Formerly Used Defense Sites (FUDS) Program

Martha's Vineyard Remedial Investigation/Feasibility Study

US Army Corps of Engineers, New England District
US Army Engineering and Support Center, Huntsville
TPP Meeting #2:
October 14, 2010

US Army Corps of Engineers
BUILDING STRONG®

Agenda

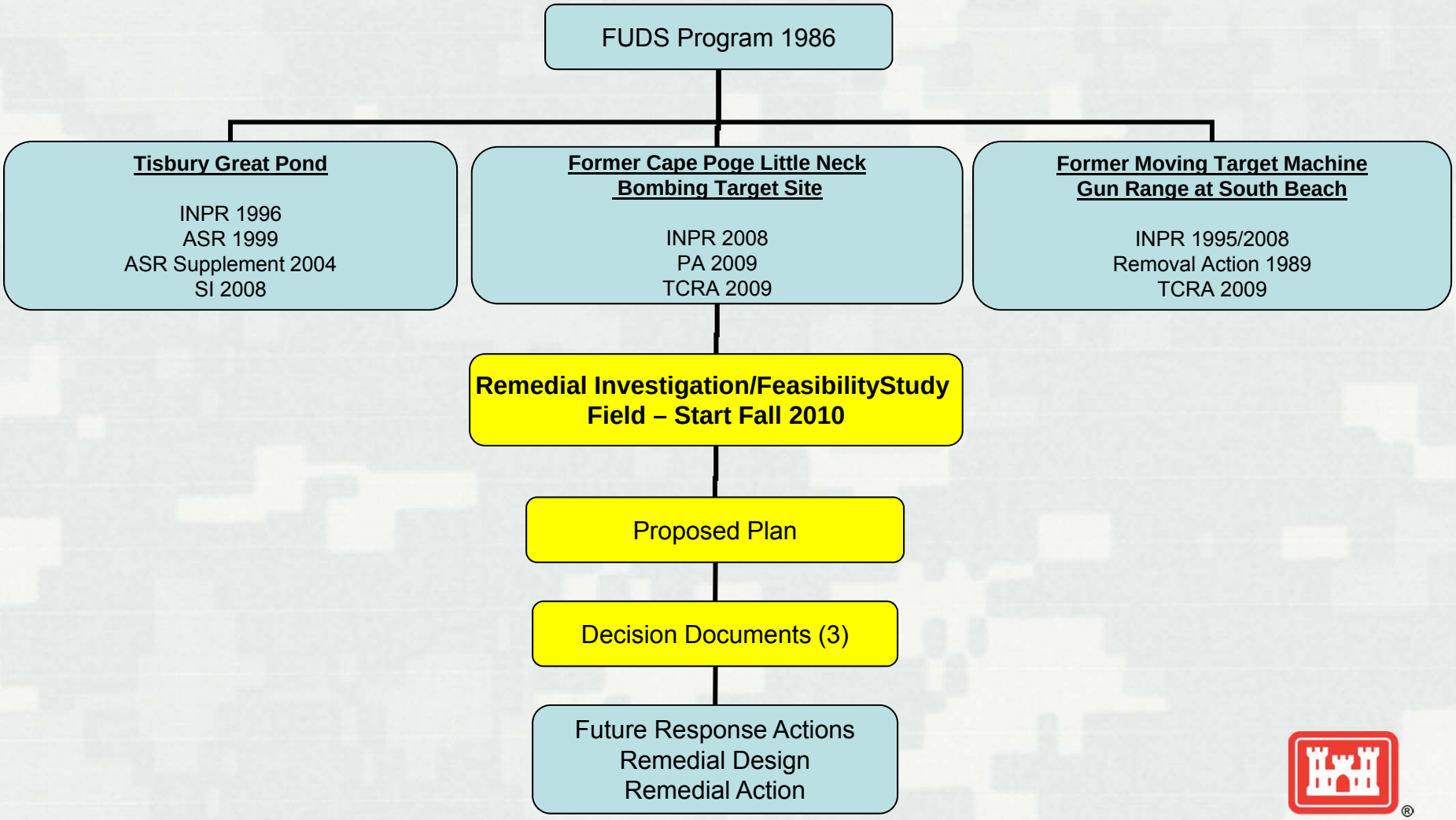
- Introduction/Statement of Objectives - USACE
- TPP Presentation – UXB Team/USACE
  - Summary of work completed to date
  - RI Field Work Planned
- Work Plan Discussion – All
- Wrap Up/Adjourn

BUILDING STRONG®

Technical Project Planning Team

- USACE – New England District and USAESCH
- TTOR
- MA DEP
- EPA
- DCR
- Town of Chilmark
- Town of Edgartown
- Town of West Tisbury
- Dukes County
- Wompanoag Tribe of Gay Head (Aquinnah)
- UXB Team

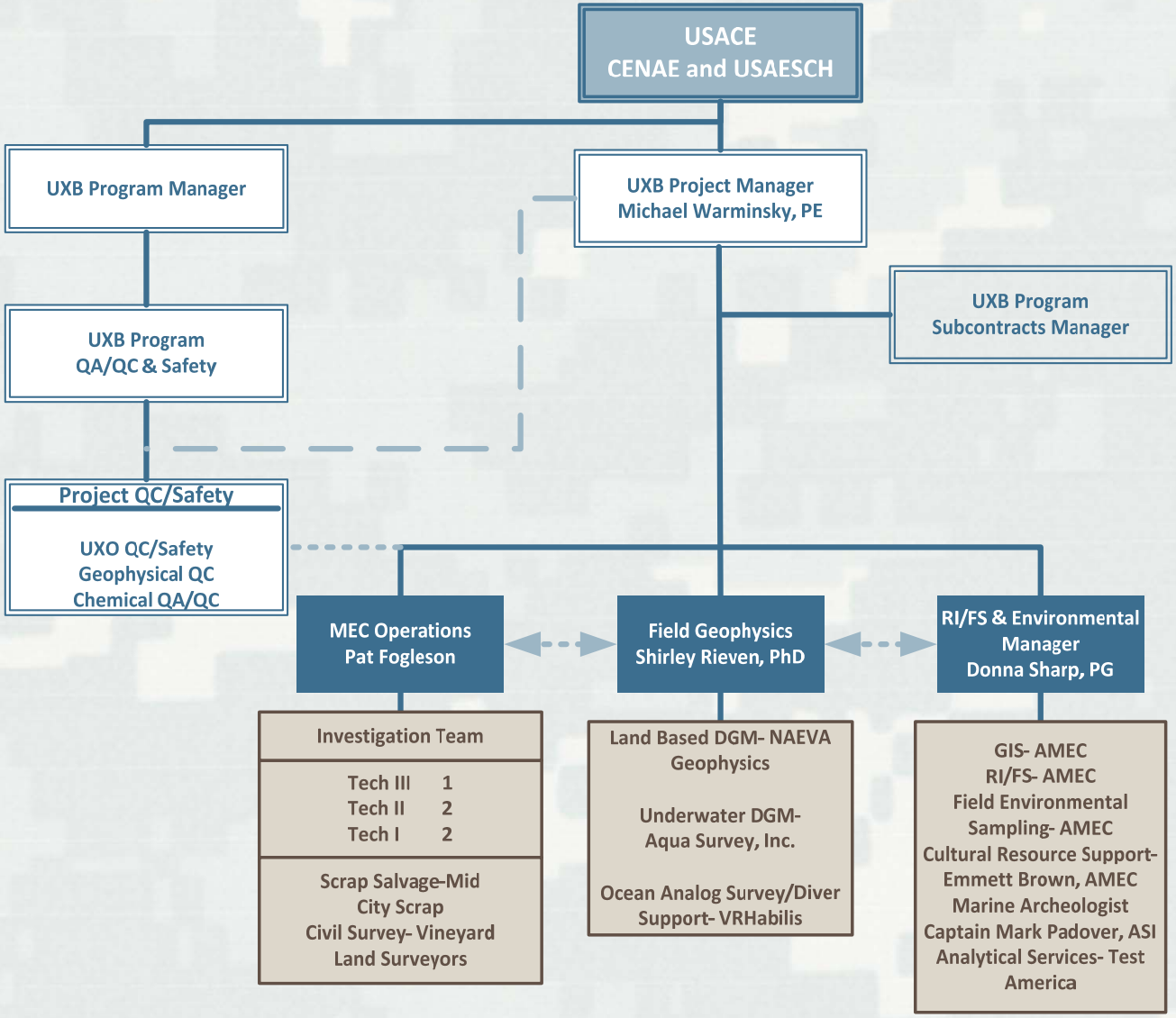
CERCLA Process



Martha's Vineyard RI/FS

- Purpose of a Military Munitions Response Program (MMRP) RI/FS
  - To adequately determine the nature and extent of Munitions and Explosives of Concern (MEC) and munitions debris (MD) at the MRS to develop future response actions without additional investigation.
  - "The objective of the RI/FS process is not the unobtainable goal of removing all uncertainty, but rather to gather information sufficient to support an informed risk management decision regarding which remedy appears to be most appropriate for a given MRS." – *Army MMRP RI/FS Guidance – November 2009*

UXB Project Team



TPP Presentation Sequence

- Part 1 – Summary of Work to Date
  - ESTCP Dive Support/Findings
  - Transport Study
  - Right of Entry (ROE) Status
- Part 2 – Planned RI Field Work
  - MEC Recon Transects
  - MEC Investigation Grids
  - Environmental Compliance
  - Schedule Summary

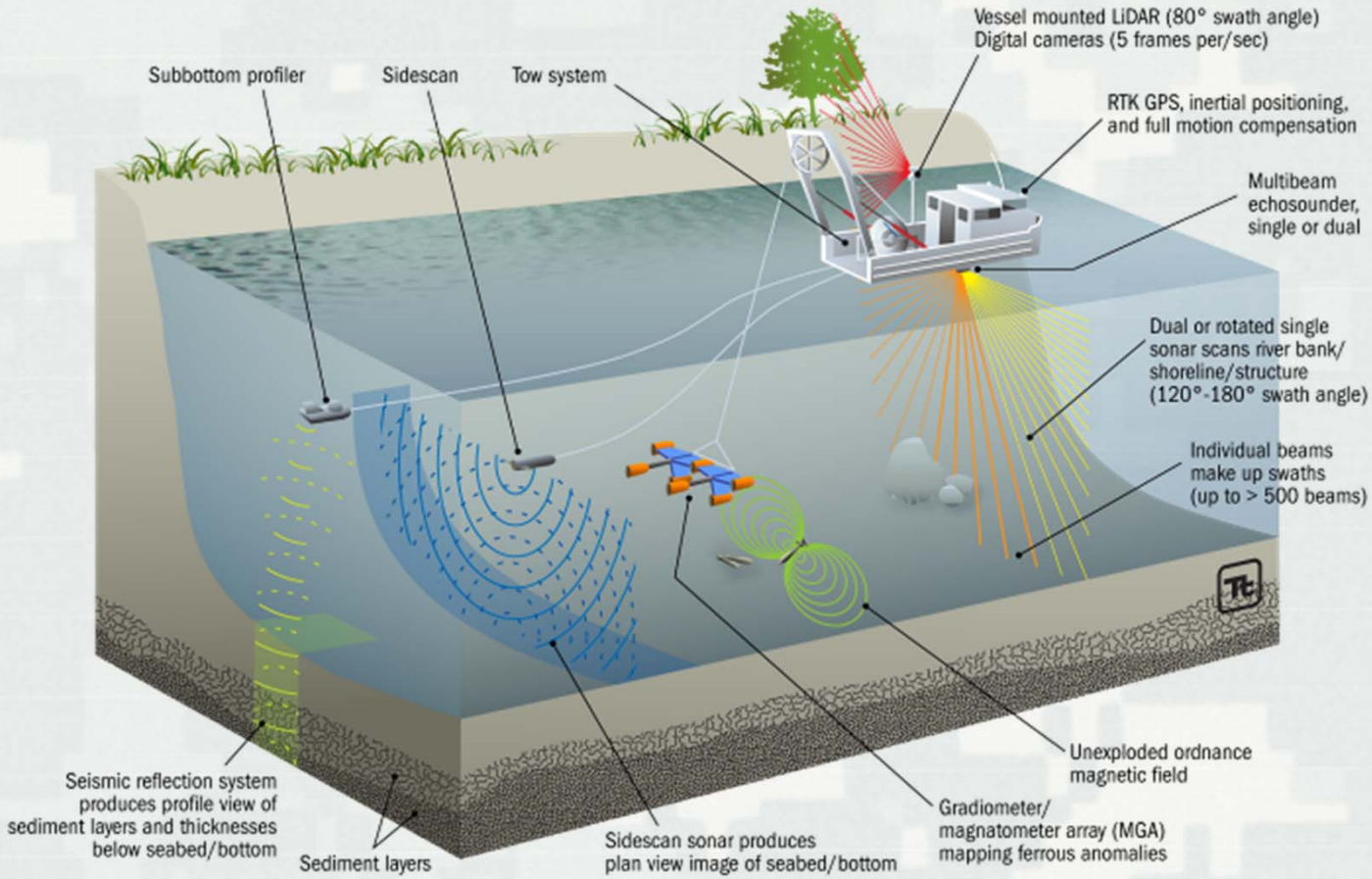
Part I

Summary of Work to Date

ESTCP WAA Demonstration

- Objectives for the Wide Area Assessment (WAA)
  - Demonstrate a practical approach to detect and locate MEC and MD in water bodies (lakes, rivers, oceans)
  - Establish a feasible approach to WAA for marine MEC
  - Integrate supplemental sensor information with the standard metal detection technologies used in MEC assessment to aid in discrimination of MEC from non-MEC background clutter in the underwater environment

ESTCP Technology Overview



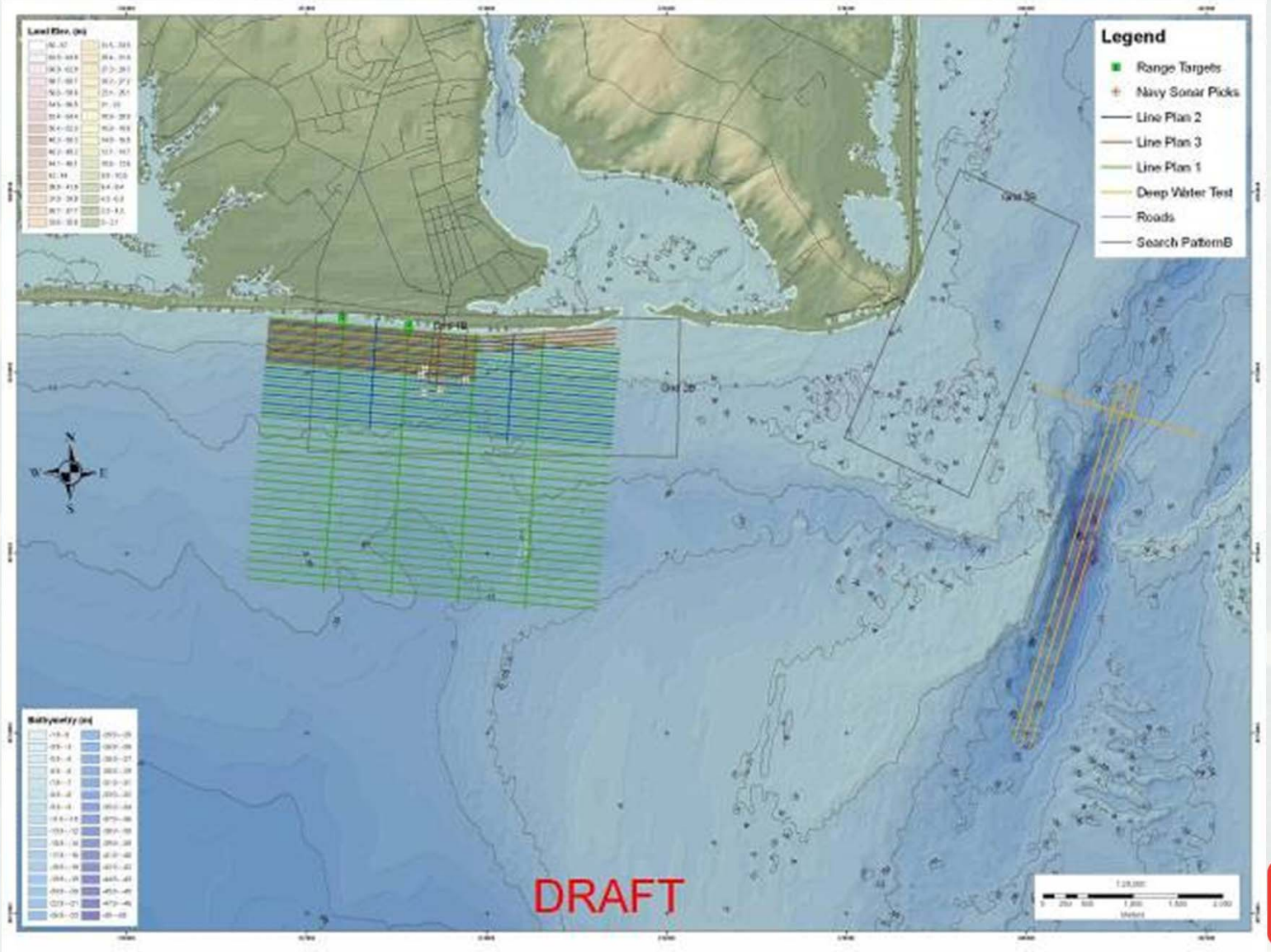
ESTCP Technology Overview

- Tetra Tech Marine Gradiometer Array (MGA)

ESTCP Transect Logic

- 3-Tier Approach for Wide Area Assessment
  - Initial Line Plan
    - Widely spaced to determine anomaly distribution
  - Secondary Line Plan
    - Focus on high anomaly areas / or areas of interest
  - Detailed Search of Areas
    - Further focus on areas or features of interest

ESTCP WAA Demonstration Area

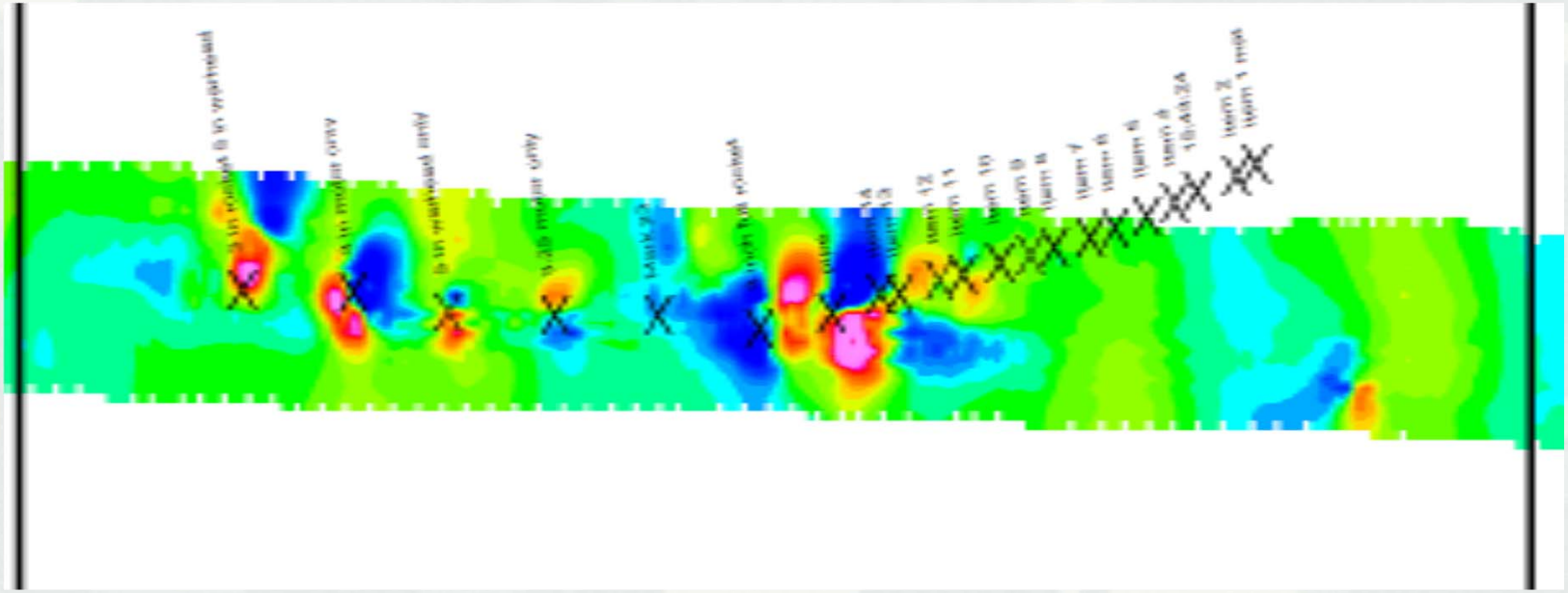


ESTCP Project Execution

- Transect Survey – June-July 2010 (Tetra Tech)
- Develop Pick Lists – July-August 2010 (Tetra Tech)
- Refine Pick List – August September 2010 (UXB, USAESCH, CENAE)
- Reacquire Anomalies – July-September 2010 (UXB Team)
- Develop ESTCP Draft Report – 2011(Tetra Tech)

Anomaly Selection Criteria

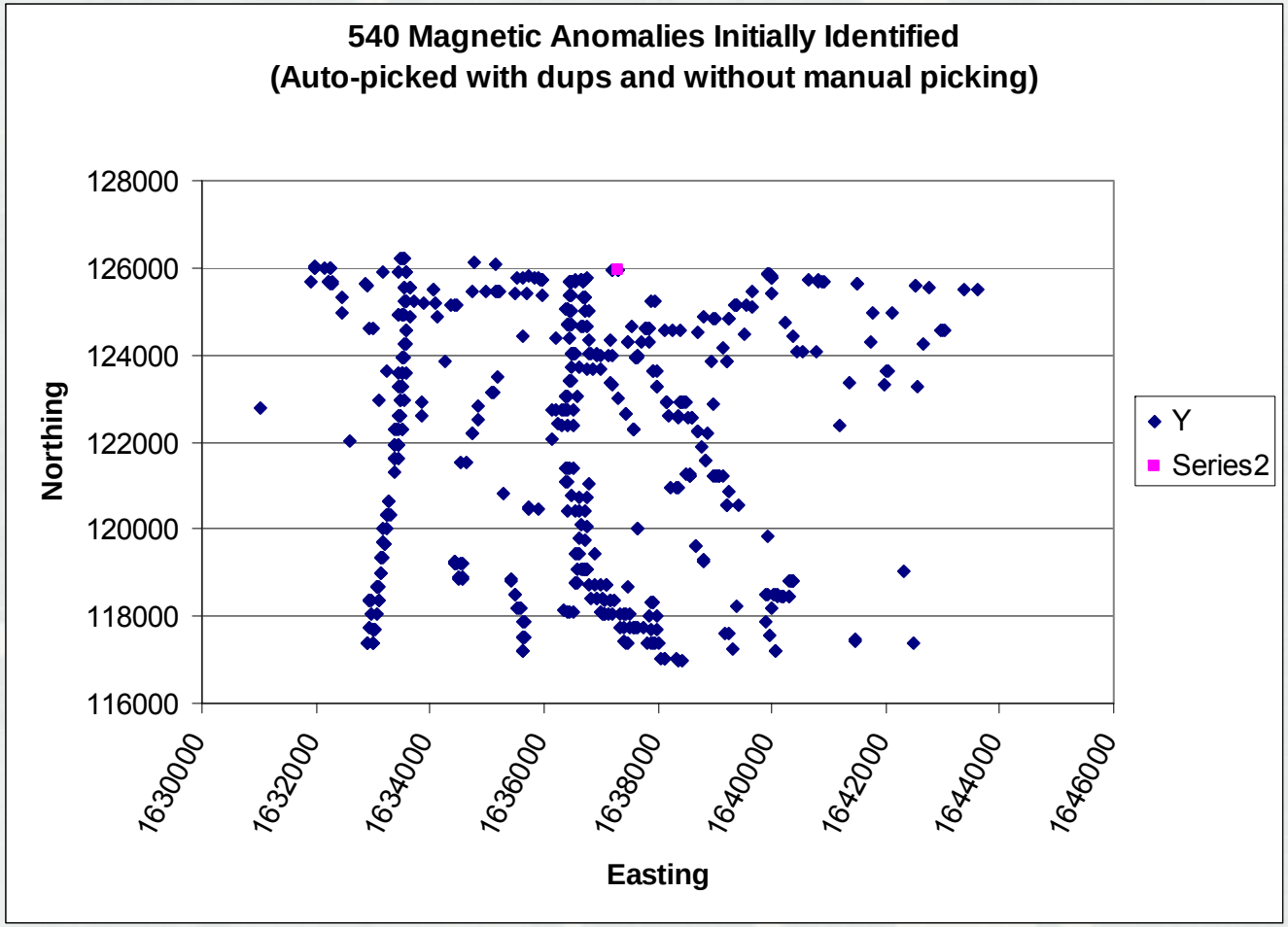
- Anomaly Character (Magnetic Dipole Form)
- Anomaly Peak Magnetic Amplitude
- Instrument Verification Strip Test Reference Signatures



- Spatial Distribution
- Included 5 Navy anomalies

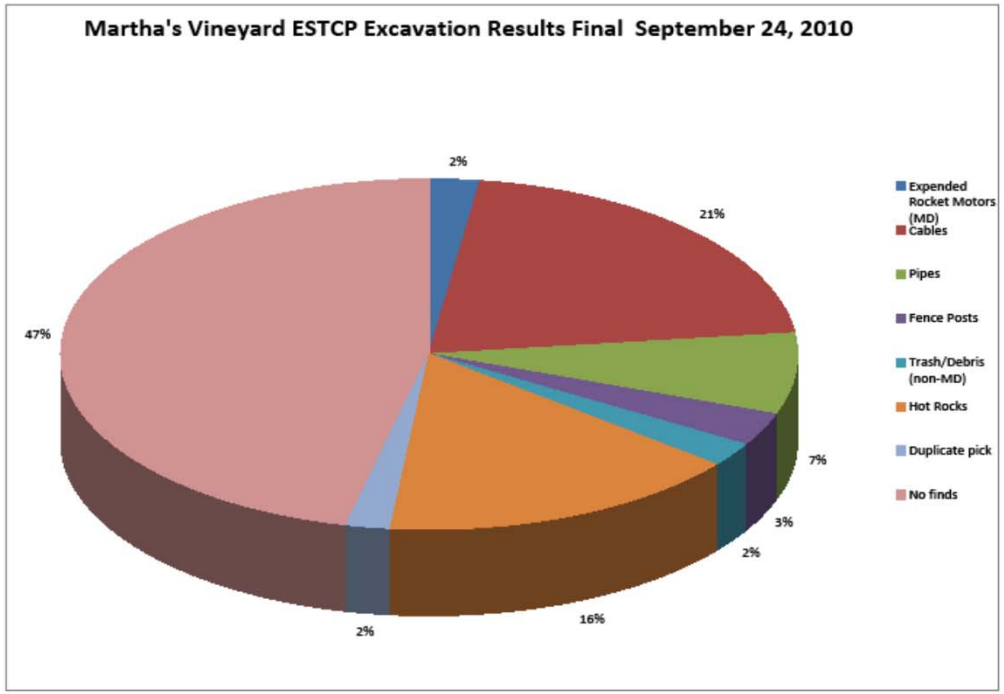
BUILDING STRONG®

Intrusive Investigation Summary



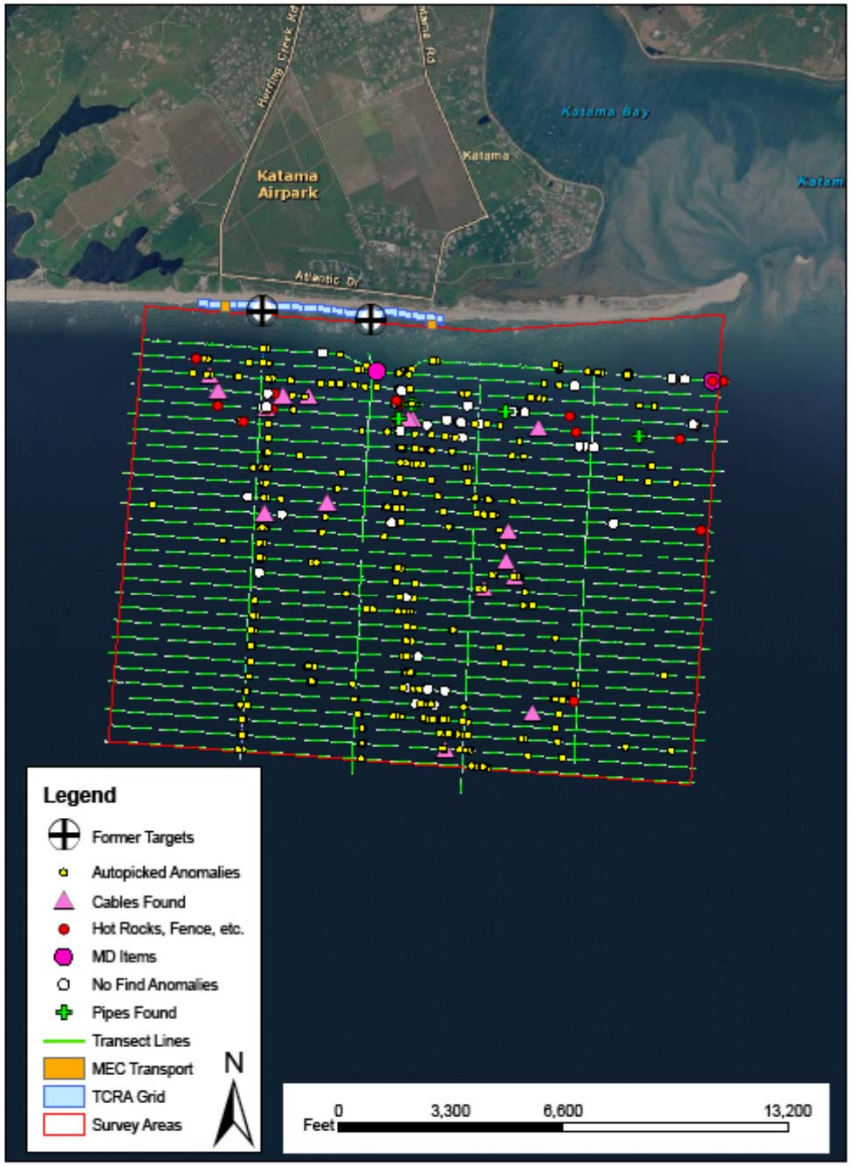
ESTCP Intrusive Results

- 95 of 540 anomalies (18%) investigated
- Final September 24, 2010



Description	Quantity
Expended Rocket Motors (MD)	2
Cables	20
Pipes	7
Fence Posts	3
Trash/Debris (non-MD)	2
Hot Rocks	15
Duplicate pick	2
No finds	44
	95

ESTCP Survey - Anomaly Status



Expended Rocket Motor

ESTCP Project Summary

- What Does the Data Tell Us?
  - Only two munitions-related items - Munitions Debris (MD) were found
  - MD items found on transects closest to the beach
  - No munitions-related items found in deeper water
  - Large number of no-finds
- Implications to RI Field Work
  - MD items found could justify running transects from the shore to the ESTCP grids
  - Very dynamic environment – ocean transects/grids planned to be mag/dig to eliminate need for reacquisition
  - Sufficient data to suggest the negative/no additional deeper water investigation planned

Transport Study Plan

- Includes South Beach and Tisbury Great Pond
  - Two grids at South Beach previously cleared during Time Critical Removal Action (TCRA)
    - Monitor to determine changes in metallic anomaly density
    - One grid between TCRA Grid 5/6 and one grid between TCRA Grid 18/19
  - Two grids to be seeded with known objects at Tisbury Great Pond
    - One grid to the east of the “breach” and one grid to the west
  - Baseline dive at start of ESTCP Dive Support Task
  - Final dive at completion of RI ocean analog survey
  - One additional dive after major storm event(s)

BUILDING STRONG®

Transport Study to Date

- Preliminary Results
  - South Beach Baseline Dive Results
    - TCRA Grid 5/6 - 24 Anomalies
    - TCRA Grid 18/19 - 155 Anomalies
    - No anomalies on surface, all buried
  - South Beach Post-Storm Dive (on-going)
    - TCRA Grid 5/6 (scheduled to start this week)
    - TCRA Grid 18/19 - 272 Anomalies to date (80% complete)
      - (12) anomalies on surface, (2) of which were MD – expended rocket(s)
      - (2) anomalies dug – one cable, one MD
  - Tisbury Great Pond
    - Date TBD due to ROE issues and severe beach erosion
  - Maps adjusted to reflect change in beach width

BUILDING STRONG®

Transport Study Area

(South Beach – Beach Width 9/6/10)

BUILDING STRONG®

Transport Study Area

(South Beach Storm Damage – Beach Width 9/10/10)

Transport Study Grid Summary

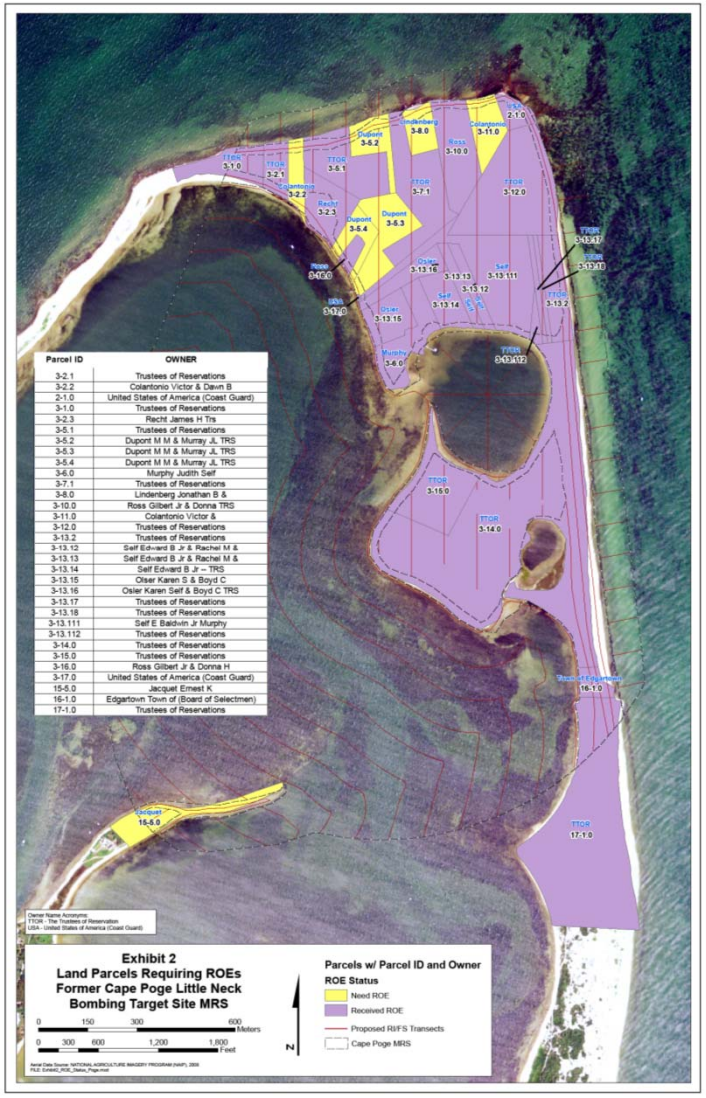
- What Does the Data Tell Us?
  - Many anomalies detected in previously cleared TCRA grids
  - *Very dynamic environment – beach erosion and re-deposition*
  - No items on surface on baseline dive, numerous item(s) on the surface post-storm dive
  - Surface/subsurface MD confirmed munitions-related items post storm dive
- Implications to RI Field Work
  - MD items found may indicate continuing source
  - Any ocean transects/grids planned to be mag/dig to eliminate need for reacquisition
  - Surface items present potential safety hazard

Rights of Entry (ROE) Status

Total Parcels	211
Parcels Acquired	86
Additional Anticipated parcels	35
Parcels Remaining to Acquire	88
Total ROEs by Owner	143
Total ROEs Received by Owner	46
Additional anticipated ROEs	16
ROEs remaining to Acquire by Owner	80

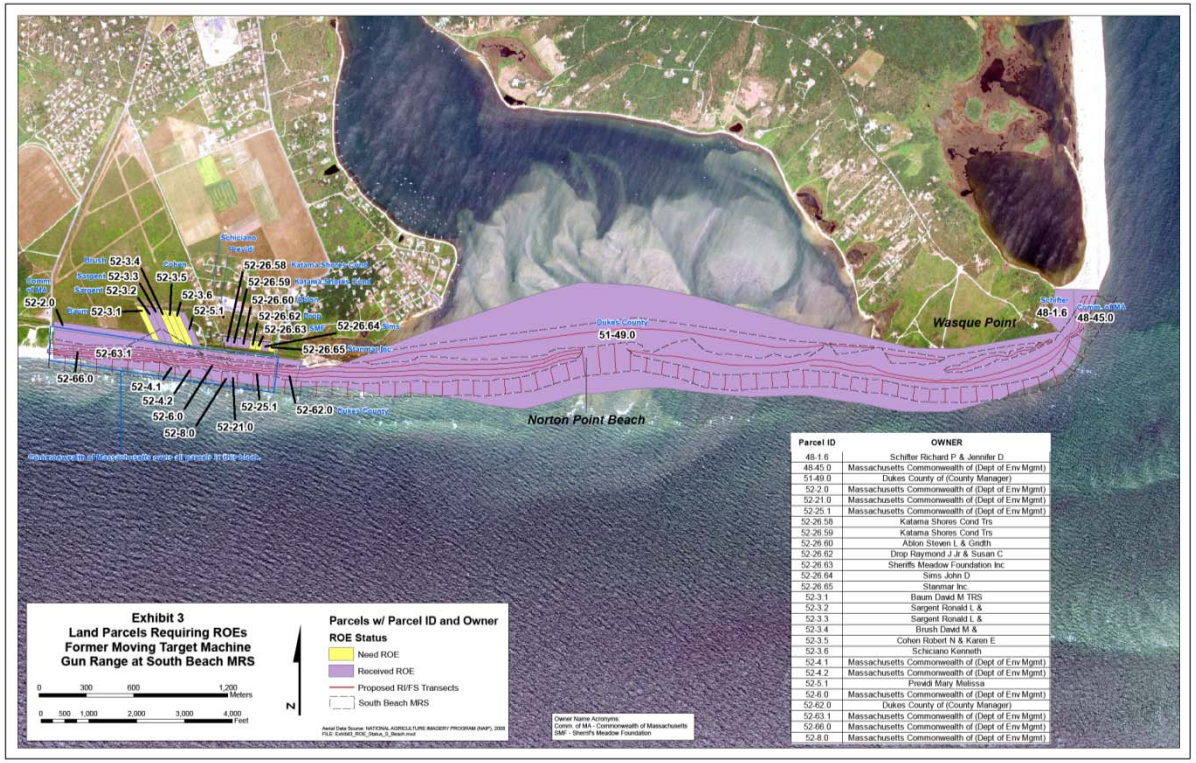
ROE's Remaining to Acquire

- Cape Poge
  - 5 parcels, 4 owners out of a total of 31 parcels with 12 owners



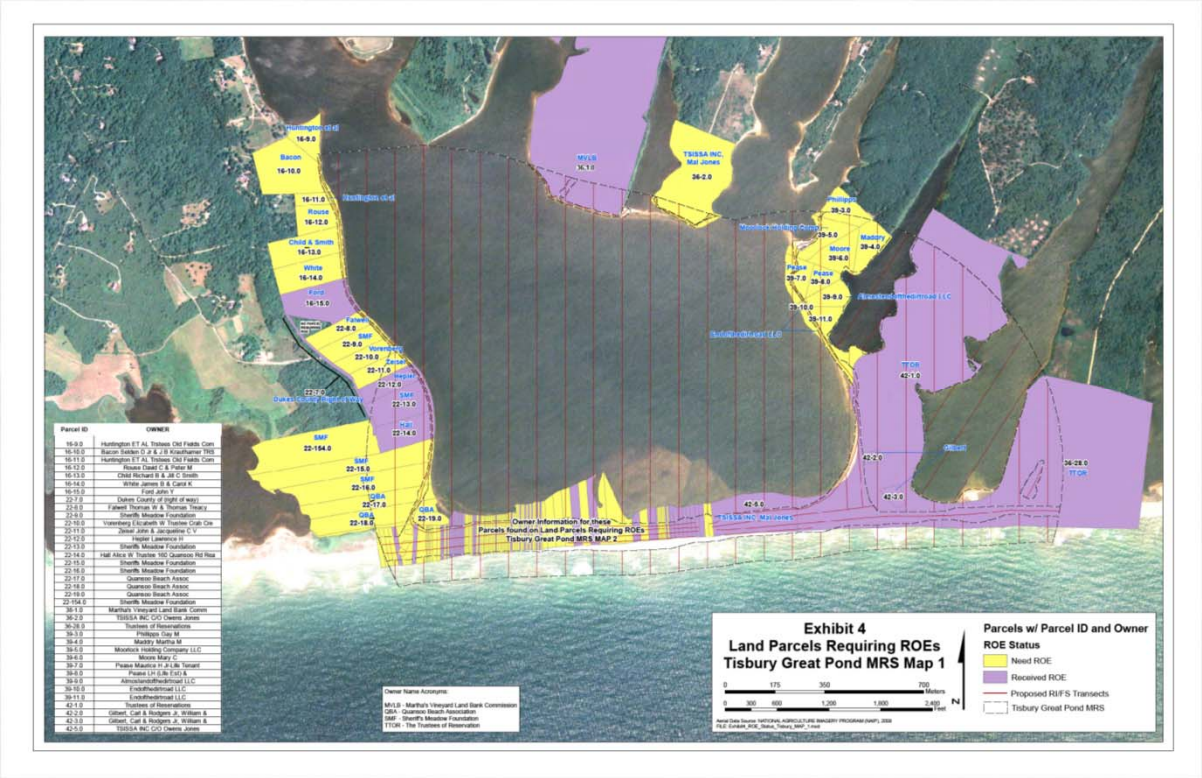
ROE's Remaining to Acquire

- South Beach:
  - 6 parcels, 6 owners out of a total of 31 parcels with 16 owners



ROE's Remaining to Acquire

- Tisbury Great Pond:
  - 77 parcels, 70 owners out of a total of 148 parcels with 115 owners



Right of Entry Contact Info

Currently negotiating: 10

Denied: 2

Left Message, need to recall: 45

Recently emailed: 4

No answer, locating: 9

Waiting on Quansoo Beach Association (QBA): 3

Part 2

RI Field Work Planned

Martha's Vineyard RI Field Work Overview

AMEC Earth & Environmental 10239 Technology Drive Knoxville, TN 37932	amec	N	US Army Corps of Engineers Omaha District	UXB International, Inc.	MRS Site Map Martha's Vineyard, Massachusetts
0 1 2 4 6 8 Kilometers 0 0.5 1 2 3 4 Miles			02/09/2010 REV: 03/05/2010	Figure 1 Drawn: JBO	DWG: figure_1_mv_mmrp_koff PROJ: 562910000

Investigation Areas at Each Site

- Land
  - Analog transects (magnetometer/all-metals detector), DGM grids
  - Anomaly Investigation in grids
  - MC Sampling (soil)
- Beach
  - DGM transects (EM61 Towed array) and DGM grids
  - Anomaly investigation in grids
- Inland Water (Intertidal Areas and Inland Ponds)
  - DGM transects (underwater EM61) and DGM grids
  - Underwater Anomaly Investigation in grids
  - MC Sampling (Sediment and Surface Water)
- Ocean
  - Analog transects (magnetometer)
  - Investigate all anomalies on each transect (dig)
  - Mag/Dig approach due to dynamic environment

BUILDING STRONG®

Munitions and Explosives of Concern (MEC) Approach

- Determine Nature and Extent of MEC
  - Perform Geophysical investigation to identify anomalies
    - MEC Recon Transects
    - Geophysical Grids
  - Perform intrusive investigation on anomalies in grids above threshold value to characterize the area
  - Continue Transport Study in ocean areas to understand movement of items on ocean floor
  - Use ESTCP and Transport Study data to further focus RI/FS efforts (extend ocean transects to ESTCP transect; mag/dig ocean transects)

MEC Approach (continued)

- Geophysical Investigation
- Geophysics Instrument Detection Depths
  - 11 times diameter of the metallic object
    - DGM – detects all metallic objects
    - Analog magnetometers – detects ferrous items only
  - Typical Detection Depths for Common Items
    - 3 pound practice bomb ~2 feet below ground/bottom
    - 3 ½ inch rocket ~3 feet below ground/bottom
    - 100 pound bomb or “cluster” of smaller items of equal mass ~ 6 feet below ground/bottom
- Actual depths may vary based on geology, orientation of anomaly, and anomaly density

MEC Approach (continued)

- Geophysical Investigation Continued
  - Geophysical Transects
    - Purpose – wide area assessment to determine extent of anomalies
      - Define areas by anomaly density for further investigation (grids)
      - Analog for ocean and land
      - Digital for inland water and beach
    - Area determined by
      - Historic munitions used at site
      - Known targets
      - Adequate spacing of transects to identify target areas
    - "Baseline" transects area reduced from initial plan to allow for discretionary placement of additional transects based on baseline results

BUILDING STRONG®

MEC Approach (continued)

- Geophysical Investigation Continued
  - Analog Geophysical Transects
    - Transects traversed using man-deployed, hand-held portable magnetometers/all metals detectors
    - Analog magnetometers sense anomalies in the earth's magnetic field, and report the proximity of the anomaly using an audible signal to the operator
    - Total anomaly counts are recorded as opposed to locations and densities of anomalies
    - Locations and lateral size of anomalies ARE preserved using non-metallic flagging, GPS recorded positioning, and field observation annotation
  - "Baseline" transect data will be used to determine placement of additional transects/grids

BUILDING STRONG®

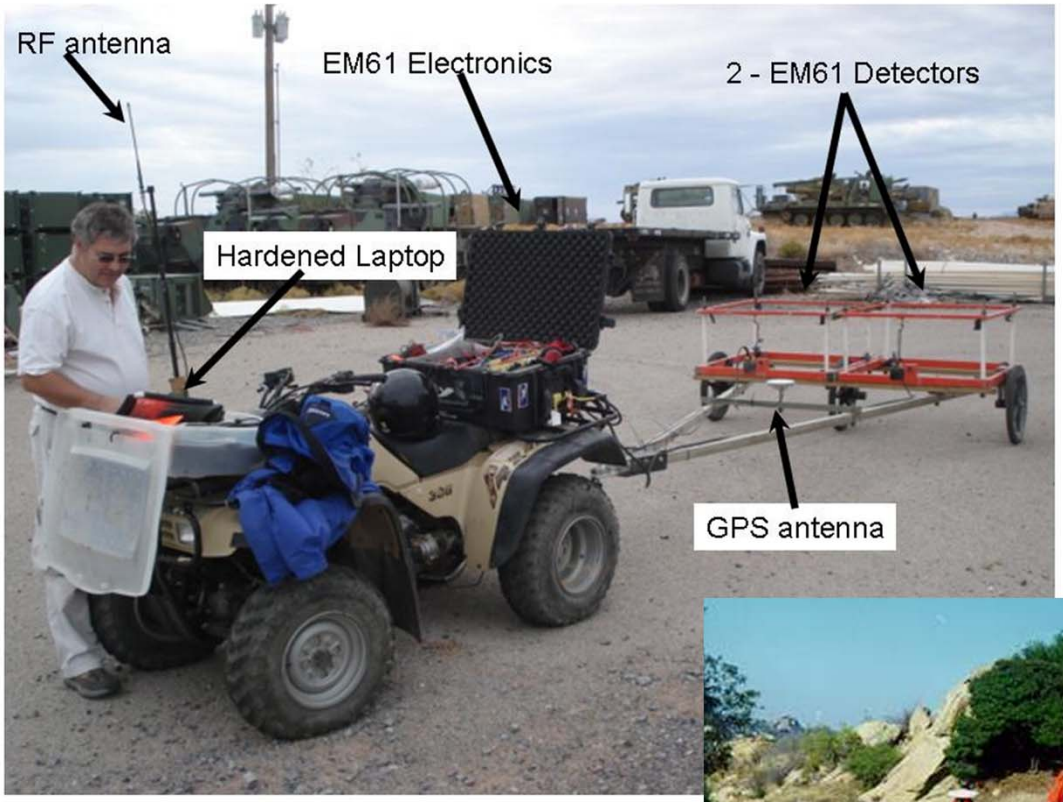
Analog Instrument

Underwater Analog Instrument

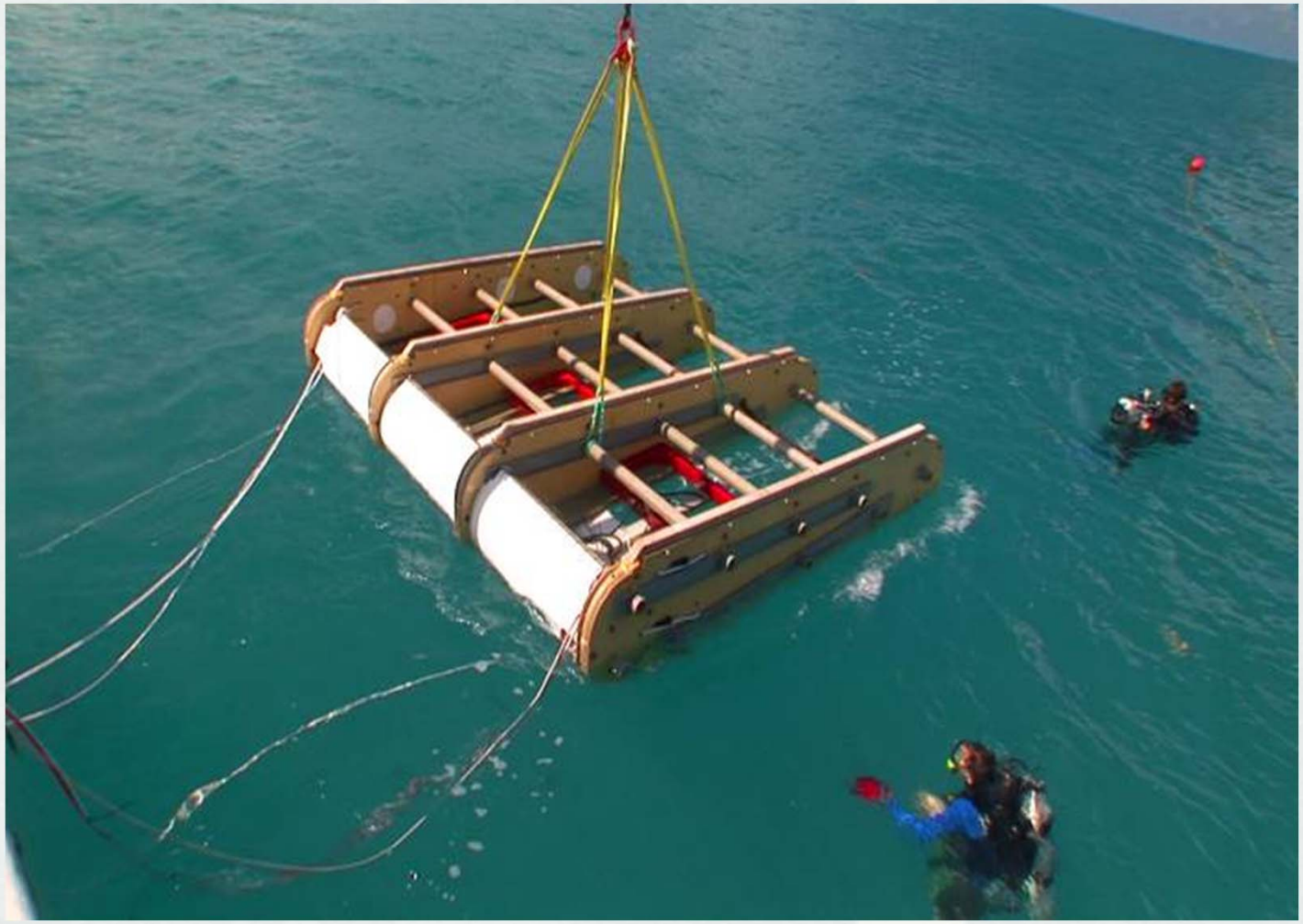
MEC Approach (continued)

- Geophysical Investigation Continued
  - Digital Geophysical Mapping (DGM)
    - Transects or grids are "mapped" using either man-deployed or All-Terrain Vehicle (ATV)-towed electromagnetic (EM) sensors
    - DGM senses and records anomalies in the earth's electromagnetic field, and
    - Electronic (Digital) recordings preserve, for later playback, the geospatial locations and intensities of those anomalies

Land-Based EM Sensor



Underwater EM Sled



MEC Approach (continued)

- Geophysical Investigation Continued
  - Geophysical Grids
    - Purpose – to determine “nature” of anomalies
      - Density and “signature” of anomalies in larger grids
      - Analog for ocean
      - Digital for inland water, land, and beach
    - Area determined by evaluation of transect data
    - Grids will be placed based on:
      - Anomalies data from analog and DGM transects
      - Historical information supported by analog and DGM transects

BUILDING STRONG®

MEC Approach (continued)

- Geophysical Investigation Continued
  - Geophysical Grids Continued
    - Placement Objectives include:
      - Confirming the location of the aerial bombing target(s)
      - Confirming the outer boundary of aerial bombing impact area
      - Characterizing the density and distribution of EM anomalies
      - Characterizing the nature of the items via intrusive investigation
    - Grid Investigation Outcome
      - Infer the distribution/density of MEC items based on anomaly densities/distributions

BUILDING STRONG®

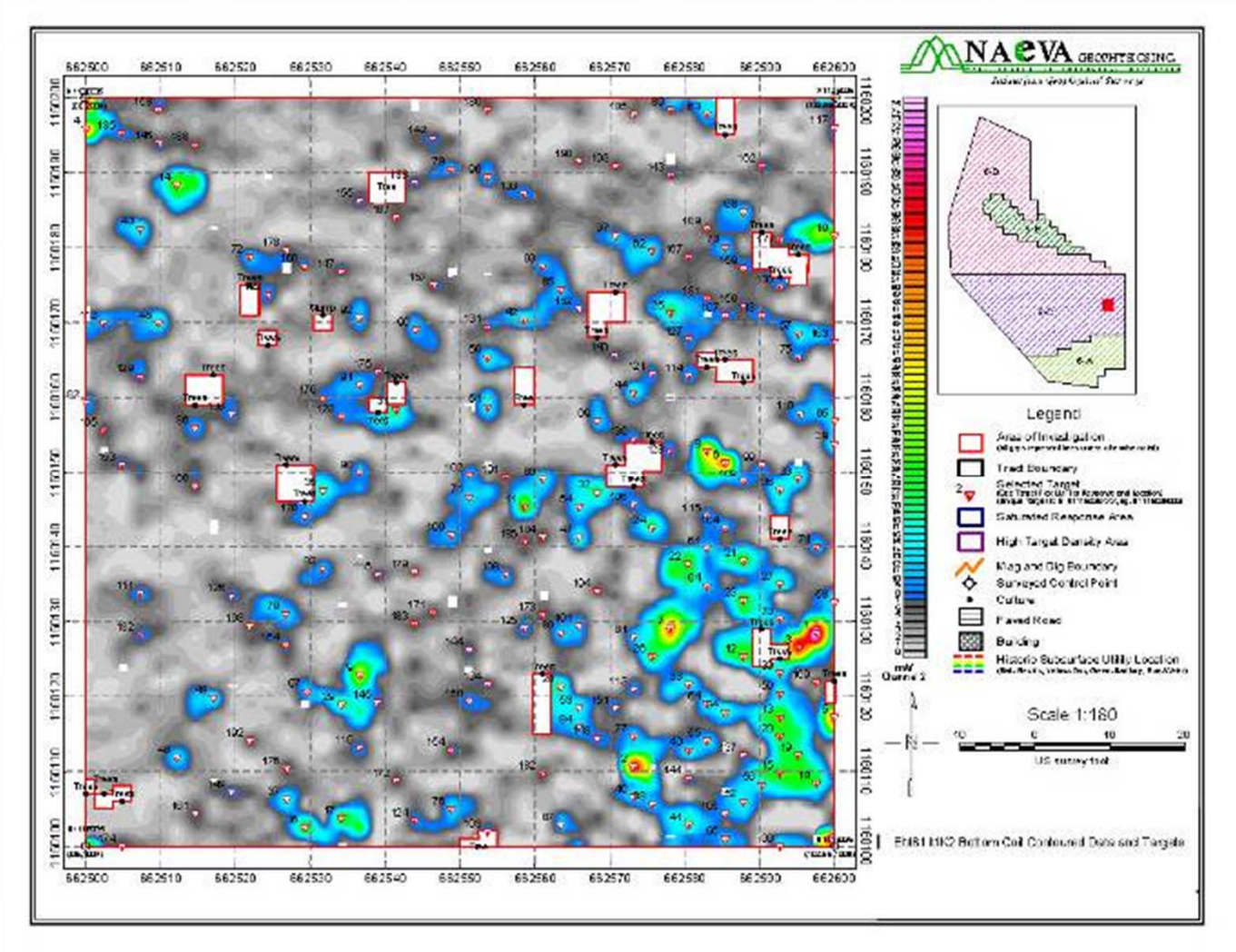
MEC Approach (continued)

- Intrusive Investigation
  - All anomalies in grids above threshold value will be investigated
  - Ocean transects to be mag/dig for all anomalies detected
  - Anomalies dug will be inspected/removed from the site
  - Data will provide confirmation of nature and extent
    - MEC type
    - MEC location in MRS
    - MEC density

MEC Approach (continued)

- Intrusive Investigation Continued
  - DGM Anomaly Selection Criteria/Prioritization – Referenced to Instrument Verification Strip (IVS)
    - Peak response
    - Time gate parameters
    - Anomaly spatial size
    - Geosoft UX-Detect software
  - Reference: EM 1110-01-4009, Section 8-6
  - DGM data will be used to develop “Dig Sheets” for anomalies to be investigated

Color-Metric Anomaly Map



BUILDING STRONG®

Munitions Constituent (MC) Approach

- Determine the Nature and Extent of MC by Sampling Potentially Affected Media
  - Collect soil, sediment and surface water samples from locations where MEC and MD is found during the RI or was previously found during other investigations
  - Collect background samples (soil, sediment, and surface water) from unimpacted areas to compare inorganic constituents
  - Collect soil samples at the locations of intentional detonations to determine if soils are impacted by RI activities

BUILDING STRONG®

MC Approach

- Soil, Sediment And Surface Water Samples Focused in Areas of Highest MEC/Munition Debris (MD) Densities
  - If MC is Detected Above Screening Values, Additional Samples May Be Collected To Better Delineate Extent
- Groundwater Samples will be Collected from Existing Public Supply Wells
  - If MC in Soil is Detected Above Applicable Screening Levels, Additional Groundwater Samples may be collected

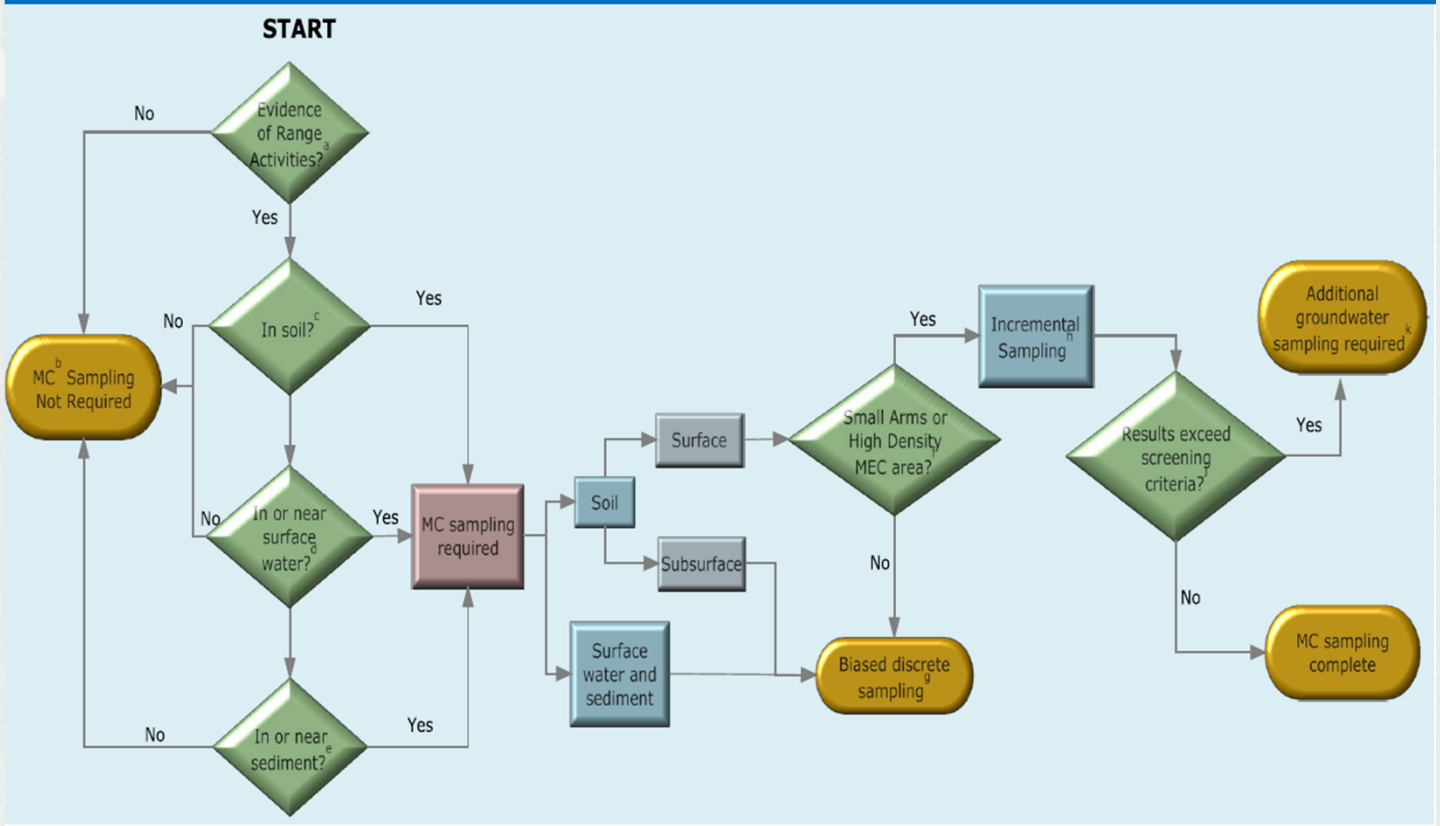
MC Approach

- MC Sample Analysis
  - Analyses at each MRS for discrete soil, surface water, and sediment samples
    - Metals – SW 6010B/6020
    - Explosives – SW 8330B
  - Analyses for incremental soil samples
    - Metals – SW 6010B/6020 on dry, sieved, pre-ground soil using Method SW 8330B prep method
    - Explosives – SW 8330B
  - Pre/Post detonation soil samples
    - Metals – SW 6010B/6020
    - Explosives – SW 8330B

BUILDING STRONG®

MC Approach

Exhibit 9
Remedial Investigation Munitions Constituents Sampling Logic
Former Cape Poge Little Neck Bomb Target MRS, Moving Target Machine Gun Range MRS, and Tisbury Great Pond MRS



MC Approach

- Sample locations and numbers collected will be determined after the geophysical and intrusive investigations.
- Background Samples per MRS
  - Surface Soil – 10 Discrete, 1 Incremental Sample
  - Subsurface Soil – 10 Samples
  - Sediment – 10 Samples
  - Surface Water – 10 Samples
  - Groundwater – 10 Samples (TBD if necessary)

MC Approach

- QA/QC Samples for the Following Media: Soil, Sediments, Surface Water and Groundwater
  - MS/MSD samples will be collected at a ratio of 1:20 or at least one per MRS (all media above)
  - Duplicate samples will be collected at a 1:10 ratio (all media above)
  - If required, QA samples will be collected at a 1:20 ratio and submitted to a QA lab (all media above)
  - Background MIS will be collected in triplicate (surface soil only)

MC Approach

- RI/FS Action Levels for Delineation Purposes
  - Background data
  - USEPA Regional Screening Level (RSL) Tables, May 2010
- Human Health and Ecological Risk Assessment

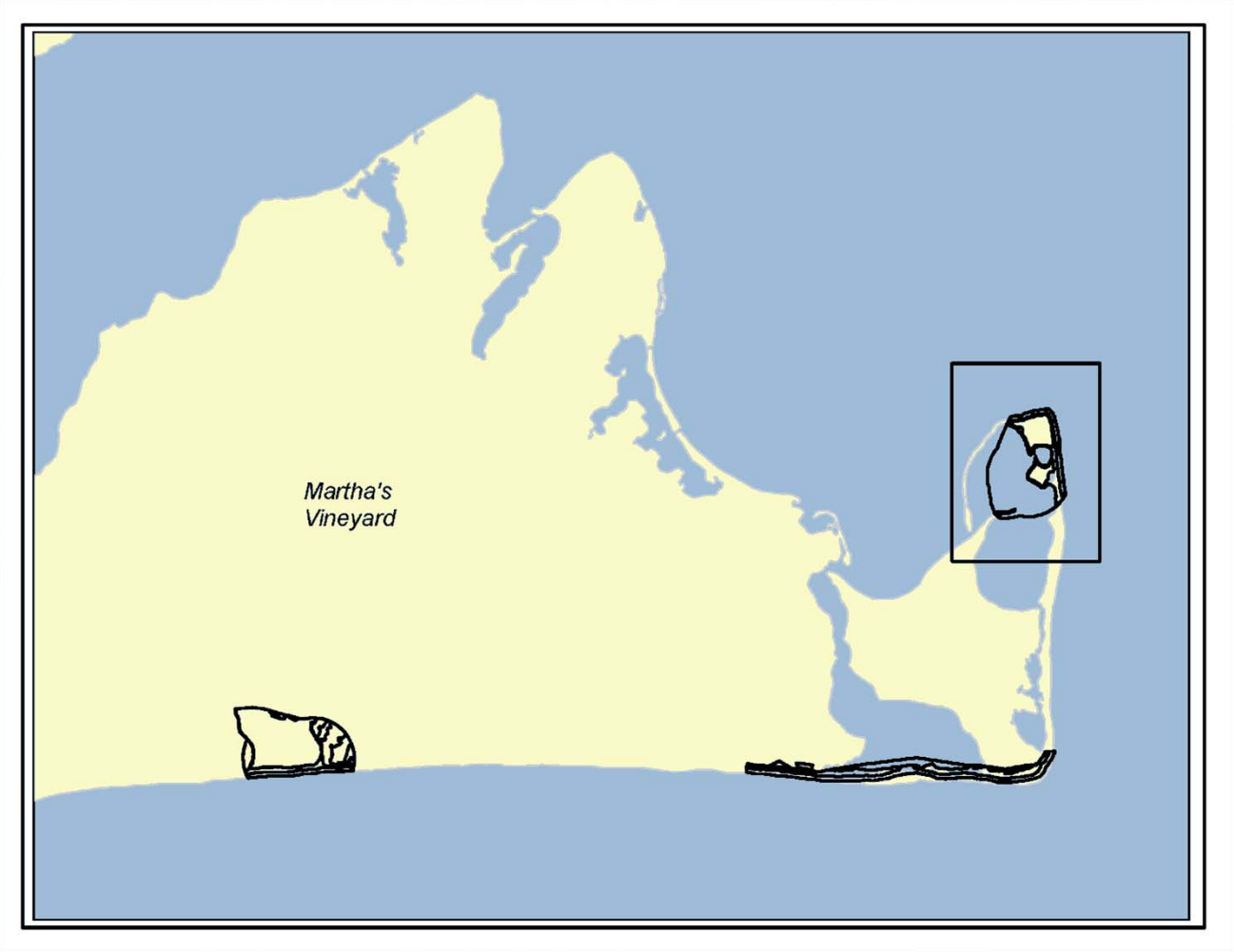
BUILDING STRONG®

Investigation Methods Summary

- Determine Nature and Extent of MEC
  - Geophysical Investigation
  - Intrusive Investigation
  - Transport Study
  - ESTCP WAA Demonstration
- Determine Nature and Extent of MC
  - Collect soil, sediment and surface water samples from locations where MEC and MD is found during the RI or was previously found during other investigations
  - Collect background samples (soil, sediment, and surface water) from unimpacted areas to compare inorganic constituents
  - Collect soil samples at the locations of intentional detonations to determine if soils are impacted by RI activities
  - Groundwater Samples will be Collected from Existing Public Supply Wells

BUILDING STRONG®

Former Cape Poge Little Neck Bomb Target Site MRS

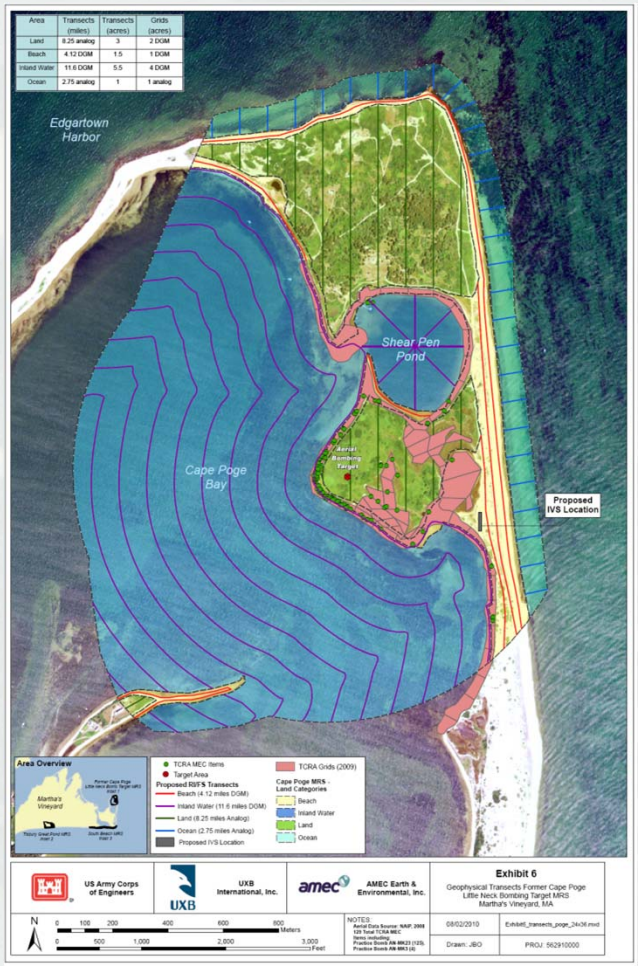


Former Cape Poge Little Neck Bomb Target Site MRS RI Proposed Transects/Grids

Area	Transects (miles)	Transects (acres)	Grids (acres)
Land	8.25 analog	3	2 DGM
Beach	4.12 DGM	1.5	1 DGM
Inland Water	11.6 DGM	5.5	4 DGM
Ocean	2.75 analog	1	1 analog

BUILDING STRONG®

Former Cape Poge Little Neck Bomb Target Site MRS RI Transect/Grid Approach



Area	Transects (miles)	Transects (acres)	Grids (acres)
Land	8.25 analog	3	2 DGM
Beach	4.12 DGM	1.5	1 DGM
Inland Water	11.6 DGM	5.5	4 DGM
Ocean	2.75 analog	1	1 analog

- Underwater Transects
  - ►Follow bathymetric contours in Cape Poge Bay
  - ►Radial pattern in Shear Pen Pond
  - ►Perpendicular to beach out minimum of 300 feet in ocean
- Land-Based Transects
  - ►Evenly Spaced
  - ►Bias toward known target area
- Grids – Placement Based on Transect Data Review

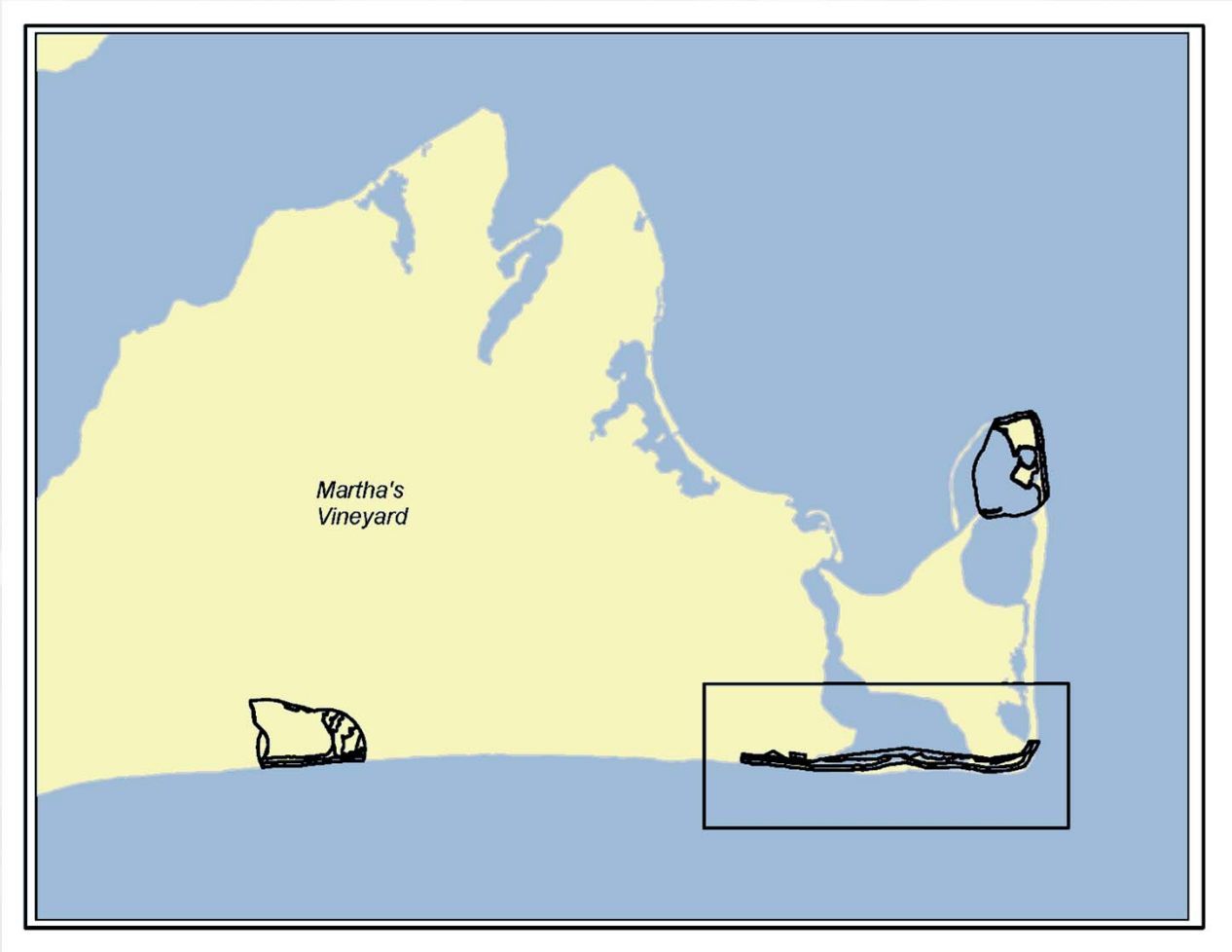
BUILDING STRONG®

Former MTMG Range at South Beach MRS RI Proposed Transects/Grids

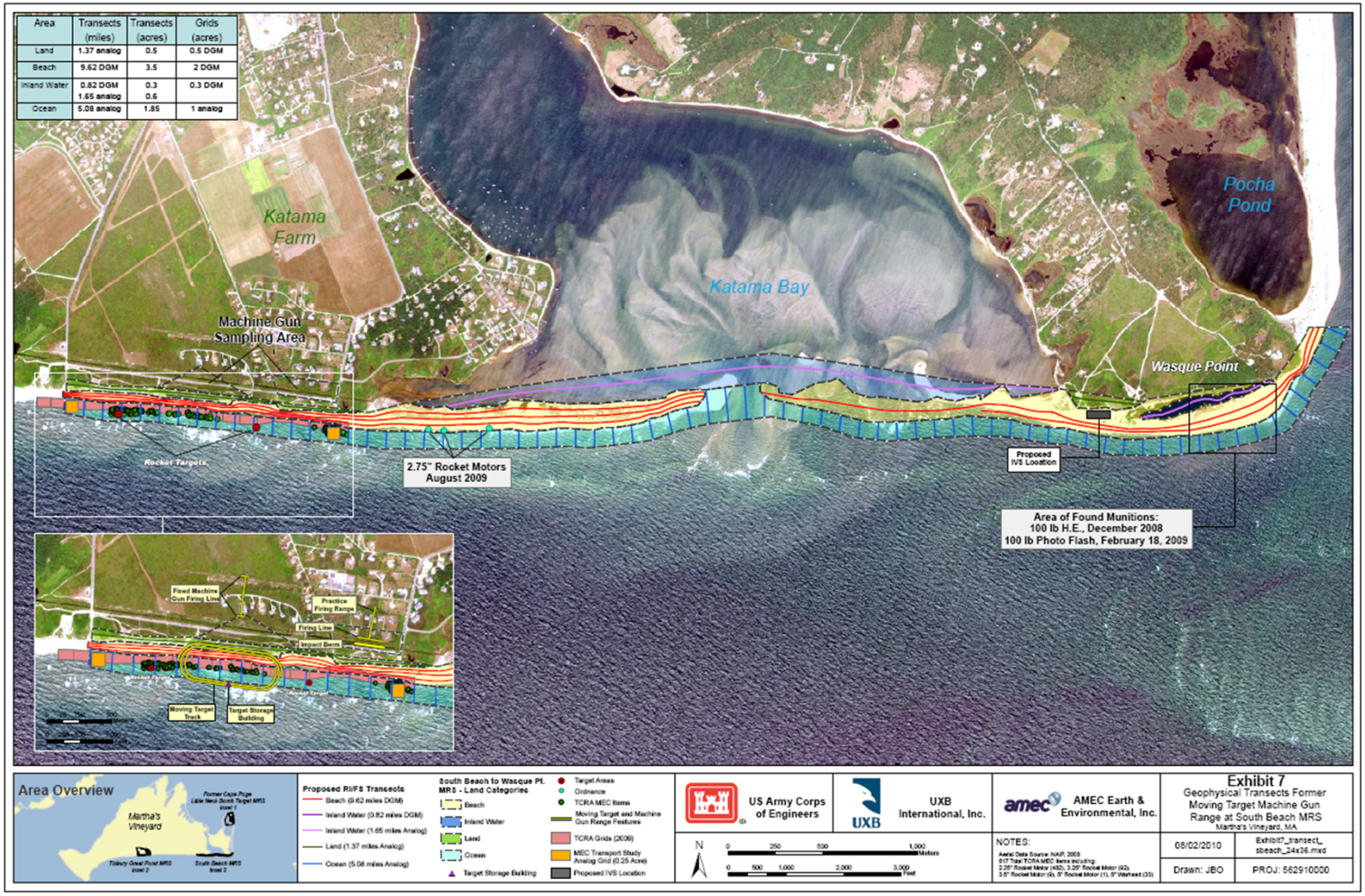
Area	Transects (miles)	Transects (acres)	Grids (acres)
Land	1.37 analog	0.5	0.5 DGM
Beach	9.62 DGM	3.5	2 DGM
Inland Water	0.82 DGM 1.65 analog	0.3 0.6	0.3 DGM
Ocean	5.08 analog	1.85	1 analog

BUILDING STRONG®

Former MTMG Range at South Beach MRS



Former MTMG Range at South Beach MRS Transect/Grid Approach



BUILDING STRONG®

South Beach Remedial Investigation Transect/Grid Approach

- Underwater Transects
  - Inland Water transect line parallel to beach in Katama Bay
  - Inland Water transect down the middle of the pond at Wasque Point
  - Perpendicular to beach out a minimum of 300 feet in ocean South Beach to Wasque Point (includes former Moving Target Machine Gun Range track)
  - May run transects parallel to beach near ESTCP survey area
- Land-Based Transects
  - Parallel to beach
  - Bias toward known target area
- Grids – Based on Transect Data Review

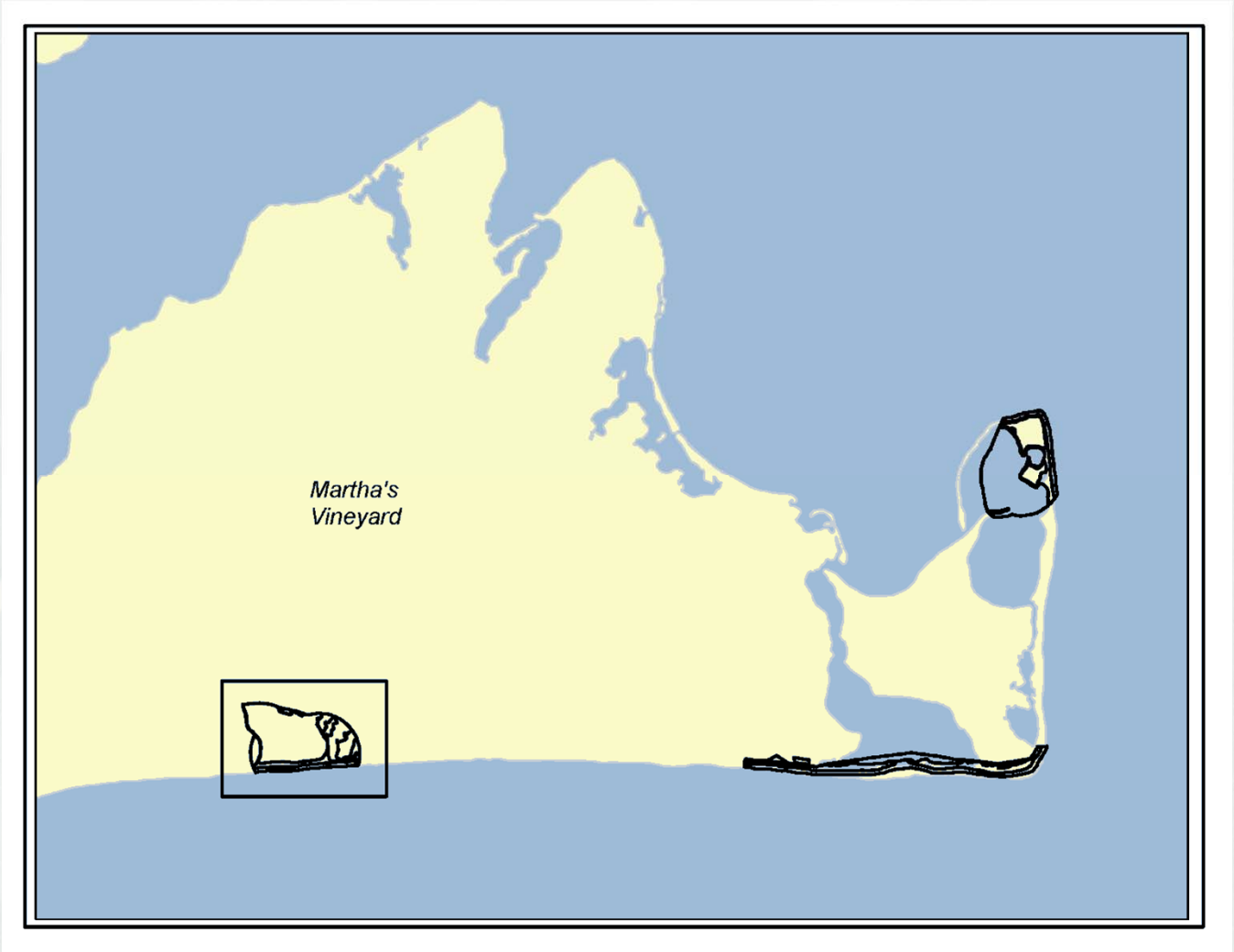
BUILDING STRONG®

South Beach Remedial Investigation MC Approach

- Greater Potential for MC
  - Potential for impacted soil at the Former Moving Target Machine Gun Range on the western side of the South Beach MRS
  - Explosive and propellant residues may be present in front of and behind the firing lines and around targets
- Focus MC Sampling
  - 4 historic firing lines and the northern portion of the former track identified on a 1943 military plan (remnants on land)
  - Decision Units will encompass the firing line and surrounding areas and the moving target area
- Groundwater samples may be collected if soil results indicate MC is detected above the screening criteria

BUILDING STRONG®

Tisbury Great Pond MRS



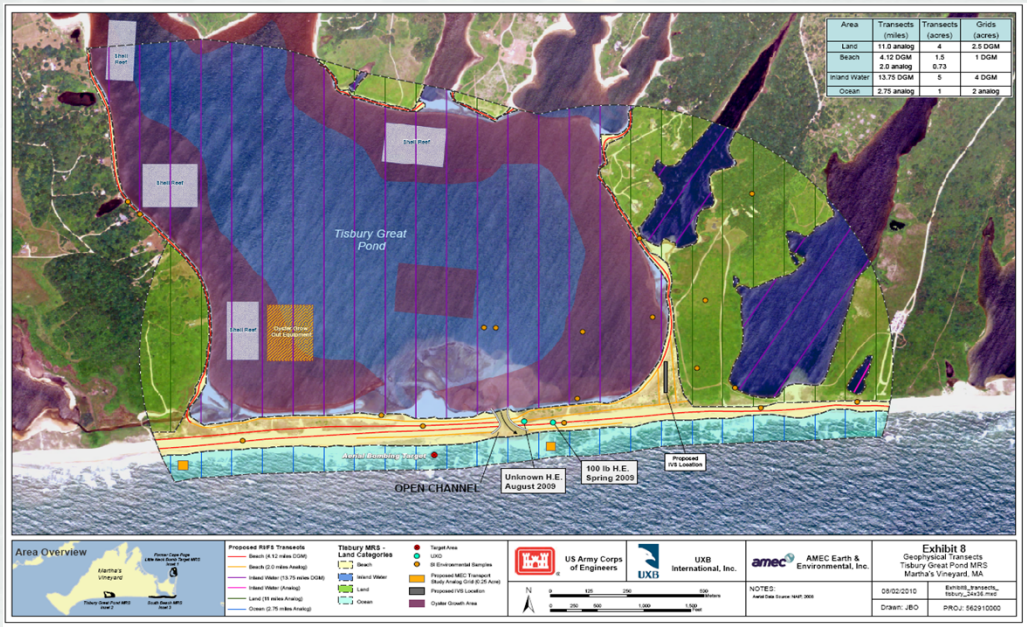
Tisbury Great Pond MRS RI Proposed Transects/Grids

Area	Transects (miles)	Transects (acres)	Grids (acres)
Land	11.0 analog	4	2.5 DGM
Beach	4.12 DGM 2.0 analog	1.5 0.73	1 DGM
Inland Water	13.75 DGM	5	4 DGM
Ocean	2.75 analog	1	2 analog

BUILDING STRONG®

Tisbury Great Pond MRS RI Transect Approach

- Underwater Transects
  - Follow prevailing wind direction in Tisbury Great Pond
  - Perpendicular to beach out minimum of 300 feet in ocean
- Land-Based Transects
  - Evenly Spaced
  - Add additional analog transects in beach dunes
  - Follow contours on beach for DGM transects



- Grids – Based on Transect Data Review

BUILDING STRONG®

Environmental Compliance

- Objective: Avoid, Minimize, and/or Mitigate impacts to natural resources, and sensitive populations and habitats as well as archaeological/cultural resources

- Dependent on Species, Season and Environment

Environmental Compliance

- Four Main areas at each MRS
  - Upland
  - Inland Water
  - Beach
  - Ocean

Environmental Compliance

- Natural Resources
  - State species of Special Concern
  - Threatened Species
  - Endangered Species

Environmental Compliance

- Four Types of Natural Resources of Concern
  - Birds
  - Reptiles
  - Insects
  - Plants
- Archaeological/cultural sites

Project Schedule

- Cape Poge
  - Ocean: May 2011-June 2011
  - Inland Water: November 2010 - June 2011
  - Land: Oct 2010 – Dec 2010
  - Beach Area: Oct 2010 – Dec2010

Task 4a Optional Ocean/Inland Water Area, Cape Poge		
Task	Start Date	End date
Civil Survey	Thu 5/12/11	Mon 5/16/11
Ocean Survey	Tue 5/17/11	Thu 6/2/11
Analog Transects	Tue 5/17/11	Thu 5/26/11
Transect Data Review	Fri 5/27/11	Fri 5/27/11
Analog Grids	Mon 5/30/11	Thu 6/2/11
Inland Water Survey	Thu 11/11/10	Thu 3/31/11
Geophysical Test Strip	Thu 11/11/10	Fri 11/12/10
DGM Transects	Mon 11/15/10	Fri 12/3/10
Transect Data Review	Mon 12/6/10	Mon 12/6/10
DGM Grids	Tue 12/7/10	Thu 3/31/11
Intrusive Investigation	Fri 12/10/10	Fri 4/8/11
Prepare Dig Sheets	Fri 12/10/10	Tue 4/5/11
Reacquire/Dig Anomalies	Mon 12/13/10	Wed 4/6/11
MEC Disposal	Thu 4/7/11	Thu 4/7/11
MPPEH/MD Disposal	Fri 4/8/11	Fri 4/8/11
QA/QC	Tue 5/17/11	Fri 7/8/11
Task 4a Complete	Thu 6/2/11	Thu 6/2/11
Task 4b Optional Former Cape Poge Bomb Site Land/Beach Area		
Civil Survey	Fri 12/10/10	Tue 12/14/10
Clearing	Tue 11/2/10	Wed 11/10/10
Geophysical Test Strip	Wed 10/27/10	Wed 10/27/10
Land Area	Wed 10/27/10	Thu 12/9/10
Site Recon/Analog Transects	Wed 10/27/10	Mon 11/1/10
Transect Data Review	Tue 11/2/10	Tue 11/2/10
DGM Grids	Thu 12/2/10	Thu 12/9/10
Beach Area	Thu 10/28/10	Wed 11/10/10
Site Recon/Digital Transects	Thu 10/28/10	Thu 10/28/10
Transect Data Review	Fri 10/29/10	Mon 11/1/10
DGM Grids	Mon 11/8/10	Wed 11/10/10
Intrusive Investigation	Tue 12/7/10	Thu 12/23/10
Prepare Dig Sheets	Tue 12/7/10	Mon 12/20/10
Reacquire/Dig Anomalies	Wed 12/8/10	Tue 12/21/10
MEC Disposal	Wed 12/22/10	Wed 12/22/10
MPPEH/MD Disposal	Thu 12/23/10	Thu 12/23/10
QA/QC	Wed 10/27/10	Wed 12/15/10
Task 4b Complete	Thu 12/23/10	Thu 12/23/10

BUILDING STRONG®

Project Schedule

- South Beach
  - Ocean: June 2010-June 2011
  - Inland Water: Oct 2010 - May 2011
  - Land: Nov 2010 – Dec 2010
  - Beach Area: Nov 2010 – Dec 2010

Task 4c Optional Ocean/Inland Water Area, South Beach		
Task	Start Date	End date
Civil Survey	Mon 5/2/11	Thu 5/5/11
Ocean Survey	Mon 6/14/10	Mon 6/6/11
Analog Transects	Mon 4/4/11	Wed 5/4/11
Transect Data Review	Thu 5/5/11	Thu 5/5/11
Analog Grids	Fri 5/6/11	Wed 5/11/11
MEC Transport Study Analog Grid	Mon 6/14/10	Mon 6/6/11
Delineate Grid	Mon 6/14/10	Thu 6/17/10
Seed Grid	Fri 6/18/10	Wed 6/23/10
Monitor Grid	Thu 6/24/10	Wed 6/1/11
Recover Seeded Items	Thu 6/2/11	Mon 6/6/11
Inland Water Survey	Tue 10/26/10	Thu 11/4/10
Geophysical Test Strip	Tue 10/26/10	Tue 10/26/10
DGM Transects	Wed 10/27/10	Fri 10/29/10
Transect Data Review	Mon 11/1/10	Mon 11/1/10
DGM Grids	Tue 11/2/10	Thu 11/4/10
Intrusive Investigation	Fri 11/5/10	Fri 11/12/10
Prepare Dig Sheets	Fri 11/5/10	Tue 11/9/10
Reacquire/Dig Anomalies	Mon 11/8/10	Wed 11/10/10
MEC Disposal	Thu 11/11/10	Thu 11/11/10
MPPEH/MD Disposal	Fri 11/12/10	Fri 11/12/10
QA/QC	Mon 4/4/11	Tue 5/3/11
Task 4c Complete	Wed 5/11/11	Wed 5/11/11
Task 4d Optional South Beach Site Land/Beach Area		
Civil Survey	Tue 12/14/10	Wed 12/15/10
Clearing	Fri 11/5/10	Mon 11/8/10
Geophysical Test Strip	Wed 11/3/10	Wed 11/3/10
Land Area	Tue 11/2/10	Mon 12/13/10
Site Recon/Analog Transects	Tue 11/2/10	Thu 11/4/10
Transect Data Review	Fri 11/5/10	Fri 11/5/10
DGM Grids	Fri 12/10/10	Mon 12/13/10
Beach Area	Thu 11/4/10	Fri 11/19/10
Site Recon/Digital Transects	Thu 11/4/10	Fri 11/5/10
Transect Data Review	Mon 11/8/10	Tue 11/9/10
DGM Grids	Thu 11/11/10	Fri 11/19/10
Intrusive Investigation	Wed 12/15/10	Thu 12/23/10
Prepare Dig Sheets	Wed 12/15/10	Wed 12/22/10
Reacquire/Dig Anomalies	Thu 12/16/10	Thu 12/23/10
MEC Disposal	Thu 12/23/10	Thu 12/23/10
MPPEH/MD Disposal	Thu 12/23/10	Thu 12/23/10
QA/QC	Tue 11/2/10	Mon 12/13/10
Task 4d Complete	Thu 12/23/10	Thu 12/23/10

BUILDING STRONG®

Project Schedule

- Tisbury Great Pond
  - Ocean: April 2011-May 2011
  - Inland Water: April 2011-May 2011
  - Land: Nov 2010 – Dec 2010
  - Beach Area: Oct 2010 – Dec 2010

Task 4e Optional Ocean Area Tisbury Great Pond		
Task	Start Date	End date
Civil Survey	Mon 4/4/11	Thu 4/7/11
Ocean Survey	Fri 4/8/11	Mon 5/2/11
Analog Transects	Fri 4/8/11	Tue 4/19/11
Transect Data Review	Wed 4/20/11	Wed 4/20/11
Analog Grids	Thu 4/21/11	Mon 5/2/11
QA/QC	Fri 4/8/11	Fri 4/29/11
Task 4e Complete	Fri 4/29/11	Fri 4/29/11
Task 4f Optional Pond Area of Tisbury Great Pond		
Civil Survey	Thu 4/7/11	Tue 4/12/11
Pond Survey	Wed 4/13/11	Thu 5/5/11
Geophysical Test Strip	Wed 4/13/11	Wed 4/13/11
DGM Transects	Thu 4/14/11	Wed 4/20/11
Transect Data Review	Thu 4/21/11	Thu 4/21/11
DGM Grids	Fri 4/22/11	Thu 5/5/11
Intrusive Investigation	Wed 4/27/11	Fri 5/20/11
Prepare Dig Sheets	Wed 4/27/11	Tue 5/17/11
Reacquire/Dig Anomalies	Thu 4/28/11	Wed 5/18/11
MEC Disposal	Thu 5/19/11	Thu 5/19/11
MPPEH/MD Disposal	Fri 5/20/11	Fri 5/20/11
QA/QC	Wed 4/13/11	Wed 5/18/11
Task 4f Complete	Fri 5/20/11	Fri 5/20/11
Task 4g Optional Tisbury Great Pond Land/Beach		
Civil Survey	Thu 12/16/10	Tue 12/21/10
Clearing	Tue 11/16/10	Fri 11/19/10
Geophysical Test Stip	Mon 10/25/10	Mon 10/25/10
Land Area	Fri 11/5/10	Wed 12/1/10
Site Recon/Analog Transects	Fri 11/5/10	Mon 11/15/10
Transect Data Review	Tue 11/16/10	Tue 11/16/10
DGM Grids	Mon 11/22/10	Wed 12/1/10
Beach Area	Tue 10/26/10	Tue 11/2/10
Site Recon/Digital Transects	Tue 10/26/10	Tue 10/26/10
Transect Data Review	Wed 10/27/10	Thu 10/28/10
DGM Grids	Fri 10/29/10	Tue 11/2/10
Intrusive Investigation	Thu 11/25/10	Mon 12/20/10
Prepare Dig Sheets	Thu 11/25/10	Wed 12/15/10
Reacquire/Dig Anomalies	Fri 11/26/10	Thu 12/16/10
MEC Disposal	Fri 12/17/10	Fri 12/17/10
MPPEH/MD Disposal	Mon 12/20/10	Mon 12/20/10
QA/QC	Fri 11/5/10	Thu 12/23/10
Task 4g Complete	Mon 12/20/10	Mon 12/20/10

BUILDING STRONG®

Questions/Discussion

- Contact Information
  - Carol Ann Charette (978) 318-8605
  - Ralph Campbell (256) 895-1621
  - Mike Warminsky (908) 237-4592