

## St. Juliens Creek Annex Restoration Advisory Board Meeting Summary: August 11, 2009 Meeting

### RAB Members Present:

Walter Bell	NAVFAC Mid-Atlantic	Janna Staszak	CH2M HILL
Robert Mann	RAB Community Co-chair	Adrienne Jones	CH2M HILL
John Burchette	USEPA (Region III)	Dave Koubsky	Elizabeth River Project
Robert Stroud	USEPA (Region III)	Kelly Jobst	PWD Portsmouth
Karen Doran	Virginia DEQ	Brooke Harris	Shaw Environmental, Inc.

**Location:** Major Hillard Library, Chesapeake, Virginia

**Meeting Date:** August 11, 2009

**From:** Adrienne Jones/CH2M HILL

**Minutes Date:** October 27, 2009

### Restoration Advisory Board Welcome and Introductions

At 6:00 PM Mr. Bell presented opening remarks and introductions to the Restoration Advisory Board (RAB). Mr. Bell explained that he is the Naval Facilities Engineering Command (NAVFAC) Mid-Atlantic Remedial Project Manager for St. Juliens Creek Annex (SJCA). The other RAB members and the guests introduced themselves. Handouts of all of the presentations were distributed.

### Five-Year Review

Ms. Staszak presented an overview of the five-year review. The objectives of the presentation were to present the purpose and process of a five-year review, discuss the ongoing five-year review, provide the schedule for the review, and answer questions.

Five-year reviews are required by Section 121 of Comprehensive Environmental Response Compensation Liability Act for remedial actions which result in any hazardous substances, pollutants, or contaminants remaining at a site. They are required to be completed within five years of the initiation of the first remedial action conducted at a facility. The objective of the review is to determine if the selected remedy remains protective of human health and the environment. The existing remedy may be modified if it is determined to be no longer protective.

Ms. Staszak explained the five-year review process. The process begins by identifying sites where a five-year review is required. Once the sites have been identified, an evaluation of the protectiveness of human health and the environment at those sites is performed through a review of Record of Decision (ROD) requirements, confirmation that Applicable or Relevant and Appropriate Requirements are being met, review of post-remedy documents and findings, and by conducting site visits and inspections to confirm land use and conditions (involving United States Environmental Protection Agency [USEPA] and Virginia Department of Environmental Quality [VDEQ]). The five-year review process also includes community involvement through notification in local newspapers and at RAB meetings, interviews and/or surveys, and maintenance of the Administrative Record. The process is completed by documenting the findings in a report to identify any circumstance that may prevent a particular remedy from functioning as designed or provide sufficient protection of human health and the environment.

The Installation Restoration Program (IRP) sites at SJCA which are active in the IRP or have RODs in place were listed and the rationale for whether they have been identified for inclusion on the five-year review was provided. The only site required for inclusion in the upcoming five-year review is Site 4 because it is the only site with a signed action ROD in which a remedial action left waste in place. Although not required, a summary will be included for Site 21 because an action interim ROD for that site will have been signed during the five-year review timeframe but the interim remedial action will not yet have been initiated.

Ms. Staszak explained that evaluation of the protectiveness of the remedy is performed by obtaining relevant information and data concerning the response action from which to base an assessment of remedy performance. Sources of this information include RODs, ROD amendments or explanation of significant differences, remedial investigation (RI) reports, feasibility studies, remedial designs (RDs), construction closeout reports, remedial action completion reports, and remedy performance and post-closure data. Additionally, site visits and inspections including EPA and VDEQ, should be conducted to provide information about a site's status and visually confirm and document the conditions of the remedy, site, and surrounding area. The evaluation should determine if the remedy is functioning as intended by the decision document; if the exposure assumptions, toxicity data, cleanup levels, and Remedial Action Objectives used at the time of remedy selection are still valid; and if any other information has come to light that could call into question the protectiveness of the remedy.

Background information for Site 4, the only site requiring the five-year review, was presented. The site is an 8.3-acre landfill adjacent to a wetland. It operated from 1970 to 1981, during which time primarily trash, wet garbage, construction materials were disposed of. Some solvents, acids, bases, and polychlorinated biphenyls were reportedly disposed of prior to 1976. The ROD and RD were completed in 2004 to implement the selected remedy; which consisted of wetland surface debris removal, eastern drainage sediment removal, installation of a 2-foot soil cover, and implementation of land use controls (LUCs). The remedial action was initiated March 21, 2005 and completed October 19, 2005. The LUC RD was completed in 2006 to prohibit digging into or disturbing the soil cover or landfill contents and prohibit residential use and development of the site. The specific requirements of the LUC RD were listed but not discussed in detail.

Ms. Staszak discussed voluntary groundwater performance monitoring conducted at Site 4. Although no risk associated with groundwater at Site 4 was identified, voluntary groundwater performance monitoring was conducted to evaluate the site's impact on groundwater quality to confirm no potential releases have posed unacceptable risk. Because there were no groundwater constituents of concern (COCs), the monitoring plan was developed based on the soil COCs (arsenic, iron, cadmium, lead, and thallium). Three downgradient monitoring wells and one upgradient monitoring well were sampled quarterly for two years. The results indicated that although no increasing trends of concentrations were evident, the most recent (2006 to 2008) arsenic concentrations detected in downgradient SJS04-MW04S were somewhat greater than historical (1997 and 1999) concentrations. Therefore, additional voluntary groundwater monitoring was recommended to evaluate remedy protectiveness in association with the five-year review and is currently being planned.

The community involvement aspects of the process were presented, consisting of a public notice of the five-year review initiation and interviews/surveys to solicit community feedback in order to provide additional information about a site's status. The public notice was published in the *Virginian-Pilot* on July 11, 2009. The interviews/surveys will be mailed to RAB members and nearby civic leagues. Ms. Staszak asked the RAB for suggestions of any additional groups or individuals that should be solicited. Mr. Mann suggested calling the City Clerks office for a list of the city's civic leagues.

The schedule for the five-year review was presented. The additional groundwater sampling at Site 4 will be conducted in August 2009. The final five-year review report will be signed by March 21, 2010 and the public notice indicating that the report has been finalized will be published in April 2010.

Mr. Koubsky asked what concentration the elevated arsenic at SJS04-MW04S was detected at. Ms. Staszak responded that it was detected at approximately 30 micrograms per liter.

## Site 21 Vapor Intrusion Investigation

Mr. Bell provided an update of the vapor intrusion investigation. The objectives of the presentation were to explain vapor intrusion, present an overview of the Site 21 vapor intrusion investigation, and discuss the site schedule.

Mr. Bell explained that he recently had a meeting with the occupants of the Site 21 buildings to discuss the upcoming vapor intrusion investigation. Details about what vapor intrusion is, how it's being investigated, the actions needing to be taken by the occupants, and what the occupants could expect during the investigation activities was provided during the meeting.

Mr. Bell explained what vapor intrusion is and why it's a concern. Vapor intrusion is the migration of volatile chemicals from the subsurface into overlying buildings. There are several factors that can influence whether vapor intrusion will occur; including volatile organic compound (VOC) concentrations, soil type, groundwater depth, building construction, and building foundation/slab condition. Many chemical vapors found indoors come from common commercial or industrial settings such as paint, dry-cleaned clothing, cigarette smoke, cleaning products, and gasoline-powered machinery. Vapor intrusion is a concern because of the potential for human health risks if vapors are present in buildings at

excessive concentrations. Often times VOCs can not be seen, smelled, or tasted and can potentially cause both acute and chronic effects. Additionally, they present the potential for safety hazards (e.g., explosion). Although vapor intrusion is rarely the primary cause of indoor air pollution, it should be investigated any time there is a volatile chemical within 100 ft of an occupied building.

Mr. Bell explained that the Navy is committed to investigating vapor intrusion. There is guidance available from the Department of Defense (DoD) and USEPA concerning investigation of vapor intrusion pathways. A vapor intrusion video (*Understanding Vapor Intrusion: A Guide to Key Concepts and Principles*) put together by the Navy and Marine Corps Public Health Center was played.

A vapor intrusion investigation is currently planned at Site 21, which is the only location on the base that has a groundwater plume underneath buildings. Site 21 is located in the central industrial portion of SJCA and currently consists of several buildings, asphalt parking areas, and minimal grass-covered areas. The source of contamination at the site was the use of trichloroethene for degreasing operations and reported disposal on railroad tracks, roads, and around buildings. The historical activities resulted in a VOC plume in the shallow aquifer groundwater at the site. Potential human health risks associated with the VOC groundwater plume were evaluated in the RI report. Potable use of groundwater by hypothetical future residents poses potential risk from several VOCs, and an approach to address the risk is currently being developed in an Interim Proposed Plan and Interim ROD. Additionally, potential risk from inhalation of vapors by hypothetical future residents and current industrial workers in Buildings 54 and 1556 from several VOCs was identified. No acute or short-term risk to building occupants from potential vapor intrusion pathways was identified and the RI recommended additional vapor intrusion evaluation. The approach for further evaluation has been jointly scoped by the Navy, USEPA, and VDEQ.

The activities associated with the first investigation event were explained. Step 1, completed August 14, 2009, consisted of conducting a building survey to identify building specific information that may have an impact on the sampling activities (i.e., chemical inventory, HVAC system and operation, presence of preferential pathways, and use of doors, windows, and loading docks). The information was used to aid in determining sample locations, identify and remove factors that can contribute to indoor air vapors and affect the outcome of the sampling, and will be used to evaluate the contribution of subslab vapors to the indoor air concentrations. The conceptual site models (CSMs) for Buildings 47 and 1556 were presented. Mr. Bell explained that although Building 54 is occupied and potential risk to the occupant was identified during the RI, the building is not included in this phase of the investigation. The Building 54 occupant will be relocated because the building is not large enough for the activities that need to occur in the building. That exact timeframe for the relocation has not been determined at this point, although it is expected to occur in the near future, and the need for investigation of vapor intrusion into the building will be made when more information about the relocation is made available.

Step 2, scheduled to occur the week of August 17, 2009, consists of collection of direct measurements. Subslab to indoor air pressure measurements will be collected to determine how a building "breathes," or changes pressurization. Measurements will be collected from one location within each building being investigated continuously over 7 days and the results will be used in combination with the other data during the evaluation of the

investigation results. Sublab vapor samples will be collected to determine the concentrations of VOCs vaporizing from the groundwater plume and building up under the building slab. Samples will be collected from a minimum of two locations within each of the buildings being investigated.

Step 3, scheduled to occur at the end of September 2009, consists of the data evaluation. The sublab vapor concentrations will be compared to indoor air screening criteria to determine the necessary follow up activities. At a minimum, one additional sampling event will be performed. The timing and scope of the event will be based on the results of this first sampling event.

## Munitions Response Site Prioritization Protocol

Mr. Bell provided a summary of the Munitions Response Site Prioritization Protocol (MRSPP). The objectives of the presentation were to review the Munitions Response Program (MRP), explain the purpose of the MRSPP, and present the application of the MRSPP for Area UXO 001.

An overview of the MRP was provided. The MRP was established because Congress directed the DoD to identify and prioritize their munitions response sites (MRS). The associated regulations were completed in October 2005. The MRSPP is risk based and considers both explosives safety factors for munitions and explosives of concern (MEC) and relative risk factors for munitions constituents (MC). It is used to prioritize munitions response (MR) actions based on the overall conditions at each MRS and sequence project funding.

Commonly used munitions terms were explained. MEC consists of specific categories of military munitions that may pose unique explosives safety risks such as unexploded ordnance (UXO), discarded military munitions (DMM), or MC in high enough concentrations to pose an explosive hazard. MC are any materials originating from UXO, DMM, or other military munitions including explosive and non-explosive materials, and emission, degradation, or break-down elements of such ordnance or munitions.

Mr. Bell explained that the specific DoD responsibilities associated with the MRP are to: ensure appropriate regulatory agencies and affected stakeholders are offered opportunities to participate in the application of the MRSPP; include records related to the MRSPP in the Administrative Record and Information Repository; apply the MRSPP to each MR area in the inventory such that the total acreage of each MR area is evaluated; and formally document sequencing decisions and notify stakeholders of changes due to component chain-of-command changes.

Mr. Bell indicated that the purpose of the MRSPP is to provide a methodology for prioritizing sites known or suspected of containing UXO, DMM, and/or MC. Each DoD component is to apply the MRSPP to determine a relative priority for each MRS. The MRSPP is applicable for sites that are: currently or previously owned by, leased to, or otherwise possessed or used by the DoD; known or suspected to contain UXO, DMM, or MC; and included in the inventory of defense sites. The MRSPP is not applicable for: locations that are not, or were not, owned by, leased to, or otherwise possessed or used by the DoD; locations neither known to contain or suspected of containing UXO, DMM, or MC; locations outside the US; locations where the presence of military munitions results from

combat operations; currently operating military munitions storage and manufacturing facilities; locations that are used for, or were permitted for, the treatment or disposal of military munitions; and operational ranges. The MRSPP is applied when there are sufficient data to run at least one of the three hazard evaluation modules: Explosion Hazard Evaluation (EHE), Chemical Hazard Evaluation (CHE), or Health Hazard Evaluation (HHE). The EHE evaluates explosive hazards posed by MEC. The CHE evaluates hazards associated with chemical warfare material (CWM). The CHE module is very specific to CWM (i.e., nerve gas). The HHE evaluates health (both acute and chronic) and environmental hazards posed by MC and incidental non-munitions related contaminants. After the preliminary assessment (PA) was conducted for UXO 001, there was sufficient data to run the EHE and CHE modules. The HHE module may be run after further investigation is completed.

Mr. Bell explained that the MRSPP is reapplied to a site in the following instances: upon completion of a response action that could change the potential hazard at a site; to update or validate a previous module evaluation at a site when new information is available; to update or validate a priority that was previously assigned based on only one or two of the three hazard evaluation modules; or upon further delineation and characterization of a MR area into MRSs. The MRSPP was designed to maximize use of the latest MR site-specific data and to be applied early in the MR process. Data sources may include PAs, archive search reports, historic record reviews, CSMs, site investigations (SIs), and environmental baseline surveys. Additional data gathering activities may be required to supplement existing data. Public/stakeholder input is required during the process.

After being prioritized, the sites are sequenced for response action. As a matter of policy, sites with higher relative risks are considered before sites with lower relative risks, but other factors may influence sequencing decisions. These factors include cultural and social factors; economic factors; reasonable anticipated future land use; availability of appropriate technology; and short-term and long-term ecological effects and environmental impacts in general, including injures to natural resources.

A description of the only active MRP site at SJCA was provided and a figure showing the site was displayed. Area UXO 001 is comprised of the current and former wharf areas along the shoreline of the Southern Branch of the Elizabeth River, and consists of approximately 3,000 linear feet of wharf. Only pilings remain in the northern wharf area. The southern wharf area is still present but has been damaged. A dolphin pier, located in the southern wharf area, was evaluated in the PA but removed from the area boundary because the PA concluded that it was not used for ordnance loading. The PA was finalized in June 2009 and included an initial MRSPP scoring of the site based on archives search and historic record reviews. A module ranking of "A" is high and "G" is low, and a priority ranking of "1" is high and "8" is low. The EHE module received a ranking of "E" and the CHE module received a ranking of "F". The CHE is pending because the data needed to complete the module are not available. UXO 001 received an overall prioritization ranking of "6".

Mr. Bell noted that the Navy is seeking public information and input that may be useful in refining the site hazard evaluation and completing the prioritization of UXO 001. The address to submit comments to was provided.

Mr. Bell explained how the protocol data element tables of the modules are completed. The scores of all hazard classifications that apply for a table are circled but only the highest classification score is recorded in the ranking box for the table. Site-specific data used to select the hazard classification is documented at the bottom of the table. Mr. Bell reviewed the protocol data element tables completed for Area UXO 001, which are included in the PA report:

Tables 1 through 10 make up the EHE Module:

Table 1, Munitions Type, identifies the munitions types that are known or suspected to be present at the site. Three classifications of munitions were selected; "high explosive (unused)", "bulk secondary high explosives, pyrotechnics, or propellant", and "practice". The rationale for the selection made is that although the exact munitions potentially present is unknown, shipping records indicate that the potential exists for items to have been dropped from the piers. Potential items may include small arms, 2" - 16" projectiles, practice bombs, hand grenades, and several other items.

Table 2, Source of Hazard, identifies the sources of the explosive hazards known or suspected to be present at the site. The source selected for UXO 001 is "former storage or transfer points" because the site was used as a transfer point to load and unload ships.

Table 3, Location of Munitions, identifies the locations where munitions are known or suspected to be present at the site. Both "suspected (physical evidence)" and "suspected (historical evidence)" were selected. The rationale for the selection is based on physical evidence (including sediment sample and magnetic investigation results) and historical evidence (historical records) of munitions loading and unloading operations at the site, indicating the potential exists for munitions to have been dropped during transfer operations.

Table 4, Ease of Access, identifies the barrier type directly related to the ease of public access to the site. "Barrier to MRS access is incomplete" was selected because a natural barrier exists at the site because of the presence of approximately 15- to 20-ft of deep water. However, the barrier is incomplete as the river floor can be accessed by diving, construction activities, etc. Additionally, signs are posted identifying the site as part of the Navy's Range Program.

Table 5, Status of Property, identifies the status of the property within the DoD. "DOD control" was selected, as the site is located within the boundaries of SJCA.

Table 6, Population Density, identifies the population density per square mile that most closely corresponds with the population of the site, including the area within a 2-mile radius of the perimeter of the site. "100-500 persons per square mile" was selected based upon the 2000 US Census Bureau data for Block 1002, Block Group 1, Census Tract 214.03 (Chesapeake, Virginia), which states there are 273 persons per square mile located within the sites Census tract area.

Table 7, Population Near Hazard, identifies the number of inhabited structures within two miles of the site. "26 or more inhabited structures" was selected.

Table 8, Types of Activities/Structures, identifies the types of activities that occur and/or structures that are present within two miles of the site. Several classifications were selected

and comprise; “residential, educational, commercial, or subsistence”, “parks and recreational areas”, and “industrial or warehousing”.

Table 9, Ecological and/or Cultural Resources, identifies the ecological and/or cultural resources present at the site. “Ecological and cultural resources present” was selected because a portion of the site near Building M-5 is located in a wetland/marsh area. Additionally, portions of the site are located within, or adjacent to, the SJCA Historic District and may contain cultural resources.

Table 10, Determining the EHE Module Rating, adds the scores from Tables 1 through 9 to determine a cumulative score and corresponding ranking.

Tables 11 through 20 make up the CHE Module:

Table 11, CWM Configuration, identifies the CWM configurations known or suspected to be present at the site. Both “CAIS K941 and CAIS K942” and “CAIS (chemical agent identification sets)” were selected. The basis for the selection is that although evidence of CAIS does not currently exist at the site, documentation does exist that these sets were stored at SJCA and may have been loaded and unloaded by ship at the wharf. Therefore, CASI are included as potential CWM. Because the type is unknown the most conservative type was selected.

Table 12, Sources of CWM, identifies the sources of CWM hazards known or suspected to be present at the site. “Former storage or transfer points of CWM” was selected because the site was a potential transfer point for the loading and unloading of gas identification (CAIS) kits.

Table 13, Location of CWM, identifies the locations where CWM are known or suspected of being found at the site. “Suspected (historical evidence)” was selected because historical documentation in the Initial Assessment Study (IAS) identifies that CAIS were stored in Building 163. Shipping documentation was not specific as to how the items were transported to Building 163 (possibly truck, railroad, or ship). The IAS identifies that CAIS were airlifted from Building 163 to be consolidated with other kits at Quantico as part of SETCON ONE; however, it does not indicate whether or not other methods of transportation (e.g., shipping) were also used.

Tables 14 through 19 are the same as Tables 4 through 9 of the EHE and received the same selections and scoring as the EHE tables.

Table 20, Determining the CHE Module Rating, adds the scores from Tables 11 through 19 to determine a cumulative score and corresponding ranking.

Tables 21 through 28, which make up the HHE Module, were not completed because the data needed for the module are not available. Mr. Bell noted that completion of only one module is needed to complete the prioritization.

Table 29, MRS Priority, combines the rating from all of the modules to determine an overall priority rating for the site. An MRS assigned a Priority of 1 has the highest relative priority; an MRS assigned a Priority of 8 has the lowest relative priority. Only an MRS with CWM known or suspected to be present can be assigned a priority of 1 and cannot be assigned a Priority of 8. The overall MRS Priority Rating for UXO 001 is 6. Mr. Bell explained that

MRSPP ranking is combined with Navy budgeting information to determine which sites should receive priority funding.

Mr. Koubsky asked if funding will be made available to address the site since it is considered low priority. Mr. Bell responded that he does not anticipate having a problem getting funding for the site. Mr. Koubsky asked if side scan sonar was going to be used at the site. Mr. Bell responded that it is and that some side scan data has already been collected at the site from training activities conducted in the area. Mr. Koubsky asked when the side scan sonar data will be collected. Mr. Bell responded that it will be collected in November 2009.

## UXO 001 Site Inspection Activities

Ms. Staszak summarized the UXO 001 SI activities. The purpose of the presentation was to provide a brief review of the site history and previous investigations and present the proposed SI strategy.

A figure showing the location of the site at the base was presented. The northern wharf area consists of 1.7 acres and the southern wharf area consists of 4.5 acres. Ms. Staszak provided a history of the site. The northern wharf area was built in 1917 and 1918 from wood pilings (550-ft long). It was specialized for the loading of Mark VI mines produced at SJCA; the goal for mine production, loading, and shipping operations was 1,000 mines per day. The wharf was reported to be in extremely poor condition starting in the 1926 annual reports by the Bureau of Ordnance but repairs were not recommended because the wharf was no longer in use. The southern wharf area consists of Wharf 1 and Wharf 2. Wharf 1 was constructed in approximately 1898 for ordnance loading during the Spanish-American War. It was used heavily throughout the first 20 years of SJCA but was inactive between 1931 and the 1940s due to safety concerns. Wharf 2 was constructed north of Wharf 1 between 1898 and 1903 to aid in ordnance loading and was operational for ordnance loading from 1903 to the mid-1970s. It was extended and altered four times with the final alteration extending it to Wharf 1 and adding a dolphin pier/catwalk for lighter storage. No documentation was found describing ordnance operation along the dolphin pier/catwalk extension. In 1944 it was projected that approximately 25,000 tons of ordnance could be shipped monthly. Bomb loading activities ceased between 1945 and the mid-1960s. The majority of loading operations from the mid-1960s to 1977 consisted of gun ammunition, which was loaded by stacking oak pallets strapped together by steel, the height and slope of the pallets adjusted with the tide cycles.

The previous investigations conducted at the site were summarized. An IAS was conducted in 1981, during which Explosive Ordnance Disposal team divers visually searched the northern wharf area and identified metal and thick silt deposits, indicating ordnance could have been dropped adjacent to the former wharf area. It was assumed the potential ordnance presence was not a hazard as long as the sediment was not disturbed and recommended that real estate records be annotated to indicate ordnance may be present. A Relative Risk Ranking (RRR) was performed in 1996 and included a site reconnaissance, magnetometer survey, and sediment sampling in the northern wharf area. Approximately 68 contacts were identified in three concentration areas around the former wharf pilings. A figure identifying the three concentration areas was presented. The contacts indicate all types of buried metallic objects and do not necessarily indicate the presence of MEC.

Additionally, isolated chemical detections were identified in the sediment. A Site Screening Assessment (SSA) was completed in 1996 and included human health and ecological risk screenings on the RRR data. No risk was identified to human receptors. Risk was identified to ecological receptors; however, the risk was considered minimal and no further evaluation was recommended. Therefore, the RRR recommended no further action for the northern wharf area under the IRP and the potential risk from MEC was to be addressed under the Navy's Range Program. Several post-SSA activities were conducted at the site: signs were posted in the area to prohibit intrusive activities; the United States Army Corp of Engineers (USACE) was notified of the potential presence of MEC; and the Internet Navy Facility Assets Data Store Property Record Card was noted to indicate UXO may exist along all SJCA wharfs. No USACE restrictions were implemented on the water body. In 2008, sonar imagery was collected within portions of the SJCA wharf areas. It included the use of side scan sonar technology to identify subsurface features and physical anomalies. Ten anomalies were detected in the immediate vicinity of the southern wharf area; however, what the anomalies are is unknown. The wharf areas (northern and southern) were identified as MRP Area UXO 001 in 2008.

Ms. Staszak indicated that a PA was completed in June 2009 and described the process and findings. No site visits or sampling were performed because the site is under water. No documentation was found to confirm the presence of munitions in the vicinity of the wharf areas; however, anecdotal evidence (interviews) indicated the potential for munitions to have been dropped during loading operations. The PA recommendation was for further investigation in the northern and southern wharf areas and no additional investigation in the dolphin pier area.

Based on the recommendation of the PA, a SI will be conducted. Because the site is underwater, the SI investigation will be conducted in two phases. Phase 1, expected to be conducted in November 2009, will consist of an underwater geophysical investigation using a boat-towed array. Side scan sonar will be used to guide the boat-towed array since visibility in the river is minimal. Mr. Bell noted that the sonar detects physical irregularities and features but does not detect subsurface anomalies. Phase 1 will be conducted to identify concentrations of metallic anomalies and the results will be used to guide Phase 2. Phase 2, to be conducted in spring 2010, will consist of targeted anomaly investigations. Areas with concentrations of anomalies will be dredged to collect anomalies and determine if anomalies are MEC, and sediment samples will be collected from dredged material and analyzed for select constituents. The SI report, scheduled for summer 2010, will summarize both phases of the investigation. Mr. Bell pointed out that the objective of the SI is to determine whether munitions are present and based on the results, a removal action may be conducted or an RI completed to refine the data.

Mr. Mann asked if the SI was limited to the Southern Branch of the Elizabeth River. Mr. Bell responded that it is and the investigation will not expand past the river channel. Mr. Koubsky asked what concentrations the polycyclic aromatic hydrocarbons were detected at; Ms. Staszak responded that she is unsure. Mr. Bell noted that he is working with Navy legal to determine whether the Coast Guard needs to be notified of the investigation activities or the potential for ordnance at the site.

## Roundtable / Q & A

Mr. Bell asked if anyone had general questions or comments that they would like to discuss. No roundtable topics were brought forward by the RAB for discussion.

Mr. Bell asked Mr. Mann if he had noticed barges along the shoreline of St. Juliens Creek. Mr. Mann responded that he had not noticed the barges. Mr. Koubsky explained that the barges may be associated with Weeks Marine, which is leasing land from Southern Aggregate while they move in some equipment.

Mr. Bell indicated that the Navy wants to reach out to the community to increase participation in the RAB. Ms. Staszak noted that the Community Involvement Plan for SJCA is currently being updated. Additionally the 10<sup>th</sup> anniversary of the RAB is occurring and the Navy would like to plan something special for the anniversary. Ms. Jobst suggested adding a notice to the *Service to the Fleet* to reach the workers on the Base.

### Next Meeting:

Mr. Bell noted that the next RAB meeting will be in approximately 6 months. Mr. Bell asked if there were any topics that the RAB members would be interested in. No suggestions were made.

**Meeting Adjourned.**

**RESTORATION ADVISORY BOARD (RAB)  
AGENDA**

**For the  
Environmental Restoration Program (ERP)  
St. Juliens Creek Annex  
Chesapeake, Virginia**

**Major Hillard Library  
824 Old George Washington Hwy  
Chesapeake, Virginia 23323  
(757) 410-7078**

**Tuesday, August 11, 2009 at 6:00 PM**

**TOPIC**

**SPEAKER**

**Welcome & Introduction**

Walt Bell  
Naval Facilities Engineering Command

**Five Year Review**

Janna Staszak  
CH2M HILL

**Site 21 Vapor Intrusion Investigation**

Walt Bell  
Naval Facilities Engineering Command

***Break***

**Munitions Response Site  
Prioritization Protocol (MRSPP)**

Walt Bell  
Naval Facilities Engineering Command

**UXO 1 Site Inspection Activities**

Janna Staszak  
CH2M HILL

**Roundtable**

Comments/Questions  
Future RAB Meeting Schedule  
Future Agenda

Walt Bell  
Naval Facilities Engineering Command

**Closing Remarks & Adjourn**



# St. Juliens Creek Annex Five Year Review

SJCA RAB Meeting  
August 11, 2009

# Objectives



- Present the purpose and process of a Five-Year Review
- Discuss the currently ongoing Five-Year Review
- Provide the schedule for the review
- Answer questions

# Purpose



- Five-Year Review is required by Section 121 of Comprehensive Environmental Response Compensation Liability Act (CERCLA) for remedial actions which result in any hazardous substances, pollutants, or contaminants remaining at a site
  - Required five years from the initiation of the first remedial action
- Objective of the review is to determine if the selected remedy remains protective of human health and the environment
  - Existing remedy may be modified if no longer protective

# Process

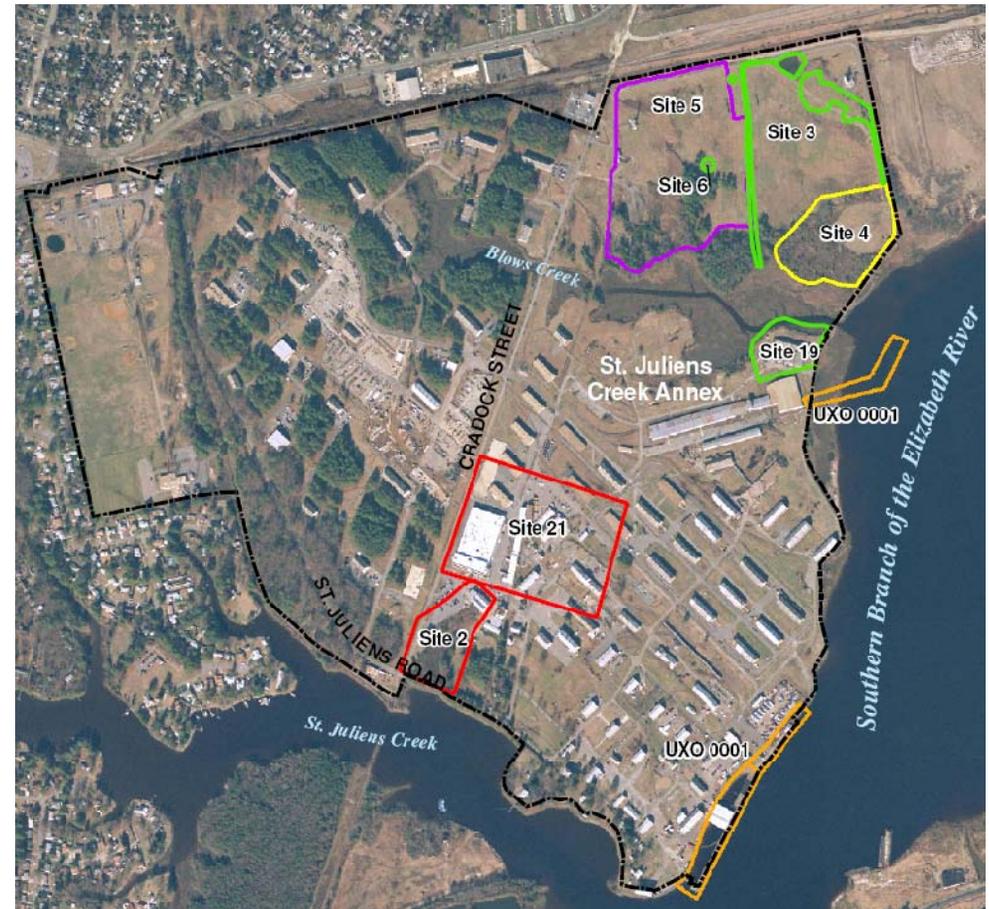


- Identify sites where a Five-year review is required
- Evaluate protectiveness of human health and the environment
  - Review requirements in Record of Decisions (RODs)
  - Review post-remedy documents and findings
    - Confirm Applicable or Relevant and Appropriate Requirements (ARARs) are met
  - Conduct site visits and inspections
    - EPA and VDEQ involvement
    - Confirm land use
- Involve community
  - Place notice in local newspapers
  - Notify RAB at meetings
  - Conduct interviews/surveys
  - Maintain Administrative Record
- Complete report
  - Identify any circumstance that may prevent a particular remedy from functioning as designed or provide sufficient protection of human health and the environment

# Active IRP Sites or Sites with RODs



- Site 2
  - Remedial Investigation/Feasibility Study (RI/FS) phase
- Site 3
  - Removal action resulted in Unlimited Use and Unrestricted Exposure (UU/UE)
  - No further action ROD
- Site 4
  - Action ROD
  - Remedial action left waste in place
  - Five-year review required
- Site 5
  - Engineering Evaluation and Cost Analysis (EE/CA)/Removal Action phase
- Site 6
  - Removal action resulted in UU/UE
  - No further action ROD
- Site 19
  - Removal action resulted in UU/UE
  - No further action Site Closeout Report
- Site 21
  - RI/FS phase, will be post-ROD @ time of Five-Year Review
  - Remedial action won't be initiated
  - Site summary included in Five-year review
- UXO 1
  - Preliminary Assessment/Site Inspection phase



- St. Juliens Creek Annex
- RI/FS Site
- NFA Site
- Response Complete - Site with LUCs
- EE/CA/Removal Action Site
- PA/SI Site

# Remedy Protectiveness Evaluation



- Obtain relevant information and data concerning a response action from which to base an assessment of remedy performance
  - Record of Decision (ROD)
  - ROD Amendment/ESD
  - Remedial Investigation Report
  - Feasibility Study
  - Remedial Design
  - Construction Closeout Report
  - Remedial Action Completion Report
  - Remedy Performance and Post-Closure Data
- Conduct site visits and inspections
  - EPA and VDEQ involvement
  - Provide information about a site's status and visually confirm and document the conditions of the remedy, site, and surrounding area
- Answer the following questions
  - Is the remedy functioning as intended by the decision document?
  - Are the exposure assumptions, toxicity data, cleanup levels, and Remedial Action Objectives (RAOs) used at the time of remedy selection still valid?
  - Has any other information come to light that could call into question the protectiveness of the remedy?

# Site 4: Landfill D



- 8.3-acre landfill adjacent to a wetland
- Operated from 1970 to 1981
  - Primarily trash, wet garbage, construction material
  - Some solvents, acids, bases, and PCBs were reportedly disposed of prior to 1976 (RCRA)



# Site 4 Background

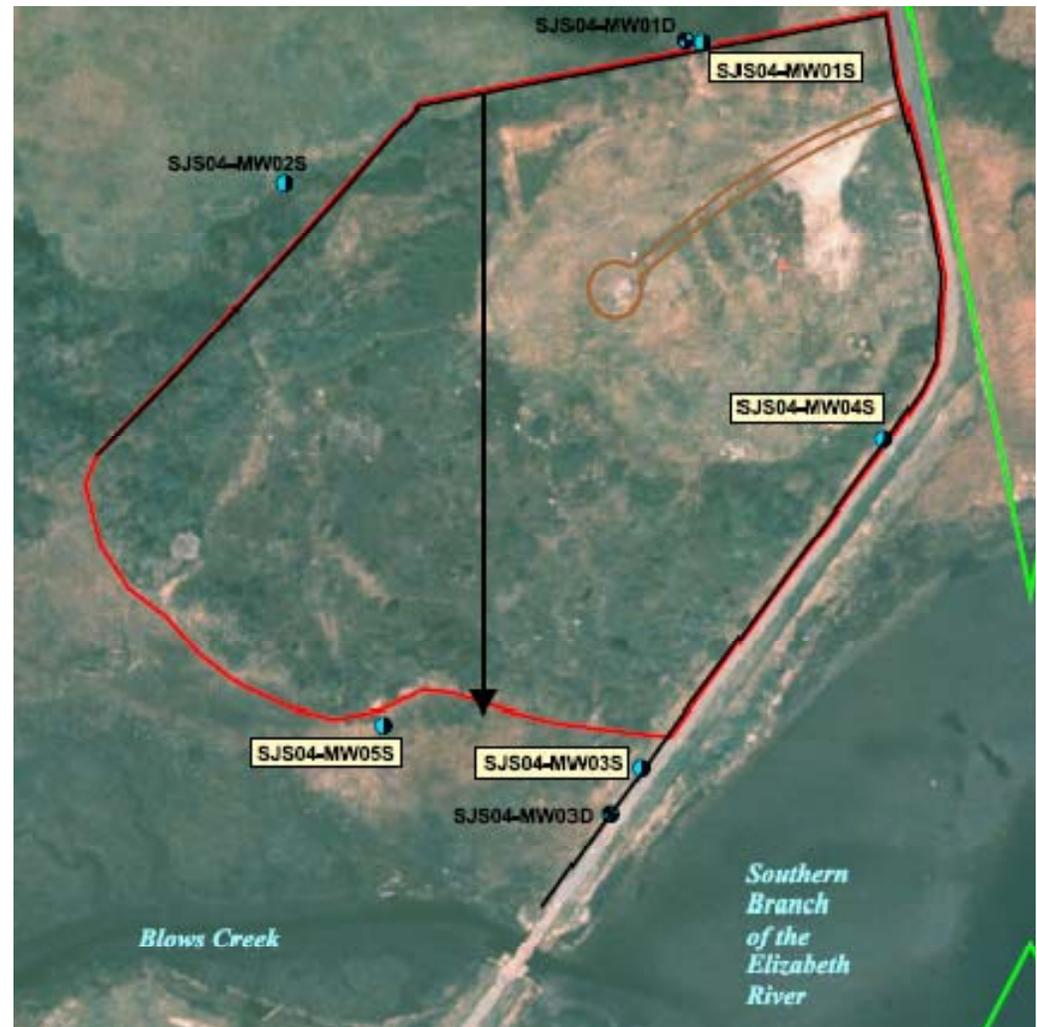


- ROD and Remedial Design (RD) completed in 2004 to implement the selected remedy
  - Wetland surface debris removal
  - Eastern drainage sediment removal
  - 2-foot soil cover
  - Land use controls (LUCs)
- Remedial Action initiated March 21, 2005 and completed in October 19, 2005
- LUC RD completed in 2006 to prohibit digging into or disturbing the soil cover or landfill contents and prohibit residential use and development of the site
  - 5-year site remedy reviews for the engineered remedies and LUCs
  - Annual visual inspections of the soil cover
  - Survey plat indicating the location & dimensions of the landfill and indicating that LUCs apply
  - Signs indicating access restrictions & presence of buried waste posted on perimeter of landfill
  - Regional Shore Infrastructure Plan or similar document that incorporates LUC objectives
  - Notification to EPA & VDEQ
    - Proposals for a major land use change inconsistent with the use restrictions and exposure assumptions described in the ROD
    - Anticipated action that may disrupt the effectiveness of the LUCs
    - Action that might alter or negate the need for the LUCs
    - Anticipated transfer of the property subject to the LUCs
    - Prior to any changes in the risk, remedy, or land use; including LUC failures with proposed corrective action
  - EPA & VDEQ concurrence prior to modifying or terminating the LUC objectives or implementation actions
  - List of LUCs with associated boundaries and expected durations
  - Notification of any failure to complete LUC implementation or any failure of the remedy

# Site 4 Voluntary Groundwater Performance Monitoring



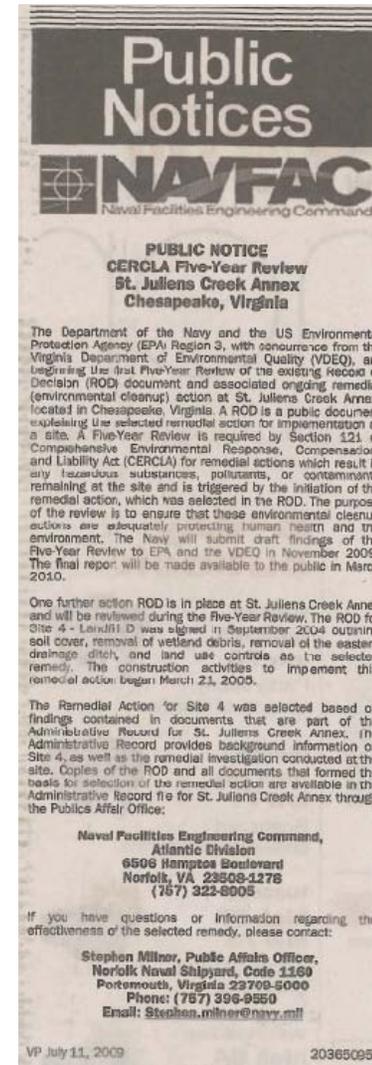
- Purpose: evaluate the site's impact on groundwater quality to confirm no potential future releases will pose unacceptable risk
- Monitoring:
  - COCs (arsenic, iron, cadmium, lead, thallium)
  - Wells: 3 downgradient & 1 upgradient
  - Frequency: Quarterly for a minimum of 2 years
- Results:
  - Although no increasing trends of concentrations evident, the most recent (2006 to 2008) arsenic concentrations detected in downgradient SJS04-MW04S were somewhat greater than historical (1997 & 1999) concentrations
  - Additional voluntary groundwater monitoring recommended to evaluate remedy protectiveness in association with the five-year review



# Community Involvement



- Public notice of Five-year Review initiation
- Interviews/Surveys
  - Solicit community feedback in order to provide additional information about a site's status
  - Will be mailed to RAB members and nearby civic leagues



# Schedule



- Public notice – July 11, 2009
- Site inspections with EPA and VDEQ – August 11, 2009
- Site 4 groundwater sampling – August 21, 2009
- Draft report – November 2, 2009
- Final report – March 21, 2010
- Public notice – April 2010

# Questions/Comments?

# Site 21 Vapor Intrusion Investigation

St. Juliens Creek Annex  
RAB Meeting  
August 11, 2009



# Purpose

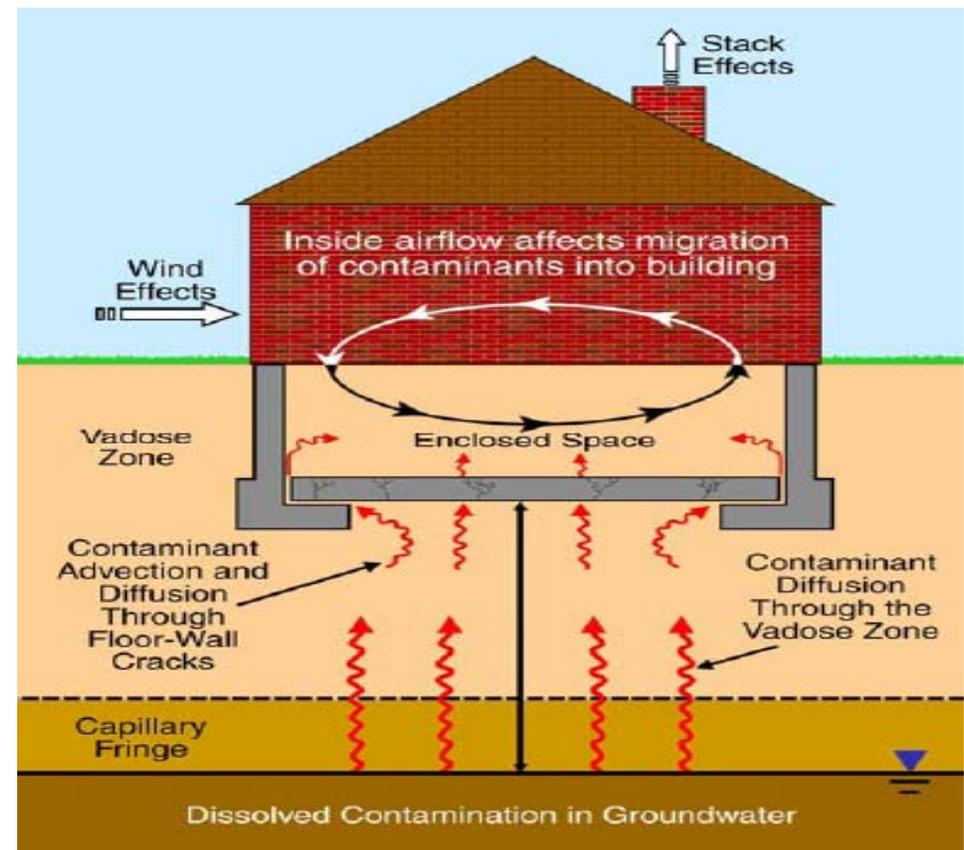


- Explain vapor intrusion
- Present an overview of the Site 21 vapor intrusion investigation
- Discuss the site schedule

# What is Vapor Intrusion?



- Vapor intrusion is the migration of volatile chemicals from the subsurface into overlying buildings
- Several factors can influence whether vapor intrusion will occur
  - VOC concentrations
  - Soil type
  - Groundwater depth
  - Building construction
  - Building foundation/slab condition
- Many chemical vapors found indoors come from common commercial or industrial settings
  - Paint
  - Dry-cleaned clothing
  - Cigarette smoke
  - Cleaning products
  - Gasoline-powered machinery



# Vapor Intrusion Video



# What Makes Vapor Intrusion a Concern?

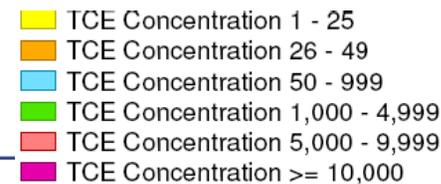
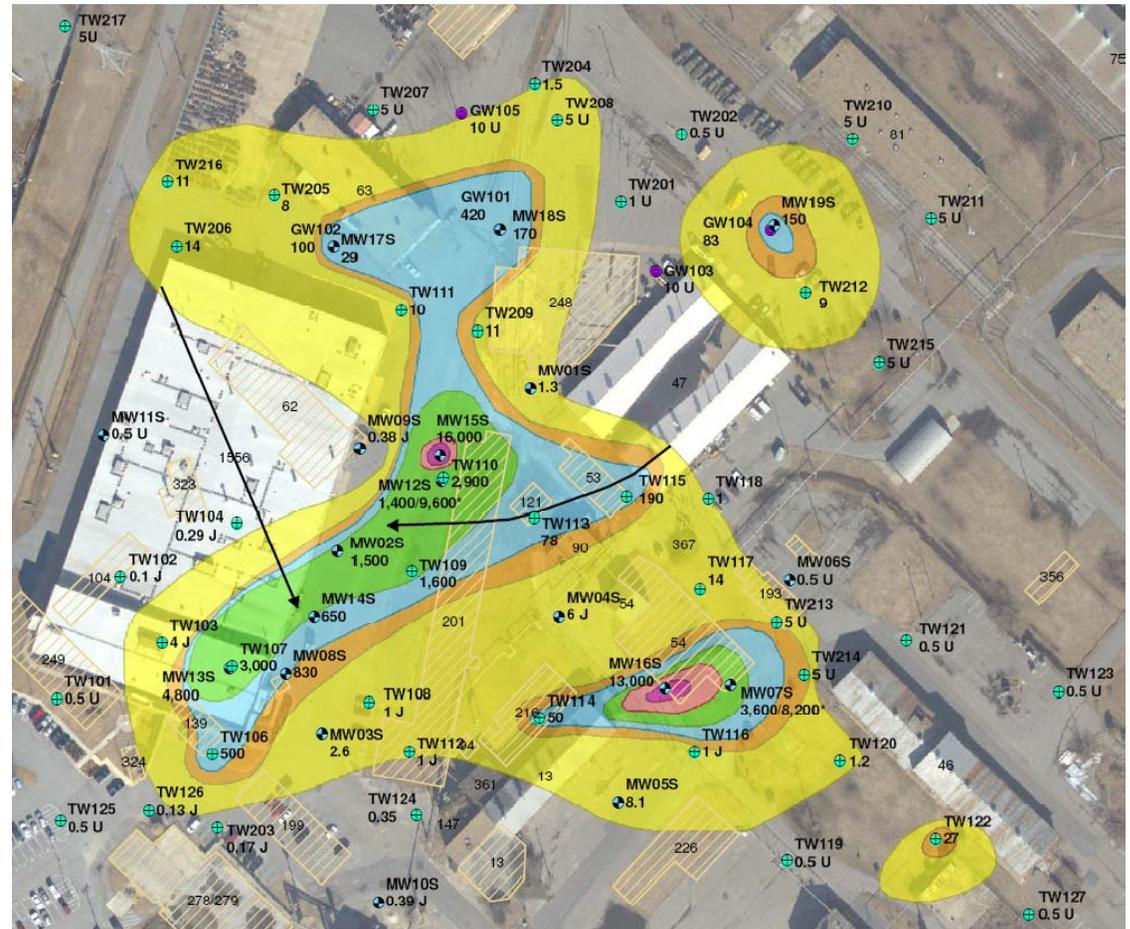


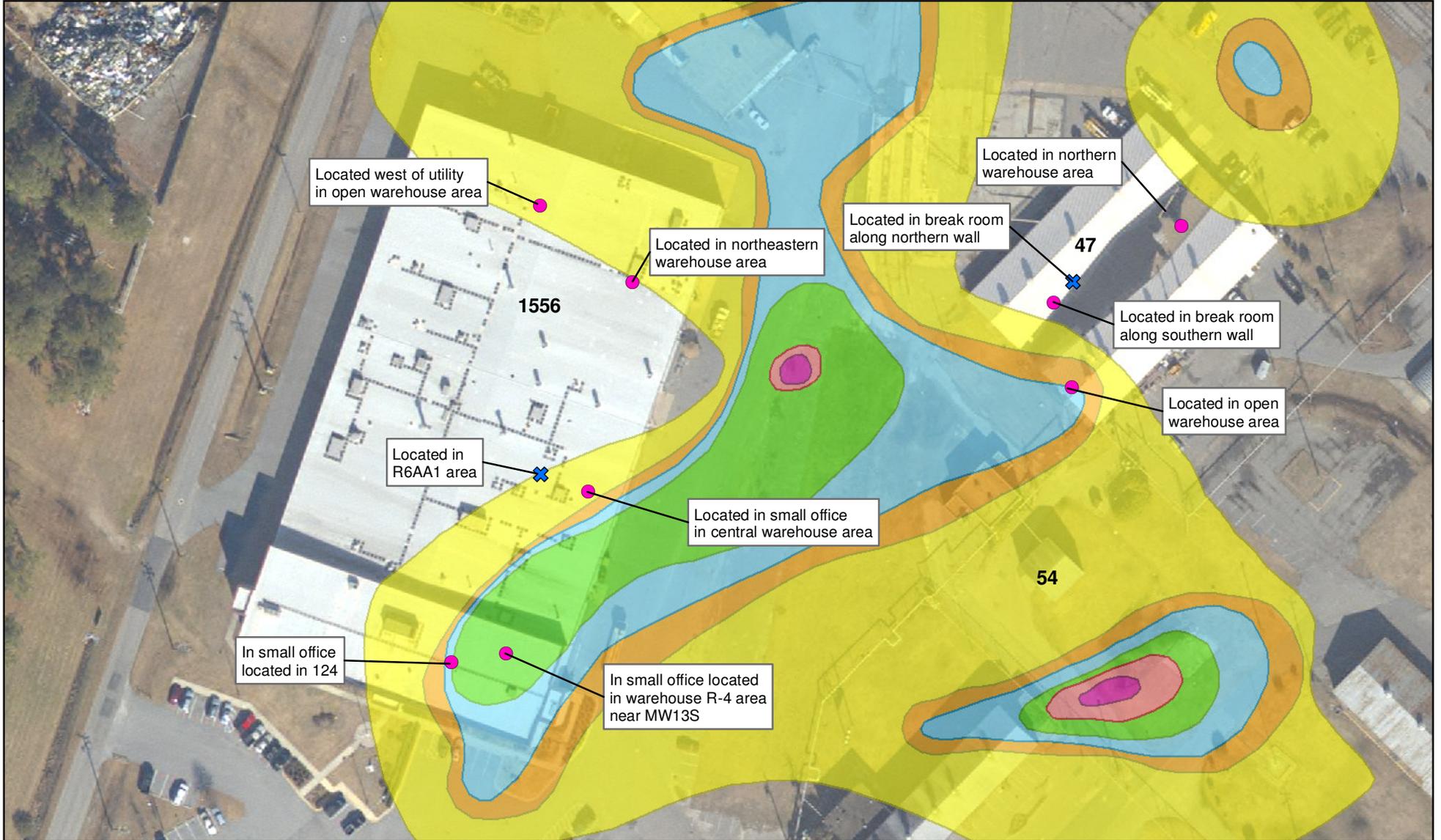
- Potential for human health risks if vapors are present in buildings at sufficient concentrations
  - Often cannot see, smell, or taste VOCs
  - Potentially both acute and chronic effects
- Potential for safety hazards (e.g., explosion)
- Although vapor intrusion is rarely the primary cause of indoor air pollution, it should be investigated any time there is a volatile chemical within 100 ft of an occupied building

# SJCA Vapor Intrusion Investigation



- Site 21 is the only area with a groundwater plume underlying buildings
  - Location: Central industrial portion of SJCA
  - Source: TCE was used for degreasing operations and reportedly disposed on railroad tracks, roads, and around buildings
  - Surface Features: Buildings, asphalt parking areas, minimal grass-covered areas





**Legend**

- TCE Concentration 1 - 25
- TCE Concentration 26 - 49
- TCE Concentration 50 - 999
- TCE Concentration 1,000 - 4,999
- TCE Concentration 5,000 - 9,999
- TCE Concentration  $\geq 10,000$
- Approximate location of proposed pressure monitoring location
- Approximate location of subslab vapor location

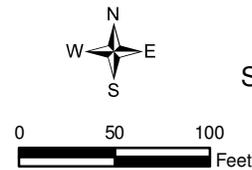


Figure 2  
Proposed Subslab Vapor Sample  
and Pressure Measurement Locations  
Site 21 Vapor Intrusion Pathway Building Survey  
St. Juliens Creek Annex  
Chesapeake, Virginia

# Site 21 Background



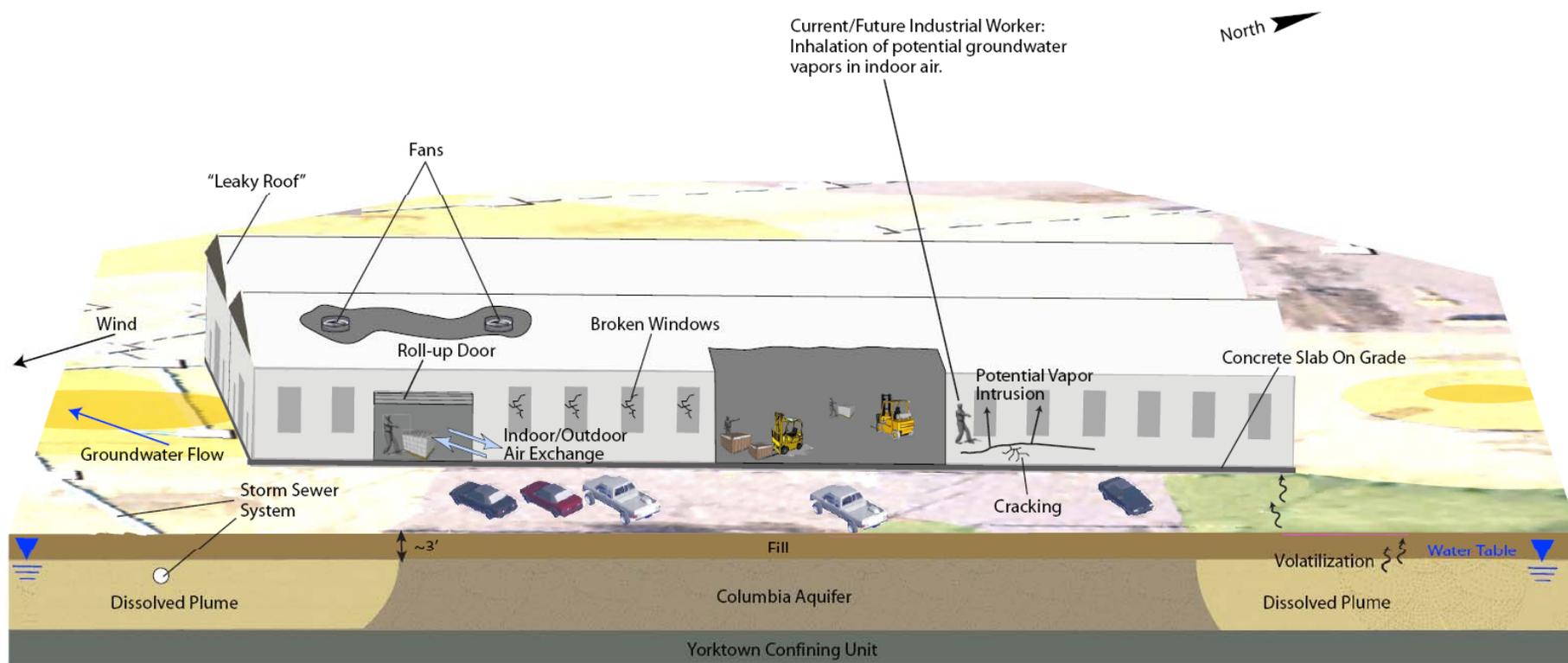
- VOC plume in the shallow aquifer groundwater
- Potential human health risks identified in the Remedial Investigation (RI) report (CH2M HILL, 2008)
  - Potable use of groundwater by hypothetical future residents from several VOCs
    - Potential risk is currently being addressed under an Interim Proposed Plan and Record of Decision
  - Inhalation of vapors by hypothetical future residents and current industrial workers in Buildings 54 and 1556 from several VOCs
    - No acute or short-term risk to building occupants from potential vapor intrusion pathways
  - Additional vapor intrusion evaluation recommended
    - Approach for further evaluation jointly scoped by Navy, USEPA, and VDEQ

# Site 21 Vapor Intrusion Investigation Activities – First Event

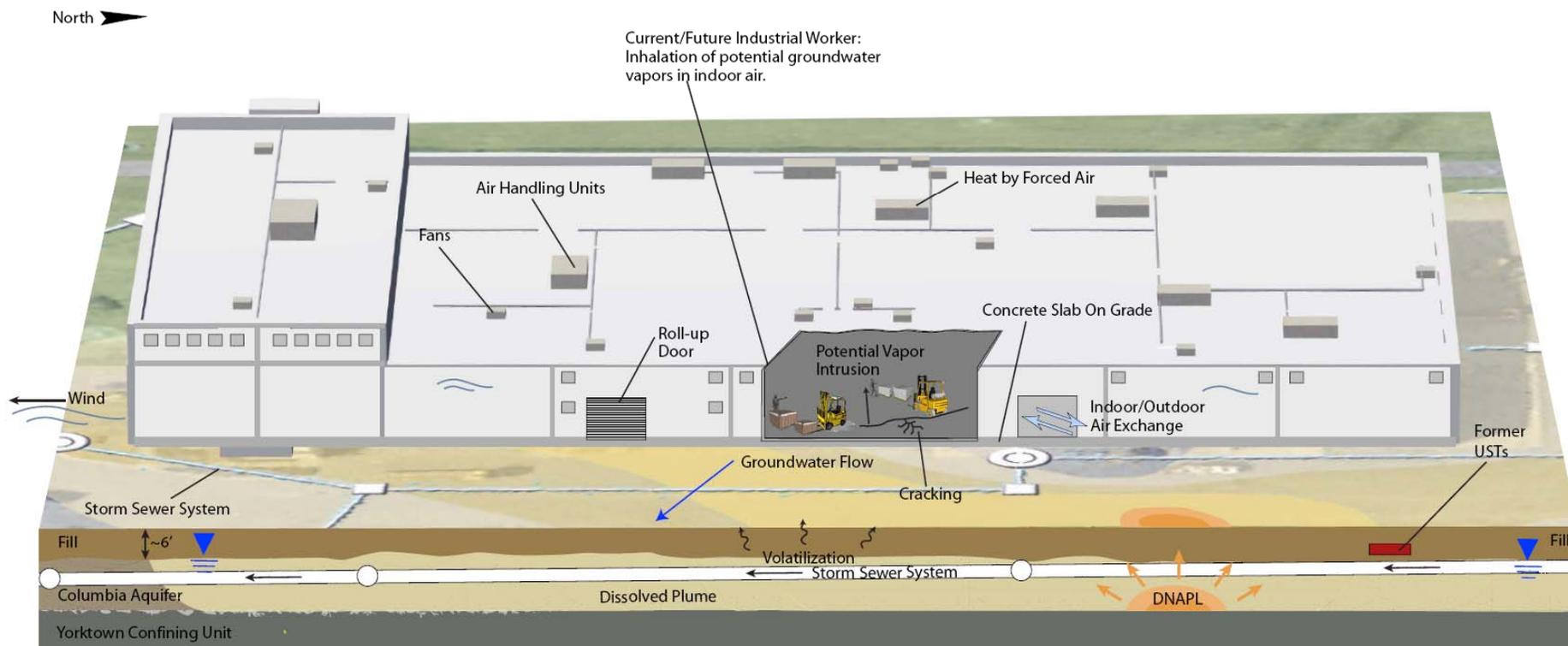


- Step 1: Conduct building inspections (occurred August 7, 2009)
  - Identify building specific information that may have an impact on the sampling activities
    - Chemical inventory
    - HVAC system and operation
    - Presence of preferential pathways
    - Use of doors, windows, and loading docks
  - Information used to
    - Aid in determining sample locations
    - Identify and remove factors that can contribute to indoor air vapors and effect the outcome of the sampling
    - Evaluate contribution of subslab vapors to the indoor air concentrations

# Vapor Intrusion CSM – Building 47



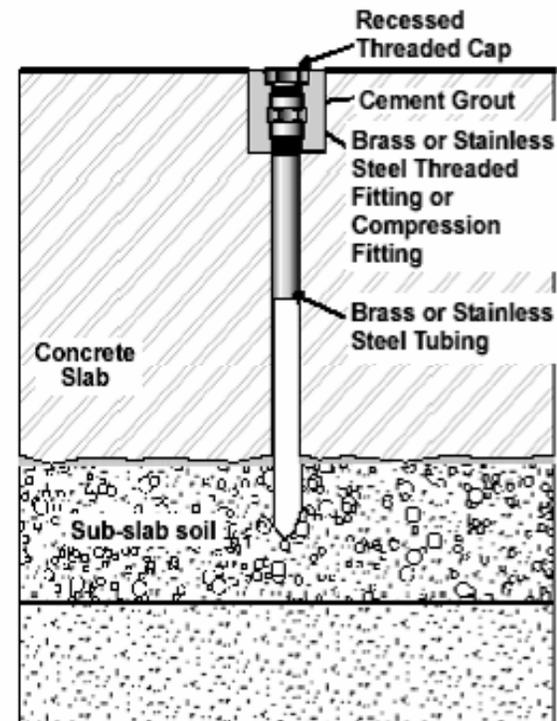
# Vapor Intrusion CSM – Building 1556



# Site 21 Vapor Intrusion Investigation Activities – First Event



- Step 2: Collect direct measurements (will occur week of August 17, 2009)
  - Subslab to indoor air pressure measurements
    - Collected to determine how a building “breathes,” or changes pressurization
    - Collected from one location within each building being investigated continuously over 7 days
    - Results used in the multiple lines of evidence evaluation (if needed)
  - Subslab vapor samples
    - Collected to determine the concentrations of VOCs vaporizing from the groundwater plume and building up under the building slab
    - Collected from a minimum of two locations within each building being investigated



# Site 21 Vapor Intrusion Investigation Activities – First Event



- Step 3: Evaluate Data (will occur end of September 2009)
  - Compare subslab vapor concentrations to indoor air screening criteria to determine follow up activities

# Questions or Comments?



# Munitions Response Site Prioritization Protocol (MRSPP)

UXO 0001 - St. Juliens Creek Annex,  
Chesapeake, Virginia

August 2009



# Objectives



- **Review the Munitions Response Program**
- **Purpose of the Prioritization Protocol**
- **Application of the Protocol to Site UXO-0001**

# Munitions Response Program



- Congress directed that DoD identify and then prioritize their MRSs
- Finalized Oct. 2005 [32 CFR Part 179]
- Risk based
  - Considers both explosives safety factors for MEC and relative risk factors for MC
- Used to:
  - Prioritize munitions response actions based on the overall conditions at each MRS
  - Sequence project funding



# Munitions Response Program



- **Protocol requires each DoD component to:**
  - **Apply the protocol to each MRS under its control and assign a priority**
  - **Use the priority with consideration of other factors in sequencing munitions response actions**
    - Stakeholder ,
    - Economic
    - Program
  - **Fulfill specific procedural and administrative requirements**
    - Quality assurance ,
    - Documentation ,
    - Reporting to the OSD,
    - Reviewing to re-apply as necessary



# Munitions Response Program



## •Specific DoD Component responsibilities:

- Ensure appropriate regulatory agencies and affected stakeholders are offered opportunities to participate in the application of this Protocol
- Include records related to prioritization in the Administrative Record and the Information Repository
- Apply the Protocol to each munitions response area or site in the inventory such that the total acreage of each munitions response area is evaluated.
- Formally document sequencing decisions and notify stakeholders of changes due to Component chain-of-command decisions



# Understanding Munitions Terms

- **Munitions and Explosives of Concern (MEC)**

- **Specific categories of military munitions that may pose unique explosives safety risks, such as**

- unexploded ordnance (UXO),
    - discarded military munitions (DMM) or
    - munitions constituents (MC) in high enough concentrations to pose an explosive hazard

- **Munitions Constituents (MC)**

- **Any materials originating from UXO, DMM, or other military munitions, including**

- explosive and non-explosive materials, and
    - emission, degradation, or breakdown elements of such ordnance or munitions

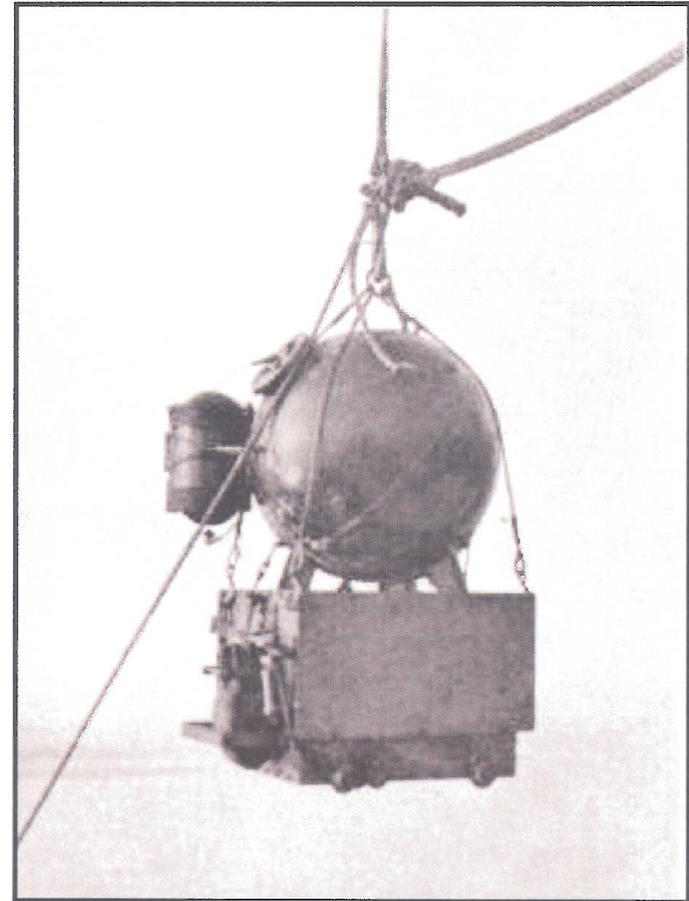


# Purpose of the Prioritization Protocol

- **To provide a methodology for prioritizing sites known or suspected to contain:**
  - **Unexploded munitions (UXO)**
  - **Discarded munitions (DMM), and/or**
  - **Munitions constituents (MC)**
- **Each DoD component is to apply the Protocol to determine a relative priority for each MRS**

# Where the Protocol is Applied

- **Applied to sites that are**
  - **Currently or previously owned by, leased to, or otherwise possessed or used by DoD**
  - **Known or suspected to contain UXO, DMM, or MC; and**
  - **Included in the inventory of defense sites.**



A Mark VI sea mine used in the North Sea Mine Barrage. The spherical mine was deployed on an iron box anchor. Belknap, *The Yankee Mining Squadron*, 1920, p. 25.

# Where the Protocol is NOT Applied

- Locations that are not, or were not, owned by, leased to, or otherwise possessed or used by DoD
- Locations neither known to contain, or suspected of containing UXO, DMM, or MC
- Locations outside the United States
- Locations where the presence of military munitions results from combat operations
- Currently operating military munitions storage and manufacturing facilities
- Locations that are used for, or were permitted for, the treatment or disposal of military munitions
- Operational ranges

[32 CFR Part 179]



# When the Protocol is Applied

- Protocol shall be applied *when there are sufficient data* to run at least one of the three hazard evaluation modules
  - Explosion Hazard (EH)
  - Chemical Hazard (CH)
  - Health Hazard (HH)
- For UXO 0001:
  - With the Preliminary Assessment, sufficient data allowed running EH and CH.
  - The Site Inspection may provide sufficient data for the HH Module.



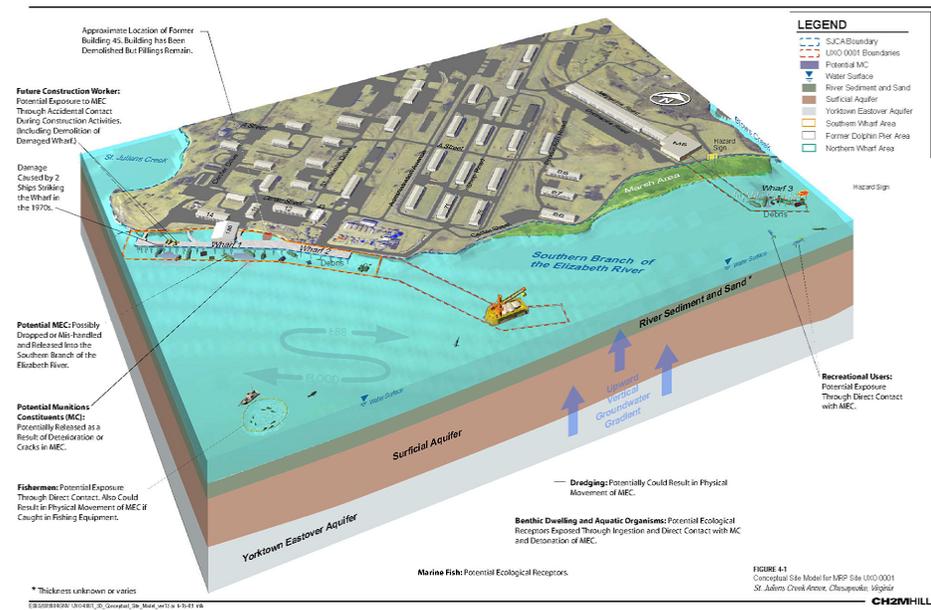
# When the Protocol is Reapplied

## Protocol will be reapplied:

- Upon completion of a response action that could change the potential hazard at the site
- To update or validate a previous module evaluation at a site when new information is available.
- To update or validate a priority that was previously assigned based on evaluation of only one or two of the three hazard evaluation modules
- Upon further delineation and characterization of a munitions response area into munitions response sites

# Priority Protocol Data Sources

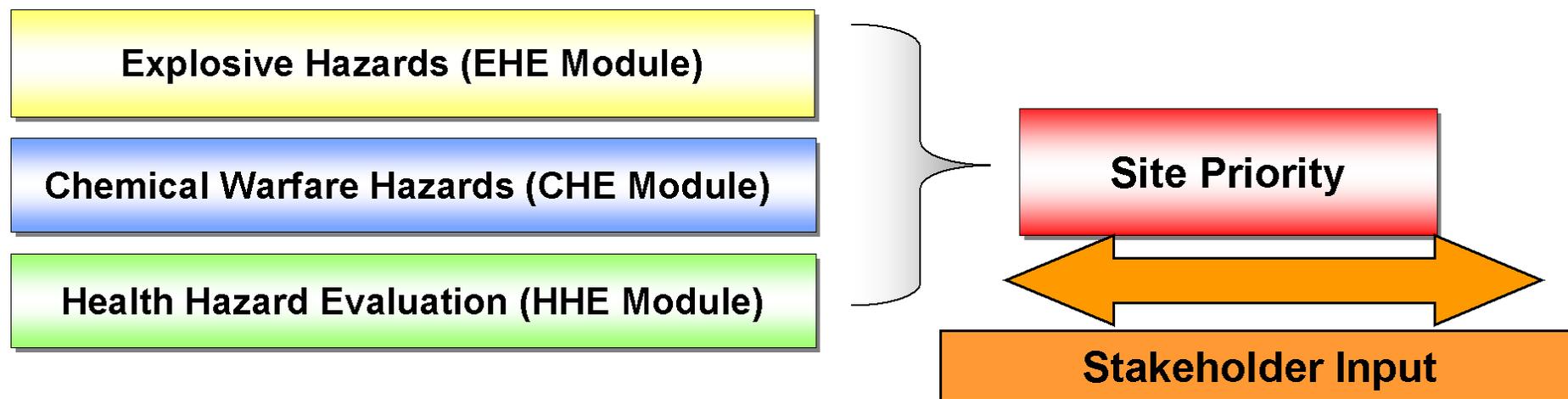
- The Protocol was designed to:
  - Maximize use of the latest MRS-specific data
  - Be applied early in the munitions response process
  
- Data sources may include:
  - ✓ Preliminary Assessments, Archive Search Reports, Historic Record Reviews
  - ✓ Conceptual Site Models
    - Site Inspections
    - Environmental Baseline Surveys
  
- Additional data gathering activities may be required to supplement existing data
  
- Public/Stakeholder input is required during the process



# Potential Hazards are Prioritized

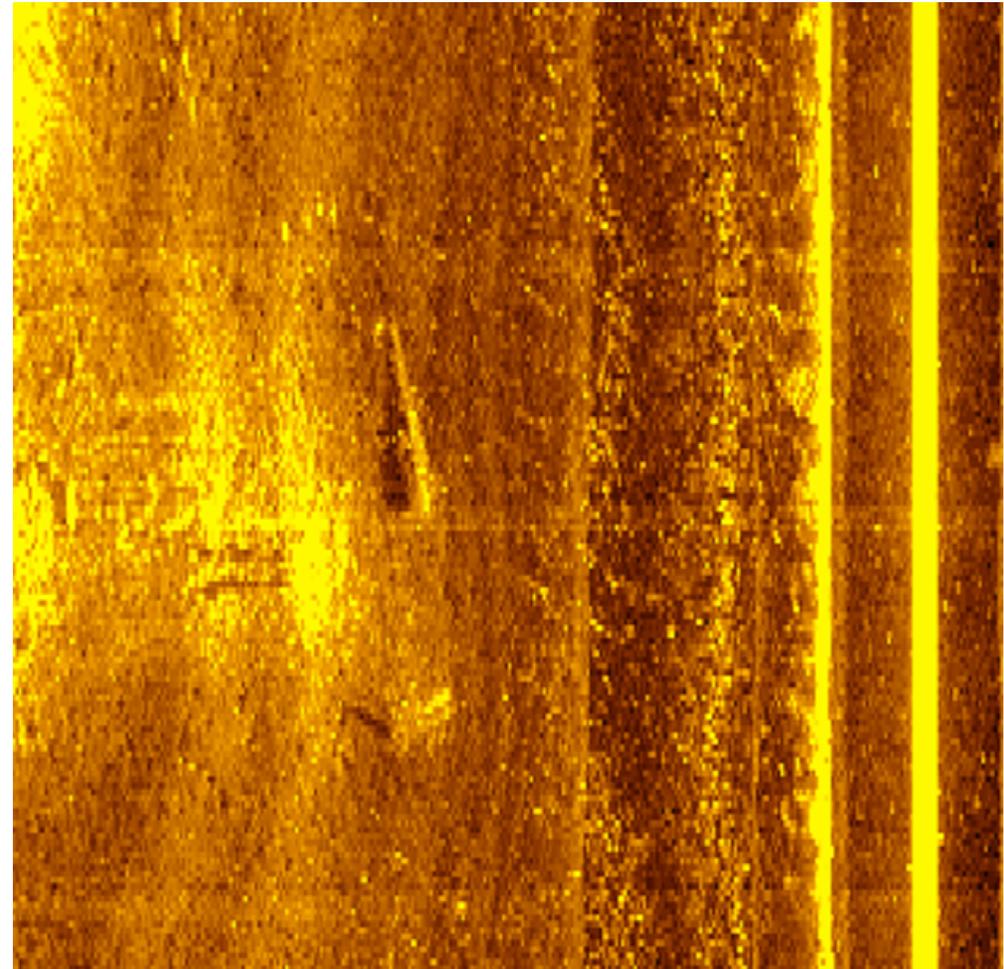
## • Potential risk evaluation process used to analyze:

- ✓ EHE – Evaluates explosive hazards posed by munitions and explosives of concern
- ✓ CHE – Evaluates hazards associated with chemical warfare material
- HHE – Evaluates health (both acute and chronic) and environmental hazards posed by munitions constituents and incidental non-munitions related contaminants



# Understanding the Rankings

- **EHE Module – Explosive Hazard Evaluation**
  - Provides consistent approach for evaluating explosive hazards
- **CHE Module – Chemical Warfare Materiel (CWM)**
  - Provides an evaluation of the chemical hazards associated with the physiological effects of CWM
- **HHE Module – Health Hazard Evaluation**
  - Provides a consistent approach for evaluating the relative risk to the human health and the environment posted by munitions constituents
- **Module Ranking – A is high, G is low**
- **Priority Ranking – 1 is high, 8 is low**



# Sequencing for Response Action



- After being prioritized, sites are sequenced for response action
- As a matter of policy, sites with higher relative risks are considered before sites with lower relative risks, but other factors may influence sequencing decisions

# Factors Affecting Sequencing

- **Considerations other than Protocol's relative priority scoring may influence sequencing, such as:**
  - **Cultural and social factors**
  - **Economic factors**
  - **Reasonably anticipated future land use**
  - **The availability of appropriate technology**
  - **Short-term and long-term ecological effects and environmental impacts in general, including injuries to natural resources**

# St. Juliens Creek Annex MRS UXO 0001



- **UXO 0001 - Current and former wharf areas along the shoreline of the Southern Branch of the Elizabeth River**
- **Approximately 3,000 linear feet of wharf**
- **Potential exists for munitions to have been dropped during loading and unloading of ships**



# St. Juliens Creek Annex MRS UXO 0001



- A Preliminary Assessment (PA) was finalized for UXO 0001 in June 2009
- The PA included an initial MRSPS scoring of the site based on Archive Search Reports, Historic Record Reviews

Site Name	EHE Module Rating	CHE Module Rating	HHE Module Rating	Overall Priority Rating
UXO 0001	E	F	Evaluation Pending	6

Note: Module Ranking – A is high, G is low

Note: Priority Ranking – 1 is high, 8 is low

Note: Evaluation Pending – There are known or suspected MEC but sufficient information is not available to populate the nine data elements of the EHE Module



# To Submit Comments

**The Navy is seeking public information and input that may be useful in refining the site hazard evaluation and completing the prioritization of UXO 0001.**

## **Submit information to:**

Mr. Walter J. Bell, P.E.  
NAVFAC Mid-Atlantic  
9742 Maryland Avenue  
Building N-26, Room 3300  
Norfolk, VA 23511-3095

Email: [walt.j.bell@navy.mil](mailto:walt.j.bell@navy.mil)

# Completing the EHE and CHE tables

Sample Table		
Classification	Description	Score
No barrier	• There is no barrier preventing access to any part of the MRS (i.e., all parts of the MRS are accessible).	10
Barrier to MRS access is incomplete	• There is a barrier preventing access to parts of the MRS, but not the entire MRS.	8
Barrier to MRS access is complete but not monitored	• There is a barrier preventing access to all parts of the MRS, but there is no surveillance (e.g., by a guard) to ensure that the barrier is effectively preventing access to all parts of the MRS.	5
Barrier to MRS access is complete and monitored	• There is a barrier preventing access to all parts of the MRS, and there is active, continual surveillance (e.g., by a guard, video monitoring) to ensure that the barrier is effectively preventing access to all parts of the MRS.	0
EASE OF ACCESS	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 10).	
DIRECTIONS: Document any MRS-specific data used in selecting the <i>Ease of Access</i> classification in the space provided. <hr/> <hr/> <hr/> <hr/> <hr/>		

Circle all hazard types present at the MRS

Record only the largest single classification score in the box

**DO NOT ADD MULTIPLE SCORES TOGETHER!**

Document any site-specific data used In selecting the hazard classification.

# Discussion



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# **Site UXO-001**

# **Site Inspection Activities**

**St. Juliens Creek Annex**  
**RAB Meeting**  
**August 11, 2009**

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# Purpose



- Brief review of the site history
- Brief review of previous investigations
- Present proposed Site Inspection strategy

# Area UXO 1 Location



Southern Wharf: 4.5 acres  
Northern Wharf: 1.7 acres

# Area UXO 1 History



- Northern Wharf Area

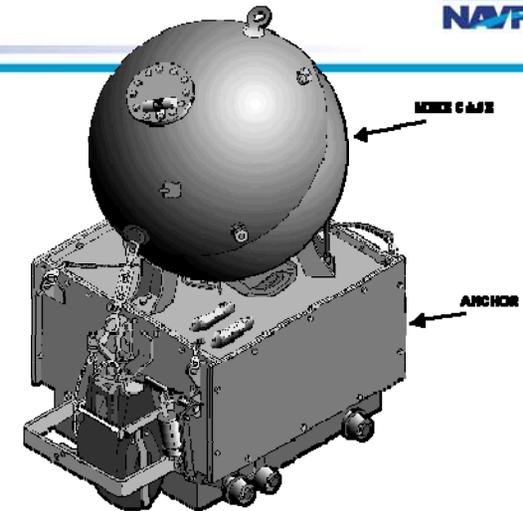
- Built in 1917 and 1918 from wood pilings (550-ft long)

- Specialized for the loading of Mark VI mines produced at SJCA

- Goal for mine production, loading, and shipping operations was 1,000 mines per day

- Wharf reported to be in extremely poor condition starting in the 1926 annual reports by the Bureau of Ordnance

- Repairs were not recommended because the wharf was no longer in use



# Area UXO 1 History (cont'd)



- Southern Wharf Area

- Wharf 1

- Constructed ~1898 for ordnance loading during the Spanish-American War
    - Used heavily throughout the first 20 years of SJCA
      - Inactive between 1931 and the 1940s due to safety concerns

- Wharf 2

- Constructed north of Wharf 1 between 1898 and 1903 to aid in ordnance loading
    - Operational for ordnance loading from 1903 to the mid-1970s
    - Extended and altered four times
      - Final alteration to Wharf 2 extended it to Wharf 1 and added a dolphin pier/catwalk for lighter storage
        - » No documentation was found describing ordnance operation along the dolphin pier/catwalk extension
    - In 1944 it was projected that ~25,000 tons of ordnance could be shipped monthly
    - Bomb loading activities ceased between 1945 and the mid-1960s
    - Majority of loading operations from the mid-1960s to 1977 consisted of gun ammunition
      - Ammunition was loaded by stacking oak pallets strapped together by steel
        - » Height and slope of the pallets adjusted with the tide cycles

# UXO 1 Wharfs



## Legend

-  SJCA Boundary
-  Wharf 1
-  Wharf 2
-  Dolphin Wharf Area
-  Wharf 3

# Investigation History



- Initial Assessment Study - 1981
  - Indicated EOD team divers visually searched northern wharf area and identified metal and thick silt deposits
  - Indicated ordnance could have been dropped adjacent to the former wharf area
    - Assumed ordnance presence was not considered a hazard as long as the sediment was not disturbed
  - Recommended real estate records be annotated to indicate ordnance may be present
- Relative Risk Ranking (RRR) - 1996
  - Site reconnaissance, magnetometer survey, and sediment sampling in the northern wharf area
  - Approximately 68 contacts identified in 3 concentration areas around the former wharf pilings
    - Contacts indicate all types of buried metallic objects and do not necessarily indicate the presence of munitions and explosives of concern (MEC)
    - No visual confirmation of the contacts made
  - Isolated chemical detections in the sediment



# Investigation History



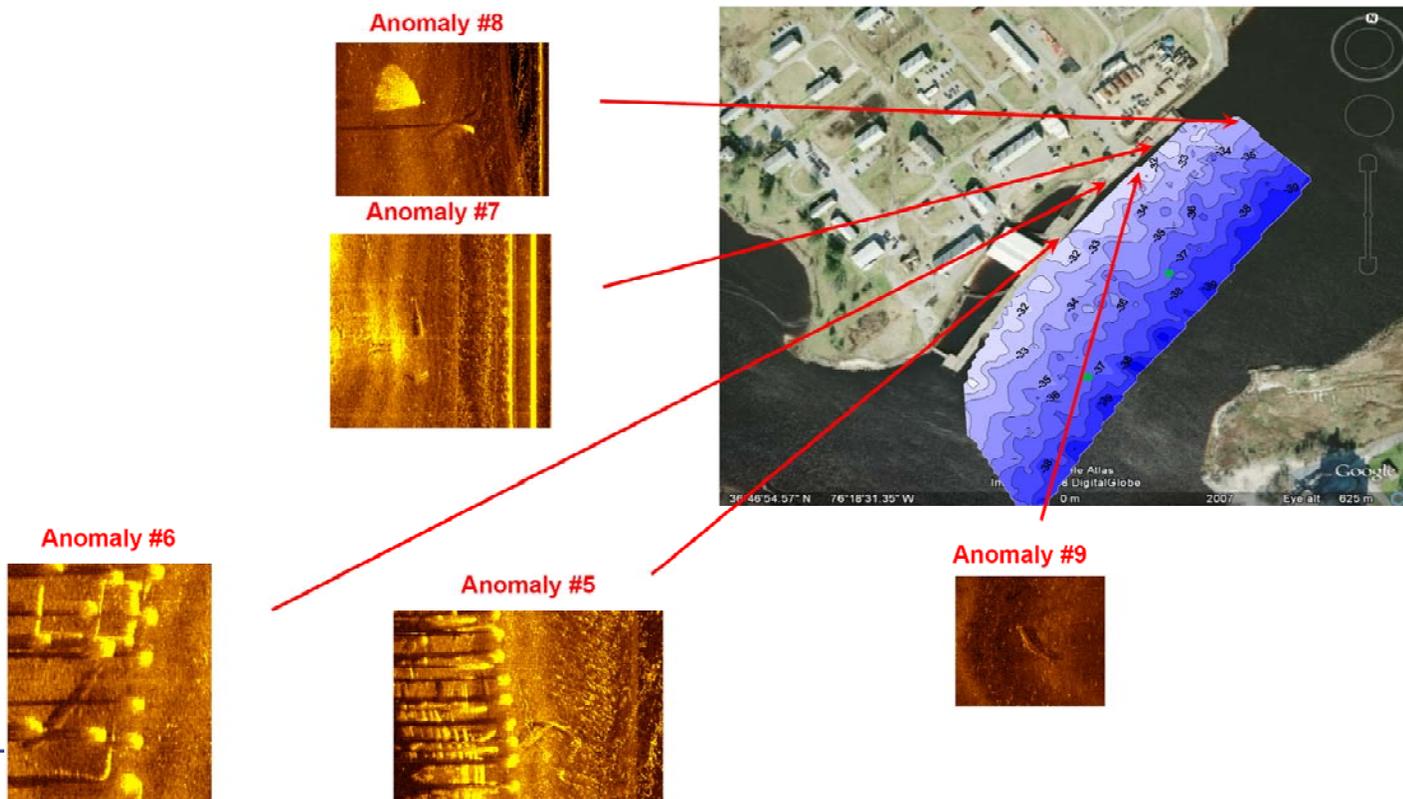
- Site Screening Assessment (SSA) - 1996
  - Human health and ecological risk screenings conducted on the RRR data
    - No risk identified to human receptors
    - Ecological risk considered minimal and no further evaluation recommended
  - No further action for northern wharf area under IR program
    - Potential risk from MEC would be addressed under the Navy's Range Program
- Post-SSA Activities
  - Signs posted in the area to prohibit intrusive activities
  - United States Army Corp of Engineers (USACE) notified of the potential presence of MEC
  - Internet Navy Facility Assets Data Store (iNFADS) Property Record Card noted to indicate unexploded ordnance may exist along all SJCA wharfs
  - No USACE restrictions were implemented on the water body
  - In 2008 the wharf areas (northern and southern) were identified as Munitions Response Program (MRP) Area UXO 1

# Investigation History



- Sonar Imagery - 2008

- Conducted within portions of the SJCA wharf areas
- Included the use of side scan sonar technology to identify subsurface features and physical anomalies
- ~~Detected~~ ten anomalies in the immediate vicinity of the southern wharf



# Investigation History

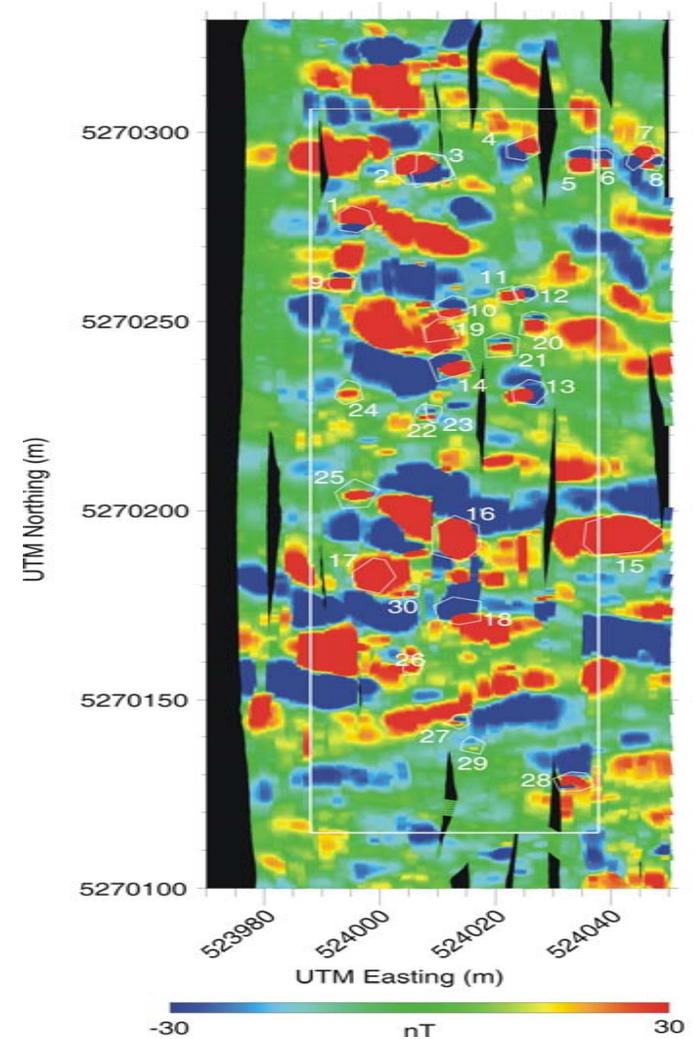


- Preliminary Assessment - June 2009
  - No documentation found to confirm the presence of munitions in the vicinity of the wharf areas
  - Anecdotal evidence (interviews) indicated potential for munitions to have been dropped during loading operations
    - MEC may be present in the sediment beneath the wharf areas
  - No site visits or sampling performed
  - Recommendations:
    - Further investigation in northern and southern wharf areas
    - No additional investigation in the dolphin pier area

# Proposed SI Investigation Strategy



- Conduct the SI investigation in 2 phases
  - Phase 1 (November 2009)
    - Underwater geophysical investigation
      - Boat-towed array
    - Intended to identify concentrations of metallic anomalies
    - Will be used to guide Phase 2



# Proposed SI Investigation Strategy



- Conduct the SI investigation in 2 phases
  - Phase 2 (Spring 2010)
    - Targeted anomaly investigations
      - Areas with concentrations of anomalies will be dredged to determine if anomalies are MEC
      - Sediment samples will be collected from dredged material and analyzed for select constituents
  - SI Report will summarize both phases of the investigation (Summer 2010)

