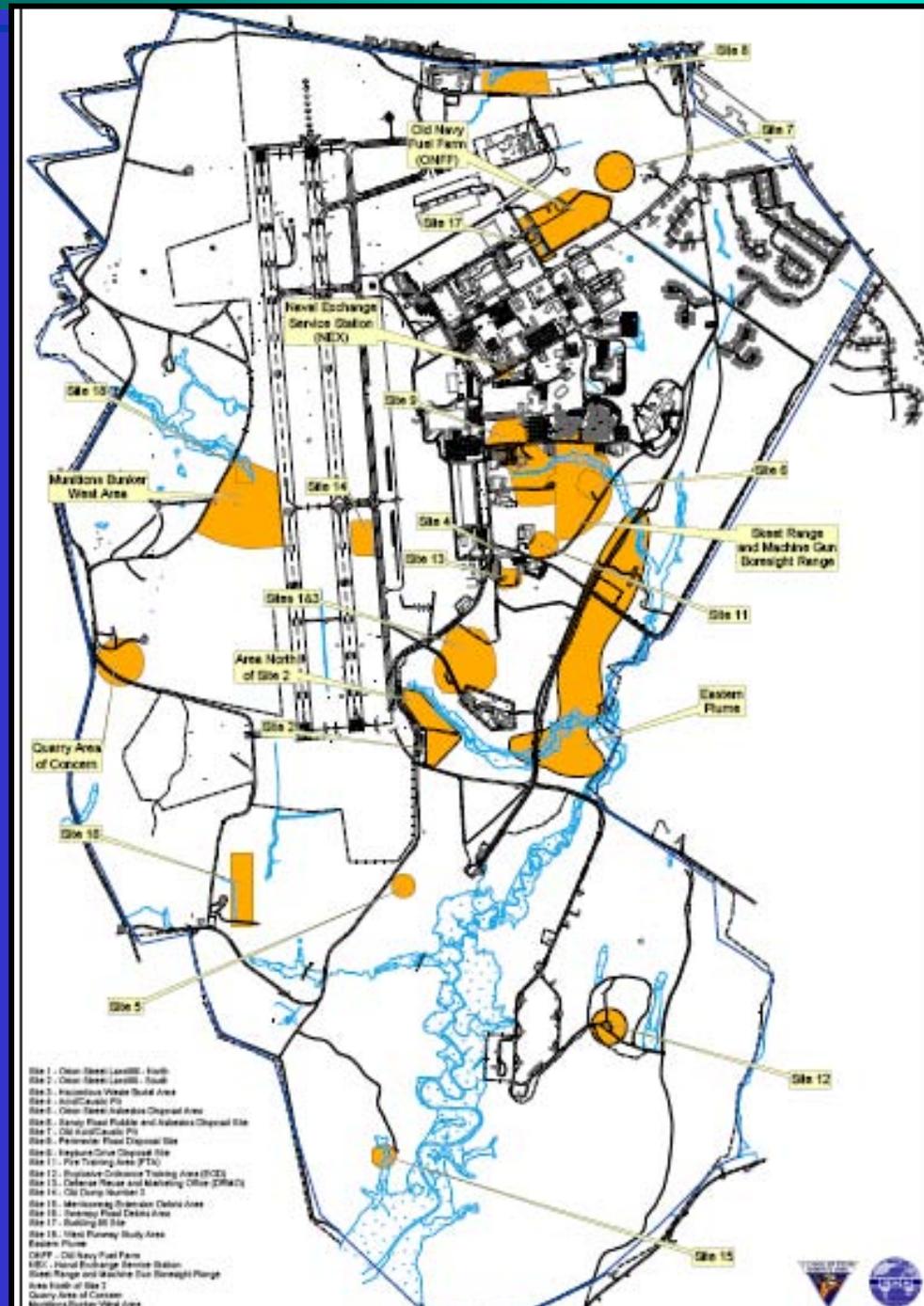
## *Status*

- Preparing a Work Plan to investigate both the area north of Site 2 and Site 2
- Possible field work this fall

## *Status Updates (cont.)*

- **Naval Air Station Brunswick Long-Term Monitoring Program**  
**Spring 2008**
  - Spring 2008 Sampling Event begins 1 April 2008 and continues through the month of April 2008.
  - Sampling will be completed at the following sites:
    - Site 2 Orion Street Landfill - South
    - Site 7 Old Acid Caustic Pit
    - Site 9 Neptune Drive Disposal Area
    - Site 1 Orion Street Landfill/Site 3 Hazardous Waste Burial Area
    - Eastern Plume
  - All Long-Term Monitoring Sites have final LTM Plans
  - Site 17 Building 95 will not be sampled due to the Remedial Investigation being undertaken during 2008 – 2009. The suspension of LTM sampling (Site 17) will be reviewed by the project stakeholders at the end of 2008.

# NAS Brunswick Basewide Map – Environmental Restoration Areas



- Site 1 - Orion Street Landfill - North
- Site 2 - Orion Street Landfill - South
- Site 3 - Hazardous Waste Burial Area
- Site 4 - Acid/Caustic Pit
- Site 5 - Orion Street Asbestos Disposal Area
- Site 6 - Sandy Road Rubble and Asbestos Disposal Site
- Site 7 - Old Acid/Caustic Pit
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- Site 11 - Fire Training Area (FTA)
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- Site 18 - West Runway Study Area
- Eastern Plume
- ONFF - Old Navy Fuel Farm
- NEX - Naval Exchange Service Station
- Skeet Range and Machine Gun Bore-sight Range
- Area North of Site 2
- Quarry Area of Concern
- Munitions Bunker West Area



## *Status Updates (cont.)*

- **Eastern Plume Groundwater Flow Model**

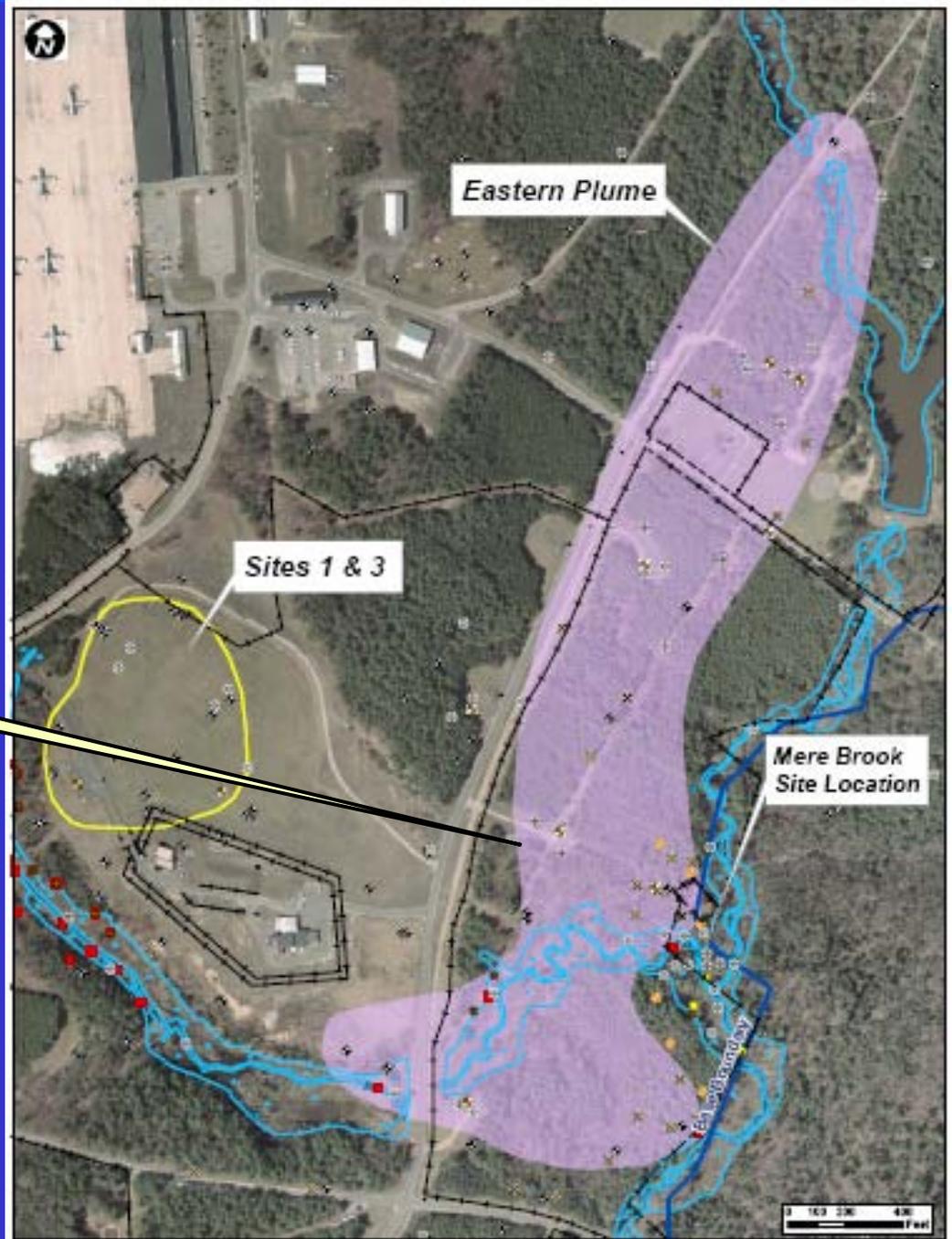
Groundwater flow model of the Eastern Plume will assist project stakeholders with evaluating contaminant migration pathways, determining the effectiveness of the current extraction well network, and locating additional extraction well(s) in the Eastern Plume.

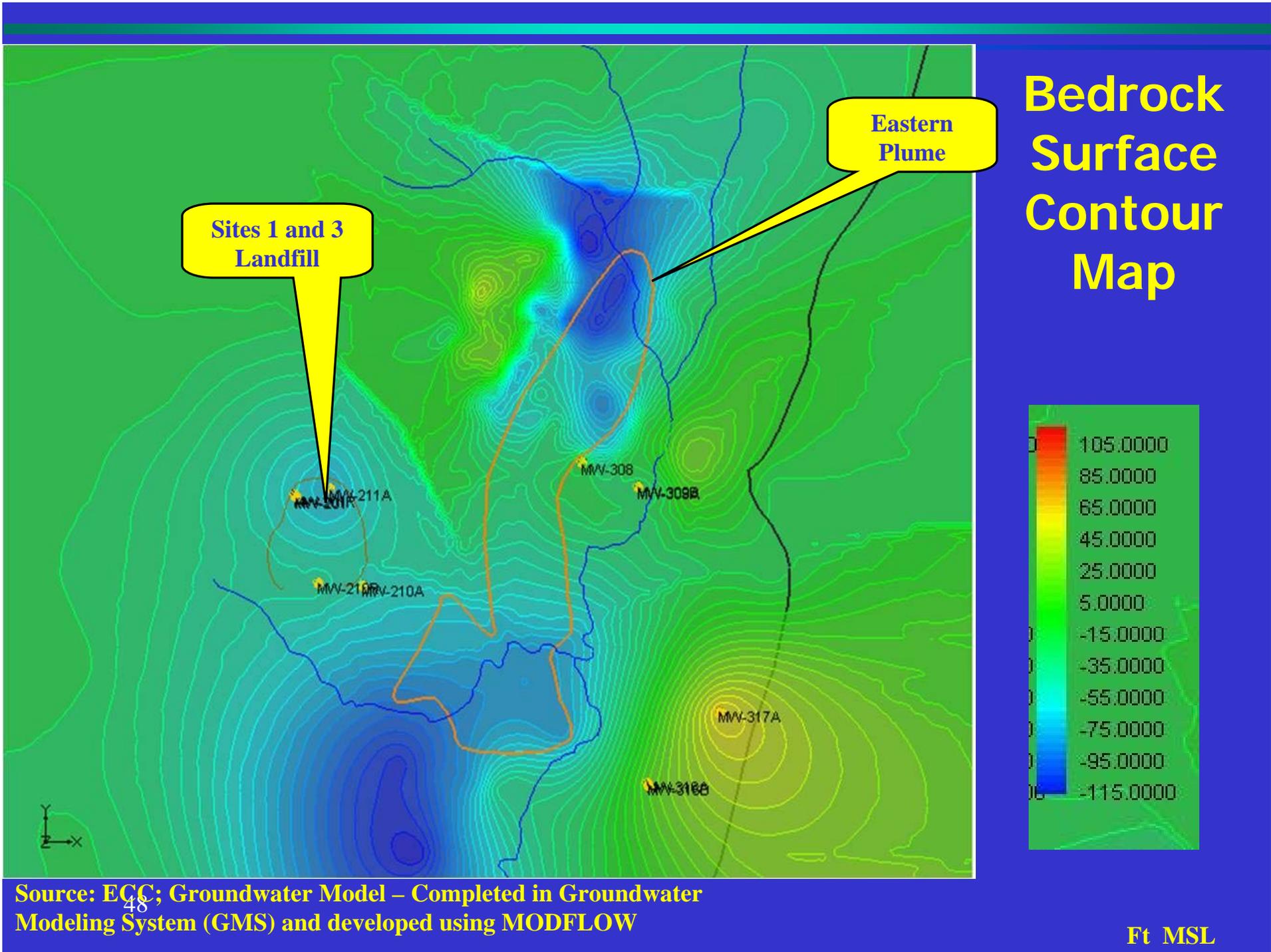
- **Remaining Tasks for the groundwater flow model for Eastern Plume consist of the following:**

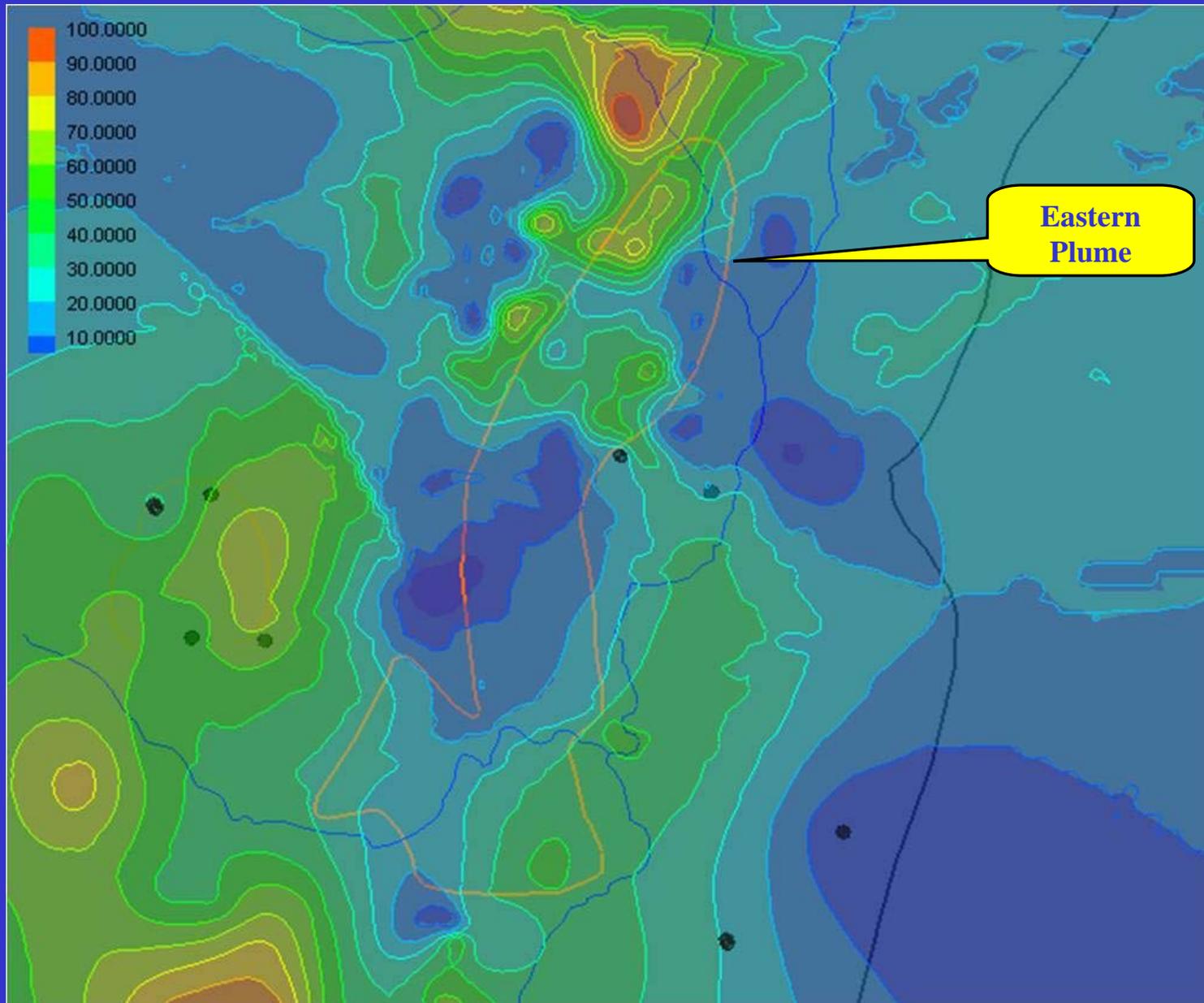
- **Aquifer Recovery Test - April 2008**
- **Incorporate new data and calibrate model – May 2008**
- **Issue Draft Groundwater Model - June 2008**
- **Regulator review of Groundwater Model - July through August 2008**
- 46 – **Final Groundwater Model – Fall 2008**

# Eastern Plume Area

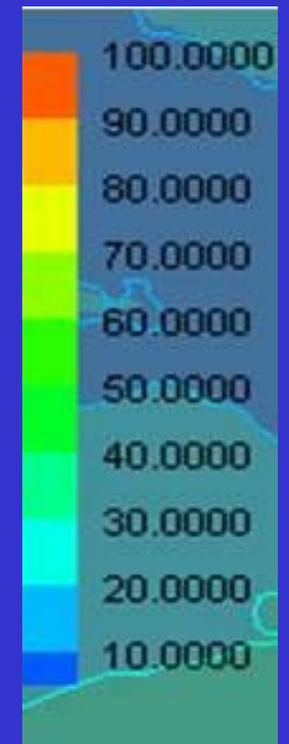
Eastern Plume







# Clay Thickness Map



Feet

49  
Source: ECC; Groundwater Model – Completed in Groundwater Modeling System (GMS) and developed using MODFLOW

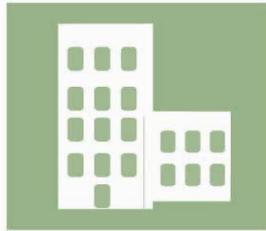
# *Mere Brook Fish Tissue Study*

- Mr. Cornell Rosiu  
US EPA Region I

# *Questions*

- **Future Restoration Advisory Board Agenda Topics**
- **2008 NAS Brunswick Restoration Advisory Board Meetings**  
*(\*Note - RAB Meetings are on Wednesday evenings)*
  - 11 June 2008
  - 15 October 2008
  - 3 December 2008

# MRRRA



Midcoast Regional  
Redevelopment Authority

## ***The BNAS Reuse Master Plan***

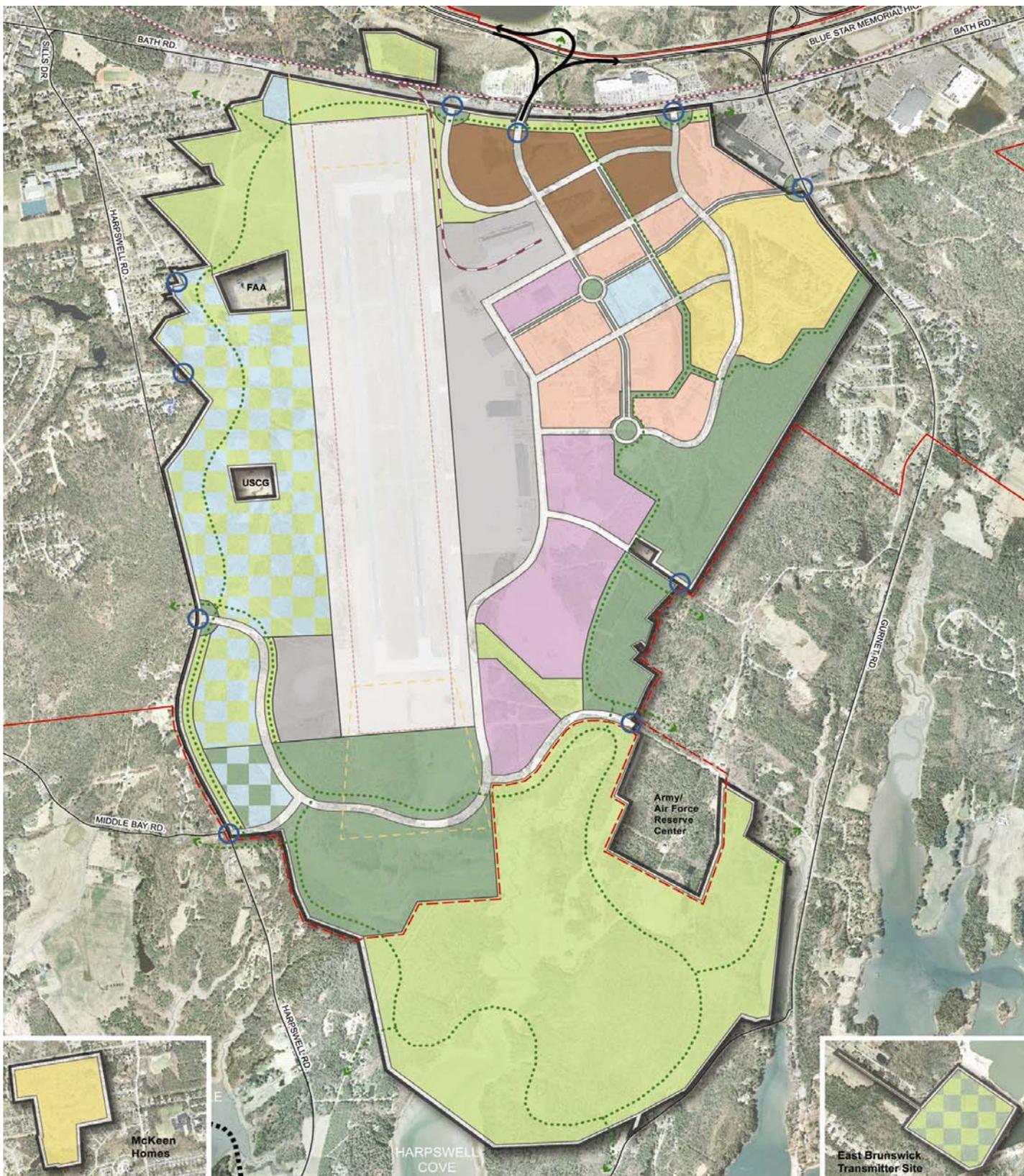
Presentation  
to the  
RAB

March 19, 2008

# Midcoast Regional Redevelopment Authority

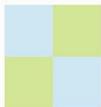
- MRRA was created by Maine Legislature in 2006 as the entity to implement the Reuse Master Plan for BNAS and the Topsham Annex
- Recognized as the Local Redevelopment Authority (LRA) by Department of Defense (Similar to the Loring Development Authority)
- Overseen by an 11 member Board of Trustees – Appointed by the Governor and Confirmed by the Legislature
- MRRA meets 3<sup>rd</sup> Tuesday of each month at various locations in the region
- MRRA office is Bldg. #37 at the Base entrance and has a staff of 6

# Reuse Master Plan Framework



# Reuse Master Plan Land Use Program

LAND USE DISTRICTS		SURPLUS ACRES	PERCENT OF TOTAL
Land Development	Airport Operations	500	16%
	Aviation-Related Business	230	7%
	Professional Office	120	4%
	Community Mixed Use	175	5%
	Business and Technology Industries	190	6%
	Education	200	6%
	Residential	215	7%
	<b>SUBTOTAL</b>	<b>1,630</b>	<b>51%</b>
Open Space	Recreation / Open Space	510	16%
	Natural Areas	1,060	33%
	<b>SUBTOTAL</b>	<b>1,570</b>	<b>49%</b>
<b>GRAND TOTAL</b>		<b>3,200</b>	<b>100%</b>



1. Checkered blue-light green area totals 320 acres, of which an undefined 175 acres have been assigned in the table above to Education and 145 acres to Natural Areas.



2. Checkered blue-dark green area totals 30 acres, all of which has been assigned in the table above to Recreation/Open Space; however, Education would be an allowed use, if needed.



3. Checkered light green-dark green (East Brunswick Transmitter Site) area totals 70 acres, of which an undefined 35 acres have been assigned in the table above to Recreation/Open Space and 35 acres to Natural Areas.

# Going Forward

**BNAS Reuse Master Plan provides the framework and serves as the basis for the following actions**

- Environmental Impact Statement must be prepared by Navy on Reuse Plan, starting early 2008
- Airport Master Plan must be developed by MRRA/DOT/FAA
- MRRA must work with the Navy and other federal/state agencies on property disposition and environmental remediation strategies

# Contact Information



[www.mrra.us](http://www.mrra.us)

[victoriab@mrra.us](mailto:victoriab@mrra.us)

(207) 798-6512

# Mere Brook Fish Tissue Study

## Study Overview:

Replicates FWS fish study in 1995.

Scheduled the week of July 9, 2006.

A team effort...

- fish sampling by FWS
- chemical analyses by Navy
- data analysis/ reporting by EPA.

Draft report anticipated in early 2008.

# Mere Brook Fish Tissue Study

## Study Plan:

Fishing upstream and downstream:

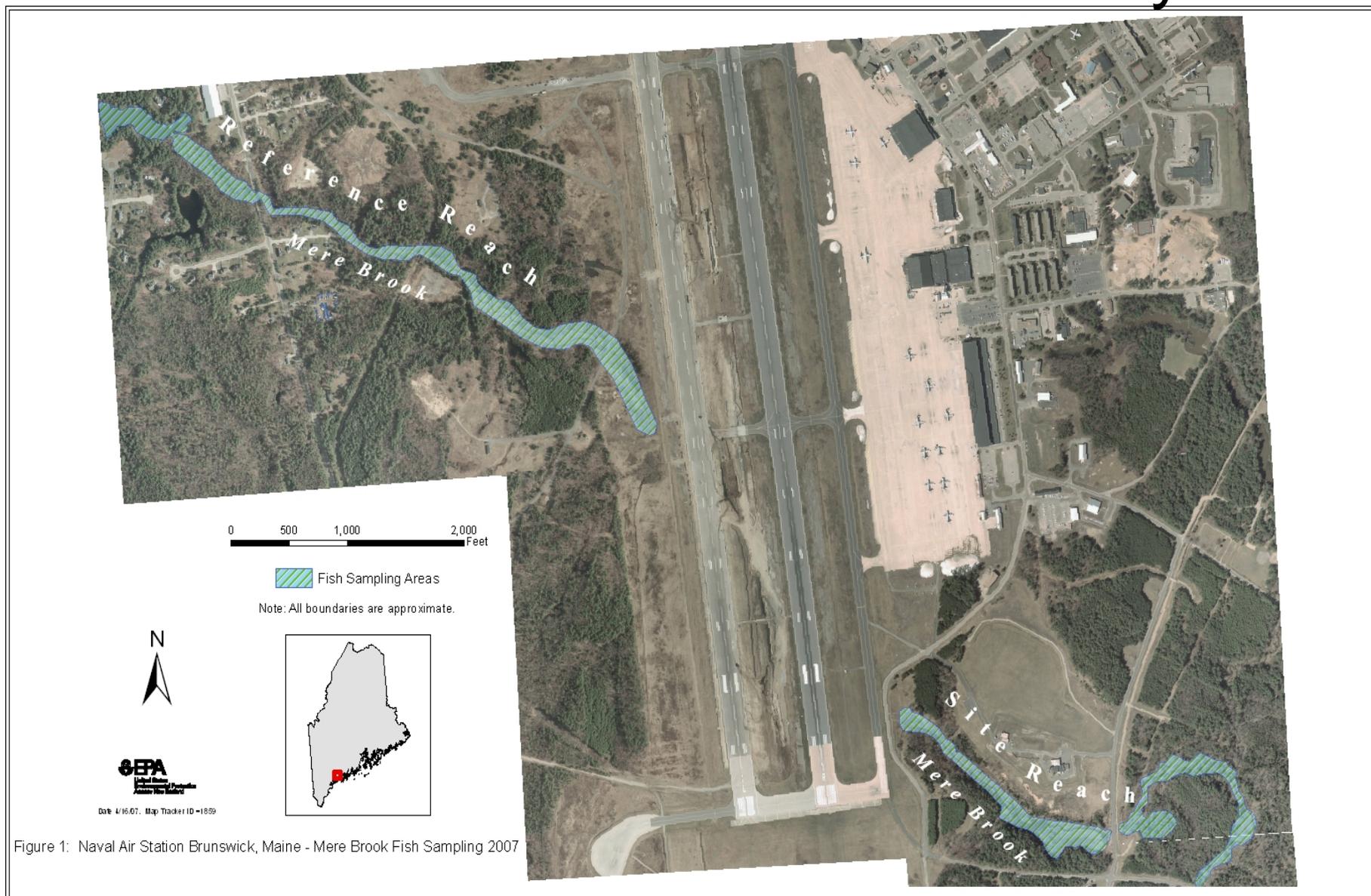
- adult eastern brook trout (~6 inch)
- juvenile eastern brook trout (<3 inch)

Sample analyses:

- tissue metals, pesticides, % lipid
- fish aging using length & weight
- archive fish scales.

Report and compare to FWS study in 1995.

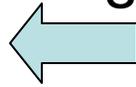
# Mere Brook Fish Tissue Study



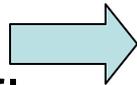
# Mere Brook Fish Tissue Study



Ground water seeps to the surface along the downstream “site” reach of the Brook

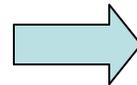


Seep water flows into the Brook



Photos by T. Finlayson, Gannett Flemming

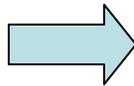
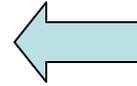
Site reach with the airfield in the background



# Mere Brook Fish Tissue Study



Beaver pond upstream of the culvert with Reference Reach in the background



Brook downstream of culvert with Site Study Reach in the foreground

# Mere Brook Fish Tissue Study

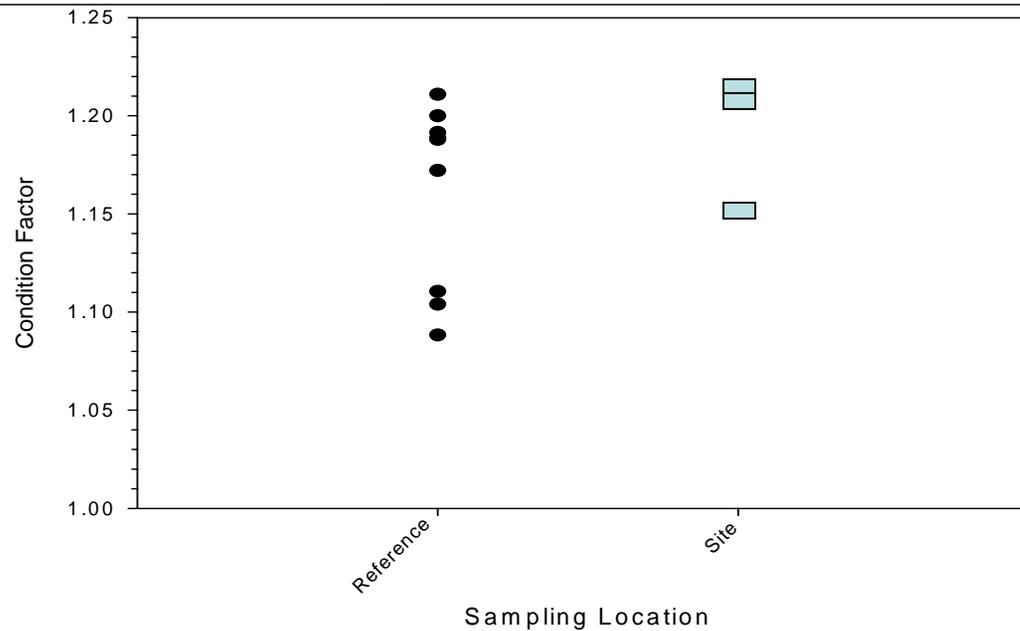
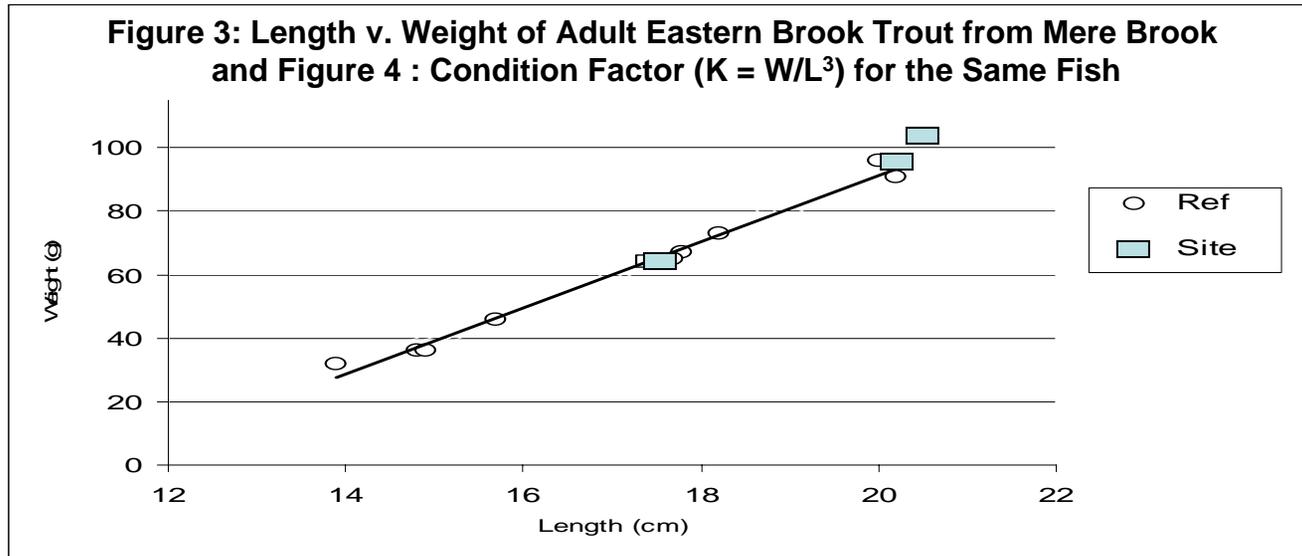


Fish sampling July 9-10, 2007

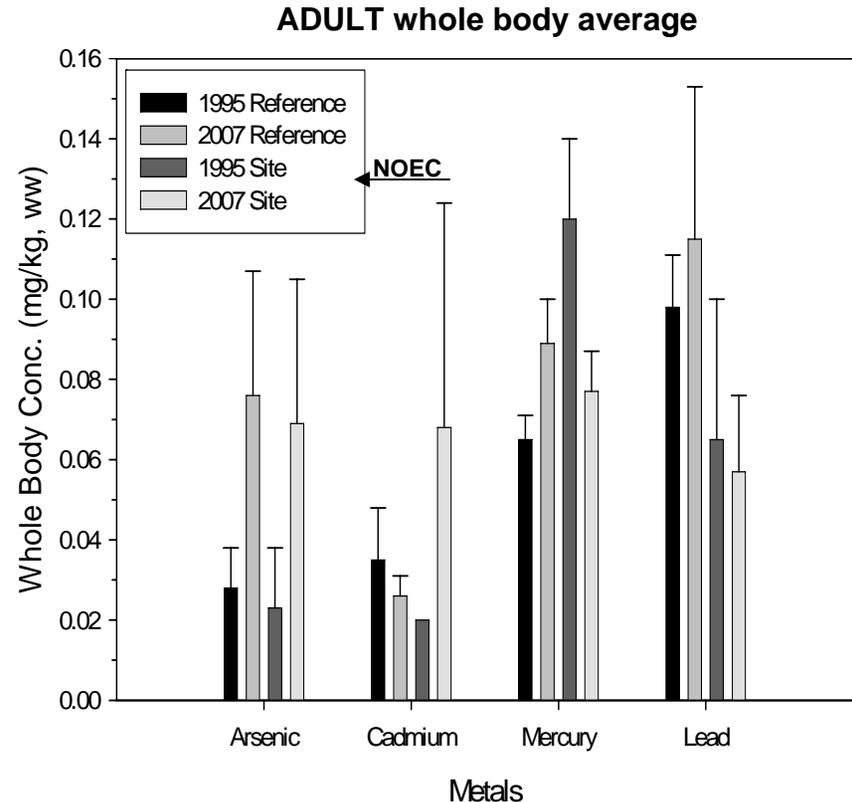
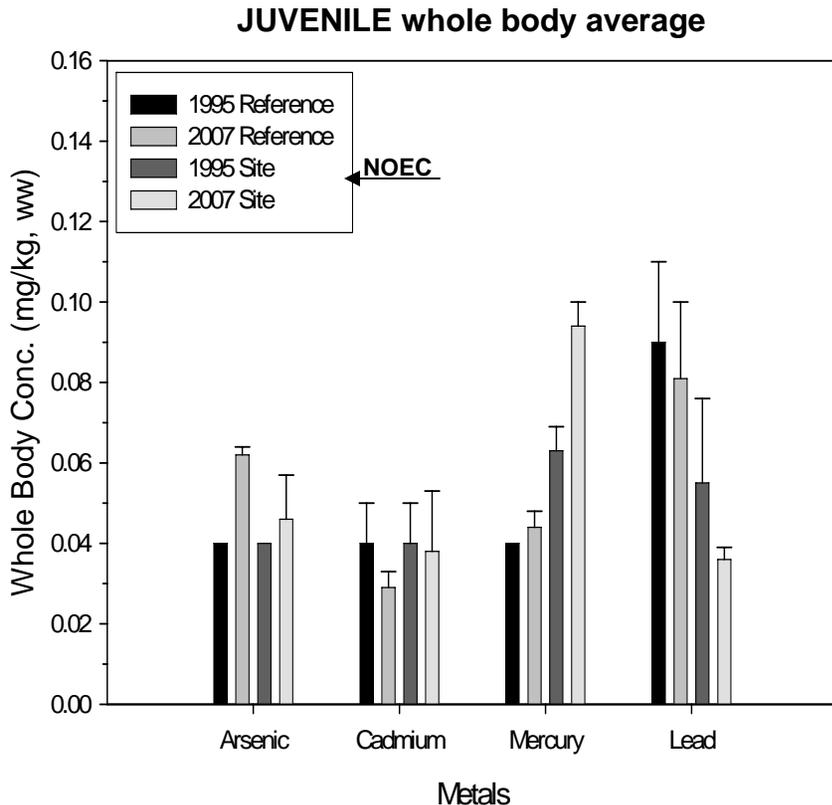


Site Study Reach adults and processing station

# Mere Brook Fish Tissue Study



# Mere Brook Fish Tissue Study



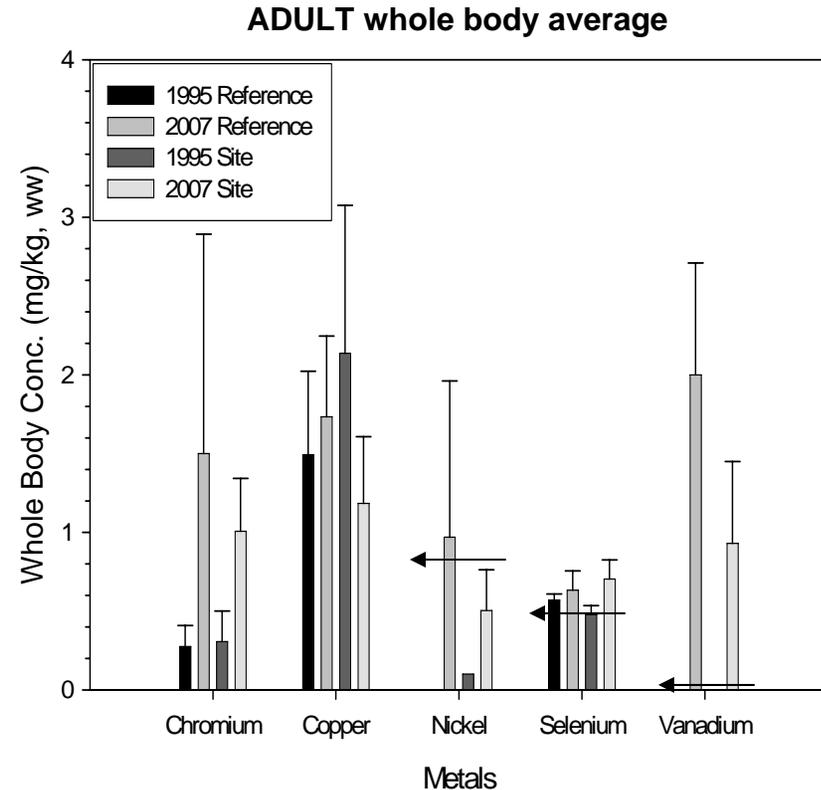
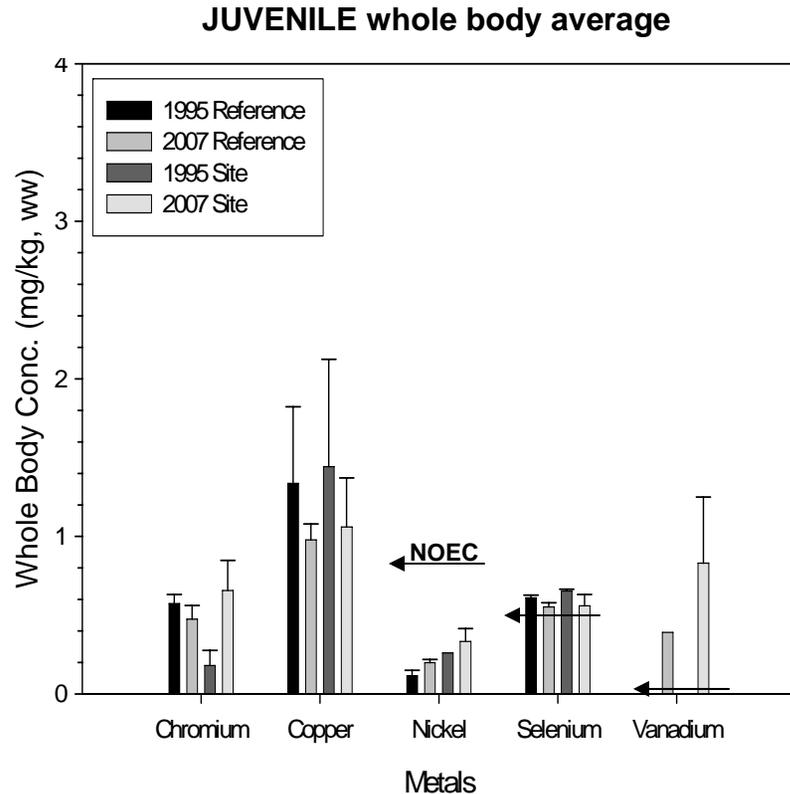
## METALS - Site Study Reach brook trout in 2007 have:

Higher average whole body concentrations of Cd and Hg (juveniles)

Lower average whole body concentrations of As and Pb

Compared to 1995, in 2007 both Reaches have fish with overall higher average whole body concentrations of As and Hg (juveniles).

# Mere Brook Fish Tissue Study



## METALS - Site Study Reach brook trout in 2007 have:

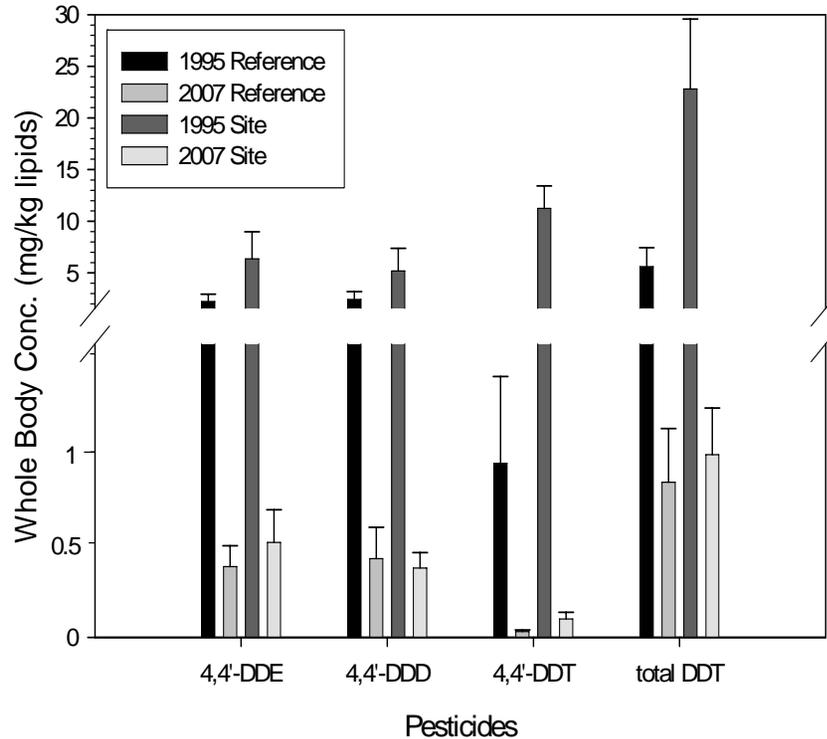
Higher average whole body conc. of Cr, Ni (juveniles) & Se (adults)

Lower average whole body concentrations of Cu and V (adults)

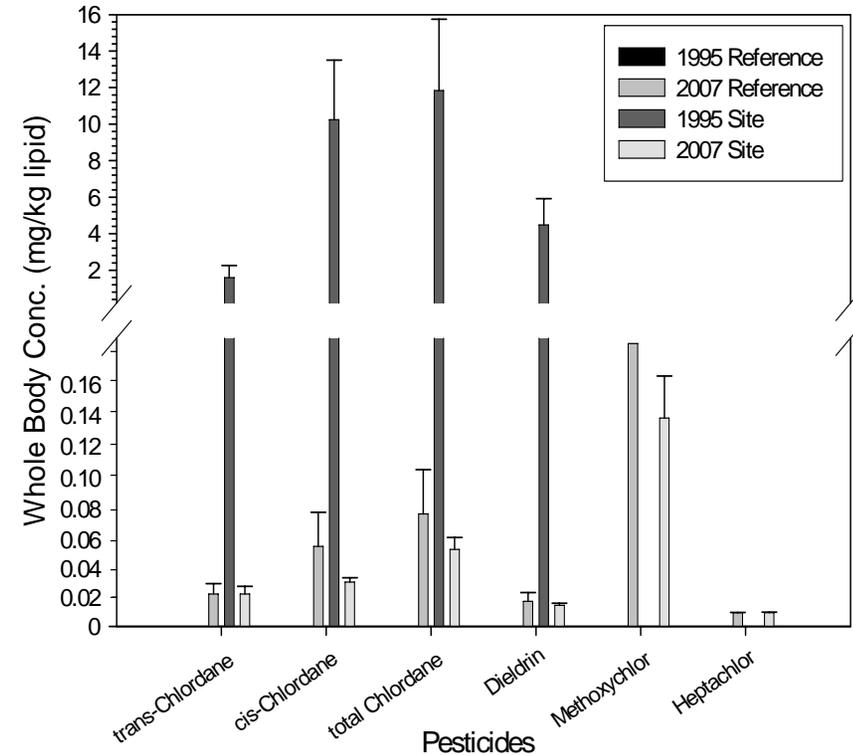
Compared to 1995, in 2007 both Reaches have fish with overall higher average whole body concentrations of Cr, Ni and Se (adults).

# Mere Brook Fish Tissue Study

ADULT whole body average  
- Lipid normalized -



ADULT whole body average  
- Lipid normalized -



## PESTICIDES - Site Study Reach brook trout in 2007 have:

Higher average whole body concentrations of DDTs

Lower average whole body conc. of Chlordanes and Dieldrin

Compared to 1995, in 2007 both Reaches have lower concentrations by a factor of ~2-10.