

St. Juliens Creek Annex Restoration Advisory Board Meeting Summary: May 18, 2010 Meeting

RAB Meeting Attendees:

Walter Bell	NAVFAC Mid-Atlantic	Janna Staszak	CH2M HILL
Robert Mann	RAB Community Co-chair	Adrienne Jones	CH2M HILL
Marty Costello	RAB Member	Alexa Go	CH2M HILL
Robert Stroud	USEPA (Region III)	Kelly Jobst	PWD Portsmouth
Karen Doran	Virginia DEQ	Bill Squire	Shaw Environmental, Inc.

Location: Major Hillard Library, Chesapeake, Virginia

Meeting Date: May 18, 2010

From: Adrienne Jones/CH2M HILL

Minutes Date: August 2, 2010

Restoration Advisory Board Welcome and Introductions

At 6:30 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.

Fiscal Year 2010 Goals

Mr. Bell reviewed the objectives of the presentation, which were to provide an overview of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process; provide an update of the Environmental Restoration Program (ERP) sites and Fiscal Year (FY) 2010 goals for the Installation Restoration Program (IRP) sites, Munitions Response Program (MRP) sites, and for facility-wide ERP activities; and answer any questions.

Mr. Bell provided an overview of the CERCLA process. Mr. Bell explained when and why goals are established for the base. Goals are established yearly to cover the FY, which starts on October 1 and ends on September 30. The goals serve as a budgeting tool for allocating funds, prioritization tool to determine sequencing of sites to be investigated and remediated based on their potential risk to human health and the environment, and scheduling tool to keep remediation projects on schedule. A figure was presented showing the status of the ERP sites at SJCA.

Mr. Bell provided the background and status of IRP Site 2 (Waste Disposal Area B). Site 2 is a 5.7-acre site that includes an unlined waste disposal area for construction debris, blast grit, waste ordnance, and solvents, which operated from 1921 to 1942. A Remedial Investigation (RI) was conducted at the site from 1997 through 2008 and identified potential risk to human health and/or the environment from waste; chlorinated solvents, one polycyclic aromatic hydrocarbon (PAH), and one pesticide in the shallow aquifer groundwater; chlorinated solvents and metals in the surface water; PAHs, pesticides, one polychlorinated biphenyl (PCB), and metals in the sediment; and PAHs, pesticides, PCBs, and metals in the soil. A Feasibility Study (FS) to develop and evaluate remedial alternatives to address the site's human health and environmental concerns was completed in 2009 and revised in 2010. A Proposed Plan identifying the preferred remedial alternative is currently in progress. The FY10 goals established for Site 2 are to finalize the FS by December 31, 2009 and have the Record of Decision (ROD) signed by September 30, 2010.

Mr. Bell provided the background and status of IRP Site 4 (Landfill D). Site 4 is an 8.3-acre landfill that operated from 1970 to 1981. The RI was completed in 2003 and identified potential concerns from the waste; metals, PCBs, and PAHs in soil; and mercury in drainage sediment. Soil cover installation and drainage ditch sediment removal were completed in October 2005 in accordance with the ROD. The Remedial Action Completion Report was completed in September 2006 and a Land Use Control (LUC) Remedial Design (RD) was implemented to prohibit disturbance of the soil cover and residential use of the site. Voluntary groundwater monitoring was conducted from November 2006 through August 2009 to evaluate the site's impact on groundwater quality and the results have been incorporated into the Five-Year Review Report. The site is maintained with LUCs (signs, fencing, survey plat, annual inspections, and base planning) and is subject to five-year reviews. No FY10 goals were established for Site 4.

Mr. Bell explained the purpose and status of the Five-Year Review Report. Five-Year Reviews are required for sites in which the remedial action resulted in any hazardous substances, pollutants, or contaminants remaining on site. They are required five years from the initiation of the first remedial action. The objective of Five-Year Reviews is to determine if the selected remedy remains protective of human health and the environment. If the review determines that the existing remedy is no longer protective, the remedy may be modified. The Five-Year Review Report concluded that the remedy at Site 4 is protective of human health and the environment. The Five-Year Review is currently awaiting final signature. The FY10 goal established for the Five-Year Review is to finalize the report by March 31, 2010. The final report has been delayed due to legal comments that were resolved in late April 2010. Signature is anticipated in May 2010.

Mr. Bell presented the background and status of IRP Site 5. The site consists of approximately 23 acres, a portion of which was used as a burning grounds from the 1930s to the 1970s. Various wastes were reportedly disposed of, including solvents, paint sludge, pesticides, and refuse. An RI was conducted at the site from 1997 through 2007 and identified potential concerns: waste and metals, pesticides, and PAHs in the surface soil and drainage sediment. An Engineering Evaluation/Cost Analysis was conducted to develop a removal action to address the potential concerns. The removal action is currently in progress but has been delayed due to discovery of munitions and explosives of concern (MEC). The restoration approach is being revised based on future land use considerations and a public

notice documenting the revision will be published. The FY10 goals established for IRP Site 5 are to draft the Construction Closeout Report for the removal action by September 30, 2010 and draft the Proposed Plan by September 30, 2010.

Mr. Bell presented the background and status of IRP Site 21. Site 21 is an industrial area of the base. Historically, buildings were used as maintenance and electrical shops and munitions loading facilities, outdoor areas were used for equipment and chemical storage, and a former fuel service station was operated. An RI was conducted from 2003 to 2008 and identified potential concerns from chlorinated solvents in the shallow aquifer groundwater and indoor air. The Interim Proposed Plan identified In Situ Chemical Reduction (ISCR) and Enhanced Reductive Dechlorination (ERD) as the preferred remedial alternative for addressing groundwater concerns. Walt explained that the Proposed Plan is interim because the evaluation of potential risk to workers from vapor intrusion through the inhalation of indoor air is ongoing and the pathway is therefore not addressed within the document. If unacceptable risk from vapor intrusion is identified, a subsequent proposed plan will be prepared to address that pathway. Currently, an RI Addendum documenting the further investigation of potential indoor air concerns is in progress, the Interim ROD is awaiting final signature, and an Interim Remedial Action Work Plan is under development. The FY10 goals established for Site 21 are to obtain final signature on the Interim ROD by December 31, 2010, finalize the Interim RD by March 31, 2010, and draft the RI Addendum by September 30, 2010.

Mr. Bell presented the background and status of MRP Area UXO 001. MRP Area UXO 001 consists of approximately 2,230 linear feet of current or former wharf areas along the Southern Branch of the Elizabeth River. The northern wharf area was constructed in 1917 and used for loading and unloading MEC, especially Mark VI mines. The wharf is no longer present, with the exception of some pilings. The southern wharf area was constructed in 1898. The wharf was damaged when two ships struck it in 1975. The wharf is still in use, but no longer used for ordnance loading or unloading. A Preliminary Assessment (PA) for the area was completed in 2009 and recommended further investigation. A Site Inspection (SI) Report is currently in progress to document a geophysical investigation conducted in 2010. An additional investigation is currently being planned to further assess geophysical anomalies. The FY10 goal established for MRP Area UXO 001 is to finalize the Phase 1 SI Report by March 31, 2010. Ms. Jobst noted that a portion of wharf is condemned. Mr. Bell noted that there were plans to demolish the wharf but the plans have been delayed due to the potential for munitions in the river.

Mr. Bell presented the additional goals established for the base, which consist of drafting the Community Involvement Plan update by December 31, 2010, drafting the Site Management Plan for FY 2011 through 2015 by June 30, 2010, conducting a ten-year RAB celebration by September 30, 2010, and preparing a Success Story by September 30, 2010. The partnering team is planning for FY10 with an expected funding in the amount of 5.6 million dollars.

Mr. Bell presented some of the additional ERP successes at the base. He explained that some of the former ERP sites and areas of investigation have been turned back over to the base for beneficial land use. Plans are under development to use a portion of former IRP Site 3 for a photovoltaic array. Additionally, an area south of the northern wharf area of MRP Area UXO 001 is being targeted for building oyster reefs as part of the mitigation for the Craney Island expansion. Mr. Costell asked if the oyster reefs would be identified by pilings. Mr.

Bell responded that the Virginia Port Authority will be in charge of the oyster reefs and has not yet provided that level of detail .

Site 21 Interim Remedial Design/Remedial Action

Ms. Staszak reviewed the presentation objectives, which were to provide a description of the groundwater remedy to be implemented at Site 21 and solicit questions or comments.

Ms. Staszak provided background information on the remedy for the site. An Interim ROD was signed in May 2010. The remedy to address risks from potential future residential users exposed to chlorinated volatile organic compounds (CVOCs) in groundwater through its potable use consists of ISCR, ERD, LUCs, and Long-term Monitoring (LTM). The remedy will be implemented in summer and fall 2010.

Ms. Staszak explained the ISCR portion of the remedy. Zero valent iron (ZVI) will be injected into 202 locations to chemically destroy the CVOCs in the highest concentration areas of the site. The process is estimated to take 55 days to complete. The Liquid Atomized Injection (LAI®) process will be used to perform the injections. This process creates a liquid-like mixture of iron particles, gas and water that can be sprayed at high pressure into the subsurface. A figure depicting the layout of the injection points was displayed. The injection points will be placed in the highest concentration areas a minimum of 10 feet from utilities. Although the activity looks relatively intrusive, only small areas of the site will be impacted at a time and those areas will be delineated with fencing and signs. The injection equipment consists of a direct push drilling rig, mixing equipment, and a compressed gas source.

Ms. Staszak explained the first phase of the ERD portion of the remedy. The high-concentration areas under Building 1556 that cannot be accessed by ZVI injection equipment will be treated through enhanced biological processes. Emulsified vegetable oil (EVO) will be injected into two horizontal wells drilled under the foundation of Building 1556. EVO will stimulate the degradation of CVOCs by naturally-occurring microbes. A figure depicting a cross section of a horizontal well was displayed.

Ms. Staszak explained second phase of the ERD portion of the remedy. The same product used in the injections during the first ERD phase, EVO, will be used in the second phase; however, it will be injected into 123 temporary injection points in the low-concentration areas. A figure depicting the layout of the injection points was displayed. The injection layout consists of a series of rows placed perpendicular to groundwater flow to treat the groundwater as it flows through these rows. Approximately 8 points may be completed at a time. Injection will take approximately four days per point, for a total of 58 days of injection.

Ms. Staszak explained the LTM portion of the remedy. Baseline sampling will be completed prior to the injections. Verification sampling will be conducted after the injections are performed to confirm that concentrations are decreasing and aquifer conditions are conducive to further reduce CVOC concentrations. Verification sampling in the ISCR areas will be conducted one, three, and six months after treatment and then semiannually. Verification sampling in the ERD areas will be conducted semiannually following treatment. Additional treatment may be necessary if concentrations stop decreasing.

Ms. Staszak explained the LUCs portion of the remedy. LUCs will be implemented to specify the areas of the site where groundwater use restrictions will be enforced. The LUCs will be established in a LUC RD.

Ms. Staszak discussed some of the logistical considerations associated with implementing the remedy. Parking and traffic may be temporarily impacted. Access to the delineated work areas will be prohibited due to health and safety concerns associated with the equipment and chemicals. Coordination with base personnel is ongoing and will continue throughout the action. A preconstruction meeting will be held and will include the project stakeholders. Materials will be staged in the northern portion of the site.

The RAB had no comments or questions on the presentation.

Site Inspection Activities Area UXO 1

Ms. Staszak reviewed the presentation objectives, which were to review the background of MRP Area UXO 1; provide an update on the status of Area UXO 1 SI activities; discuss the next steps in the CERCLA process; update the Munitions Response Site Prioritization Protocol (MRSPP); and solicit questions or comments.

Ms. Staszak referred to the overview Mr. Bell provided on the historical wharf operations during the FY 2010 Goals Update topic.

The previous investigations conducted in the northern wharf area under the IRP at the site were summarized. An Initial Assessment Survey (IAS) was conducted in 1981, during which Explosive Ordnance Disposal (EOD) 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. No visual confirmation of the contacts was made. 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 unexploded ordnance (UXO) 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 MRP Area UXO 001.

The previous investigations conducted under the MRP at the site were summarized. A PA was completed in 2009. The PA included a review of on-site and off-site records sources to determine the potential for munitions to have been dropped into the water during loading operations. Although no documentation was found to confirm the presence of munitions in the vicinity of the wharf areas, anecdotal evidence through interviews indicated there was potential for munitions to have been dropped, which may have resulted in discarded military munitions (DMM) present in sediment if not recovered. The PA recommended further investigation.

An SI, consisting of side scan and bathymetry surveys and a digital geophysical mapping survey, was conducted in 2010. A figure showing the areas of the site included in the investigation was projected. Ms. Staszak explained that the area of the figure shown in red represent the portions of the site that could not be included due to access restrictions (i.e., the water was too shallow or the damaged wharf presented safety concerns). The areas shown in green represent the areas of the site that were able to be investigated. The digital geophysical mapping was conducted by pulling boat-towed sensors with magnetometers spaced at 1.5 meters, resulting in surveyed lines 1 meter apart to give complete coverage of the area. Figures depicting the results of the geophysical mapping were displayed. The geophysical mapping identified 1,386 metallic anomalies at the bottom of the river in the southern area and 265 anomalies in the northern area. Because metallic anomalies are present but it is unknown whether they represent DMM, an additional investigation will be conducted to inspect metallic anomalies. Divers cannot be used for the inspection because the river water is too murky and poses safety concerns; therefore, metallic anomalies will be dredged from select areas of the river bottom for inspection and identification. If DMM presence is positively confirmed, an RI or Removal Action will be conducted.

Mr. Bell provided an update on the MRSPP, which was initially presented during the August 2009 RAB Meeting. The MRSPP is a tool used to provide a methodology for prioritizing sites known or suspected to contain UXO, DMM, and/or munitions constituents for investigation and/or action. Each Department of Defense (DoD) component is to apply the protocol to determine a relative priority for each MRP site. The MRSPP includes evaluation of potential risk associated with explosive hazards posed by MEC, hazards associated with chemical warfare material, and health (both acute and chronic) and environmental hazards posed by munitions constituents and incidental non-munitions related contaminants. The MRSPP is updated continuously as new information is collected.

Mr. Bell noted that the MRSPP presented in August 2009 was reviewed by the Navy to ensure certain business rules were being followed. The review resulted in the necessity to revise the MRSPP; therefore, the public is being updated on those revisions. Mr. Bell reviewed the revisions:

Explosive Hazard Evaluation Module Tables:

Table 5, Status of Property, identifies the status of the property within the DoD. Previously "DOD control" was selected; however, because a portion of the site extends into a public waterway, the selection was changed to "Non-DoD Control". The change resulted in a higher score for the table.

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. Previously "100-500 persons per square mile" was selected; however, a higher population density was identified and the selection was changed to ">500 persons per square mile" based upon the 2000 United States Census Bureau data for Block 2118 (Portsmouth, Virginia), which states there are 5,097 persons per square mile located within 2 miles of the site. The change resulted in a higher score for the table.

Table 9, Ecological and/or Cultural Resources, identifies the ecological and/or cultural resources present at the site. Previously "There are both ecological and cultural resources present on the MRS (munitions response site)" was selected because it was believed that portions of the site could be considered cultural resources. However, no cultural resource at the site has been identified and the selection was changed to "There are ecological resources present on the MRS". The change resulted in a lower score for the table.

Table 10, Determining the EHE (Explosive Hazard Evaluation) Module Rating, adds the scores from EHE Tables 1 through 9 to determine a cumulative score and corresponding ranking. The changes made to the EHE Tables did not result in a change to the module rating.

Tables 11 through 20 make up the Chemical Hazard Evaluation Module:

Table 11, Chemical Warfare Material (CWM) Configuration, identifies the CWM configurations known or suspected to be present at the site. Both "CAIS (chemical agent identification sets) K941 and CAIS K942" and "CAIS" were previously selected. That selection was based on documentation that CAIS were stored at SJCA and may have been loaded and unloaded by ship at the wharf. Therefore, CAIS were included as potential CWM. However, the selection was changed to "Evidence of no CWM" because no training using CAIS was performed at SJCA. The change resulted in a lower score for the table.

Table 13, Location of CWM, identifies the locations where CWM are known or suspected of being found at the site. "Suspected (historical evidence)" was previously selected because historical documentation in the IAS identifies CAIS storage in Building 163. However, based on the rationale explained above, the selection was changed to "Evidence of no CWM". The change resulted in a lower score for the table.

Tables 15, 16, and 19 are the same as Tables 5, 6, and 9 of the EHE and received the same changes and scoring as the EHE tables.

Table 20, Determining the CHE (Chemical Hazard Evaluation) Module Rating, adds the scores from CHE Tables 11 through 19 to determine a cumulative score and corresponding ranking. The changes made to the CHE tables resulted in a change to the module rating from an "F" to "No known or suspected CWM hazard".

Table 29, MRS Priority, combines the rating from all of the modules to determine an overall priority rating for the site. The changes did not result in a change to the overall MRS priority rating for UXO 001.

Mr. Costello asked to what depth magnetometers can detect metallic anomalies in the silt. Ms. Staszak responded that it depends on the size and orientation of the anomaly, but that the rule of thumb is that an anomaly can be detected at a depth of 11 times its diameter. Mr.

Costello asked if EOD performed the work conducted during the SI. Ms. Staszak responded that the work was performed by a contractor. Mr. Bell noted that an EOD team performed some training with the side scan sonar in association with the investigation. Mr. Costello asked if munitions could be suspected on the other side of St. Juliens Creek. Ms. Staszak responded that no loading activities occurred in that area.

Roundtable / Q & A

Mr. Bell asked if anyone had general questions or comments that they would like to discuss. Ms. Jobst asked if the removal action at Site 5 had been reinitiated. Mr. Bell responded that a scope of work to complete the removal action based on the changes resulting from discovery of MEC at the site and a change in the removal action alternative was sent out the previous day.

Mr. Costello requested the name of the contact at the Virginia Port Authority. Ms. Jobst responded that the contact is Mr. Florin. Mr. Costello noted that a lot of money and work has gone into cleanup at the base. His main concern is the overall condition of St. Juliens Creek, as opposed to environmental cleanup at the base. He indicated that he would like the Virginia Port Authority to know there are areas in St. Juliens Creek that could be used for restoration projects.

Mr. Mann expressed his appreciation for the acknowledgement during the 10-year RAB celebration.

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, May 18, 2010 at 6:30 PM

TOPIC

SPEAKER

Welcome & Introduction

Walt Bell
Naval Facilities Engineering Command

Fiscal Year 2010 Goals

Walt Bell
Naval Facilities Engineering Command

Site 21 Remedial Design/Remedial Action

Janna Staszak
CH2M HILL

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

Fiscal Year 2010 Goals

St. Juliens Creek Annex
RAB Meeting
May 18, 2010

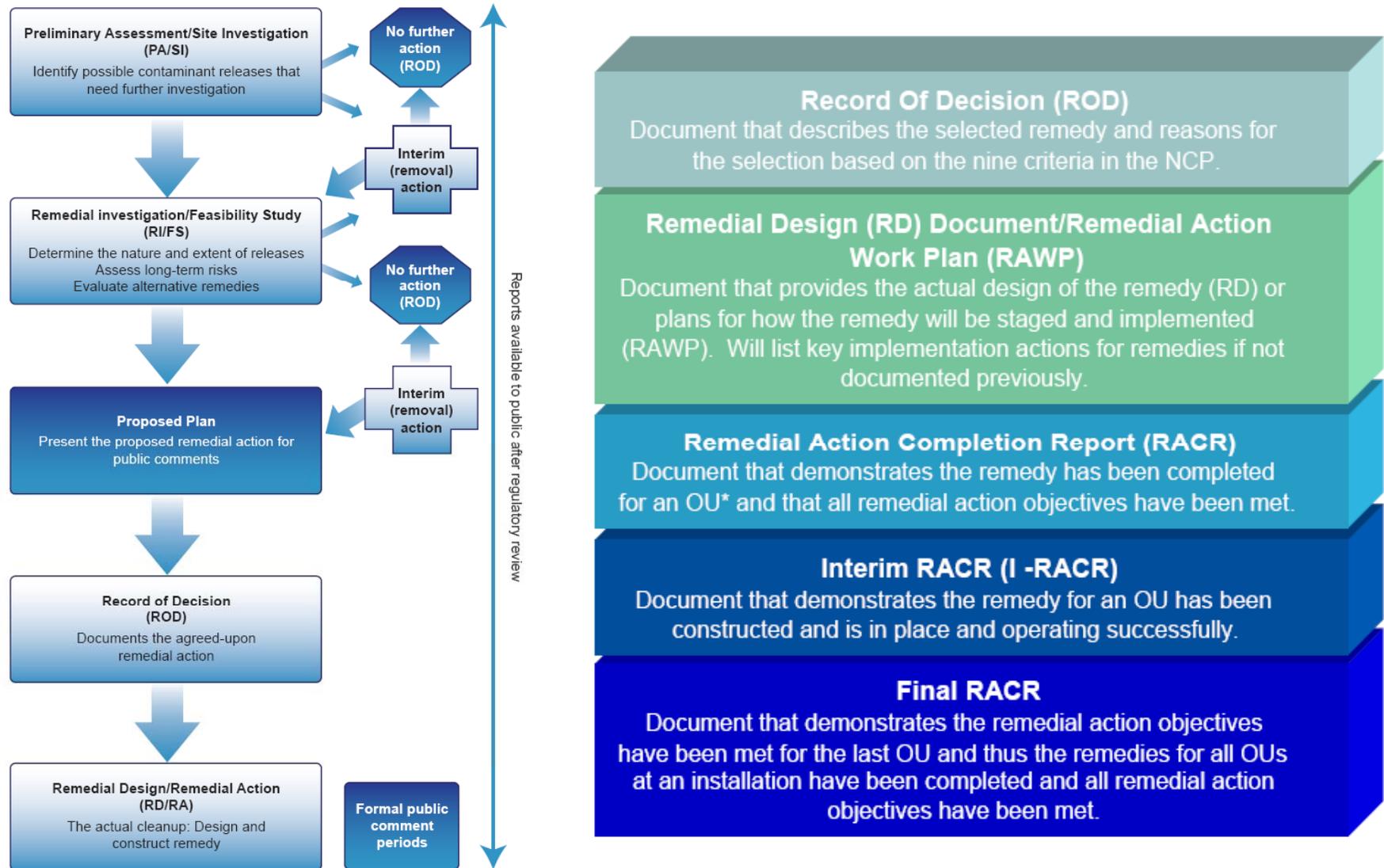


Purpose



- Provide an overview of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process
- Provide an update of the Environmental Restoration Program (ERP) sites and Fiscal Year (FY) 2010 Goals
 - Installation Restoration Program (IRP) sites
 - Munitions Response Program (MRP) areas
 - Facility-wide
- Solicit questions or comments

CERCLA Process



St. Juliens Creek Annex Goals



- Established yearly to cover FY
 - Starts October 2009 and ends September 2010
- Serve as a budgeting tool for allocating funding
- Prioritize sites to be investigated and remediated based on potential risk to human health and the environment
- Keep remediation projects on schedule

5 ERP Sites Currently Active:



Legend

- IRP Sites - Further Action
- IRP Sites - No Further Action
- Response Complete - Sites with LUCs
- MRP Areas

To-date 54 sites determined no further action

IRP Site 2: Waste Disposal Area B



IRP Site 2: Waste Disposal Area B



- Background

- 5.7-acre unlined waste disposal area for construction debris, blasting grit, waste ordnance, and solvents operated from 1921 to 1942

- Remedial Investigation (RI) conducted 1997 through 2008; concerns include:

- Waste

- Chlorinated solvents, one polycyclic aromatic hydrocarbon (PAH), and one pesticide in shallow aquifer groundwater

- Chlorinated solvents and metals in surface water

- PAHs, pesticides, one polychlorinated biphenyl (PCB), and metals in sediment

- PAHs, pesticides, PCBs, and metals in soil

- Feasibility Study (FS) to evaluate remedial alternatives completed in 2009

- Status: Proposed Plan identifying the preferred remedial alternative currently in progress

- FY 2010 Goals:

- Finalize FS by December 31, 2009

- Record of Decision (ROD) signed by September 30, 2010

IRP Site 4: Landfill D



IRP Site 4: Landfill D



- Background

- 8.3-acre sanitary landfill operated from 1970 to 1981
- Potential concerns identified during the RI in 2003 are waste; metals, PCBs, and PAHs in soil; and mercury in drainage sediment
- Soil cover installation and drainage ditch removal completed in October 2005 in accordance with the ROD
- Remedial Action Completion Report completed in September 2006
 - Land Use Controls (LUCs) implemented to prohibit disturbance of soil cover and residential use of the site
- Voluntary groundwater monitoring conducted November 2006 through August 2009 to evaluate the site's impact on groundwater quality
 - Results incorporated into Five-Year Review

- Status

- Maintenance of LUCs (signs / fence / survey plat / annual inspections / base planning)
- Five-Year Reviews
- No site-specific FY 2010 Goals established

Five-Year Review



- Background

- Purpose

- Required for sites in which the remedial action resulted in any hazardous substances, pollutants, or contaminants remaining
 - Required five years from the initiation of the first remedial action
 - Objective is to determine if the selected remedy remains protective of human health and the environment
 - Existing remedy may be modified if no longer protective

- Recommendation

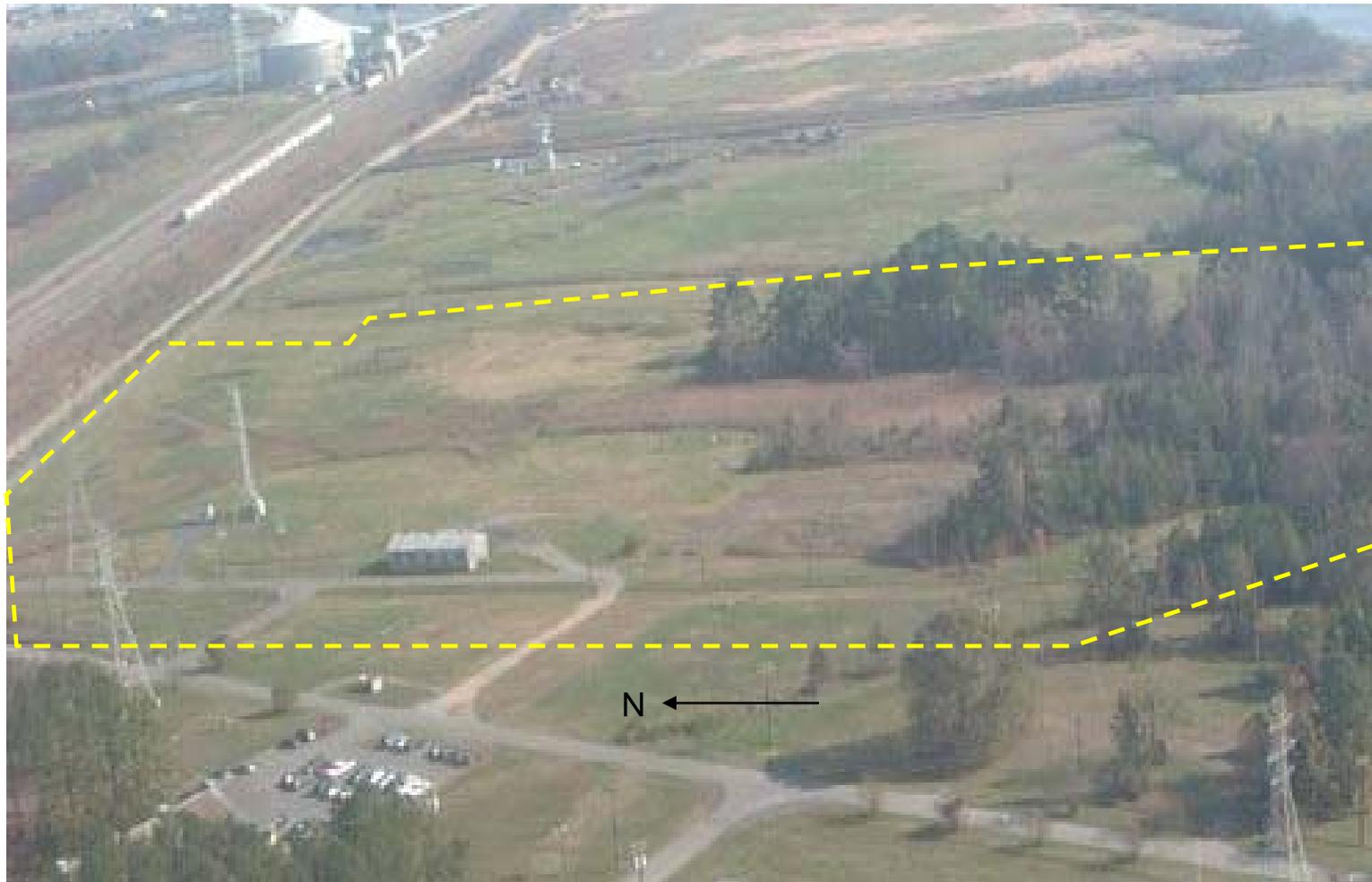
- Protectiveness Statement: The remedy at Site 4 is protective of human health and the environment. All threats at the site have been addressed through installation of a soil cover over the contaminated soil and waste and removal of contaminated sediments, the installation of fencing and warning signs, and the implementation of institutional controls.

- Status: Awaiting final signature

- FY10 Goal: Finalize Five-Year Review Report by March 31, 2010

- Delayed due to legal comments that were resolved in late April 2010
 - Signature anticipated in May 2010

IRP Site 5: Burning Grounds



IRP Site 5: Burning Grounds



- Background

- Approximately 23-acre burning grounds for ordnance operated from 1930 to 1970s; various wastes reportedly disposed (solvents, paint sludge, pesticides, and refuse)
- Potential concerns identified in the RI conducted 1997 through 2007 are waste and burnt soil; and metals, pesticides, and PAHs in surface soil and drainage sediment
- Engineering Evaluation/Cost Analysis prepared to develop a removal action to address concerns

- Status: Removal action currently in progress

- Delayed due to discovery of munitions and explosives of concern (MEC)
- Restoration approach being revised based on future land use considerations; public notice upcoming

- FY 2010 Goals:

- Draft Construction Closeout Report by September 30, 2010
- Draft Proposed Plan by September 30, 2010

IRP Site 21: Industrial Area



IRP Site 21: Industrial Area



- **Background**

- Industrial area

- Buildings historically used as maintenance and electrical shops and munitions loading facilities; and outdoor areas used for equipment and chemical storage
 - Fuel service station (no longer present)

- RI conducted 2003 through 2008; potential concerns identified are chlorinated solvents in groundwater and indoor air

- Interim Proposed Plan identified In Situ Chemical Reduction (ISCR) and Enhanced Reductive Dechlorination (ERD) as preferred remedial alternative for addressing groundwater concerns

- **Status**

- RI Addendum documenting further investigation of potential indoor air concerns in progress

- Interim ROD awaiting final signature

- Interim Remedial Action Work Plan under development

- **FY 2010 Goals:**

- Signature of Interim ROD by December 31, 2009

- Finalize Site 21 Remedial Design by March 31, 2010

- Draft Site 21 RI Addendum by September 30, 2010

MRP Area UXO 1: Wharf Area Sediments



MRP Area UXO 1: Wharf Area Sediments



- Background

- Approximately 2,230 linear feet of current and former wharf areas along the Southern Branch of the Elizabeth River

- Northern Wharf Area

- Constructed in 1917

- Used for loading/unloading ordnance, particularly Mark VI mines

- No longer present with the exception of pilings

- Southern Wharf Area

- Constructed in 1898

- Damaged when two ships struck it in 1975

- Still in use, but not for ordnance loading/unloading

- Preliminary Assessment completed in 2009 recommended further investigation

- Status

- Site Investigation (SI) report in progress to document a geophysical investigation conducted in 2010

- Additional investigation being planned to further assess geophysical anomalies

- FY 2010 Goal: Finalize Phase 1 SI Report by March 31, 2010

Additional FY 2010 Goals



- Draft Community Involvement Plan update by December 31, 2010
- Draft Site Management Plan for FY 2011 through FY 2015 by June 30, 2010
- Conduct ten-year RAB anniversary celebration by September 30, 2010
- Prepare a Success Story by September 30, 2010

Conclusions



- The Partnering Team is planning for FY 2010 with anticipated funding of \$5.6 million

ERP Successes



- Beneficial land use of former ERP sites and areas of investigation
 - Photovoltaic array being planned for former ERP Site 3
 - Oyster reefs being considered in an area adjacent to MRP Area UXO 1



Questions/Comments?

Site 21 Interim Remedial Design/Remedial Action

St. Juliens Creek Annex
RAB Meeting
May 18, 2010



Purpose



- Provide a description of the groundwater remedy to be implemented at Site 21
- Solicit questions or comments

Background Information



- **Interim Record of Decision (ROD) signed in May 2010**
- **Remedy to address risks from exposure of potential future residential users to chlorinated volatile organic compounds (CVOCs) in groundwater**
 - **In Situ Chemical Reduction (ISCR)**
 - **Enhanced Reductive Dechlorination (ERD)**
 - **Land Use Controls (LUCs)**
 - **Long-term Monitoring (LTM)**
- **Remedy to be implemented in summer and fall 2010**

ISCR Description



- **Zero valent iron (ZVI) will be injected into 202 locations to chemically destroy CVOCs in the highest concentration areas**
- **Process is estimated to take 55 days to complete**
- **Liquid Atomized Injection (LAI®) process will be used**
 - **creates a liquid-like mixture of iron particles, gas and water that can be sprayed at high pressure into the subsurface**

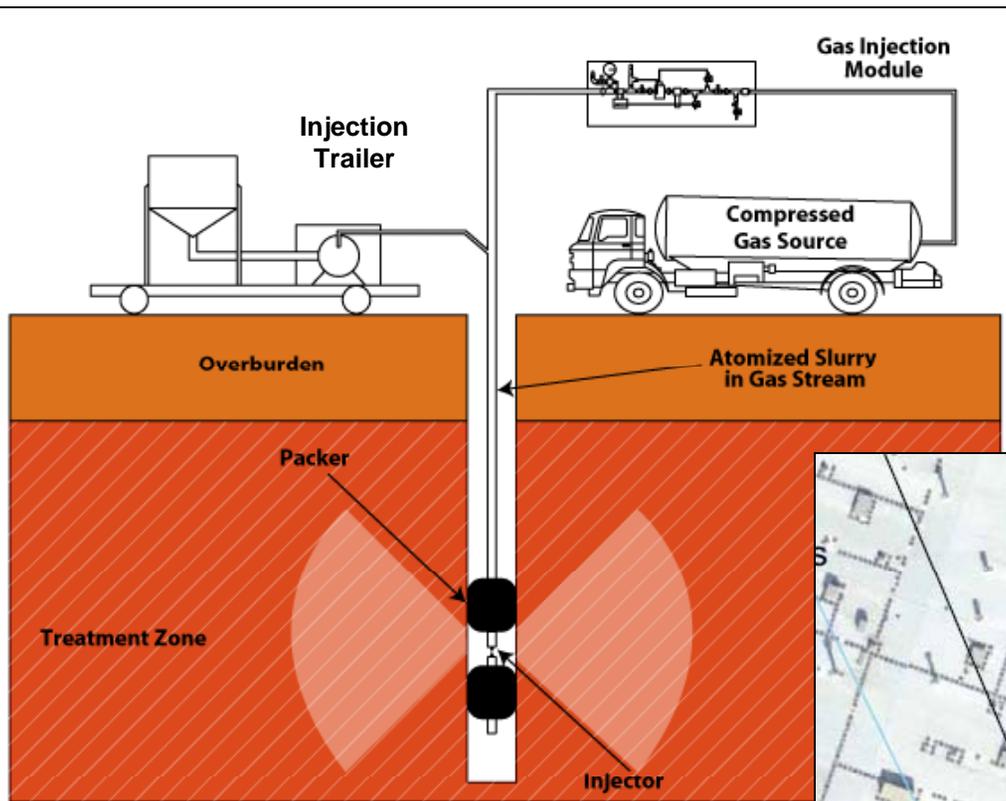


Standard Hydraulic Injection

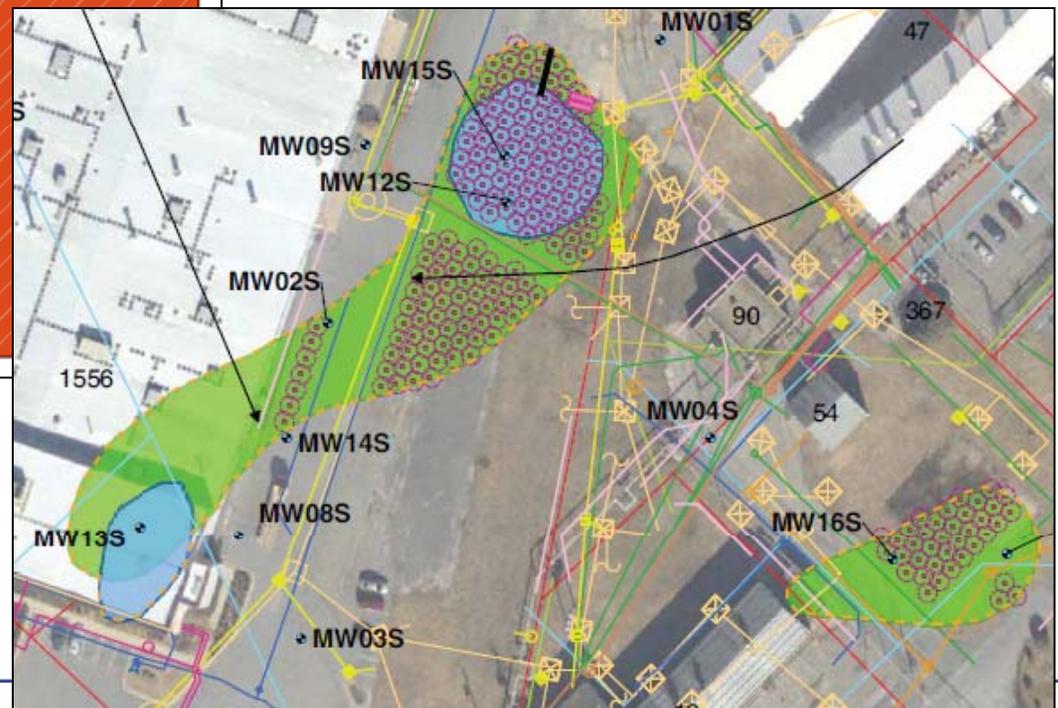


Liquid Atomized Injection

ISCR Description, cont.



- Injection points will be placed in highest concentration areas, at least 10 feet from utilities
- Only small areas of the site will be impacted at the same time

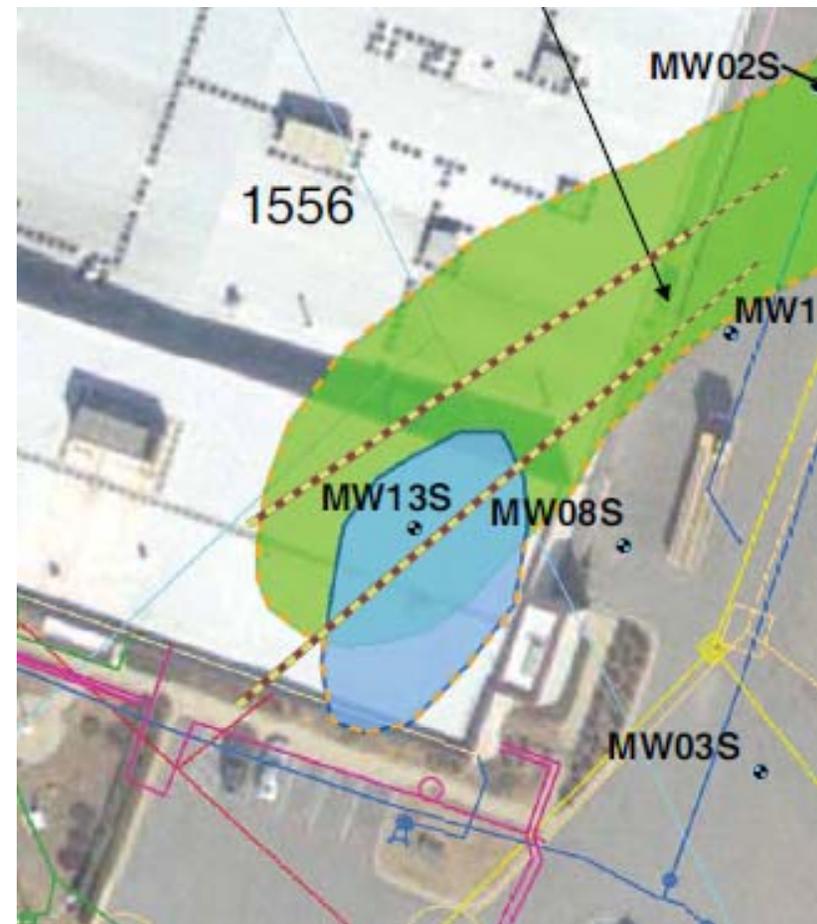


- Injection equipment consists of a direct push drilling rig, mixing equipment and a compressed gas source

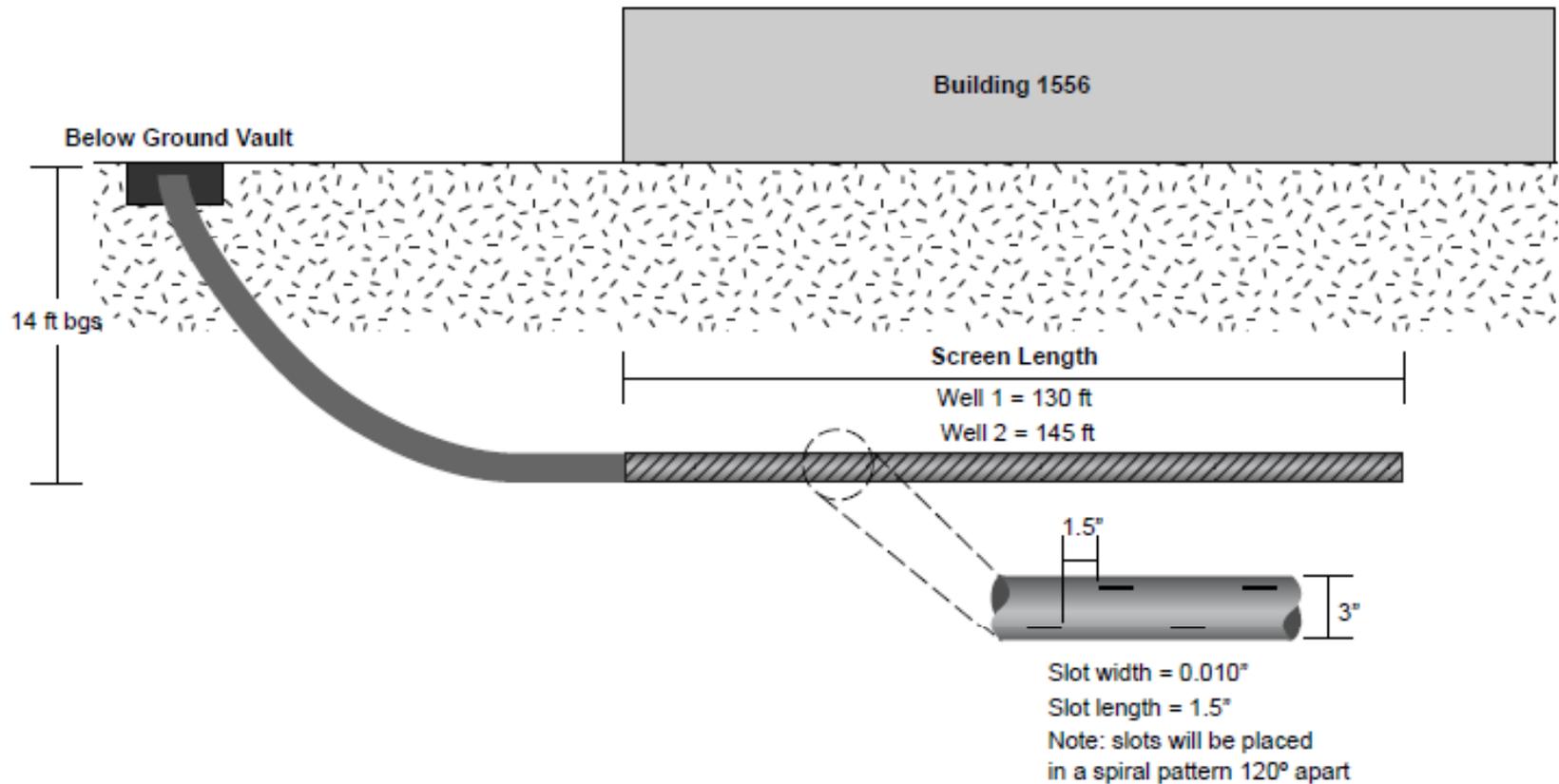
ERD Phase I Description



- High-concentration areas under Building 1556 that cannot be accessed by ZVI injection equipment will be treated through enhanced biological processes
- Emulsified vegetable oil (EVO) will be injected into two horizontal wells drilled under the foundation of Building 1556
- EVO will stimulate the degradation of CVOCs by naturally-occurring microbes



ERD Phase I Description, cont.



ERD Phase II Description



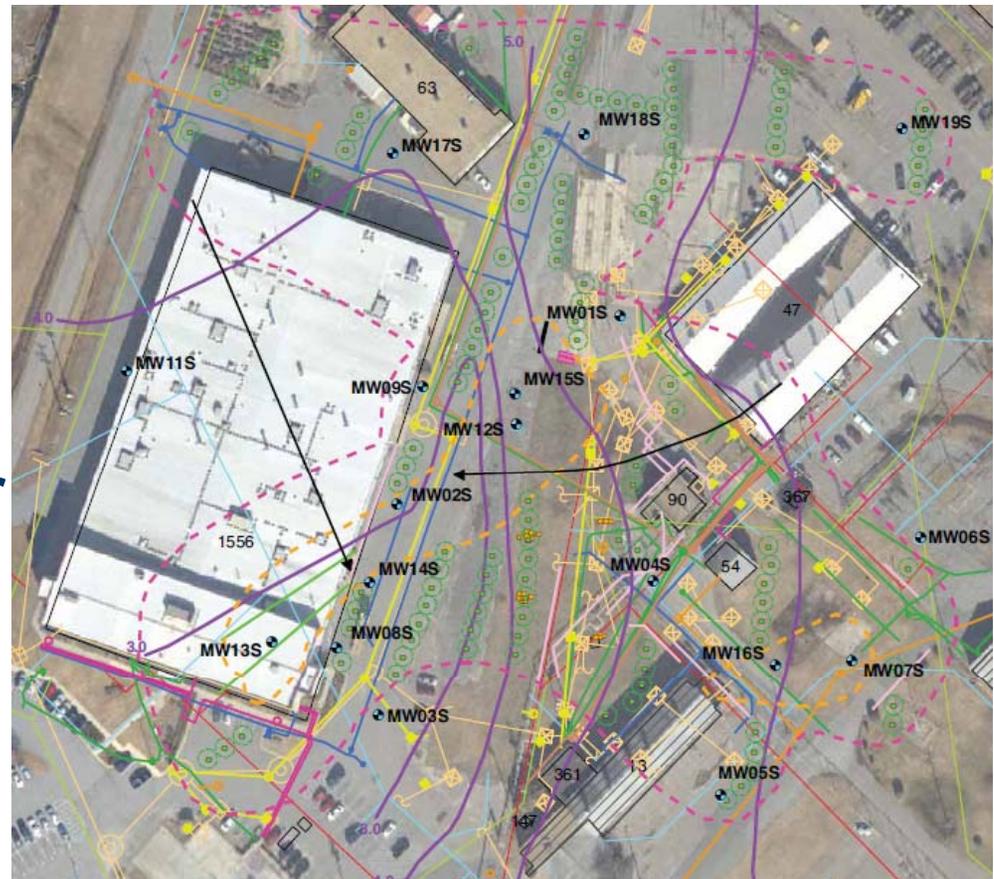
- **Low-concentration areas will be treated by injecting EVO into temporary injection points across the site**
- **EVO will stimulate the degradation of CVOCs by naturally-occurring microbes**
- **Injection layout consists of a series of rows placed perpendicular to groundwater flow**
- **Groundwater is expected to flow through these rows and be treated**



ERD Phase II Description, cont.



- 123 total injection points
- Approximately 8 points may be completed at a time
- Injection will take approximately 4 days per point
- Total of 58 days of injection



Long-term Monitoring



- **Baseline sampling to be completed prior to ISCR and ERD treatment**
- **Verification Sampling following treatment**
 - ISCR areas – 1,3 and 6 months after treatment and then semiannually
 - ERD areas – semiannually following treatment
- **Sampling will confirm concentrations are decreasing and aquifer conditions are conducive to further concentration reductions**
- **Additional treatment may be necessary if concentrations stop decreasing**

Land Use Controls

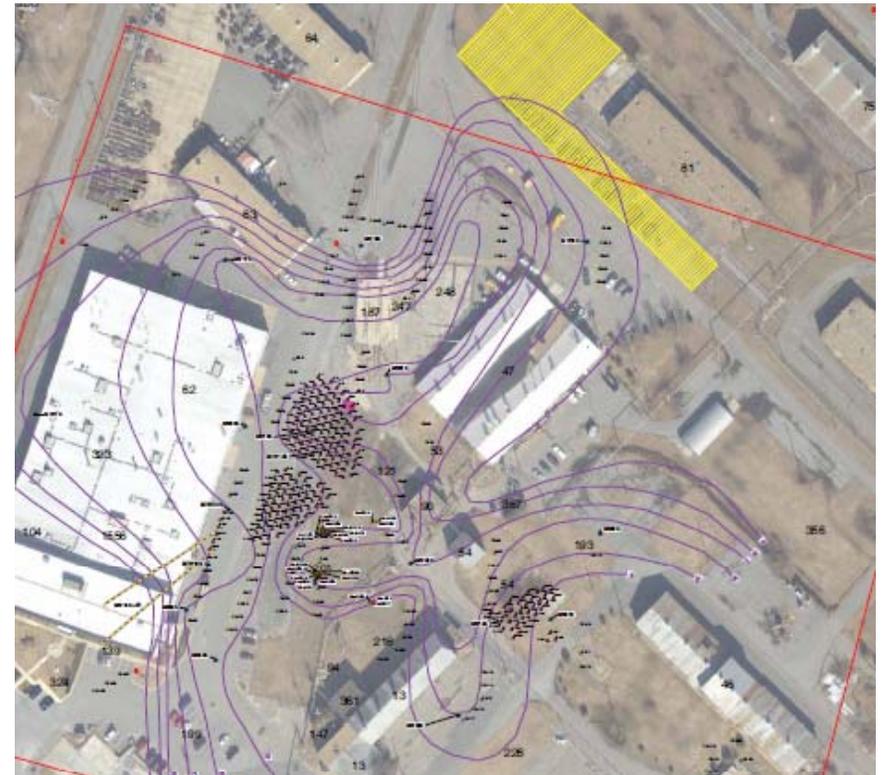


- **Land Use Control Remedial Design will be completed by the Navy**
- **Will specify areas where groundwater use restrictions will be enforced**

Logistical Considerations



- Remedy Implementation may temporarily impact parking and traffic patterns
 - Access to delineated work areas is prohibited due to health and safety concerns with equipment and chemicals
- Coordination with base personnel will take place prior to initiation of field efforts and on a regular basis while efforts are ongoing
- A preconstruction meeting will be held and will include stakeholders
- Materials will be staged in the northern area of the site



Legend

- | | |
|-------------------------|--|
| Site 21 Boundary | Horizontal Well Slotted Screen |
| EVO Injection Point | Horizontal Well Riser Pipe |
| ZVI Injection Point | Depth to Confining Layer Contour (feet below ground surface) |
| Fire Hydrant | Temporary Staging/Bulk Storage Area |
| Shallow Monitoring Well | Approx. Locations of Former USTs |
| Bioaugmentation Wells | |

Questions/Comments?

Site Inspection Activities

Area UXO 1

St. Juliens Creek Annex
RAB Meeting
May 18, 2010



Purpose



- Review the background of Munitions Response Program Area UXO 1
- Provide an update on the status of Area UXO 1 Site Inspection activities
- Discuss the next steps in the CERCLA process
- Update the Munitions Response Site Prioritization Protocol
- Solicit questions or comments

Historical Wharf Operations



- Approximately 2,230 linear feet of current and former wharf areas along the Southern Branch of the Elizabeth River
- Northern Wharf Area
 - Constructed in 1917
 - Used for loading/unloading ordnance, particularly Mark VI mines
 - No longer present with the exception of pilings
- Southern Wharf Area
 - Constructed in 1898
 - Used for loading/unloading various ordnance
 - Damaged when two ships struck it in 1975
 - Still in use, but not for ordnance loading/unloading



Investigation History – Installation Restoration Program



- Initial Assessment Study - 1981
 - Explosive Ordnance Division 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 – Installation Restoration Program



- 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 – Munitions Response Program



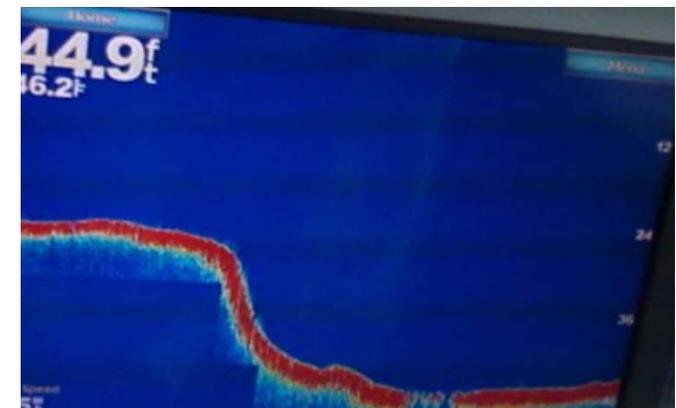
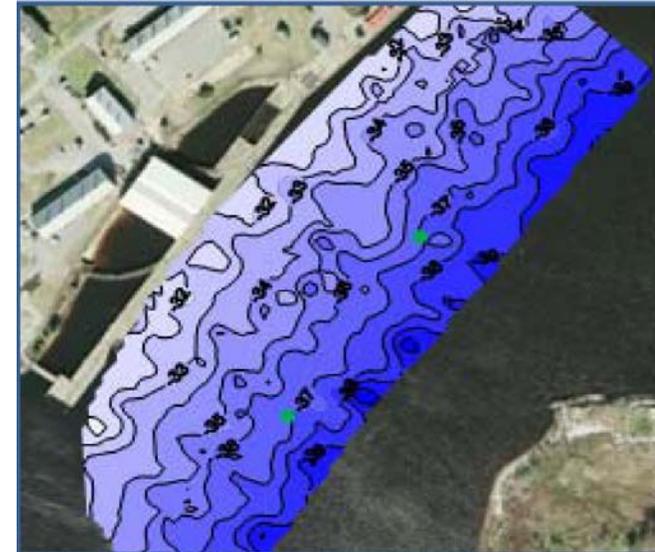
- **Preliminary Assessment – 2009**

- Reviewed on-site and off-site records sources to determine the potential for munitions to have been dropped into the water during loading operations
- Although no documentation was found to confirm the presence of munitions in the vicinity of the wharf areas, anecdotal evidence through interviews indicated there was potential for munitions to have been dropped
 - May have resulted in discarded military munitions (DMM) present in sediment if not recovered

MRP Site Inspection (2010)



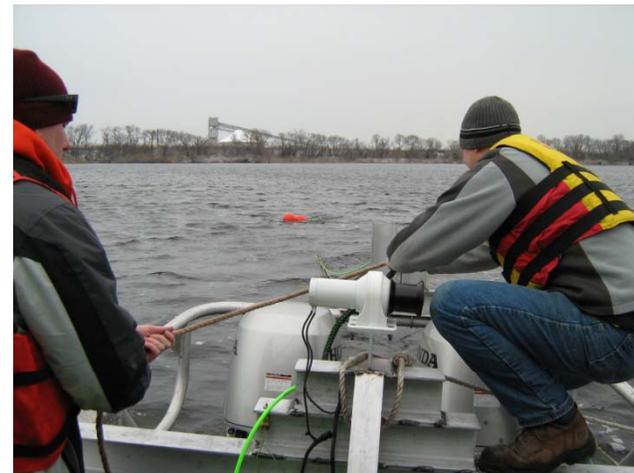
- Side scan and bathymetry surveys
- Digital geophysical mapping survey



MRP Site Inspection Digital Geophysical Mapping



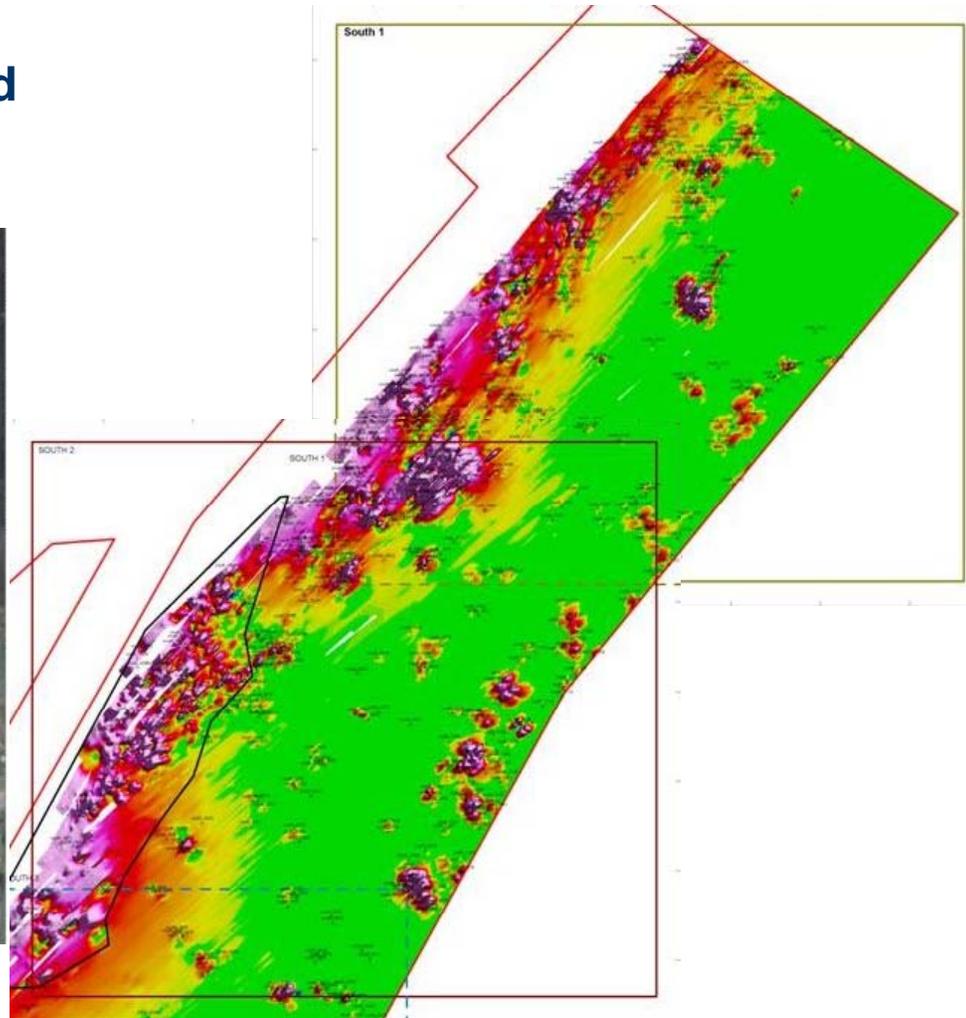
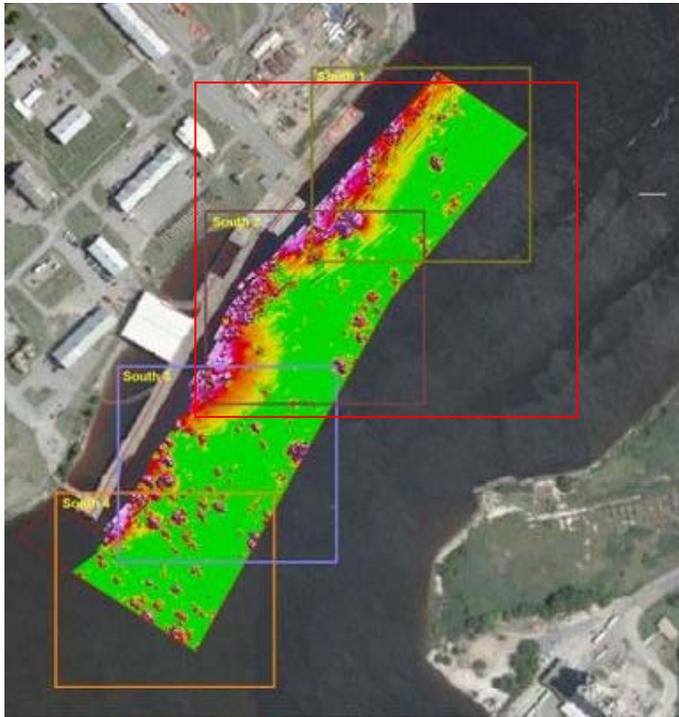
- Boat-towed sensors
 - 2 magnetometers spaced at 1.5 meets
 - Surveyed lines 1 meter apart



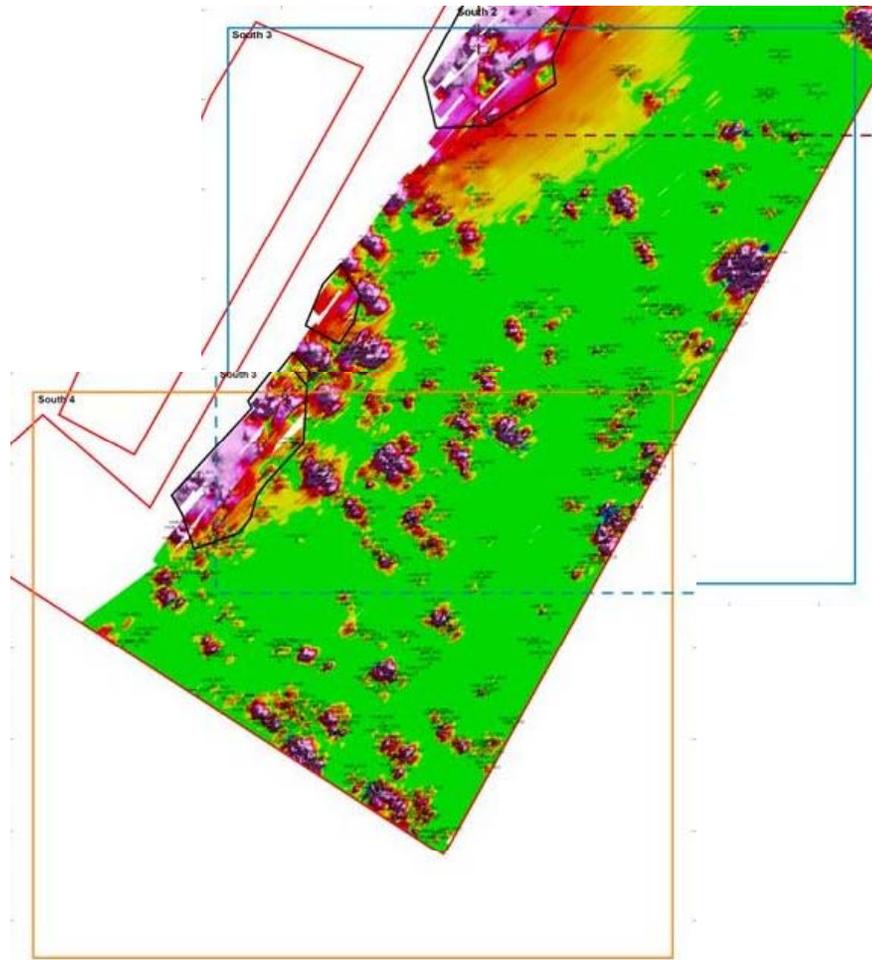
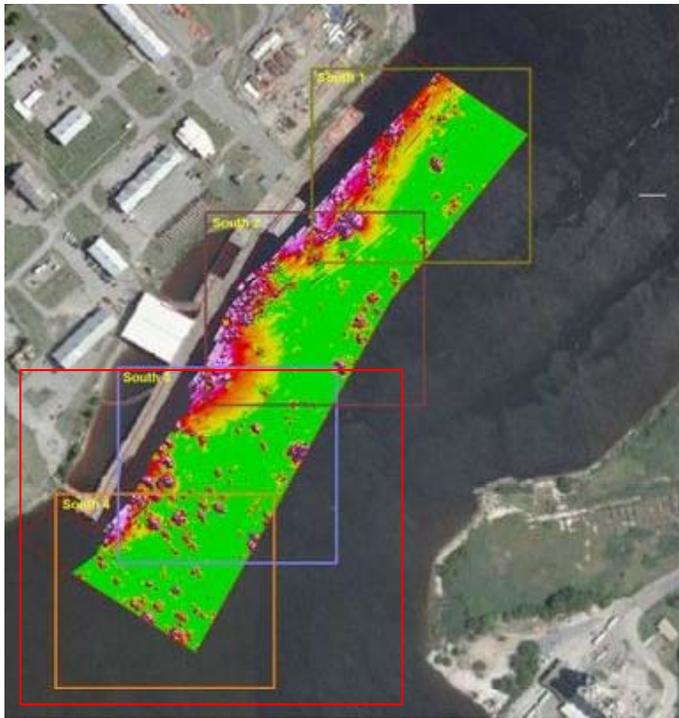
MRP Site Inspection Digital Geophysical Mapping



- Southern Area DGM
–1,386 anomalies identified



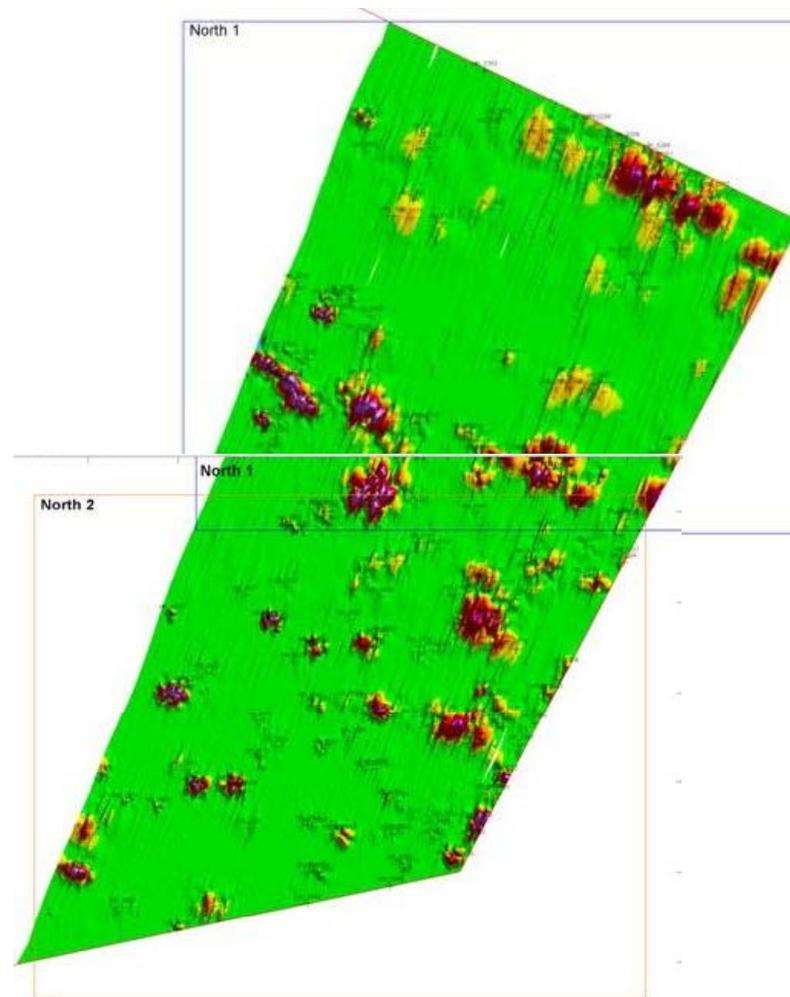
MRP Site Inspection Digital Geophysical Mapping



MRP Site Inspection Digital Geophysical Mapping



- Northern Area DGM
–265 anomalies identified



MRP Site Inspection Conclusions & Path Forward



- **Metallic anomalies are present in the southern and northern wharf areas**
 - However, metallic may or may not represent DMM
- **Intrusive investigation will be conducted**
 - Metallic anomalies from select areas will be dredged from the river bottom for inspection and identification
- **If DMM presence is positively confirmed, a Remedial Investigation or Removal Action will be conducted**



MRSP Update



- Initially presented during the August 2009 RAB Meeting
 - Tool to provide a methodology for prioritizing sites known or suspected to contain unexploded ordnance (UXO), DMM, and/or munitions constituents for investigation and/or action
 - Each DoD component is to apply the Protocol to determine a relative priority for each munitions response site
 - Evaluation of potential risk associated with:
 - Explosive hazards posed by munitions and explosives of concern
 - Hazards associated with chemical warfare material
 - Health (both acute and chronic) and environmental hazards posed by munitions constituents and incidental non-munitions related contaminants
 - Updated continuously as new information is collected

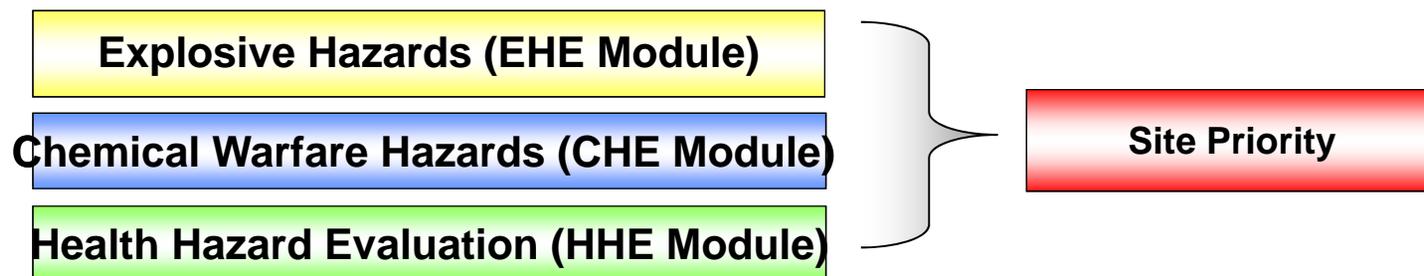




Table 5

EHE Module: Status of Property Data Element Table

DIRECTIONS: Below are three classifications of the status of a property within the Department of Defense (DoD) and their descriptions. Circle the score that corresponds with the status of property at the MRS.

Classification	Description	Score
Non-DoD control	<ul style="list-style-type: none"> • The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal, or local governments; and land or water bodies managed by other federal agencies. • The MRS is at a location that is owned by DoD, but that DoD has leased to another entity and for which DoD does not control access 24 hours per day. 	5
Scheduled for transfer from DoD control	<ul style="list-style-type: none"> • The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD, and DoD plans to transfer that land or water body to the control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the Protocol is applied. 	3
DoD control	<ul style="list-style-type: none"> • The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD must control access to the MRS 24 hours per day, every day of the calendar year. 	0
STATUS OF PROPERTY	DIRECTIONS: Record the single highest score from above in the box to the right (maximum score = 5).	5

← Former Selection

DIRECTIONS: Document any MRS-specific data used in selecting the *Status of Property* classification in the space provided.

The wharf area and investigation area extends out into a public waterway

Table 6

EHE Module: Population Density Data Element Table

DIRECTIONS: Below are three classifications for population density and their descriptions. Determine the population density per square mile that most closely corresponds with the population of the MRS, including the area within a two-mile radius of the MRS's perimeter. Circle the most appropriate score.

Note: Use the U.S. Census Bureau tract data available to capture the highest population density within a two-mile radius of the perimeter of the MRS.

Classification	Description	Score
> 500 persons per square mile	• There are more than 500 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.	5
100–500 persons per square mile	• There are 100 to 500 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.	3
< 100 persons per square mile	• There are fewer than 100 persons per square mile in the U.S. Census Bureau tract in which the MRS is located.	1
POPULATION DENSITY	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	5

←
Former
Selection

DIRECTIONS: Document any MRS-specific data used in selecting the *Population Density* classification in the space provided.

Highest census tract within 2-miles is #2118 (Portsmouth) at 5,807 persons per square mile.



Table 9

EHE Module: Ecological and/or Cultural Resources Data Element Table

DIRECTIONS: Below are four classifications of ecological and/or cultural resources and their descriptions. Review the types of resources present and circle the score that corresponds with the ecological and/or cultural resources present on the MRS.

Note: The terms *ecological resources* and *cultural resources* are defined in Appendix C of the Primer.

Classification	Description	Score
Ecological and cultural resources present	<ul style="list-style-type: none"> There are both ecological and cultural resources present on the MRS. 	5
Ecological resources present	<ul style="list-style-type: none"> There are ecological resources present on the MRS. 	4
Cultural resources present	<ul style="list-style-type: none"> There are cultural resources present on the MRS. 	3
No ecological or cultural resources present	<ul style="list-style-type: none"> There are no ecological resources or cultural resources present on the MRS. 	0
ECOLOGICAL AND/OR CULTURAL RESOURCES	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	3

Former Selection
←

DIRECTIONS: Document any MRS-specific data used in selecting the *Ecological and/or Cultural Resources* classification in the space provided.

The northern Wharf investigation area includes a wetland designated on the National Wetland Inventory. No cultural resource determination has been made for UXO 0001.



Table 10 Determining the EHE Module Rating				
	Source	Score	Value	
<p>DIRECTIONS:</p> <ol style="list-style-type: none"> From Tables 1–9, record the data element scores in the Score boxes to the right. Add the Score boxes for each of the three factors and record this number in the Value boxes to the right. Add the three Value boxes and record this number in the EHE Module Total box below. Circle the appropriate range for the EHE Module Total below. Circle the EHE Module Rating that corresponds to the range selected and record this value in the EHE Module Rating box found at the bottom of the table. <p>Note: An alternative module rating may be assigned when a module letter rating is inappropriate. An alternative module rating is used when more information is needed to score one or more data elements, contamination at an MRS was previously addressed, or there is no reason to suspect contamination was ever present at an MRS.</p>	Explosive Hazard Factor Data Elements			
	Munitions Type	Table 1	15	17
	Source of Hazard	Table 2	2	
	Accessibility Factor Data Elements			23
	Location of Munitions	Table 3	10	
	Ease of Access	Table 4	8	
	Status of Property	Table 5	5	18
	Receptor Factor Data Elements			
	Population Density	Table 6	5	
	Population Near Hazard	Table 7	5	
	Types of Activities/Structures	Table 8	5	3
	Ecological and/or Cultural Resources	Table 9	3	
	EHE MODULE TOTAL			58
	EHE Module Total	EHE Module Rating		
	92 to 100	A		
82 to 91	B			
71 to 81	C			
60 to 70	D			
48 to 59	E			
38 to 47	F			
less than 38	G			
Alternative Module Ratings	Evaluation Pending			
	No Longer Required			
	No Known or Suspected Explosive Hazard			
EHE MODULE RATING	E			

← Previously 18

← Previously 53



Table 11

CHE Module: CWM Configuration Data Element Table

DIRECTIONS: Below are seven classifications of CWM configuration and their descriptions. Circle the scores that correspond with all the CWM configurations known or suspected to be present at the MRS.

Note: The terms CWM/UXO, CWM/DMM, physical evidence, and historical evidence are defined in Appendix C of the Primer.

Classification	Description	Score
CWM, that are either UXO, or explosively configured damaged DMM	The CWM known or suspected of being present at the MRS are: + CWM that are UXO (i.e., CWM/UXO) + Explosively configured CWM that are DMM (i.e., CWM/DMM) that have been damaged.	30
CWM mixed with UXO	+ The CWM known or suspected of being present at the MRS are undamaged CWM/DMM or CWM not configured as a munition that are commingled with conventional munitions that are UXO.	25
CWM, explosive configuration that are undamaged DMM	+ The CWM known or suspected of being present at the MRS are explosively configured CWM/DMM that have not been damaged.	20
CWM/DMM, not explosively configured or CWM, bulk container	The CWM known or suspected of being present at the MRS are: + Nonexplosively configured CWM/DMM either damaged or undamaged + Bulk CWM (e.g., ton container).	15
CAIS K841 and CAIS K842	+ The CWM/DMM known or suspected of being present at the MRS are CAIS K841-toxic gas set M-1 or CAIS K842-toxic gas set M-2/E11.	12
CAIS (chemical agent identification sets)	+ CAIS, other than CAIS K841 and K842, are known or suspected of being present at the MRS.	10
Evidence of no CWM	+ Following investigation, the physical evidence indicates that CWM are not present at the MRS, or the historical evidence indicates that CWM are not present at the MRS.	0
CWM CONFIGURATION	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 30).	0

← Former Selections
←

DIRECTIONS: Document any MRS-specific data used in selecting the CWM Configuration classifications in the space provided.

No evidence of CWM. Evidence of CAIS on the surface or subsurface does not exist at UXO 0001, and no training using CAIS was documented at SJCA. Documentation does exist that these sets were stored in Building 163 at SJCA, and may have been transferred to/from ship at the wharfs. However, storage and transfer of CAIS does not qualify as a source of CWM hazard.



Table 13

CHE Module: Location of CWM Data Element Table

DIRECTIONS: Below are seven classifications of CWM locations and their descriptions. Review these locations and circle the scores that correspond with all the locations where CWM are known or suspected of being found at the MRS.

Note: The terms *confirmed*, *surface*, *subsurface*, *physical evidence*, and *historical evidence* are defined in Appendix C of the Primer.

Classification	Description	Score
Confirmed surface	<ul style="list-style-type: none"> Physical evidence indicates that there are CWM on the surface of the MRS. Historical evidence (i.e., a confirmed report such as an explosive ordnance disposal (EOD), police, or fire department report, that an incident or accident that involved CWM, regardless of configuration, occurred) indicates there are CWM on the surface of the MRS. 	25
Confirmed subsurface, active	<ul style="list-style-type: none"> Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose CWM. Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are likely to cause CWM to be exposed, in the future, by naturally occurring phenomena (e.g., drought, flooding, erosion, frost heave, tidal action), or intrusive activities (e.g., plowing, construction, dredging) at the MRS are likely to expose CWM. 	20
Confirmed subsurface, stable	<ul style="list-style-type: none"> Physical evidence indicates the presence of CWM in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause CWM to be exposed. Historical evidence indicates that CWM are located in the subsurface of the MRS and the geological conditions at the MRS are not likely to cause CWM to be exposed, in the future, by naturally occurring phenomena, or intrusive activities at the MRS are not likely to cause CWM to be exposed. 	15
Suspected (physical evidence)	<ul style="list-style-type: none"> There is physical evidence, other than the documented presence of CWM, indicating that CWM may be present at the MRS. 	10
Suspected (historical evidence)	<ul style="list-style-type: none"> There is historical evidence indicating that CWM may be present at the MRS. 	5
Subsurface, physical constraint	<ul style="list-style-type: none"> There is physical or historical evidence indicating that CWM may be present in the subsurface, but there is a physical constraint (e.g., pavement, water depth over 120 feet) preventing direct access to the CWM. 	2
Evidence of no CWM	<ul style="list-style-type: none"> Following investigation of the MRS, there is physical evidence that there is no CWM present or there is historical evidence indicating that no CWM are present. 	0
LOCATION OF CWM	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 25).	
DIRECTIONS: Document any MRS-specific data used in selecting the Location of CWM classifications in the space provided.		
No evidence of CWM. No physical or historical evidence exists confirming or indicating CAIS is or may be on the surface or subsurface at UXO 0001		
<hr/> <hr/> <hr/> <hr/> <hr/>		

← Former Selection



Table 15

CHE Module: Status of Property Data Element Table

DIRECTIONS: Below are three classifications of the status of a property within the Department of Defense (DoD) and their descriptions. Circle the score that corresponds with the status of property at the MRS.

Classification	Description	Score
Non-DoD control	<ul style="list-style-type: none"> + The MRS is at a location that is no longer owned by, leased to, or otherwise possessed or used by DoD. Examples are privately owned land or water bodies; land or water bodies owned or controlled by state, tribal or local governments; and land or water bodies managed by other federal agencies. + The MRS is at a location that is owned by DoD, but that DoD has leased to another entity and for which DoD does not control access 24 hours per day. 	4
Scheduled for transfer from DoD control	+ The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD, and DoD plans to transfer that land or water body to control of another entity (e.g., a state, tribal, or local government; a private party; another federal agency) within 3 years from the date the Protocol is applied.	3
DoD control	+ The MRS is on land or is a water body that is owned, leased, or otherwise possessed by DoD. With respect to property that is leased or otherwise possessed, DoD controls access to the MRS 24 hours per day, every day of the calendar year.	0
STATUS OF PROPERTY	DIRECTIONS: Record the single highest score from above in the box to the right (maximum score = 5).	5

← Former Selection

DIRECTIONS: Document any MRS-specific data used in selecting the Status of Property classification in the space provided.

The wharf area and investigation area extends out into a public waterway.

Table 16

CHE Module: Population Density Data Element Table

DIRECTIONS: Below are three classifications for population density and their descriptions. Determine the population density per square mile that most closely corresponds with the population of the MRS, including the area within a two-mile radius of the MRS's perimeter. Circle the most appropriate score.

Note: Use the U.S. Census Bureau tract data available to capture the highest population density within a two-mile radius of the perimeter of the MRS.

Classification	Description	Score
> 500 persons per square mile	<ul style="list-style-type: none"> There are more than 500 persons per square mile in the U.S. Census Bureau tract in which the MRS is located. 	5
100–500 persons per square mile	<ul style="list-style-type: none"> There are 100 to 500 persons per square mile in the U.S. Census Bureau tract in which the MRS is located. 	3
< 100 persons per square mile	<ul style="list-style-type: none"> There are fewer than 100 persons per square mile in the U.S. Census Bureau tract in which the MRS is located. 	1
POPULATION DENSITY	DIRECTIONS: Record the <u>single highest score</u> from above in the box to the right (maximum score = 5).	5

← Former Selection

DIRECTIONS: Document any MRS-specific data used in selecting the *Population Density* classification in the space provided.

Highest census tract within 2-miles is #2118 (Portsmouth) at 5,907 persons per square mile.



Table 19

CHE Module: Ecological and/or Cultural Resources Data Element Table

DIRECTIONS: Below are four classifications of ecological and/or cultural resources and their descriptions. Review the types of resources present and circle the score that corresponds with the ecological and/or cultural resources present on the MRS.

Note: The terms *ecological resources* and *cultural resources* are defined in Appendix C of the Primer.

Classification	Description	Score
Ecological and cultural resources present	+ There are both ecological and cultural resources present on the MRS.	5
Ecological resources present	+ There are ecological resources present on the MRS.	3
Cultural resources present	+ There are cultural resources present on the MRS.	3
No ecological or cultural resources present	+ There are no ecological resources or cultural resources present on the MRS.	0
ECOLOGICAL AND/OR CULTURAL RESOURCES	DIRECTIONS: Record <u>the single highest score</u> from above in the box to the right (maximum score = 5).	3

← Former Selection

DIRECTIONS: Document any MRS-specific data used in selecting the *Ecological and/or Cultural Resources* classification in the space provided.

The northern wharf investigation area includes a wetland designated on the National Wetland Inventory. No cultural resource determination has been made for UXO 0001.



Table 20
Determining the CHE Module Rating

	Source	Score	Value	
DIRECTIONS:				
<ol style="list-style-type: none"> From Tables 11–19, record the data element scores in the Score boxes to the right. Add the Score boxes for each of the three factors and record this number in the Value boxes to the right. Add the three Value boxes and record this number in the CHE Module Total box below. Circle the appropriate range for the CHE Module Total below. Circle the CHE Module Rating that corresponds to the range selected and record this value in the CHE Module Rating box found at the bottom of the table. 	CWM Hazard Factor Data Elements			
	CWM Configuration	Table 11	0	0
	Sources of CWM	Table 12	0	
	Accessibility Factor Data Elements			
	Location of CWM	Table 13	0	13
Ease of Access	Table 14	8		
Status of Property	Table 15	5		
Receptor Factor Data Elements				
Population Density	Table 16	5	18	
Population Near Hazard	Table 17	5		
Types of Activities/Structures	Table 18	5		
Ecological and/or Cultural Resources	Table 19	3		
CHE MODULE TOTAL			31	
CHE Module Total	CHE Module Rating			
92 to 100	A			
82 to 91	B			
71 to 81	C			
60 to 70	D			
48 to 59	E			
38 to 47	F			
less than 38	G			
Alternative Module Ratings	Evaluation Pending			
	No Longer Required			
	No Known or Suspected CWM Hazard			
CHE MODULE RATING				

← Previously 13

← Previously 44

Table 29
MRS Priority

DIRECTIONS: In the chart below, circle the letter rating for each module recorded in Table 10 (EHE), Table 20 (CHE), and Table 28 (HHE). Circle the corresponding numerical priority for each module. If information to determine the module rating is not available, choose the appropriate alternative module rating. The MRS Priority is the single highest priority; record this relative priority in the **MRS Priority** or **Alternative MRS Rating** at the bottom of the table.

Note: An MRS assigned Priority 1 has the highest relative priority; an MRS assigned Priority 8 has the lowest relative priority. Only an MRS with CWM known or suspected to be present can be assigned Priority 1; an MRS that has CWM known or suspected to be present cannot be assigned Priority 8.

EHE Rating	Priority	CHE Rating	Priority	HHE Rating	Priority
		A	1		
A	2	B	2	A	2
B	3	C	3	B	3
C	4	D	4	C	4
D	5	E	5	D	5
E	6	F	6	E	6
F	7	G	7	F	7
G	8			G	8
Evaluation Pending		Evaluation Pending		Evaluation Pending	
No Longer Required		No Longer Required		No Longer Required	
No Known or Suspected Explosive Hazard		No Known or Suspected CWM Hazard		No Known or Suspected MC Hazard	
MRS PRIORITY or ALTERNATIVE MRS RATING				6	

Same
 Overall
 Rating

Questions/Comments?