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NWIRP CALVERTON
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MEMORANDUM AND MEETING MINUTES REGARDING RESTORATION ADVISORY BOARD
(RAB) MEETING HELD 6 NOVEMBER 2014 AT CALVERTON COMMUNITY CENTER NWIRP
CALVERTON NY
11/6/2014
RESOLUTION CONSULTANTS

March 13, 2014

Contract N62470-11-D-8013
Contract Task Order No. WE-07

MEMORANDUM

Re: Meeting Notification, Restoration Advisory Board (RAB) for Naval Industrial Weapons Reserve Plant Calverton, NY

To: The Members of the RAB

The Navy would like to announce that a RAB meeting has been scheduled for Thursday, April 2, 2015. This meeting is open to the general public and will begin at 7:00 PM. The location of the meeting is the Calverton Community Center, Grumman Boulevard, Calverton, New York.

Additionally, attached for your review are the minutes of the RAB meeting held on November 6, 2014. The Navy requests that you review these minutes and provide any comments that you may have to the Remedial Project Manager, Mr. James Tarr. These minutes will be discussed and approved at the April 2, 2015 RAB meeting.

Any questions regarding this correspondence should be directed to Mr. James Tarr, CPG at (757) 322-4223 or email, james.tarr@navy.mil.

Sincerely,



Robert Forstner, PE
Project Manager

**RESTORATION ADVISORY BOARD MEETING
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT (NWIRP), CALVERTON
CALVERTON COMMUNITY CENTER, CALVERTON, NEW YORK
THURSDAY, NOVEMBER 6, 2014**

The forty-first meeting of the Restoration Advisory Board (RAB) was held at the Calverton Community Center. Meeting attendees included representatives from the Navy (James Tarr and Jennifer Wright), New York State Department of Environmental Conservation (NYSDEC) (Henry Wilkie), Suffolk County Department of Health Services (Andrew Rapiejko), RAB Community Members (Lou Cork, Bill Gunther), Wading River Civic Association (Sid Bail), Arcadis (Paul Martorano), Resolution Consultants (Robert Forstner, Michael Zobel), Tetra Tech (David Brayack), and H&S Environmental (Jennifer Good, Al Taormina). The sign-in sheet is included as Attachment 1.

WELCOME AND AGENDA REVIEW

The Navy representative, Mr. James Tarr, welcomed everyone to the RAB meeting and introduced the meeting agenda. The agenda for the meeting is included as Attachment 2. The Navy presentations are included in Attachment 3.

DISTRIBUTION AND APPROVAL OF MINUTES

Mr. Tarr asked whether the RAB members received the RAB meeting minutes from the November 2013 meeting (which were distributed in March 2014 but not previously reviewed due to a lack of a quorum of RAB members at the April 2014 meeting) and the May 2014 meeting (distributed in October 2014), and if there were questions or comments on the minutes. No questions or comments were raised, and the minutes for the November 2013 and April 2014 RAB meetings were approved.

COMMUNITY UPDATE

Mr. Bill Gunther began the Community Update by referring attendees' attention to a story published earlier in the week in Newsday (a Long Island general circulation newspaper) entitled "Water Worries," and noted that with changes in project team members both at the Navy and their consultants, it was critical that the importance of protecting Long Island's water supply not be underestimated.

Mr. Gunther then introduced Mr. Sid Bail, who noted that the site is important to the Town of Riverhead's development, and local residents are waiting with great interest to see what future development might occur. Mr. Tarr agreed that the site is resource of great value, and that he's excited about what's happening regarding cleanup of the site and what that may lead to, but that redevelopment of the remaining Navy sites is something that will still go through the formal process of cleanup and transfer to the Town.

TECHNICAL PROGRESS – GENERAL OVERVIEW OF INSTALLATION RESTORATION SITES AND SITE 2 GEOPHYSICAL INVESTIGATION UPDATE

Mr. Tarr then introduced the technical portion of the meeting, which will consist of presentations on the current activities at Sites 2, 6A/10, 7 and the Southern Area.

Regarding Site 2, Mr. Tarr first provided an overall timeline of the history of recent munitions response work at the site, beginning with the discovery of 20-mm ammunition fragments during a soil investigation in 2010 and subsequent geophysical mapping conducted in 2010 and 2013, and removal actions from 2011 through 2012 and in 2014.

The most recent response action occurred between April and October 2014, and included munitions and environmental remedial activities. The munitions response operation used manual and mechanical screening to process approximately 4,100 cubic yards (CY) of soil in 4 areas to depths of as much as 6 feet below ground surface. A total of 689 items classified as Material Designated as Safe (MDAS) were recovered and destroyed, 323 items of Material Potentially Presenting an Explosive Hazard (MPPEH) were destroyed in a demolition event, and 65,620 pounds of metal was recovered and recycled.

The environmental remedial actions included the screening of the 4,100 CY of excavated material for site contaminants of concern (COCs); approximately 2,300 CY of this material was approved for reuse and placed as backfill across the site, and the remainder was disposed of offsite. During excavation, 17 intact or partially intact drums and about 110 drum carcasses were recovered, characterized and transported offsite. Field work for this phase of the work was completed in August 2014, and the close-out process was underway, with a construction completion report expected in November 2014. Further excavation of recently-delineated additional MEC areas was scheduled for spring 2015.

Discussion of the content of the Site 2 occurred throughout the presentation. Mr. Gunther asked if there was any information known as to the age and contents of the drums; Mr. Tarr indicated that labelling of the drums was sporadic, and that in many cases the actual contents were not known. Mr. Andrew Rapijko inquired as to whether any drums known to contain chlorinated solvents were identified; Mr. Tarr indicated that one drum may have contained Freon, but that the contractor (AGVIQ) felt most of the drums contained paint sludge. Confirmation sampling was conducted at drum locations; AGVIQ feels that they were able to dig to “clean” material prior to backfill and remove any remaining sources in their work area. Mr. Rapijko asked for clarification on why contaminated soil required offsite disposal; Mr. David Brayack (Tetra Tech) indicated that this information would be provided in a forthcoming completion report.

Regarding an inquiry from Mr. Gunther about future uses for Site 2, Mr. Tarr indicated that land use controls (LUCs), capping and preservation of the site as “green” space was a likely outcome. Mr. Brayack elaborated, indicating that the purpose of any proposed cap would primarily be isolation of the MEC, since the site will likely never be able to be remediated to a point at which it can be certified as clear of

MEC. Mr. Gunther inquired as to the schedule for the spring 2015 work; Mr. Tarr estimated a March to June 2015 duration.

TECHNICAL PROGRESS – FENCE-LINE TREATMENT SYSTEM UPDATE

Ms. Jen Good (H&S Environmental) provided an update on the operation of the Fence-Line Treatment System (FLTS). The presentation is included in Attachment 3. The FLTS was constructed pursuant to a Record of Decision (ROD) for Site 6A/10B that was completed in May 2012. The selected remedy calls for LUCs and a system to extract, treat and infiltrate groundwater in order to achieve the remedial goal of containing the spread of a plume of volatile organic compounds (VOCs) leaving the site in groundwater.

The FLTS system employs two extraction wells, air stripping equipment, and two infiltration galleries in order to control the VOC plume. Construction started in October 2012 and was completed in October 2013, and system start-up occurred on October 8, 2013.

Operating statistics and sampling data were then presented, covering a 13-month period from system startup through October 2014. System uptime and flow rates were lower in the first four months due to issues associated with system startup, but since February 2014 uptime typically exceeded 85 percent, average influent flowrates exceeded 78 gallons per minute, and in excess of 3 million gallons of water was treated monthly. September 2014 was the primary anomaly, with an uptime of only 57 percent and just under 2 million gallons treated.

Influent contaminant concentration trends were then presented. Generally, a downward trend has been observed since the system began operation. A spike in August 2014 was noted, but Ms. Good indicated this appeared to be erroneous data that would be reevaluated. Based on the influent data, it is estimated that the system is removing between 2 and 4 pounds of VOCs on a monthly basis, and the cumulative removal through October 2014 was estimated at 36.44 pounds.

Some specific, recent operational activities were then presented. These included adjustments to system operations, maintenance and upgrade activities, and a summary of common alarm conditions (e.g., loss of power and communications, high water levels due to rain, etc.). It was also noted that hydraulic testing was recently completed, and data will be used to refine capture zone assessments.

Mr. Gunther inquired as to the nature of these tests; Mr. Brayack responded, indicating that they were pumping tests designed to evaluate groundwater response to the system, which will allow for refinement of the estimated capture zone. Mr. Gunther also inquired about the influent concentrations, and asked whether the system was capable of treating the observed concentrations. Mr. Brayack responded, indicating that the design expectation was that the influent would be at about 50 micrograms per liter (µg/L) of VOCs under normal conditions, but that it will take several months for steady state conditions to develop; as of October 2014 the influent was approaching the expected concentration of 50 µg/L.

TECHNICAL PROGRESS –SITE 7 REMEDIAL ACTION UPDATE

Ms. Good and Mr. Brayack provided an update on the status of the air sparging / soil-vapor extraction (AS/SVE) system at Site 7 (the former Fuel Depot). The presentation is included in Attachment 3. A summary of the site history was provided first, noting that the AS/SVE system started operation on a pilot scale in 2005 and at full scale in 2006, and was operated seasonally (April to December) through November 5, 2013. Modifications have been made over time to improve performance, but the system is near the end of its functional life, with a major blower overhaul required to continue operation.

A summary of the historic tank areas, the layout of injection, monitoring and extraction wells, and system performance was then shown, including a figure depicting the extent of the contaminant plume shrinking over time. Routine sampling activities conducted since system shutdown (including quarterly sampling of seven wells) were then summarized, and contaminant trends were shown. It was noted that groundwater sampling will continue through 2015, and that data will continue to be evaluated and that pre-design activities in support of enhanced treatment (particularly in the vicinity of location SV2) will be considered.

Mr. Gunther asked inquired as to what enhanced treatment may consist of; Mr. Brayack responded, indicating that perhaps a scaled-back air injection system is a possibility, but that other options like peroxide or other forms of in-situ chemical oxidation (ISCO) may be appropriate. Mr. Gunther asked if restarting the existing system was being considered; Mr. Brayack noted that the blowers don't work. Mr. Tarr elaborated, indicating that the likely path forward would be to decommission the existing system and continue treatment with another option better suited to the scale of the remaining contamination. Potential options will likely be considered during calendar year 2015. Mr. Rapiejko asked if excavation was a potential remedial measure; Mr. Brayack noted that the contaminated soil is approximately 17 feet below grade, so while excavation may be an option, other approaches may be preferable.

TECHNICAL PROGRESS – 2014 PECONIC RIVER DATA SUMMARY

Mr. Robert Forstner (Resolution Consultants) provided an update on analytical data from the spring 2014 sampling event in the Peconic River. The presentation is included in Attachment 3. A summary of the overall monitoring program for the entire site was presented first. In whole, the annual sampling program includes groundwater sampling at 73 locations across Site 2, Site 6A and the Southern Area (including four locations in the Peconic River), surface water and sediment sampling at four locations in the Peconic River, and a round of synoptic water level gauging that utilizes 105 wells and piezometers and seven staff gauges. The entire program was conducted in September 2014; in addition, the in-river piezometers and Peconic River surface water and sediments were also sampled in May 2014.

The May 2014 Peconic River data was validated, and was the subject of the following slides. Generally, May 2014 sediment data was consistent with prior results in that chemicals of concern (COCs) were not routinely detected. Notable detections include 1,1-dichloroethene (DCE) above guidance values at SA-

SD124; 1,1-dichloroethane (DCA) and chloroethane were also detected at this location, but not above guidance values. Carbon disulfide was also detected above guidance values at SA-SD204.

The May 2014 surface water data was similarly consistent with historic data, in that COCs were generally not detected or found at levels consistent with prior intermittent detections. DCA, which was detected at SA-SW124, was the only COC detected in surface water in May 2014.

Multiple COCs were detected in two of the May 2014 samples from the Peconic River piezometers, but all were below cleanup levels specified in the Operable Unit 3 (OU3) Remedial Design. Specifically, 1,1,1-trichloroethane, DCA, DCE and 1,2,4-trichlorobenzene were detected at SA-PZ124 (at levels consistent with May 2013 and September 2013 detections at this location), and DCA, DCE and 1,2,4-trichlorobenzene were detected at SA-PZ147 (consistent with levels detected in May 2013 at this location). No COCs were detected at SA-PZ125 and SA-PZ148 in May 2014.

TECHNICAL PROGRESS – OPERABLE UNIT 3 REMEDIAL DESIGN

Mr. Brayack presented a summary of the Remedial Design document for OU3. The presentation is included in Attachment 3. The presentation began with a summary of historic milestones related to OU3, including a Record of Decision (ROD) completed in May 2012, the startup of the FLTS in October 2013, the completion of the OU3 Remedial Design in August 2014, the installation of off-property monitoring wells in September 2014, and the completion of pump tests at the FLTS in October 2014.

Groundwater clean-up levels specified in the Remedial Design were then summarized. It was noted that these levels were the same as those specified in the ROD, and are equivalent to the New York State Department of Health groundwater standards for public drinking water systems.

Remedies at the various areas within OU3 were then summarized; these include:

- For Site 6A, LUCs and monitoring, with an option to use air sparging to address residual contamination; and
- For the Fence-line Area, LUCs, monitoring and the installation of the FLTS; and
- For the Offsite High- and Low-Concentration Areas, LUCs and monitoring, with a contingency for in-situ biodegradation; and
- For the Peconic River Area, LUCs and monitoring with a contingency for in-situ air sparging.

Regarding potential future expansion of the FLTS, if needed, Mr. Rapiejko asked if there was a limit to how far north extraction wells might be located. Mr. Brayack indicated that the railroad tracks inside the fenceline serve as a practical limit, although a culvert through which piping could pass further north does exist. Ms. Jennifer Wright (Navy) asked if there's been any changes in the groundwater quality observed since the upgradient sources were removed. Mr. Brayack pointed to rapid decreases in contaminant

concentrations at the FC-MW/PZ05 cluster, where levels have decreased from about 1,000 µg/L to 50 µg/L in a matter of months.

A slide depicting the estimated capture zone for the FLTS was displayed. Mr. Rapiejko asked if the pump tests will be used to refine this area; Mr. Brayack confirmed that the pump test results will be used to evaluate the capture zone developing in the field as compared to the design assumptions.

The presentation then continued with a summary of the Remedial Design as it relates to the Peconic River Area. The primary objective is to prevent adverse impacts to ecological receptors. Monitoring will be used to evaluate potential impacts and the need for additional action in this area (which would consist of air sparging). Closeout would occur when cleanup levels are achieved. The Remedial Design cleanup benchmarks for surface water and pore water were then presented. It was noted that these were developed using New York State Department of Environmental (NYSDEC) standards, or NYSDEC guidance for deriving cleanup values for compounds for which standards did not exist, and that the values in the Remedial Design have been presented to the NYSDEC and the Suffolk County Department of Health Services. Ms. Wright elaborated, indicating that there is a technical memorandum that details the process by which the benchmarks were established.

Mr. Rapiejko noted that there is an apparent conflict regarding the dichlorobenzene and trichlorobenzene benchmarks, in that there are standards for the sums of di- and trichlorobenzenes of 5 µg/L, but the individual isomers have higher benchmarks. Mr. Brayack agreed that the benchmarks conflict in that regard, but that is due to the way the NYSDEC standards are written. In the event there is an isomer of these compounds with a concentration greater than 5 µg/L, there would need to be further discussion as to whether air sparging in the wetland is actually warranted.

Mr. Rapiejko asked about potential changes to standards, based on draft values under consideration by the United States Environmental Protection Agency, and how that might impact the Remedial Design values. Mr. Brayack indicated that there is a mechanism to incorporate revisions to the underlying standards via annual reporting requirements. If maximum contaminant levels are changed, these would be noted in the Five-Year Reviews, and a ROD amendment could be pursued if necessary.

The presentation then concluded with a summary of the role of the offsite high- and low-concentration areas. Essentially, this area serves as an early-warning system for the Peconic River Area, as it would take several years for concentrations currently observed near the FLTS to reach Connecticut Avenue. Based on the behavior of groundwater concentrations in this area, the need for the contingency actions summarized in the Remedial Design will be considered on an on-going basis.

GENERAL DISCUSSION

Following completion of the formal presentations, an opportunity for further discussion of the progress at the site in general was provided. Mr. Rapiejko inquired as to the “anomaly” area of elevated levels of chlorinated VOCs (primarily trichloroethene, with DCA and DCE also present) in the vicinity of piezometer FT-PZ460I, southeast of Swan Pond. Mr. Brayack noted that this area continues to be sampled as part of the annual sampling program, and that it is a known issue that is being monitored.

CLOSING REMARKS

Mr. Tarr thanked the attendees for their participation. The selection of a date for the next RAB meeting was deferred, pending identification of an alternative meeting location if the Calverton Community Center is not available in April. The final date and location will be confirmed and communicated about one month prior to the meeting, which would likely be in March 2014.

Mr. Tarr announced that he will be transferring to a new role within NAVFAC, but that he will continue to function as the remedial project manager for the Navy until a new manager is in place. The meeting was then adjourned.

ATTACHMENT 1

NOVEMBER 6, 2014 RAB MEETING SIGN-IN SHEET

41st RAB Meeting for NWIRP Calverton
November 6, 2014
Sign-in List

Name (Print)	Address and/or email if interested in being on mailing list	Affiliation	How did you hear about the meeting?
JAMES TANA			
Jen Wright			
Mike Zobel			
Low Cork			
Jen Good			
Robert Forstner			
Andrew Rapietko			
Dave Brogok			
AK TADORN			
HENRY WILKIE			
Paul Martens			
Bill Guntter			
Sid Bai			

ATTACHMENT 2

NOVEMBER 6, 2014 RAB MEETING AGENDA

Agenda

Restoration Advisory Board Naval Weapons Industrial Reserve Plant Calverton

**November 6, 2014
Calverton Community Center, Calverton NY
7:00 p.m.**

Welcome and Agenda Review

James Tarr CPG, NAVFAC Mid-Atlantic

Distribution of Minutes

All Members

Community Update

Bill Gunther, RAB Co-chair

Technical Progress

General Overview of ER Sites

James Tarr CPG, NAVFAC Mid-Atlantic

Site 2 Munitions Response Update

James Tarr CPG, NAVFAC Mid-Atlantic

Fence Line Treatment System Update

Jen Good PG, H&S Environmental

Site 7 Remedial Action Update

Jen Good PG, H&S Environmental

Spring 2014 Peconic River Data Summary

Robert Forstner PE, Resolution Consultants

Site 6A OU3 Remedial Design

Dave Brayack PE, Tetra Tech

Closing Remarks

James Tarr CPG, NAVFAC Mid-Atlantic

Presenters will be available after the program for questions.

ATTACHMENT 3

NAVY PRESENTATIONS – NOVEMBER 6, 2014 RAB MEETING



RESTORATION ADVISORY BOARD MEETING

**NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
(NWIRP) CALVERTON, NEW YORK**

November 6, 2014

General Overview of ER Sites



- **Sitewide**

- 2014 annual sampling program completed in May & September

- **Site 2**

- Additional excavation completed in 2014
 - Additional MEC work scheduled for 2015

- **Site 6A/10B/Southern Area**

- Fence-line system construction completed and online October 2013
 - OU3 ROD RD completed

- **Site 7**

- AS/SVE system shutdown for 2014; monitoring ongoing



SITE 2 (FIRE TRAINING AREA) MUNITIONS RESPONSE

November 2014 Restoration Advisory Board

NWIRP CALVERTON, NEW YORK

November 6, 2014

Site 2 Munitions Response Outline



- Location
- Munitions Response/Remedial Action Operations
- Project Schedule

Site 2 Location



Site 2 Munitions Response Operation

- **Background**

- Soil investigation to delineate the horizontal and vertical extent of remaining petroleum and PAH contamination in 2010
- Several (5) 20-mm fragments were found in the auger bucket of the hand auger

- **Phase I**

- Digital Geophysical Mapping Survey completed in 2010
 - Identified saturated (polygon) areas; over ~2,400 subsurface anomalies
- Explosive Safety Submission submitted in April 2011
 - Approved in May 2011; Amendment 001 approved 2013
 - Completed Remedial/Response Action Work Plan (February 2012)

- **Phase II (May 2011 to November 2012)**

- Cleared 6.9-acre MRS 02 area of MEC and MPPEH from 0 to 18 inches below ground surface
 - Returned MEC/MPPEH free soil back to the site
 - Over 17,000 MEC/MPPEH items identified and removed

- **Supplemental DGM survey completed in 2013**

Site 2 Munitions Response Operation/Remedial Action



• Phase III (April 2014 to October 2014)

–Munitions Response Activity (Manual/Mechanical Low Input Soil Screening)

- Manual/mechanical screening & processing of ~4,100 yd³ of soil in 4 grid areas up to 6 feet below ground surface
- 689 items classified as MDAS recovered and destroyed by furnace
- Completed 1 demolition event with explosives to render 323 MPPEH items safe for disposal
- 65,620 lbs. of metal recovered and recycled

–Remedial Action (Site 2)

- Excavated ~4100 yd³ of potentially contaminated soil including grids C4, G4, G3, and E2.
- All excavated and screened soils analyzed for site COCs; approximately 2,300 yd³ of soil approved for reuse and utilized as backfill across the site
- 17 intact or partially intact drums were removed from Grid C4; contents were characterized and transported offsite for incineration
- ~110 crushed drums/drum carcasses were removed from grid C4; characterized and transported offsite for incineration
- 2,242 tons of non-hazardous soil failed NYSDEC reuse criteria; transported offsite for disposal at Brookhaven Landfill
- Transportation and disposal of ~200 yd³ of concrete comingled with non-friable ACM debris

Site 2 Digital Geophysical Map, 2010

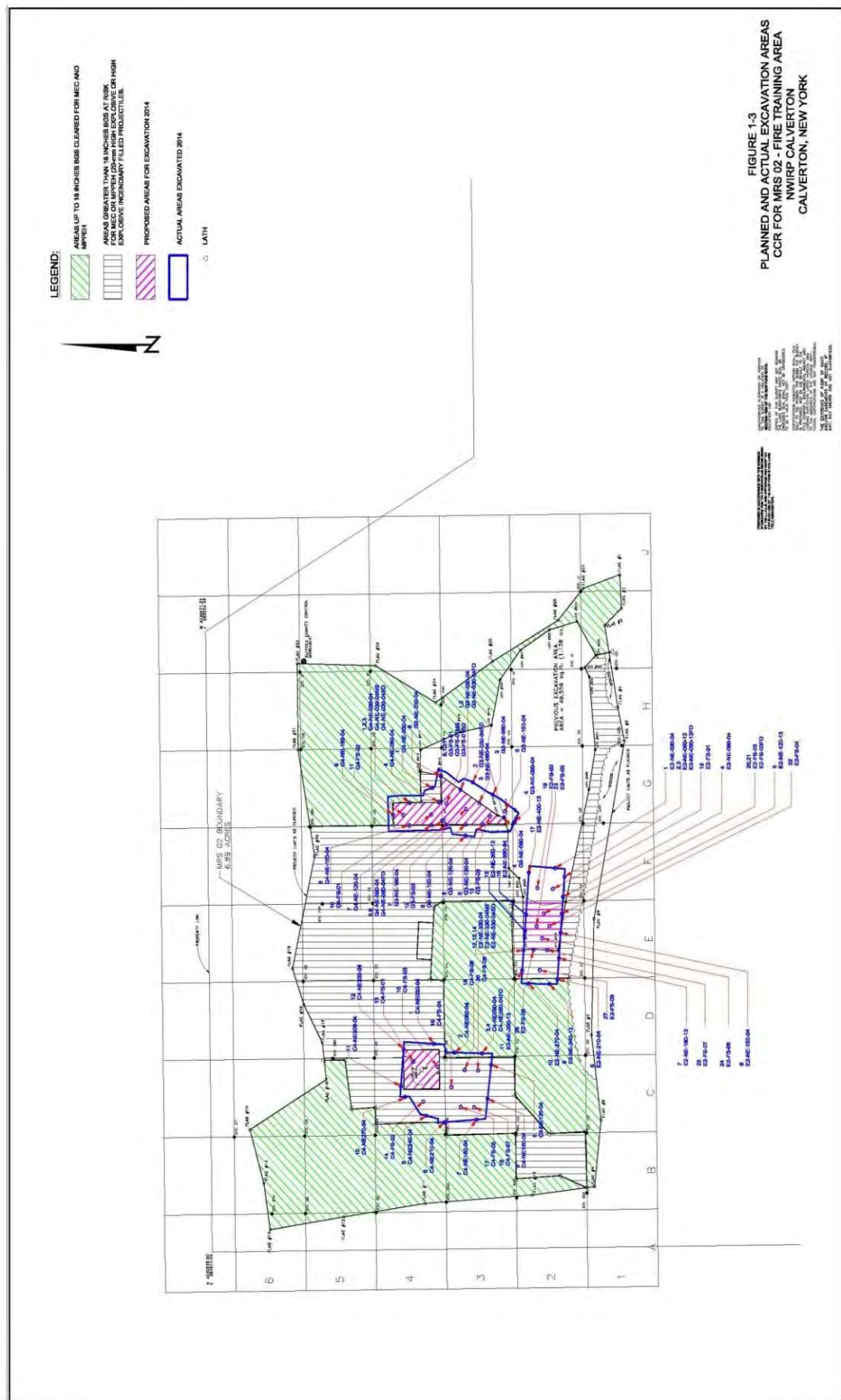


Site 2 Digital Geophysical Map, 2013

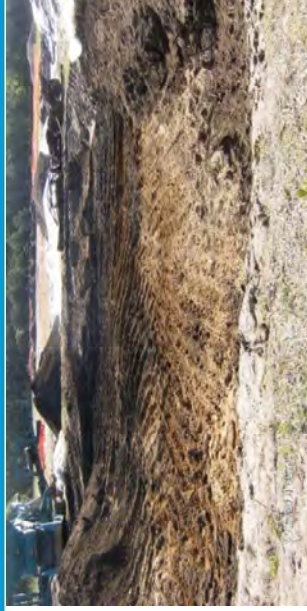




Excavation and Sampling Grid Map, 2014



Site 2 Field Photo Documentation (2014)



Current Project Schedule

- **Phase III Response Project Status —Currently in the closeout phase**

- Mobilization April 2014 (Completed)
- Mechanical Soil Screening (April 2014 – June 2014) (Completed)
- Transportation and Disposal (August 2014) (Completed)
- Site Restoration (August 2014) (Limited Completed)
- Demobilize (August 2014) (Completed)
- Load out of 3"-minus concrete/ACM debris (October 2014) (Completed)
- Construction Closeout Report (November 2014) (Ongoing)

- **Future Work**

- Work in additional MEC areas scheduled for spring 2015
- Feasibility Study under way



SITE 6A - SOUTHERN AREA FENCE LINE GROUNDWATER EXTRACTION TREATMENT SYSTEM (FLTS)

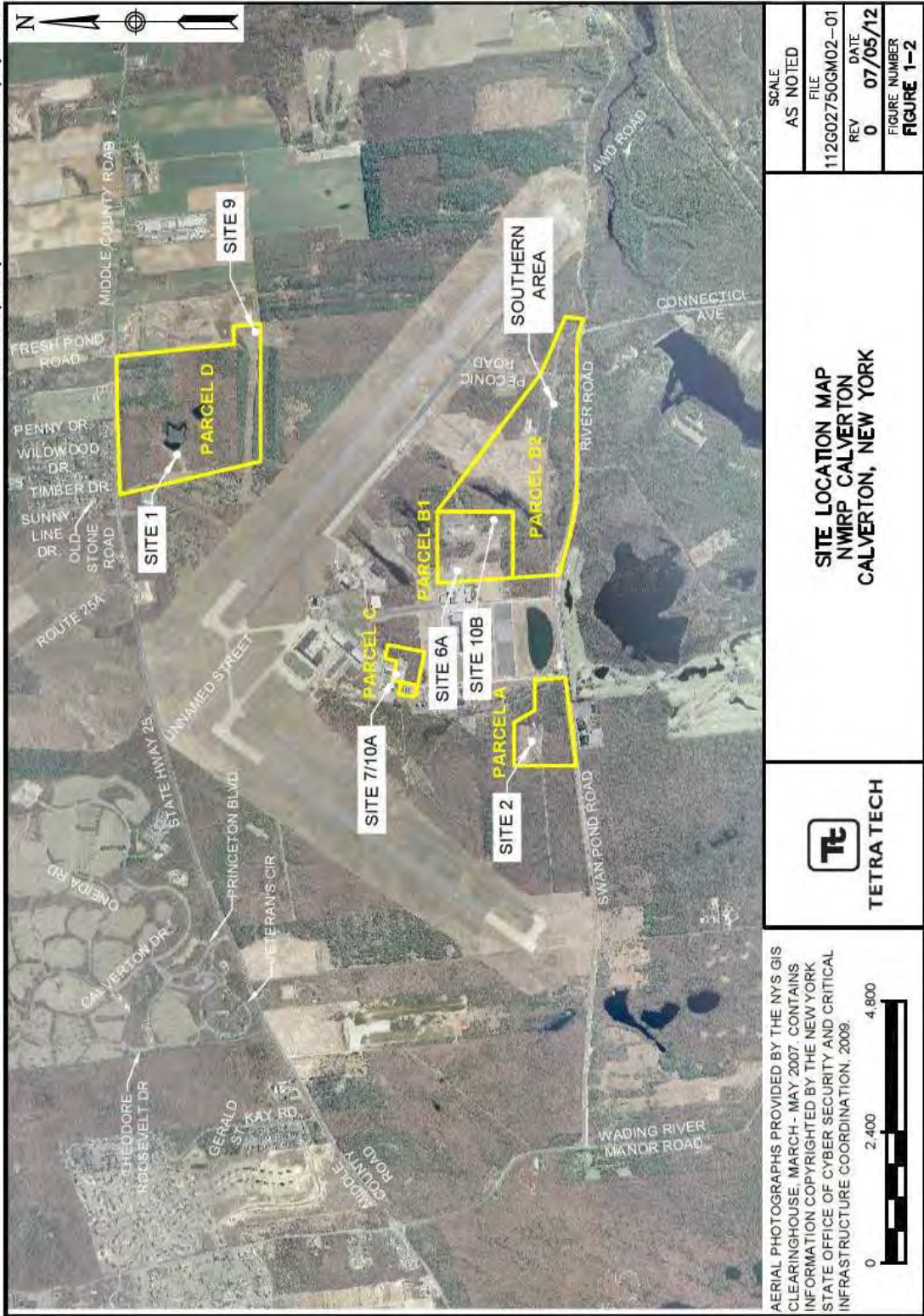
November 2014 Restoration Advisory Board
NWIRP CALVERTON, NEW YORK

November 6, 2014

Presentation Agenda

- Introduction
- System Overview
- System Operation
- Recent Operational Activities
- System Performance and Future Activities

Site Layout



Fence Line Treatment System Overview



- **Record of Decision (ROD) in May 2012**
- **Selected remedy for Fence Line Area —LUCs and monitoring with extraction, treatment, and infiltration**
- **Remedial Design for Fence Line Treatment System (FLTS) in May 2012**
- **Fence Line Treatment System overview.**
 - Two extraction wells, up to 100 gallons per minute
 - VOCs removed via air stripping
 - Treated groundwater re-injected through infiltration galleries, meeting MCLs
- **Construction began in October 2012, continued into 2013**
- **System start-up occurred 8 October 2013**

Fence Line Treatment System Overview



Fence Line Treatment System Overview



Treatment Plant Building



System Components

Fence Line Treatment System Operation

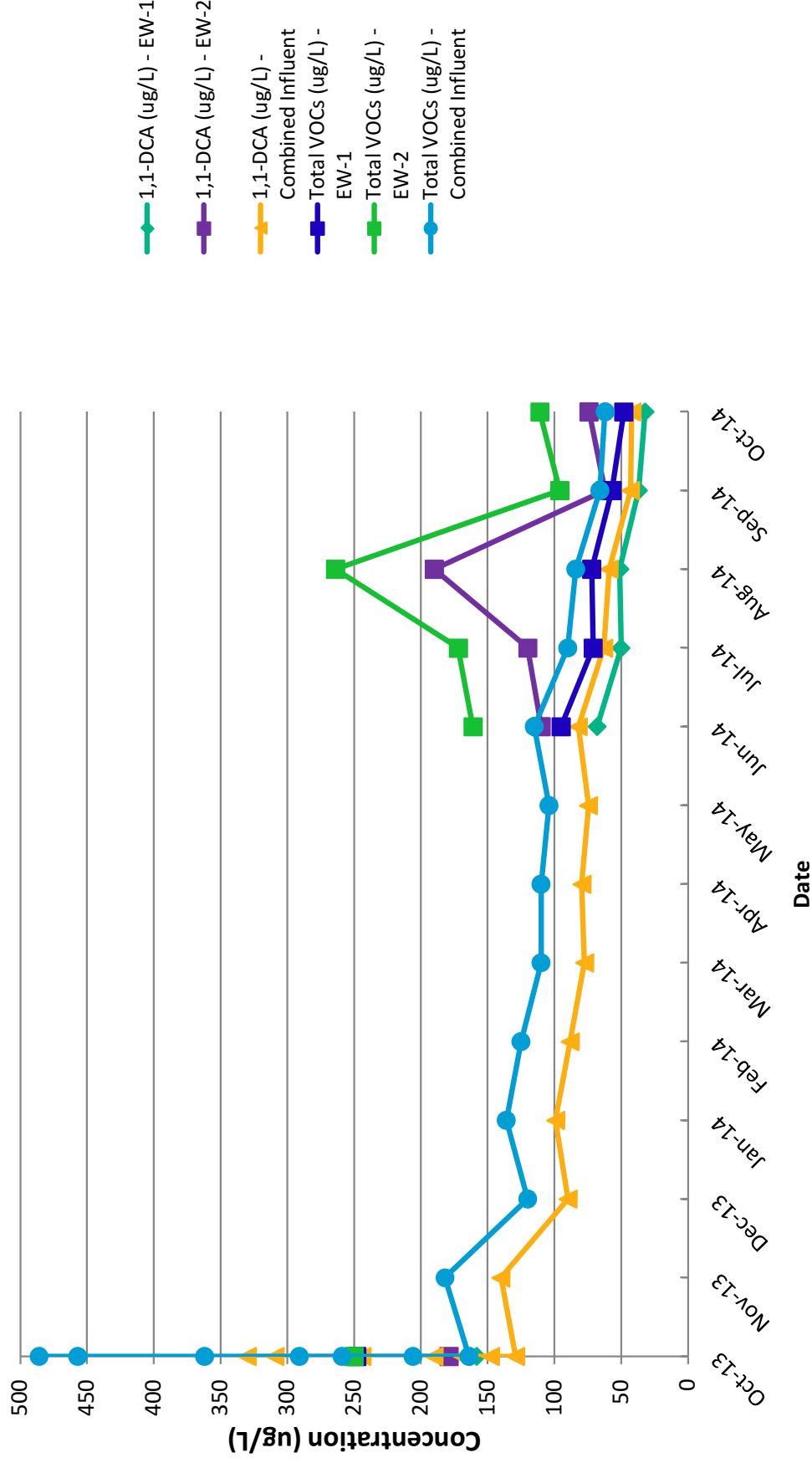


Flow Data				
Date	Total Monthly Flow (gal)	Total Cumulative Flow (gal)	Average Influent Flowrate (gpm)	Uptime (%)
Oct-13	2,976,601	2,976,601	89.9	76.7
Nov-13	2,288,925	5,265,526	78.2	67.7
Dec-13	1,715,264	6,980,790	61.5	62.5
Jan-14	2,358,016	9,338,806	77.0	68.6
Feb-14	3,814,953	13,153,759	96.2	98.4
Mar-14	3,794,639	16,948,398	91.3	93.1
Apr-14	3,683,505	20,631,903	91.0	88.3
May-14	3,658,145	24,290,048	87.9	97.4
June-14	3,149,276	27,439,324	85.0	85.8
July-14	3,113,492	30,552,816	79.4	89.3
Aug-14	3,113,492	33,666,308	81.7	92.7
Sept-14	1,949,358	35,615,666	78.8	57.2
Oct-14	3,744,800	39,360,466	87.0	96.4

Fence Line Treatment System Operation



Calverton FLTS Concentration Trends



Fence Line Treatment System Operation



VOC Mass Removal		
Date	Monthly VOC Mass Removal (lb)	Cumulative VOC Mass Removal (lb)
Oct-13	4.04	4.04
Nov-13	3.46	7.50
Dec-13	1.70	9.20
Jan-14	2.66	11.86
Feb-14	3.95	15.81
Mar-14	3.45	19.26
Apr-14	3.35	22.61
May-14	3.16	25.77
June-14	3.00	28.77
July-14	2.32	31.09
Aug-14	2.35	33.44
Sept-14	1.06	34.50
Oct-14	1.94	36.44

Fence Line Treatment System— Recent Operational Activities



- **April —September 2014**
 - Adjusted polyphosphate feed rates to optimize performance
- **September 2014**
 - Replaced level transducer in injection well
 - Converted to 25 micron bag filters, temporarily stopped using polyphosphate
- **October 2014**
 - Performed hydraulic testing – data currently being evaluated to better determine capture zone
- **Other alarms / downtime over recent months**
 - Bag filter changeouts
 - Loss of remote communication or power
 - Heavy rains (high injection well alarms)

Fence Line Treatment System— System Performance and Future Activities



- Continued compliance with all discharge goals
- Continued VOC removal efficiencies of >99%
- Future Activities
 - Continue to perform monthly compliance sampling
 - Continue to submit monthly compliance reports
 - Complete O&M Manual
 - Continued evaluation of use of polyphosphate
 - Evaluate hydraulic testing data



SITE 7 —FUEL DEPOT AIR SPARGING / SOIL VAPOR EXTRACTION SYSTEM UPDATE

November 2014 Restoration Advisory Board

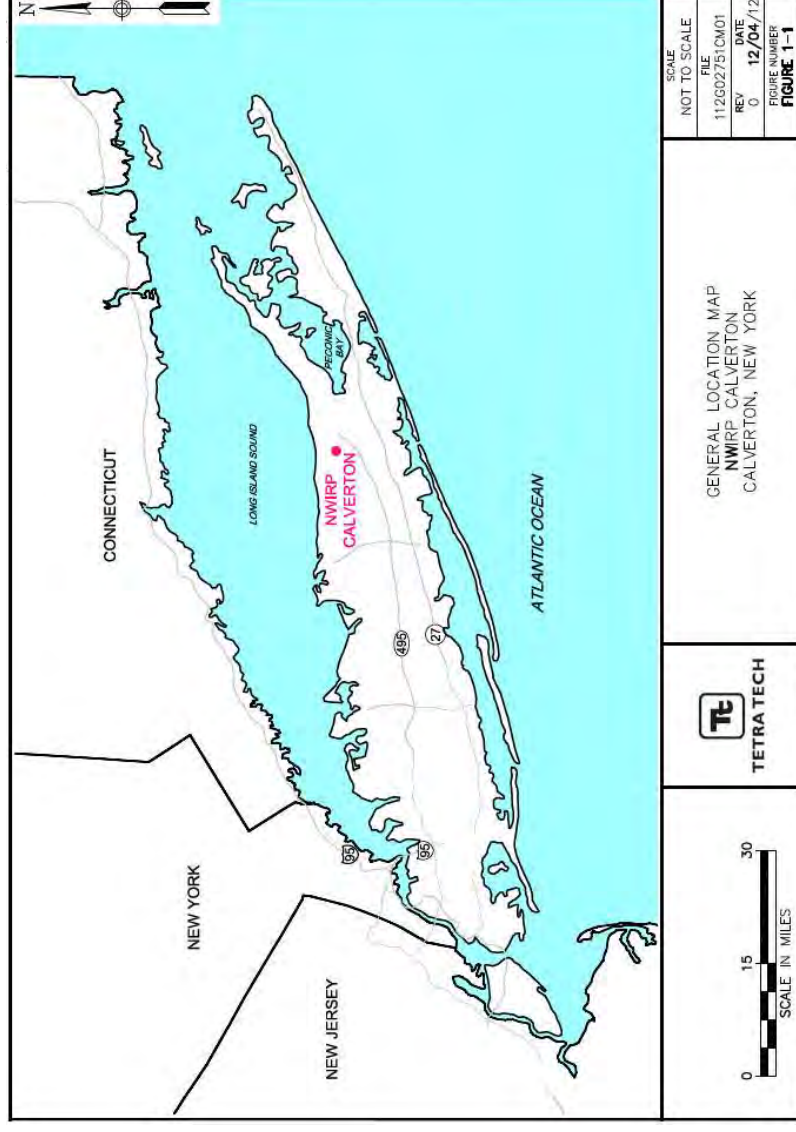
NWIRP CALVERTON, NEW YORK

November 6, 2014

Outline of Presentation



- Introduction
- System Performance
- Recent Activities
 - Quarterly Groundwater Sampling
 - Soil Sampling
- Summary and Path Forward





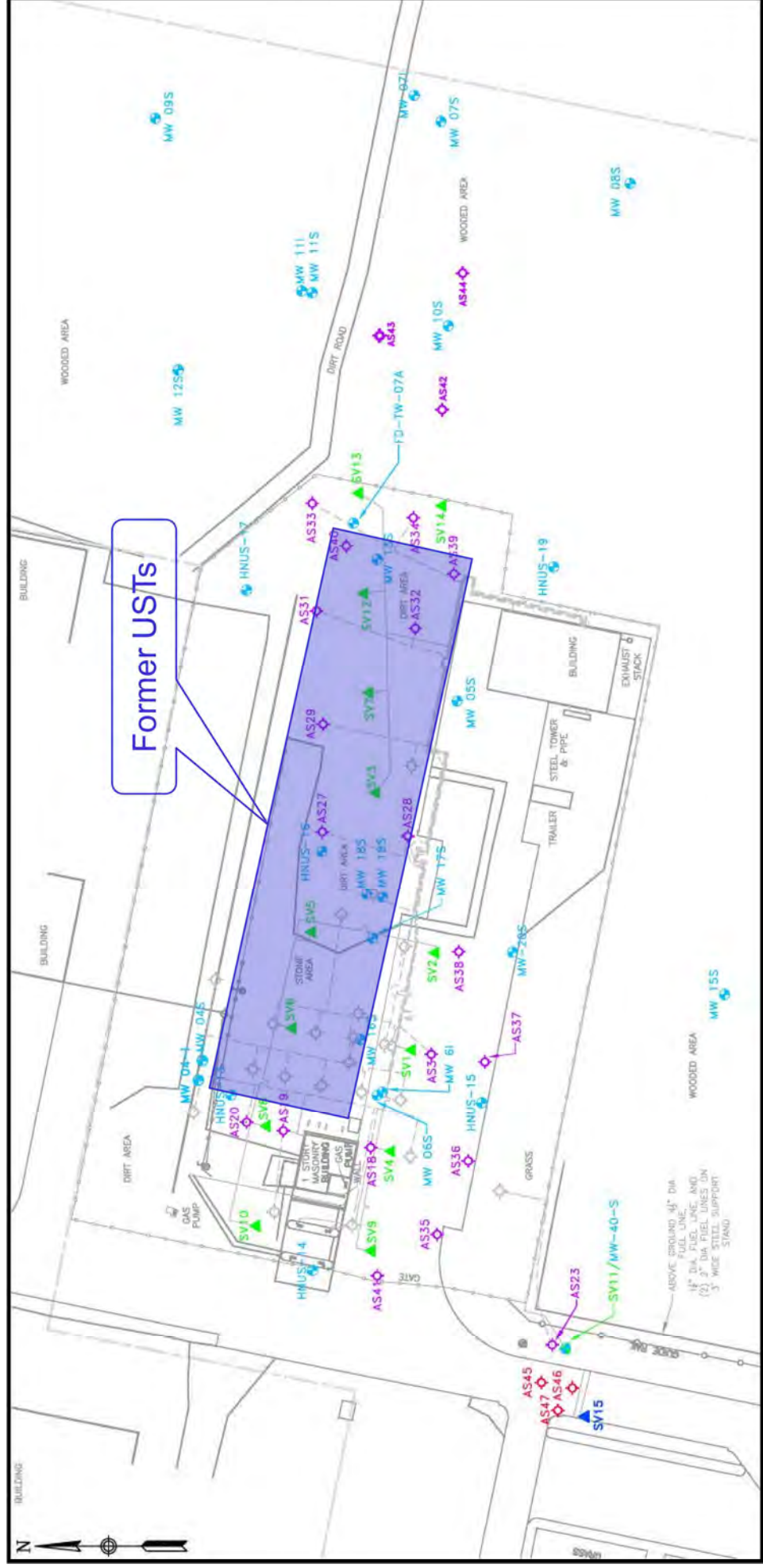
Introduction

- Air Sparging/Soil Vapor Extraction (AS/SVE) system started operation in 2005 (pilot) / 2006 (full scale)
- Operated seasonally (April to December) through November 2013
- Three modifications were made to the system to improve performance
- Current system near the end of its functional life
- System shut down in November 2013 and monitoring began per the Performance and Shutdown Evaluation document (Nov. 2013)



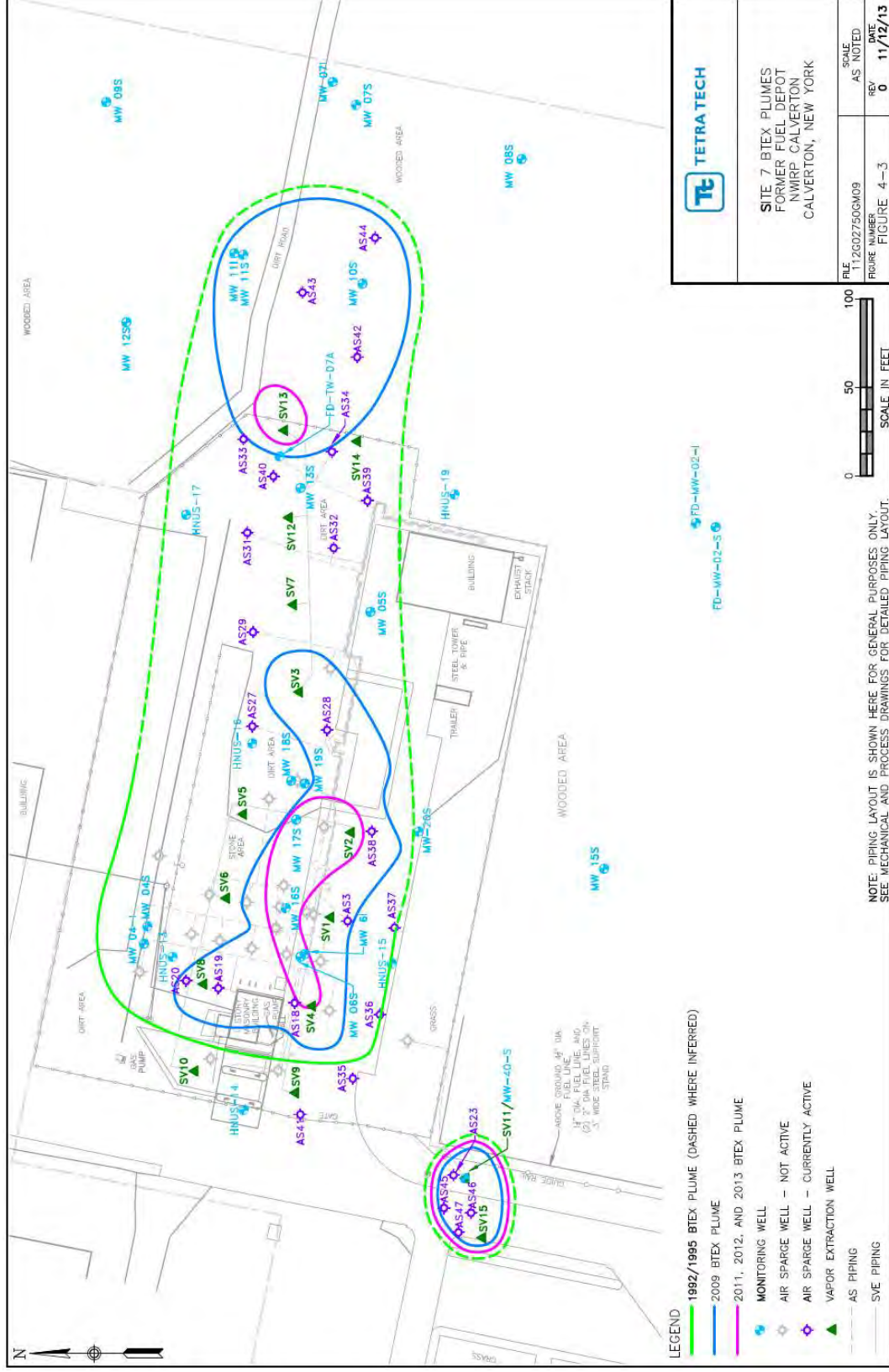
Introduction

Injection, Extraction, and Monitoring Wells



System Performance

1992/1995, 2009, and 2011 to 2013 Plume Boundaries



Recent Activities

- **Seasonal groundwater sampling without system in operation**

- First round conducted in December 2013 – system down for one month prior to sample collection
- Samples analyzed for select VOCs (BTEX, Freon, Naphthalene), 2-methylnaphthalene, and lead
- Quarterly sampling of 7 wells (SV2, SV4, SV11, SV13, SV15, MW16S, MW17S) which previously had exceedances of 2003 ROD Remediation Goals – March, June, September 2014
- Next event – December 2014

- **Post system startup soil data**

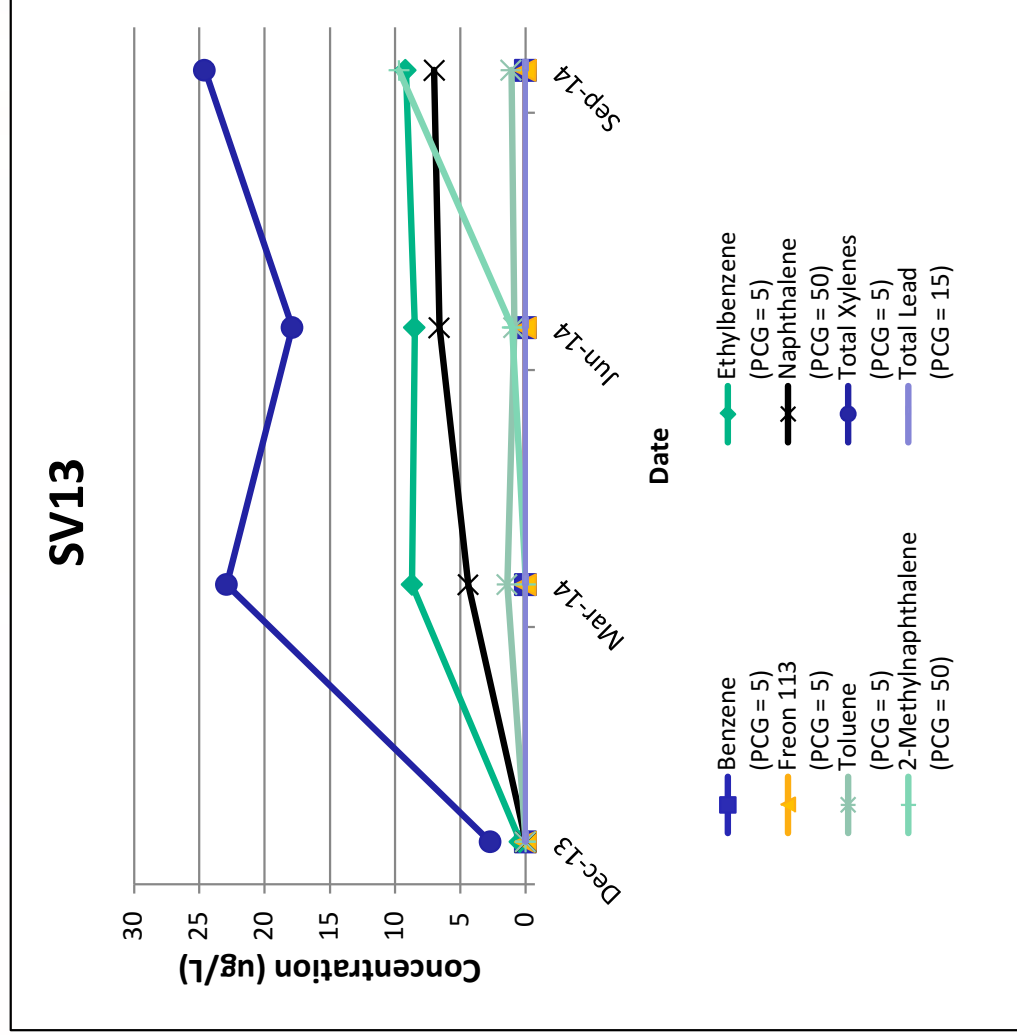
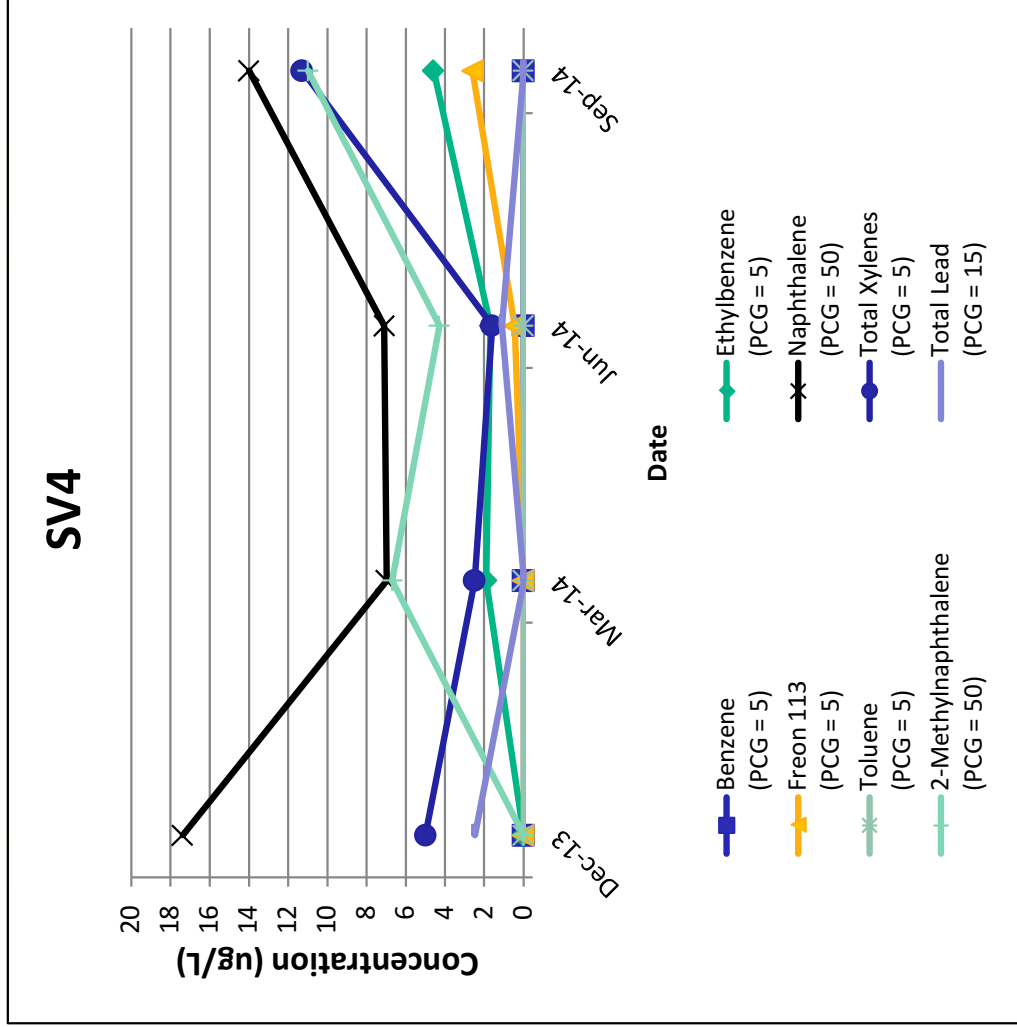
- 6 borings – up to 12 samples near the water table
- Conducted in October 2014 – analytical results pending

Quarterly Groundwater Sampling

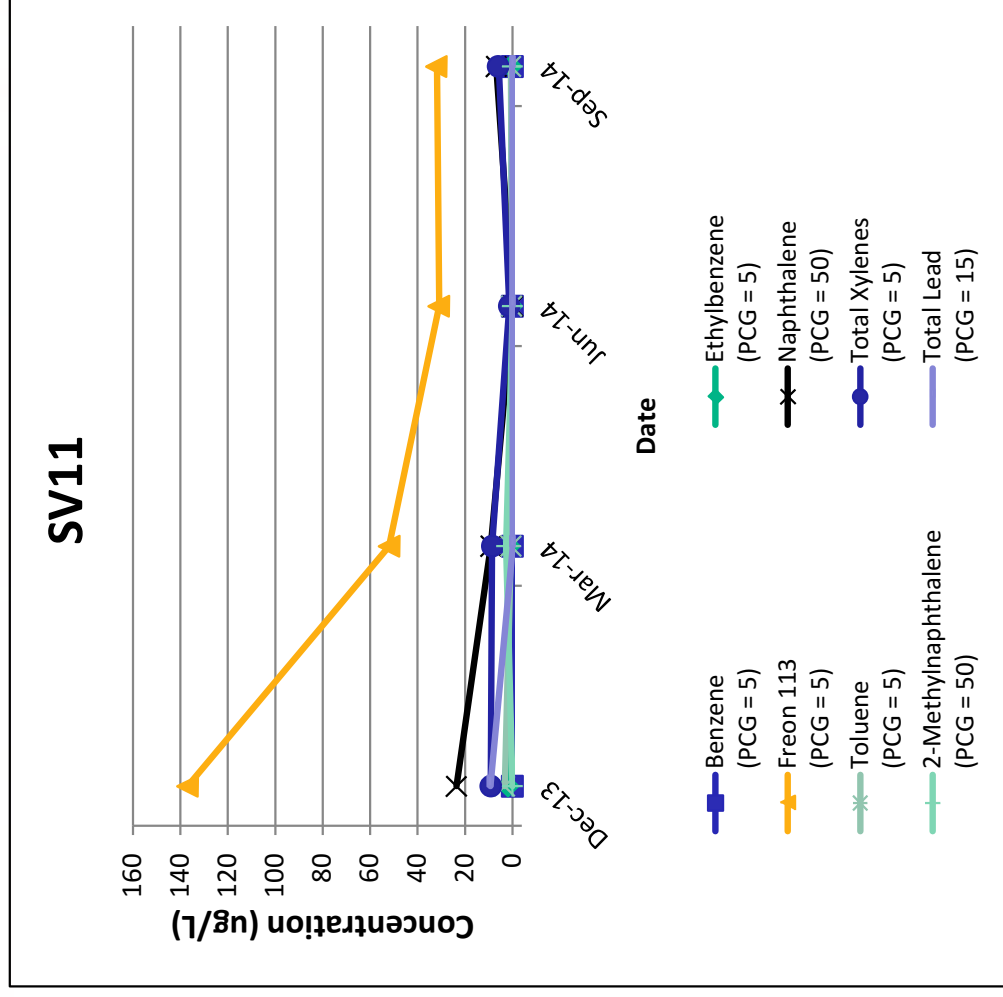
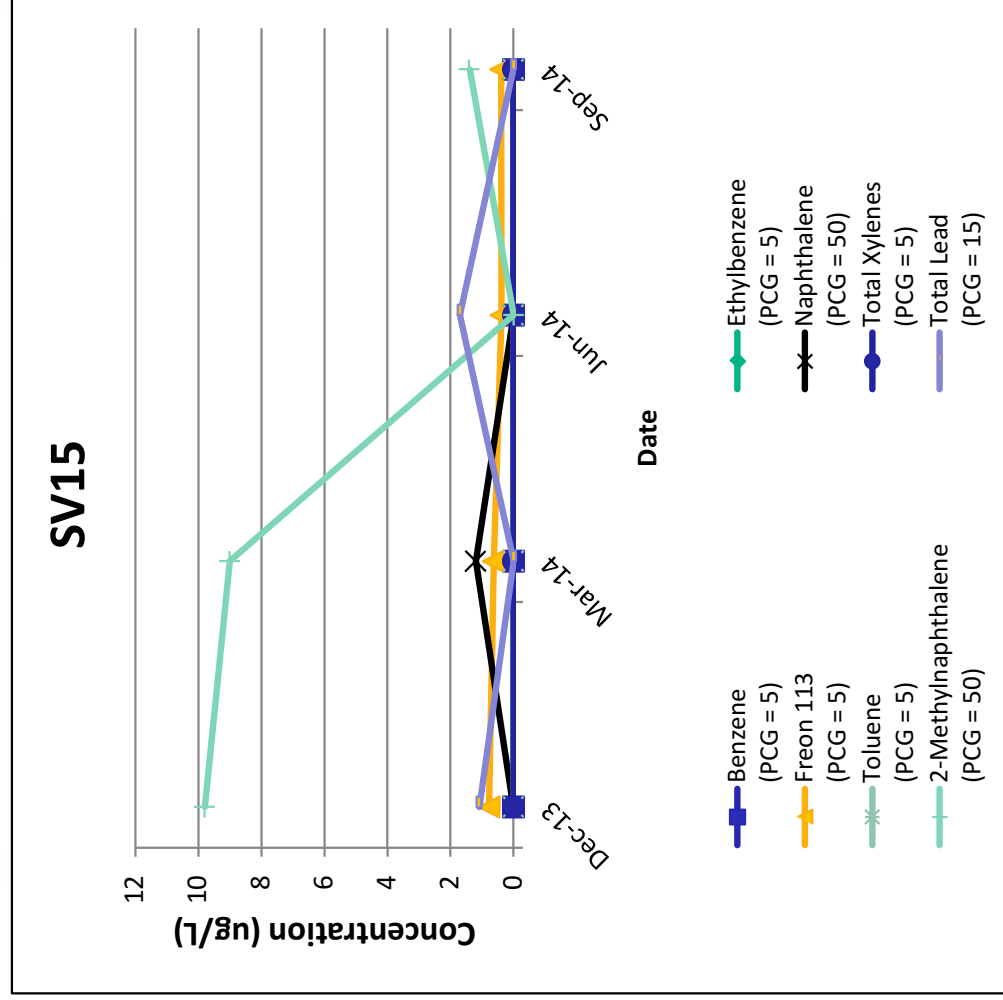


*Gray shading - value exceeds 2013 Proposed Closeout Goal

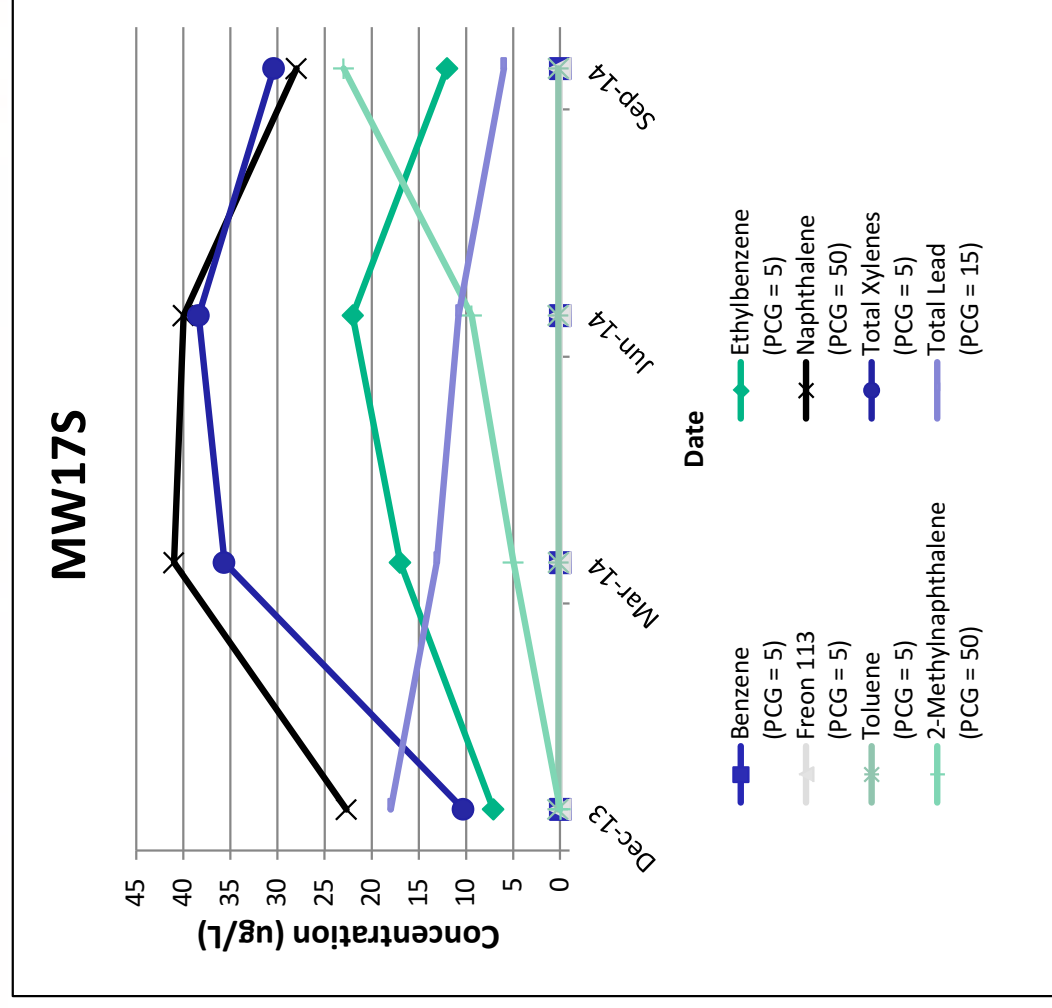
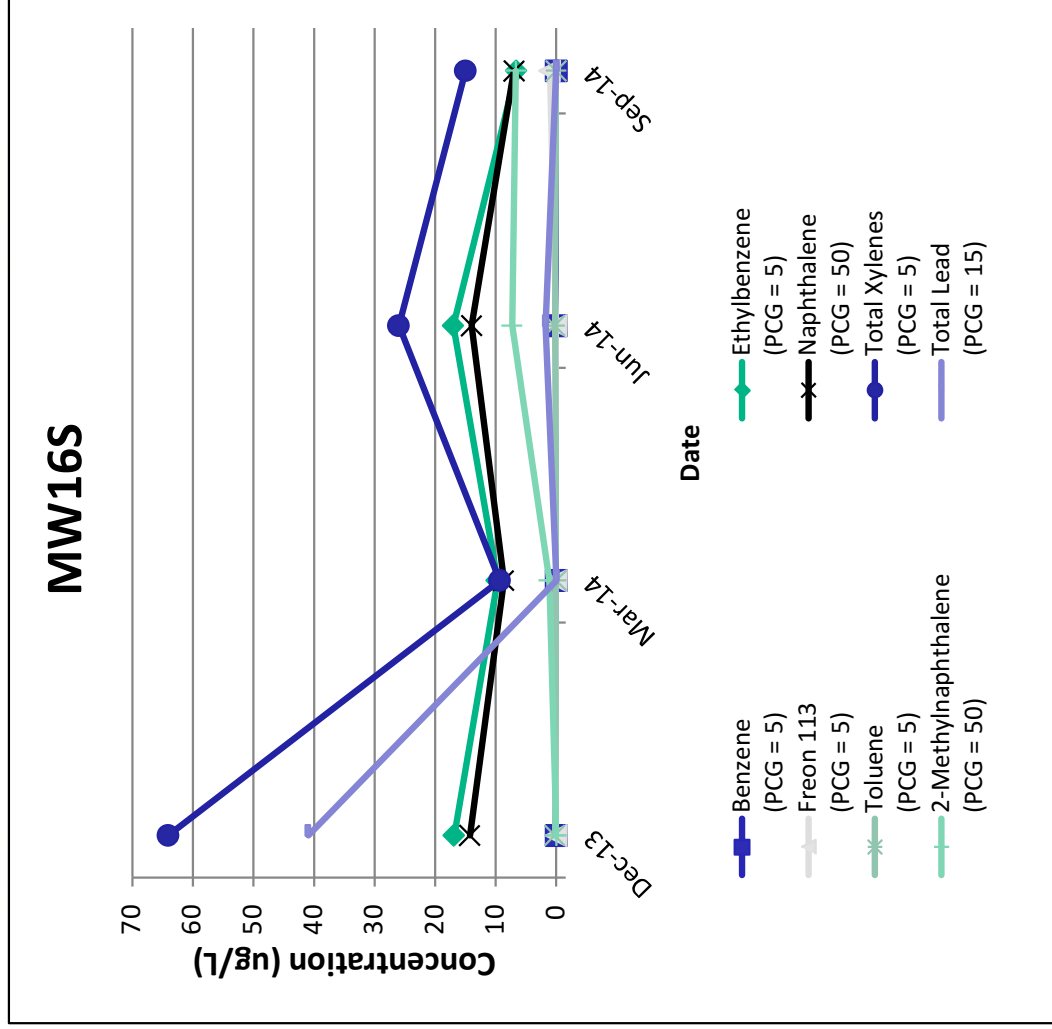
Quarterly Groundwater Sampling



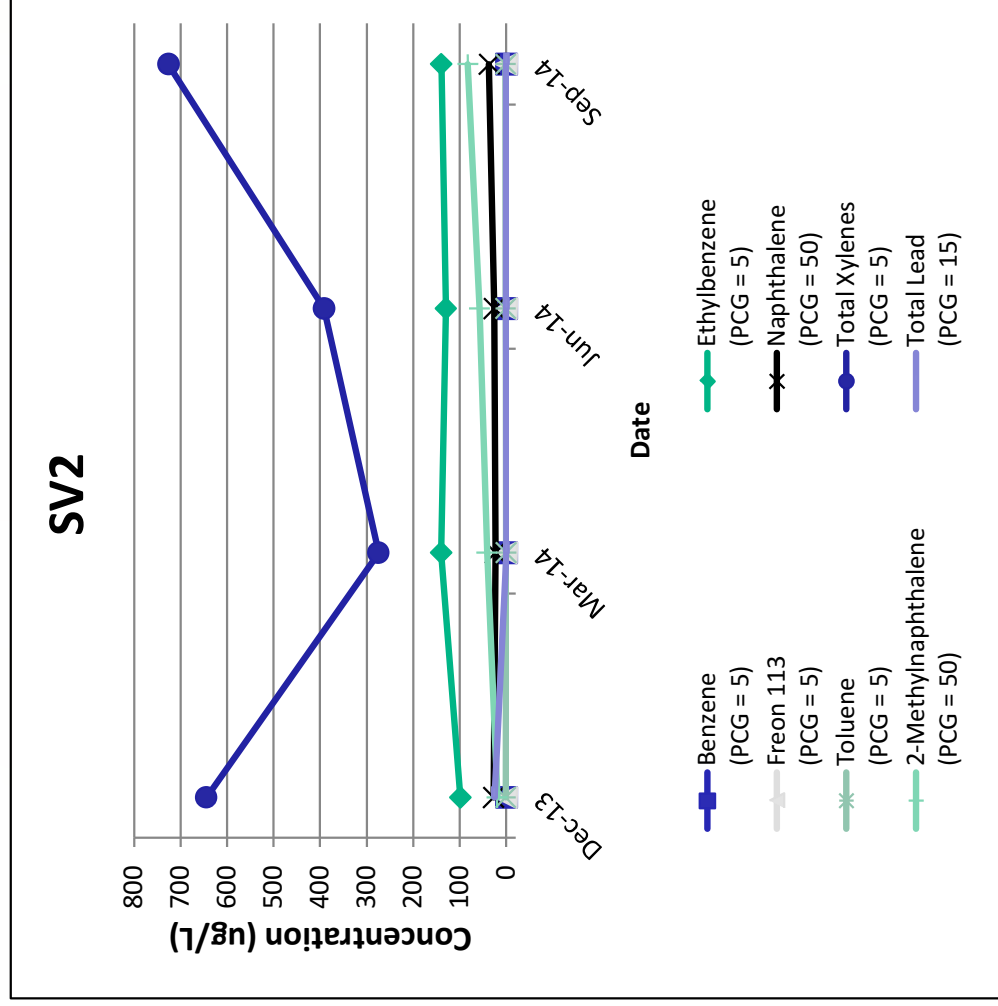
Quarterly Groundwater Sampling



Quarterly Groundwater Sampling



Quarterly Groundwater Sampling



Summary and Path Forward



- **Evaluate groundwater data at the end of 2014**
 - Data through 3rd Quarter suggests area around SV2 may require further action
- **Begin pre-design activities to support enhanced treatment in this area**
- **Continue quarterly groundwater monitoring throughout 2015**



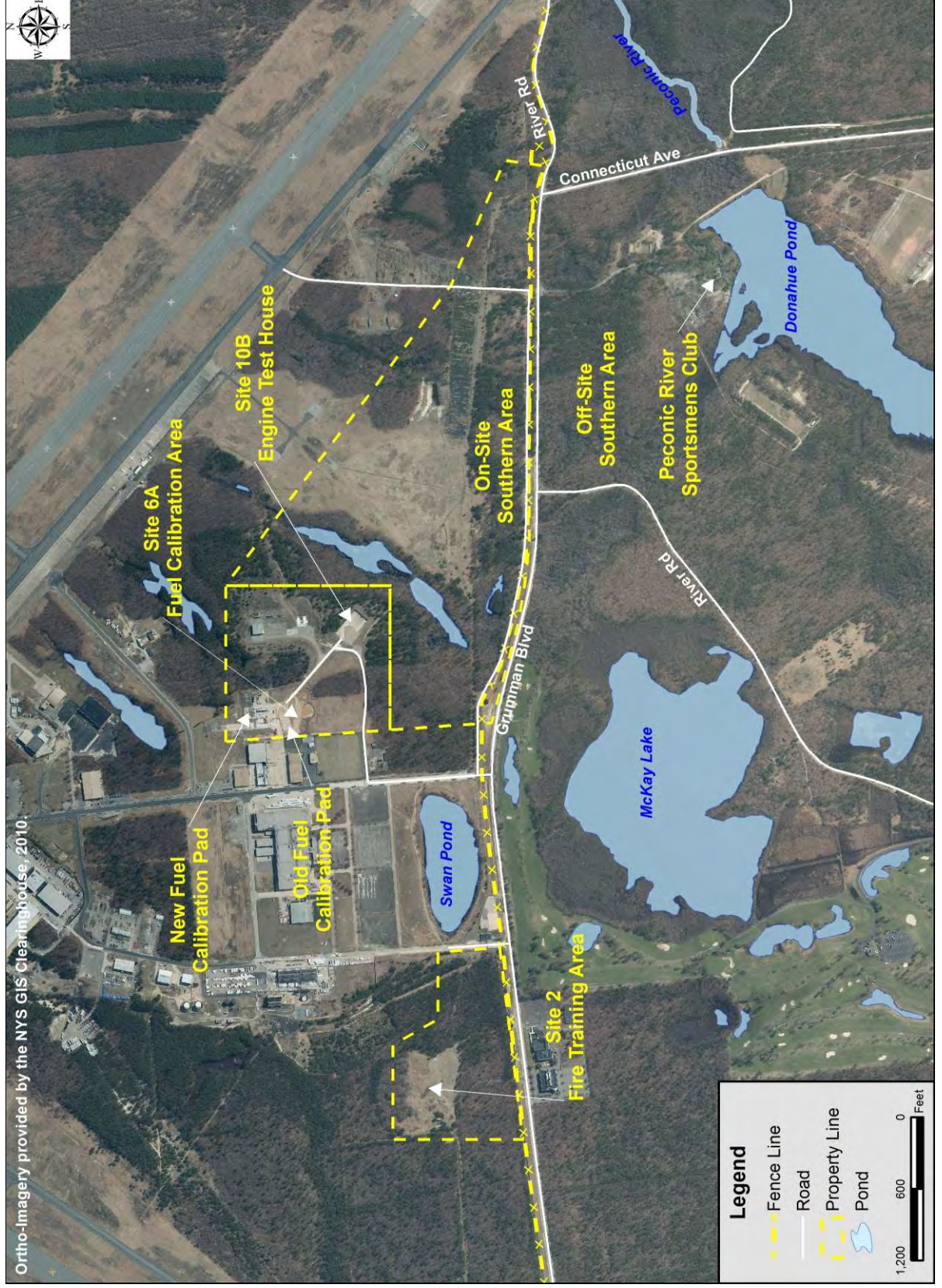
SPRING 2014 PECONIC RIVER DATA SUMMARY

November 2014 Restoration Advisory Board

NWIRP CALVERTON, NEW YORK

November 6, 2014

Facility Map



Annual Monitoring Program

• Well & Piezometer Sampling

–73 locations, all sampled in September 2014 – Analyses by lab complete and data currently being validated

–Site 2 (Fire Training Area)

- On-property – 16 locations
- Off-property – 7 locations

–Sites 6A (Fuel Calibration Area) / 10B (Engine Test House)

- 12 locations

–Southern Area

- On-site – 20 locations
- Off-site – 15 locations
- Peconic River area – 7 locations

• Surface Water and Sediment

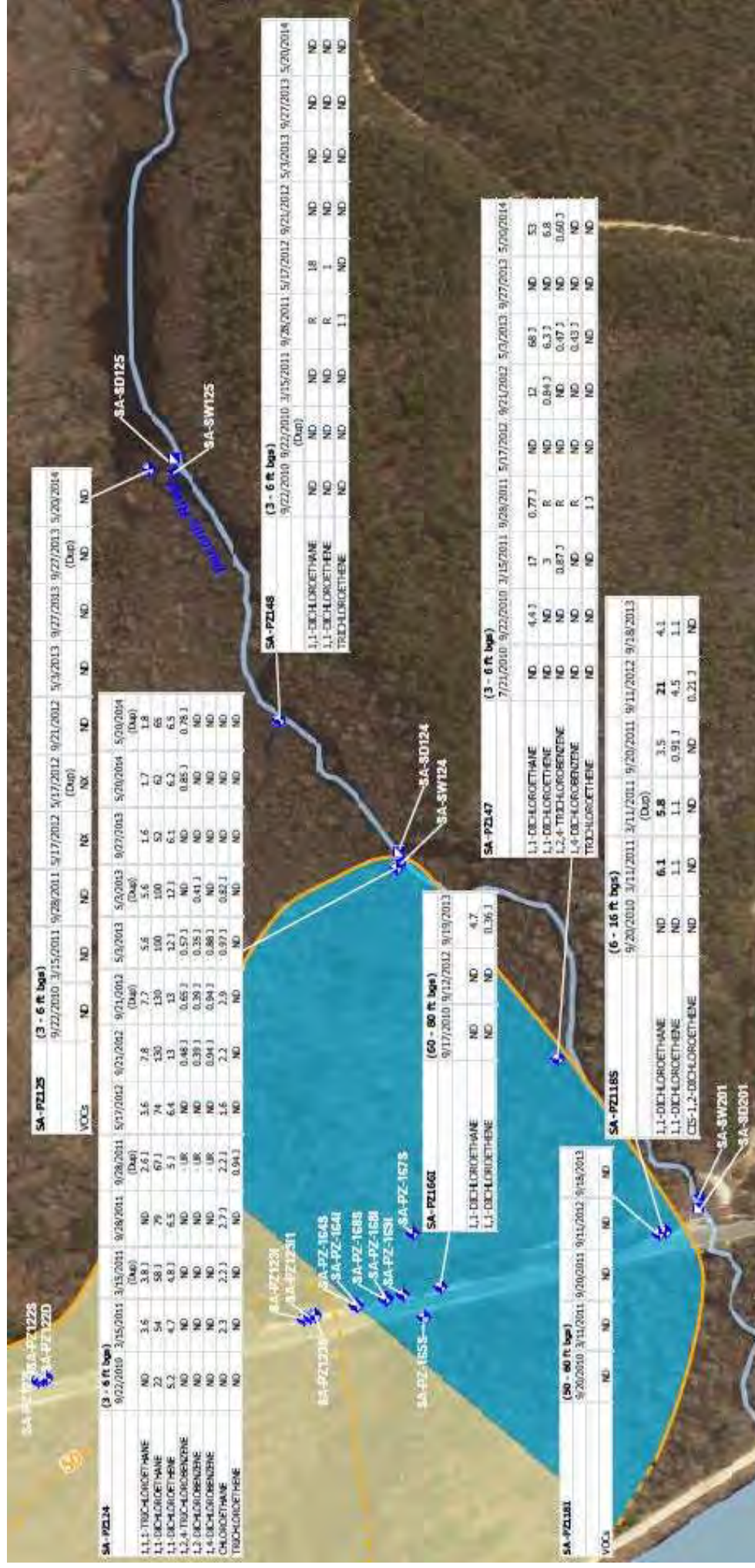
–4 locations, all sampled in May and September 2014 – May data is validated

- Co-located surface water & sediment samples (plus 4 in-river piezometers)

• Groundwater Gauging

–105 wells/piezometers and 7 staff gauges

Peconic River Area—May 2014 Results



Summary—May 2014 Peconic River Results



• Sediment

- 1,1-DCE detected at SA-SD124 above criteria; 1,1-DCA and CA also detected
- Carbon disulfide detected above criteria at SA-SD204
- No other detections of chemicals of concern

• Surface Water

- All May 2014 results are non-detect or no criteria exceedance, at a level consistent with intermittent historic detections
- 1,1-DCA at SA-SW124 was the only detected chemical of concern in May 2014
- Results consistent with prior data

Summary—May 2014 Peconic River Results



• Groundwater

–SA-PZ124

- 1,1,1-TCA, 1,1-DCA, 1,1-DCE and 1,2,4-trichlorobenzene detected, but below OU3 RD clean-up levels; consistent with levels found in May & September 2013

–SA-PZ147

- 1,1-DCA, 1,1-DCE and 1,2,4-trichlorobenzene detected, but below OU3 RD clean-up levels; consistent with levels found in May 2013

–SA-PZ125 and SA-PZ148

- No detections of chemicals of concern



OU3 REMEDIAL DESIGN

November 2014 Restoration Advisory Board

NWIRP CALVERTON, NEW YORK

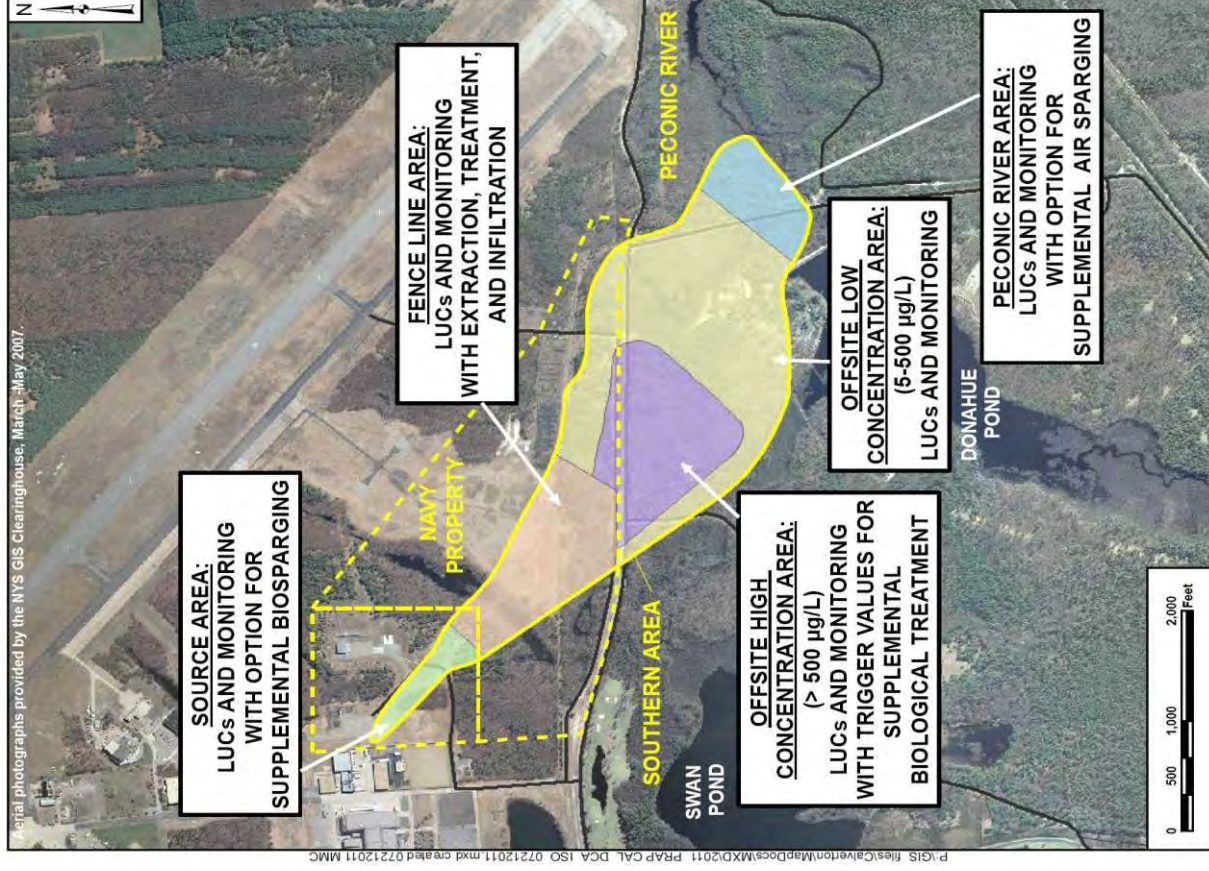
November 6, 2014



OU3 Remedial Design - Milestones



- May 2012 - Record of Decision (ROD)
- Oct 2013 - Fence Line Treatment System starts operation
- Aug 2014 – OU3 Remedial Design
- Sep 2014 – Last monitoring wells installed off property
- Sep 2014 – Monitoring well sampling and analysis conducted (annual event)
- Sep/Oct 2014 – Pumping tests conducted at Fence Line Treatment system



OU3 Remedial Design - Milestones



Site 6A – Southern Area	Remedy
Fuel Calibration Area	Land use controls (LUCs) and monitoring, with an option of an air sparging system to accelerate cleanup of residual Site 6A contamination.
Fence Line Area	LUCs, monitoring, and installation and operation of a groundwater extraction and treatment system to prevent or minimize off-property migration of VOC-contaminated groundwater.
High Concentration Area (VOCs greater than 500 µg/L)(HCA) / Low Concentration Area (VOCs less than 500 µg/L) (LCA)	LUCs and monitoring, with a contingency for in-situ biodegradation.
Peconic River Area	LUC and monitoring, with a contingency for in-situ air sparging.

OU3 Remedial Design —Clean up Levels

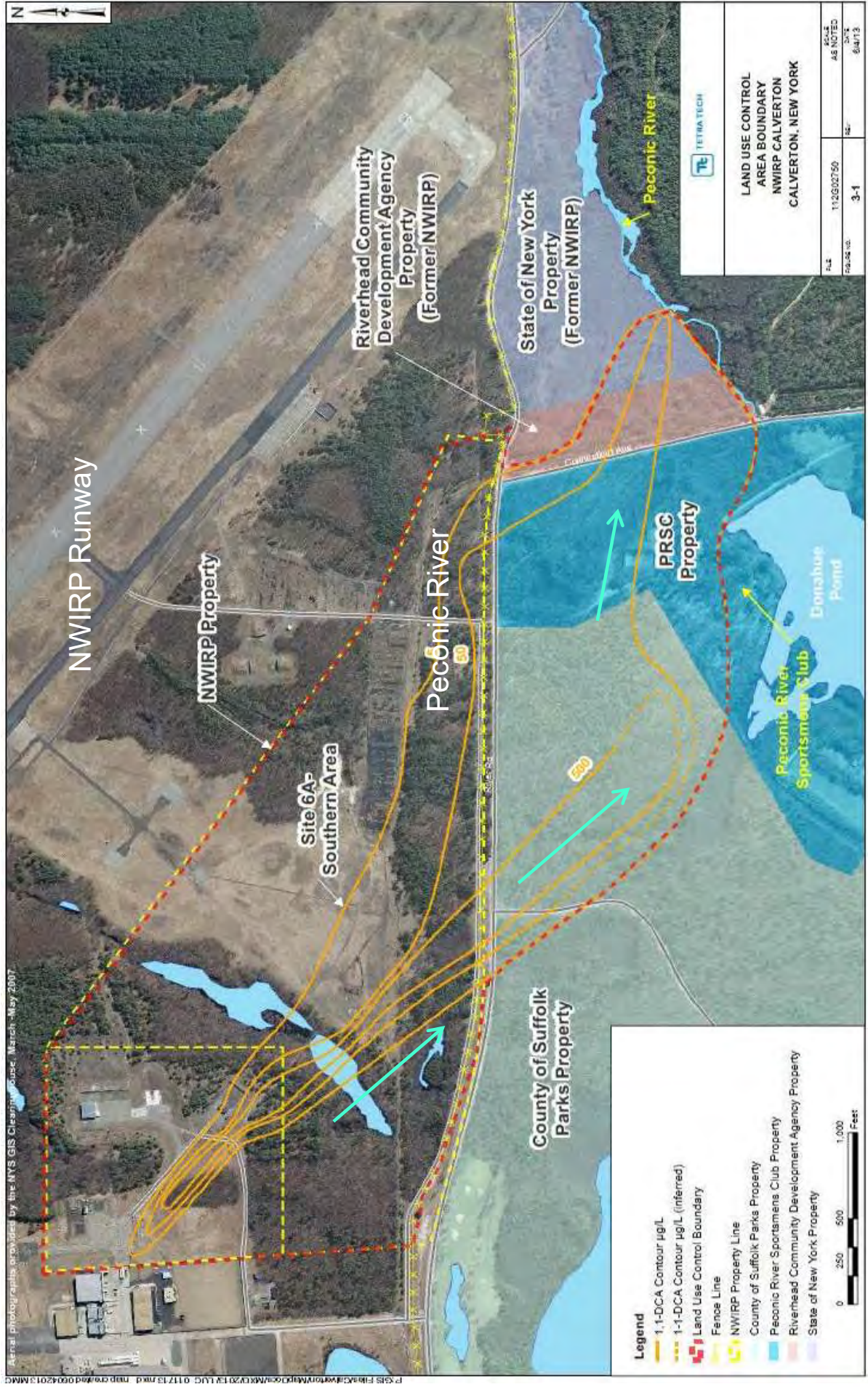


TABLE 2-1
CHEMICALS OF CONCERN AND CLEANUP LEVELS
OU3 ROD REMEDIAL DESIGN, NWIRP CALVERTON, NEW YORK

OU3 ROD Chemical of Concern	OU3 ROD Groundwater Cleanup Level (µg/L)
Benzene	5
Chloroethane	5
Dichlorobenzene, 1,2-(ortho)	5
Dichlorobenzene, 1,3-(meta)	5
Dichlorobenzene, 1,4- (para)	5
Dichloroethane, 1,1-	5
Dichloroethene, 1,1-	5
Ethylbenzene	5
Isopropyl Benzene	5
Naphthalene	50
Trichlorobenzene, 1,2,4-	5
Trichloroethane, 1,1,1-	5
Vinyl Chloride	2
Xylene	5

OU3 ROD - Operable Unit 3 Record of Decision
µg/L - micrograms per liter

OU3 Remedial Design — Land Use Controls



OU3 Remedial Design —Land Use Controls

• Land Use Control (LUC) Objectives

- Prevent human exposure to groundwater containing COCs above cleanup levels.
- Generate provisions for addressing vapor intrusion for new building construction in areas with shallow (water table) VOC-contaminated groundwater.

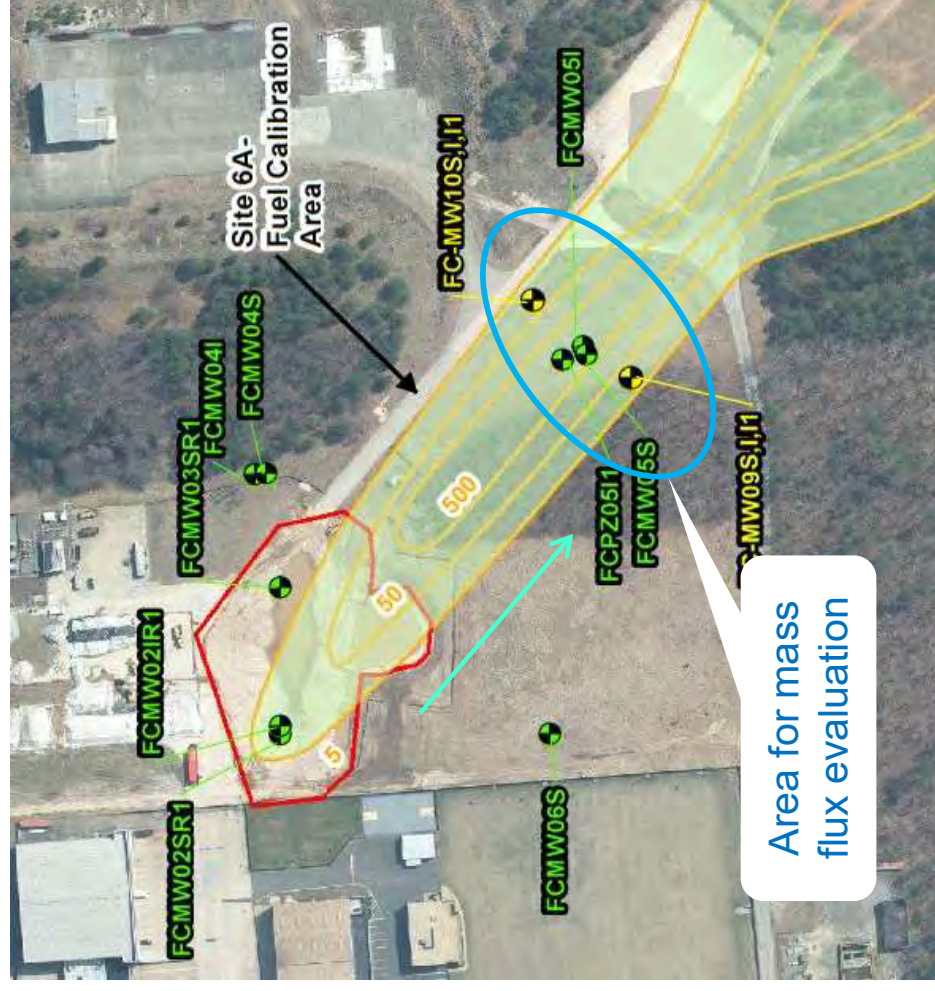
• Property Ownership in the area:

Property Owner (Current/ Future)	OU3 ROD Area	Current Use	Anticipated Future Use
Navy/ Town of Riverhead	Site 6A, Fence Line Area, HCA/LCA, Peconic River Area	Environmental Investigation/ Remediation	Economic redevelopment (Sites 6A and 10B) and conservation (remainder)
Suffolk County/ Suffolk County	HCA/LCA	Conservation/Recreation	Suffolk County Parks; Conservation/Recreation
PRSC/PRSC	HCA/LCA and Peconic River Area	Conservation, Recreation, and Residential	PRSC: Conservation, Recreation, and Residential
NYSDEC/ NYSDEC (former Navy)	LCA and Peconic River Area	Conservation/Recreation	NYSDEC: Conservation/ Recreation

OU3 Remedial Design —Site 6A/Fuel Calibration Area and Site 10B/Engine Test House

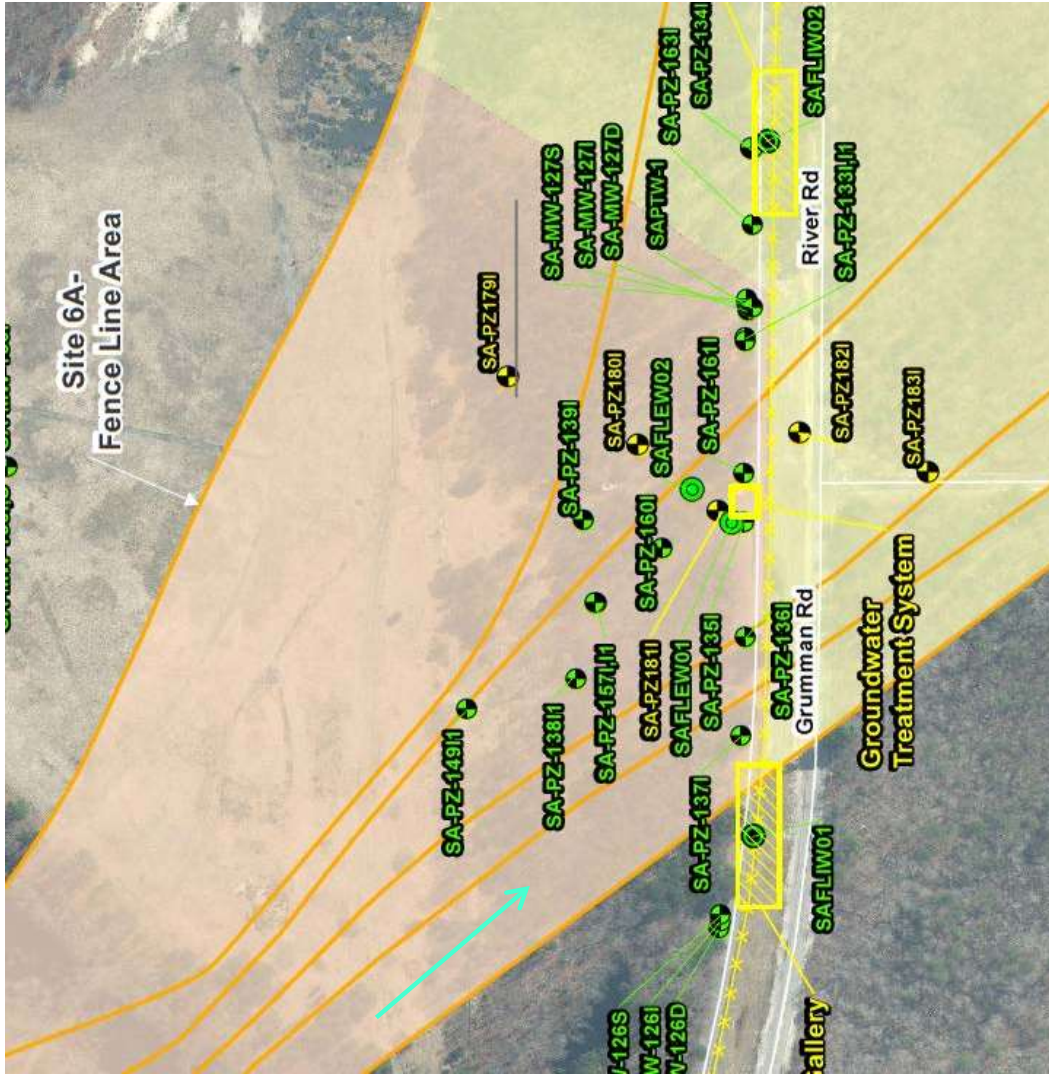


- Known source was cleaned up in 2008 to 2010
- Objective is to determine whether a continuing source of contamination remains
- Mass flux (pounds per year) is used to determine whether a continuing source is present
- A horizontal and vertical curtain of wells is used to address plume shift
- If a continuing source is present, the Navy will consider air sparging to treat residual VOCs
- Closeout to occur when cleanup levels are achieved

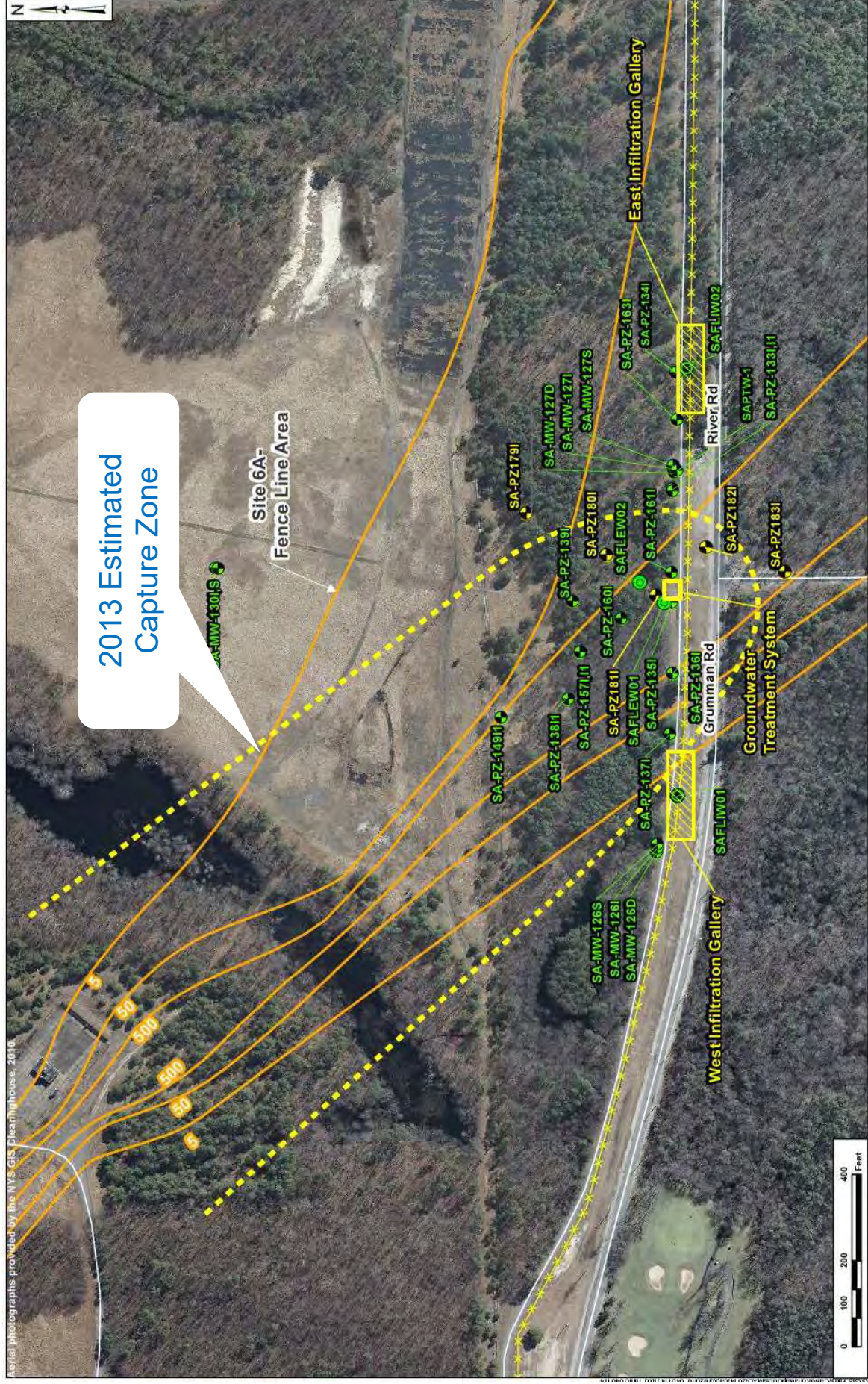


OU3 Remedial Design —Fence Line Area

- Fence Line Treatment System started operation in Oct 2013
- Objective is to prevent continuing off property migration of VOCs
- Monitoring and operational flexibility are used to address plume shift
- Time of operation is dependent whether Site 6A is a continuing source and groundwater travel time
- Shutdown to occur based on mass flux and individual well concentrations
- Closeout to occur when cleanup levels are achieved



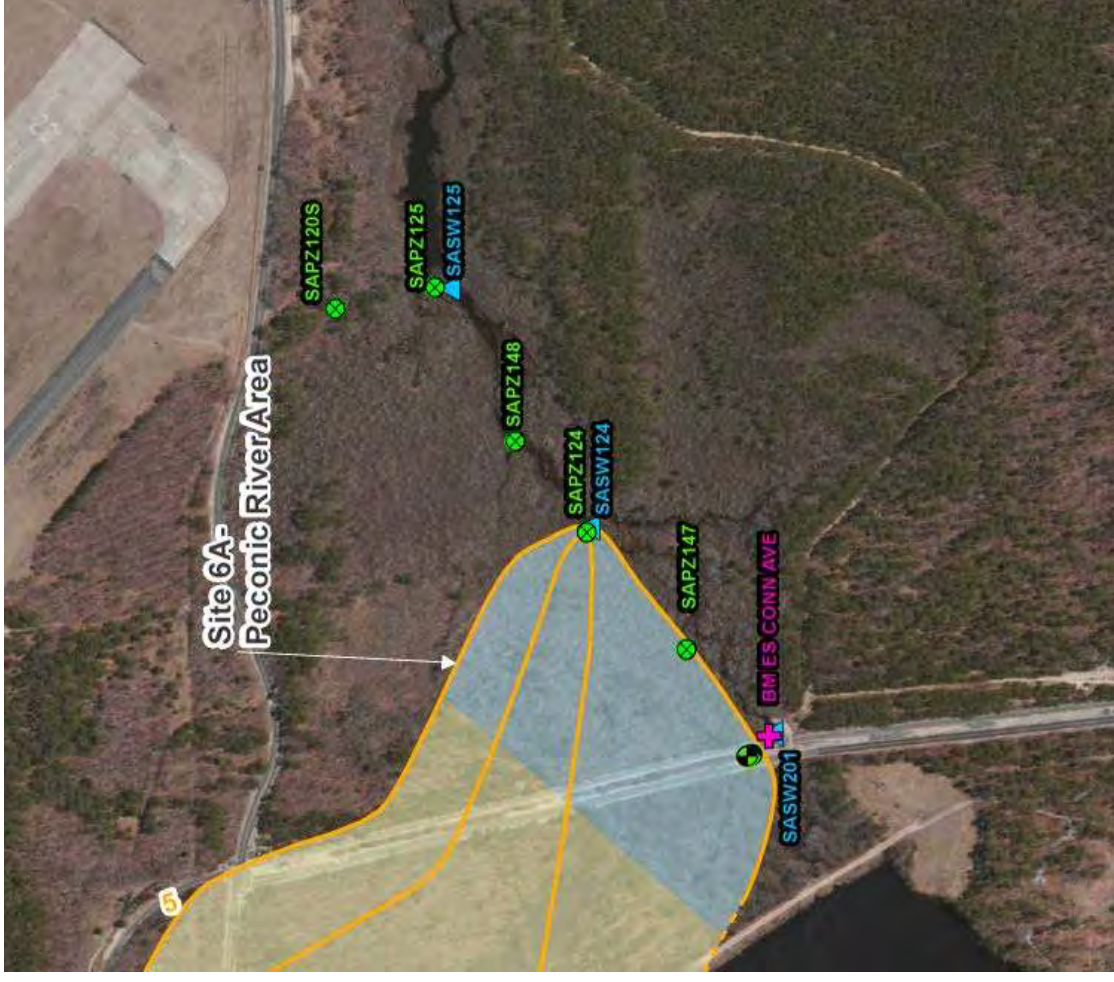
OU3 Remedial Design —Fence Line Area



OU3 Remedial Design—Peconic River Area



- Objective is to prevent adverse impact to ecological receptors
- Monitoring is used to evaluate potential impacts and the need for additional upgradient action or additional action in the Peconic River Area (i.e., air sparging in the wetland)
- Closeout to occur when cleanup levels are achieved



OU3 Remedial Design—Peconic River Area



TABLE 4-6
PORE WATER AND SURFACE WATER BENCHMARKS
SITE 6A - PECONIC RIVER AREA
NWIRP CALVERTON, NEW YORK

OU3 ROD Chemicals of Concern ¹	Ecological Surface/Pore Water Benchmarks (µg/L) ⁸	Human Health Surface Water Value (fish Ingestion) (µg/L) ^{8,7}
Benzene	210 ²	51 (10) ⁸
Chloroethane	— ³	— ⁸
Dichlorobenzenes/Trichlorobenzenes	5 ⁴	—
Dichlorobenzene, 1,2-(ortho)	6 ⁵	1,300
Dichlorobenzene, 1,3-(meta)	32 ⁵	960
Dichlorobenzene, 1,4-(para)	15 ^{5,9}	190
Dichloroethane, 1,1-	3,000 ^{5,9}	— ⁸
Dichloroethene, 1,1-	210 ⁵	7,100
Ethylbenzene	17 ²	2,100
Isopropyl Benzene	2.6 ²	— ⁸
Naphthalene	13 ²	— ⁸
Trichlorobenzene, 1,2,4-	330 ^{5,9}	70
Trichloroethane, 1,1,1-	700 ⁵	— ⁸
Vinyl Chloride	— ³	2.4
Xylene	65 ²	— ⁸

OU3 Remedial Design—Peconic River Area

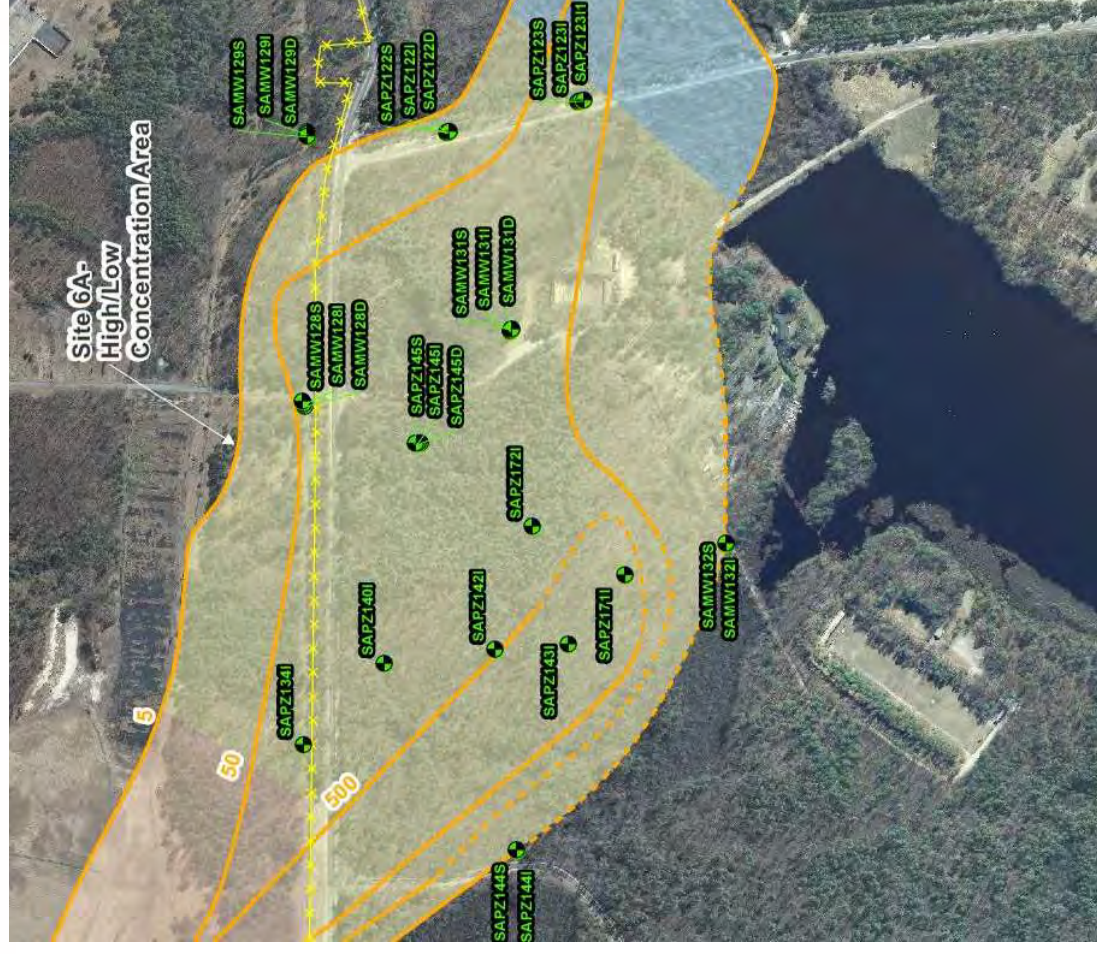


1. OU3 ROD - Operable Unit 3 Record of Decision
2. New York State Ambient Water Quality Values (AWQV) for chronic freshwater values.
3. AWQV not available and no acceptable data is available to calculate values.
4. An AWQV of 5 µg/L is listed for the sum of Dichlorobenzenes and Trichlorobenzenes.
5. New York AWQV unavailable. Water Quality Toxicity Values (WQTVs) were calculated in accordance with New York State Department of Environmental Conservation (NYSDEC) Aquatic Life Procedures in Section 706.1, Appendix for Section 702.9, of their regulations.
6. Well/location specific data will be evaluated based on a running average VOC concentration over four consecutive sampling events (2 years). If the running average concentration exceeds the benchmark, the Navy will evaluate the upgradient groundwater quality to determine the potential duration and magnitude of the benchmark exceedance and also reevaluate the plume migration and potential environmental impacts associated with mitigating plume migration at the Peconic River Area and/or at the High Concentration Area.
7. National Recommended Water Quality Criteria for Human Consumption of Aquatic Organisms (fish). Values presented in () correspond to available NYSDEC Part 703.5 Surface Water Quality Standards for protection of human health from ingestion of fish.
8. No published value is available. A default value of 51 µg/L (based on benzene) will be used to determine whether additional consideration is required. The other VOCs are similar to or less toxic than benzene.
9. Values were revised based on NYSDEC comments of May 14, 2013.

OU3 Remedial Design —High/Low Concentration Areas



- Objective is to monitor groundwater quality to evaluate effectiveness of Fence Line Treatment System and potential future impacts to Peconic River
- Results could be used to modify the operation of the Fence Line Treatment System, implement air sparging at the Peconic River, or in-situ treatment in the High/Low Concentration Areas.
- Closeout to occur when cleanup levels are achieved



Questions?