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MEETING MINUTES REGARDING THE RESTORATION ADVISORY BOARD MEETING HELD ON 21 APRIL 2016 AT THE CALVERTON COMMUNITY CENTER NWIRP CALVERON NY
10/26/2016
RESOLUTION CONSULTANTS

RESTORATION ADVISORY BOARD MEETING
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT (NWIRP), CALVERTON
CALVERTON COMMUNITY CENTER, CALVERTON, NEW YORK
THURSDAY, APRIL 21, 2016

The forty-fourth meeting of the Restoration Advisory Board (RAB) was held at the Calverton Community Center. Meeting attendees included representatives from the Navy (Joseph McCloud), New York State Departments of Environmental Conservation (NYSDEC) (Henry Wilkie) and Health (NYSDOH) (Steven Karpinski), Suffolk County Department of Health Services (Andrew Rapiejko), Town of Riverhead (Drew Dillingham), RAB Community Members (Lou Cork, Steven Shapiro (representing the Wading River Civic Organization), Vincent Racaniello), the public (Andrew Freleng), Arcadis (Paul Martorano), Resolution Consultants (Robert Forstner, Michael Zobel), Tetra Tech (David Brayack), and KOMAN Government Solutions (Jen Good, Greg Pearman). The sign-in sheet is included as Attachment 1.

WELCOME AND AGENDA REVIEW

The Navy representative, Mr. Joseph McCloud, 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. McCloud asked whether the RAB members received the RAB meeting minutes from the October 2015 meeting, and if there were questions or comments on the minutes. Other than a comment regarding affiliation reported for one attendee, no questions or comments were raised, and the minutes for the October 2015 RAB meeting were approved as amended.

COMMUNITY UPDATE

Mr. Vincent Racaniello welcomed all attendees to the meeting as the Community Co-Chair for the RAB, and thanked Mr. McCloud for arranging the pre-meeting tour of the Fence Line Treatment System (FLTS).

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

Mr. McCloud 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. McCloud 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 three

removal actions from 2011-2012, 2014 and 2015 in order to address unexploded ordnance (UXO) and munitions and explosives of concern (MEC) issues.

Summaries of the various areas of excavation and quantities of MEC and Material Potentially Presenting an Explosive Hazard (MPPEH) handled during the 2011-2012, 2014 and 2015 removal actions were presented. Combined, the three response actions have resulted in the removal or destruction of over 17,000 items of MPPEH, 1,700 20-mm rounds, 59 0.50-caliber armor-piercing projectiles, 17 intact drums, 110 drum carcasses and 77,600 pounds of recyclable metals, and the excavation, screening and backfill of 20,752 CY of site soil. Regarding the drums, Mr. Racaniello asked if any contained trichloroethene (TCE). Mr. McCloud indicated that several drums did contain TCE as part of their contents (mostly as a component of paint or paint sludge – no pure TCE was identified); in addition, two drums were also found to contain Freon. Mr. Andrew Rapiejko (SCDHS) asked if any of the soil handled was tested, and if any further work or asbestos screening is proposed. Mr. McCloud responded, indicating that soil excavated for environmental remediation purposes in grid location B4 was tested for purposes of off-site disposal, and that further response actions would be evaluated in a Feasibility Study (FS) currently underway, but that based on the results of the 2015 removal action it appears that further screening is not expected to be practical due to root mass contained in the soil. Further, asbestos screening is not planned as the asbestos only proposes a danger if exposed and friable (as might be the case during excavation and screening); if any asbestos does remain, it is currently buried and does not present a danger.

A summary of the path forward for Site 2 was presented, which is expected to include completion of a FS, followed by selection of a remedy and completion of a Remedial Design (RD). Mr. Steven Shapiro inquired as to the timetable to implement a remedy. Mr. McCloud indicated that the current timetable was for completion of the FS sometime in fall 2016, and that ideally remedy selection and the RD might be completed in time to construct the remedy sometime in 2017. If a cover is the selected remedy, it is expected that construction would take several months. Mr. David Brayack (Tetra Tech) elaborated further, noting that because it is assumed that full clearance of MEC cannot be attained, a cover is the likely remedy to be recommended in the FS. Mr. Rapiejko inquired about the status of off-property land. Mr. Brayack noted that this entire area is designated for conservation. Mr. Racaniello asked about ownership of off-property lands; Mr. Brayack indicated that except for the former Northrop Grumman just south of Site 2, the off-property lands were owned by the State or County.

Mr. Cork inquired as to the total cost for the Site 2 remedy. Mr. Brayack indicated that this is not yet known, and would be evaluated as part of the FS. However, from experience the most expensive part of the remedy at the installation to date has been the remediation at Site 1, which cost approximately $10 million. Mr. Racaniello asked how big of an area is impacted, and what extent would likely have land use controls (LUCs) imposed. Mr. Brayack estimated that the entire 10-acre clearing would be subject to a LUC, and that an estimated half-acre of off-property land would probably also be affected by LUCs. Mr. Rapiejko inquired about grids E2 and E3 (the off-property areas where mounding was observed) and

whether the munitions response site boundary might still be expanded. Mr. McCloud noted that grids E2 and E3 were added to the MRS as a result of the supplemental geophysical mapping program and it is not expected that the MRS boundary will expand beyond those areas.

TECHNICAL PROGRESS – FENCE-LINE TREATMENT SYSTEM UPDATE

Ms. Jen Good (KOMAN Government Solutions) 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 (also known as Operable Unit 3 [OU3]) 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 30-month period from system startup through March 2016. System uptime and flow rates were lower in the first four months due to issues associated with system startup; following the initial shakeout period, average influent flowrates exceeded 78 gallons per minute (gpm) over the next year. The system operated at a reduced rate beginning in March 2015, initially due to a seasonally-elevated groundwater table and subsequently due to reduced output from extraction well EW-2. A decision was made to install a new extraction well, EW-3, to address the decreasing productivity of EW-2; this well went online in late February 2016, and contributed to a higher average influent flowrate of 94.5 gpm in March 2016.

Influent contaminant concentration trends were then presented. Generally, a downward trend has been observed since the system began operation. Based on the influent data, it is estimated that the system is currently removing less than a half pound of VOCs on a monthly basis, and the cumulative removal through March 2016 was estimated at 49.07 pounds. The FLTS maintains continued compliance with all discharge goals, including effluent levels less than the relevant New York State Department of Health (NYSDOH) Maximum Contaminant Levels (MCLs), and VOC removal efficiency is in excess of 99 percent. Analysis of VOCs shows influent concentrations are nearing or are occasionally below MCLs, and as a result, system shutdown criteria will be evaluated on an ongoing basis as more data becomes available.

Mr. Shapiro asked if there was an estimated shut-down date based on this data. Mr. Brayack responded, noting that we know that the plume shifts around laterally, and also the influent concentrations are reflective of a dilution effect since the FLTS pulls in water from beyond the plume boundaries. So, evaluation of shutdown criteria would primarily consider monitoring data from monitoring wells and

piezometers in the Fence Line Area, as opposed to system influent concentrations. Based on the available data, however, consideration of eventual system shutdown might begin within a year or two.

TECHNICAL PROGRESS –SITE 7 REMEDIAL ACTION UPDATE

Ms. Good provided an update on the status of Site 7 (the former Fuel Depot). The presentation is included in Attachment 3. A summary of the site history was provided first, noting that an air sparging / soil-vapor extraction (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 2013. Modifications were made over time to improve performance, but the system reached the end of its functional life, with a major blower overhaul required to continue operation. The system was shut down in November 2013 and routine monitoring began according to the "Performance and Shutdown Evaluation" plan.

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 was done on a quarterly basis through December 2015, and on a semi-annual basis beginning March 2016. In addition, in support of a potential in-situ chemical oxidation (ISCO) pilot project, additional water quality parameters were evaluated in March 2016 to aid in design.

Groundwater monitoring data was then summarized, including trend charts showing concentrations over time of the contaminants of concern at the seven locations included in the routine monitoring program. Mr. Shapiro inquired about the "bumps" in the data, particularly one observed at MW-17S. Ms. Good responded, indicating it is possible that the bumps are caused by excess suspended solids, but that overall these anomalies are not specifically a concern. Mr. Rapiejko inquired about whether naphthalene and methylnaphthalene are indicative of jet fuel, and if they've always been present. Mr. Brayack responded, noting that these are indicative of jet fuel and diesel, and that they have been observed historically and were included in the Site 7 ROD; although they were not monitored for a period of time, during evaluation of shutdown criteria these compounds were added to the monitoring program.

Mr. Robert Forstner (Resolution Consultants) then described the decommissioning of the AS/SVE system and the path forward for the site. The demolition contractor mobilized to the site on August 20, 2015, and completed removal of piping and abandonment of wells during the first work of site work. The equipment within the fabric structure was removed and all material was decontaminated and recycled or disposed of. The fabric structure itself was repurposed by the manufacturer for reuse by a museum. Photographs indicating the progress of the work, including the final site condition, were shown.

Regarding future work, additional action in the form of ISCO was considered likely. Analysis of options and contracting were underway, and the preliminary design called for injections on 15-foot grid across the

area of remaining impacts to oxidize remaining VOC inventory. The provisional schedule estimated completion of the Work Plan in May 2016, with implementation targeted for fall 2016, depending on review and comments to the Work Plan. Mr. Rapiejko asked if ISCO could address the naphthalene and methylnaphthalene present; Mr. Forstner indicated the design team was optimistic that this was possible and it would be evaluated in depth during optimization of reagent selection and dosing.

Mr. Cork inquired about the area north and west of the runway and whether it was clean, and further noted that Luminati Aerospace was interested in purchasing the runway (although he was in favor of a lease as opposed to a sale). Mr. Brayack responded, noting that nothing was seen in that area during prior investigations.

TECHNICAL PROGRESS – 2015 GROUNDWATER INVESTIGATION

Mr. Forstner provided a presentation on the results of the 2015 sampling events. The presentation is included in Attachment 3. The main sampling event in 2015 was a continuation of the annual basewide program begun in 2011, and included surface water, sediment and groundwater sampling at four locations along the Peconic River in April and September, and a full round of groundwater sampling at 73 locations (including the four Peconic River piezometers) in September. Groundwater samples were collected from locations at Site 2 (15 locations on-property and eight locations off-property), Site 6A/10B (12 locations) and the Southern Area (18 locations onsite and 20 locations offsite, including seven offsite locations in the Peconic River area). Additional samples collected in 2015, outside of the annual basewide program, included two monitoring wells at Site 2 (FT-MW09I and 10I) that were not in included in the 2014 program and were sampled in July, additional sampling of two locations within the Site 6A source area (FC-MW02SR1 and FC-MW03SR1) in July for purposes of monitoring VOC concentrations in that area, and sampling of three locations (SA-MW179I, 180I and 181I) in the Fence Line Area in July and September for purposes of siting the new FLTS extraction well (EW-3).

All samples (groundwater, surface water and sediment) were analyzed for VOCs; three groundwater samples were also analyzed for iron, manganese and arsenic. For the results maps shown in the presentation and the accompanying detail maps, the abbreviation “ND” was employed to indicate that a given compound (or VOCs as a group, if appropriate) was not detected. Bolded results indicate that a compound exceeded a relevant standard (primarily, the NYSDOH MCLs for groundwater and/or the OU3 Remedial Design [OU3 RD] benchmarks). Detections of the primary site contaminants (e.g., 1,1-dichloroethane [DCA] and 1,1,1-trichloroethane [TCA]) were identified on the maps regardless of concentration relative to the standards. The abbreviation “NX” was used to denote samples where at least one VOC other than a primary site contaminant was detected, but that such detection(s) did not exceed a relevant standard.

Mr. Forstner first reviewed figures showing the flow of groundwater and analytical results for Site 2. Generalized groundwater flow data for Site 2 indicate flow is to the southeast, consistent with previous

observations. Groundwater elevations at Site 2 in September 2015 were generally about a half-foot to three-quarters of a foot lower than the September 2014 observations. Mr. Rapiejko inquired about flow into and out of Swan Pond, and specifically whether groundwater discharges into the pond or passes below. Mr. Forstner indicated that it is likely a combination, as water elevations recorded at staff gauges in surface water bodies have generally been in close agreement with those in nearby monitoring wells and piezometers, so surface and groundwater appear to be in direct communication. Mr. Rapiejko then asked if the water in the pond was ever sampled; Mr. Brayack indicated it was not.

Regarding groundwater quality, DCA was found just above the MCL at FT-MW03S, which may be suggestive of much higher levels of DCA and TCA observed in 2014 being connected to the disturbance and removal of drums from this general area during a prior MEC removal action. Conversely, concentrations of DCA, TCA and TCE were detected at several multiples of the MCLs at FT-MW09I (downgradient of the drum removal area) in July and September. FT-MW02S was the only other on-property location with an MCL exceedance (where ethylbenzene was nominally above the MCL). Mr. Rapiejko asked if the project team was confident that FT-MW09I and 10I were downgradient of the drum removal area and capable of evaluating contaminant migration from the drum area. Mr. Brayack responded that they were confident the wells were within the plume from this area; although the depth to screen intervals as measured below ground surface (as shown on the figures) are not identical, the screen intervals at these two locations are actually in the same elevation range due to a difference in surface elevation between these two monitoring wells.

Discussion then moved to the off-property area, particularly the area south and east of Swan Pond, where TCE has consistently exceeded its MCL at three locations. Of particular note was FT-PZ460I, where a concentration of 190 µg/L was detected, consistent with an “anomaly” that has been seen at this location since it was first sampled in February 2012. DCA, 1,1-dichloroethene (DCE), and tetrachloroethene (PCE) also exceeded MCLs at this location. TCE and cis-1,2-dischloroethene also exceeded MCLs at FT-PZ462I, and TCE exceeded its MCL at FT-PZ458I. Overall, the data indicates the TCE anomaly appears to be decreasing in intensity, though it remains an item to be monitored going forward.

Mr. Forstner then moved on to figures showing results at Sites 6A/10B and the Southern Area. First, a figure summarizing the overall contaminant plume extending from Sites 6A/10B and the subareas it is divided into for discussion purposes was shown for orientation purposes. Similar to the groundwater flow data for Site 2, groundwater at Sites 6A/10B and the Southern Area generally flows to the southeast. Water levels to the northeast were found to be approximately one-half foot lower in elevation in 2015 than in 2014, but water levels closer to the Peconic River were generally similar to those observed in 2014. The review of the groundwater chemistry data then proceeded by subarea:

- **Source Area (Sites 6A/ 10B):** There was a continued increase in concentrations of several VOCs at FC-MW03SR1 in 2015 (where six compounds exceeded their MCLs in July and eight

exceeded MCLs in September, as compared to five MCL exceedances in 2014), and at FC-MW02SR1 (where isopropyl benzene exceeded the MCL in July, and ethylbenzene exceeded the MCL in September). Groundwater results in this area were otherwise generally consistent with results from 2014. Further downgradient, concentrations at the mass flux "fenceline" near the well clusters FC-MW05, FC-MW09 and FC-MW10, across which the mass flux of VOCs moving downgradient from the source area is measured, were all below MCLs, although an increase in naphthalene was observed at FC-MW05I. The total mass flux is currently estimated at 0.2 lbs/year of VOCs, below the benchmark to consider additional source area treatment.

- **Fence-Line Area:** The trend in this area has been towards decreasing concentrations of VOCs over the past several years at most locations, particularly in areas further upgradient (e.g., DCA concentrations at SA-PZ157I1 have decreased from 550 µg/L in 2012 to 240 µg/L in 2013, 130 µg/L in 2014, and not detected in 2015). In the downgradient areas closer to the FLTS, concentrations of several times the MCL for DCA continue to be found. Some notable deviations from 2014 data were noted. As compared to 2014 data (when there were no MCL exceedances), MCLs exceedances for DCA (120 µg/L), TCA (20 µg/L) and DCE (7.9 µg/L) were noted at SA-PZ139I; this is thought to be indicative of the remaining plume of VOCs having decreased in width to the point where it is observed only intermittently by the well/piezometer network and at other times the plume may be "threading" through the well network in this area. In addition, notable increases in PCE (as compared to prior data) were observed at SA-PZ149I1 and 157I1, though it is not known if this is related to Navy use of the site.
- **Offsite High Concentration Area:** Concentrations of several VOCs (and in particular, DCA) at SA-PZ142I remain elevated. Although the 2015 DCA concentration of 60 µg/L represents a decline from the preceding years (290 µg/L in 2012, 250 µg/L in 2013 and 100 µg/L in 2014), this concentration is still twelve times the MCL. Concentrations of DCA and DCE were otherwise stable or decreased in the Offsite High Concentration Area.
- **Offsite Low Concentration Area:** Elevated concentrations of VOCs (primarily DCA, but TCA and DCE also exceed MCLs by about one order of magnitude) continue to be detected at SA-MW132I, although DCA has decreased from a peak of 740 µg/L in September 2013 to 400 µg/L in September 2015. Elsewhere within the Offsite Low Concentration Area, 2015 VOC concentrations (where detected) were generally consistent with established trends.
- **Peconic River Area:** No VOCs exceeded OU3 RD benchmarks in this area in porewater, though DCA was in excess of half of the benchmark at SA-PZ124 and 147 in April. DCA was detected in surface water at SA-SW124 in April and September, and at SA-SW201 and 204 in September only; these results did not exceed the OU3 RD benchmarks, and the detections at SA-SW204 were consistent with intermittent detections that have previously been reported.

Some discussion regarding the analytical data followed. Mr. Rapiejko inquired about the PCE detection in the Fence Line Area, and the suggestion that this may not be Navy-related. Mr. Brayack responded,

noting that PCE was initially observed when tracking the plume in 2012, appeared mostly towards the west, was historically found alone (i.e., only PCE would be detected, or site COCs listed in the OU3 ROD would be detected but not PCE), and may trace back towards a former clothing silk-screening operation that is no longer operating in one of the buildings at the site's industrial core. Mr. Racaniello noted that at SA-MW138I1 the PCE has recently been observed mixed with site COCs such as DCA; Mr. Brayack replied, indicating that it takes time for these compounds to flush out so eventually there is mixing, but that for the time being the strategy should be to continue monitoring the PCE. No other specific response was needed since regardless of the source, to the extent it exists in the plume, PCE can be treated by the FLTS.

Mr. Rapiejko then asked if it is possible that the plume in the Fence Line Area could have moved beyond the existing monitoring area. Mr. Forstner responded, noting that this is not likely; we continue to see DCA at high levels where it has historically been observed, as evidenced by the 2015 data at SA-PZ139I and 179I, and there are well clusters further sidegradient to the east and west that continue to be monitored for purposes of bounding the plume. Mr. Brayack further noted that these observations tend to indicate that the plume remains within the well network but has shrunk in total width to a point where it may not be consistently observed.

The path forward for the site was then summarized. The OU3 ROD and RD established supplemental mitigation measures (in-situ VOC degradation in the High Concentration Area and/or air stripping along the north bank of the Peconic River) and benchmarks (based on VOC concentrations in groundwater and porewater) at which such supplemental measures should be considered for implementation. Based on current data, exceedances of the benchmarks in the Peconic River Area do not appear likely in the near term, so implementation of the supplemental measures is not being considered; however, this conclusion will be re-evaluated on an annual basis. In response to specific data gaps, however, some additional work will be conducted in the near term. First, to provide better definition of the edge of the plume in the Low Concentration Area, new monitoring well clusters will be installed along the northern shore of Donahue Pond (on the Peconic River Sportsman's Club property). Secondly, in response to recent increases in VOC concentrations in the Site 6A source area, a site-specific program to investigate potential sources for these VOCs will implemented.

Finally, a path forward regarding investigation of perfluorinated compounds (PFCs) across the entire installation was discussed. PFCs are considered an "emerging contaminant" for which the science of investigation, assessment and remediation is rapidly evolving. PFCs were a component of fire-fighting foam, and may have been released as the result of fire training activities at Site 2 and/or testing of hangar fire suppression systems near Site 6A. The Sampling and Analysis Plans for the annual basewide monitoring program are in the process of being revised, and a PFC sampling component will be included. PFC sampling was tentatively scheduled for summer 2016. Regarding the fire-fighting foam, Mr. Rapiejko inquired as to how the tests of the hangar fire suppression systems were performed. Mr. McCloud

responded, noting that prior to the early 1980s, these systems were tested via a “full dump” of the system, where the full system was triggered and the foam was fully deployed and would have mostly filled the hangars. The foam was then likely just washed away with water. Later, these systems were evaluated through testing of the mixing valve only, which generated only a small quantity of foam. Mr. McCloud further explained that the screening levels for the relevant compounds of concern (known as PFOS and PFOA) are very low – 0.2 µg/L for PFOS and 0.4 µg/L for PFOA – so even limited historic releases of these compounds could be cause for concern. (N.B. – The Environmental Protection Agency later issued revised health advisories in May 2016 that lowered the screening levels for both PFOS and PFOA to 0.07 µg/L, both individually and for the combination of both compounds.) Mr. Karpinski noted that the NYSDOH is in the process of establishing an MCL for these compounds, but that they are nevertheless actively pursuing evaluation of potential PFC sites, even in the absence of a MCL. Mr. Rapiejko asked if PFCs are treatable; Mr. Karpinski indicated that they are treatable, and granulated activated carbon is effective.

GENERAL DISCUSSION

Following completion of the formal presentations, an opportunity for further discussion of the progress at the site in general was provided. Continuing the general discussion of emerging contaminants, Mr. Rapiejko inquired about 1,4-dioxane, a stabilizer often associated with TCA that the NYSDOH currently regulates as an “unspecified organic contaminant” with an MCL of 50 µg/L (although establishment of a specific MCL is currently under consideration). Mr. Forstner and Mr. Brayack both responded, noting that it is technically possible to evaluate 1,4-dioxane as a VOC, and it could therefore theoretically be monitored as part of routine sampling. However, while the reporting limits for such analyses may be compatible with the current MCL of 50 µg/L, accurate evaluation of 1,4-dioxane at lower concentrations requires a separate analysis. A screening program using the alternative analysis was completed at six locations in 2015 as part of the basewide sampling event, and it was detected in one sample at a concentration of 1.9 µg/L. Further investigation of 1,4-dioxane will therefore be deferred until a lower MCL or other relevant regulatory value is established.

CLOSING REMARKS

Mr. McCloud thanked the attendees for their participation. The next RAB meeting was planned for fall 2016, with a final date and location to be confirmed. The meeting was then adjourned.

ATTACHMENT 1

APRIL 21, 2016 RAB MEETING SIGN-IN SHEET

44th RAB Meeting for NWIRP Calverton
April 21, 2016
Sign-in List

Name (Print)	Address and/or email if interested in being on mailing list	Affiliation	How did you hear about the meeting?
Vincent Bacanelli		RAB	
Andrew Raiciglio		SCDHS	
Lou Cook		R.A.B.	
Steve Karpinski		NYSDOH	
Henry Wiltse		NYSDEC	
[illegible]		KGS	
Jen Good		KGS	
Dave Brayack		Tt	
Joseph McClain		NAVFAC	
Robert Forstner		Resolution Consulting	
Steve Shapiro		RAB/NR civic	
Mike Zobel		Resolution	
Andy Fieleg		Self member of the public	
Paul Martorano		ARCADIS	
Drew Dillingham		Riverhead	

ATTACHMENT 2

APRIL 21, 2016 RAB MEETING AGENDA

Agenda

Restoration Advisory Board
Naval Weapons Industrial Reserve Plant Calverton

April 21, 2016
Calverton Community Center, Calverton NY
7:00 p.m.

Welcome and Agenda Review
Joseph McCloud, NAVFAC Mid-Atlantic

Distribution of Minutes
All Members

Community Update
Vincent Racaniello, RAB Co-chair

Technical Progress

General Overview of ER Sites
Joseph McCloud, NAVFAC Mid-Atlantic

Site 2 Munitions Response Update
Joseph McCloud, 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

2015 Groundwater Investigation Summary
Robert Forstner PE, Resolution Consultants

Closing Remarks
Joseph McCloud, NAVFAC Mid-Atlantic

Presenters will be available after the program for questions.

ATTACHMENT 3

NAVY PRESENTATIONS – APRIL 21, 2016 RAB MEETING

RESTORATION ADVISORY BOARD MEETING

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

April 21, 2016

General Overview of ER Sites

- Sitewide
  - –2015 annual sampling program completed in May & September
- Site 2
  - –Additional MEC work completed in fall 2015
- Site 6A/10B/Southern Area
  - –Fence-line system construction completed and online October 2013
    - Replacement extraction well installed and online as of March 2016
  - –OU3 ROD RD completed
- Site 7
  - –AS/SVE system shutdown for 2014 & 2015; monitoring ongoing
  - –Pilot study for supplemental action planned

SITE 2 (FIRE TRAINING AREA) MUNITIONS RESPONSE

April 2016 Restoration Advisory Board

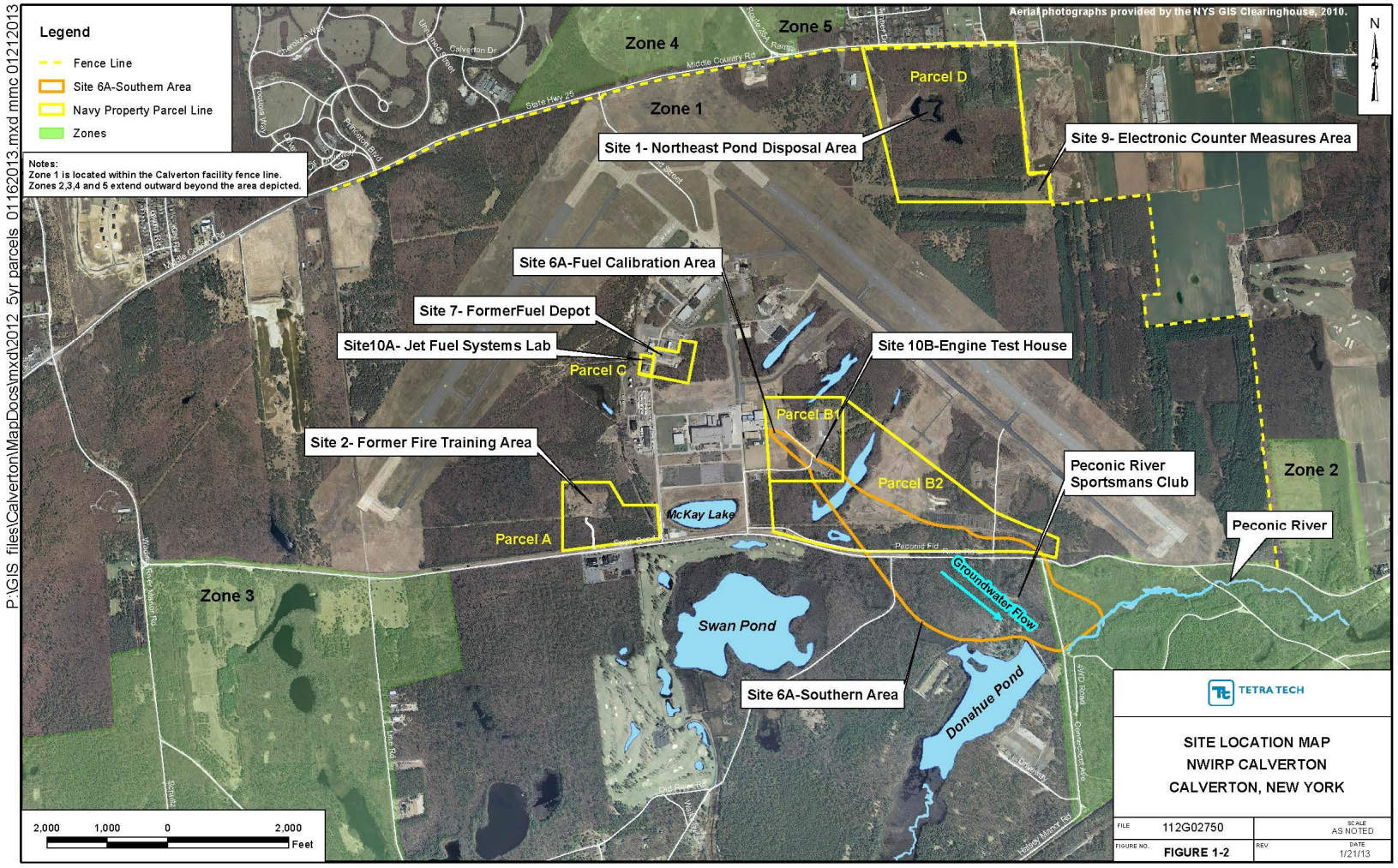
NWIRP CALVERTON, NEW YORK

April 21, 2016

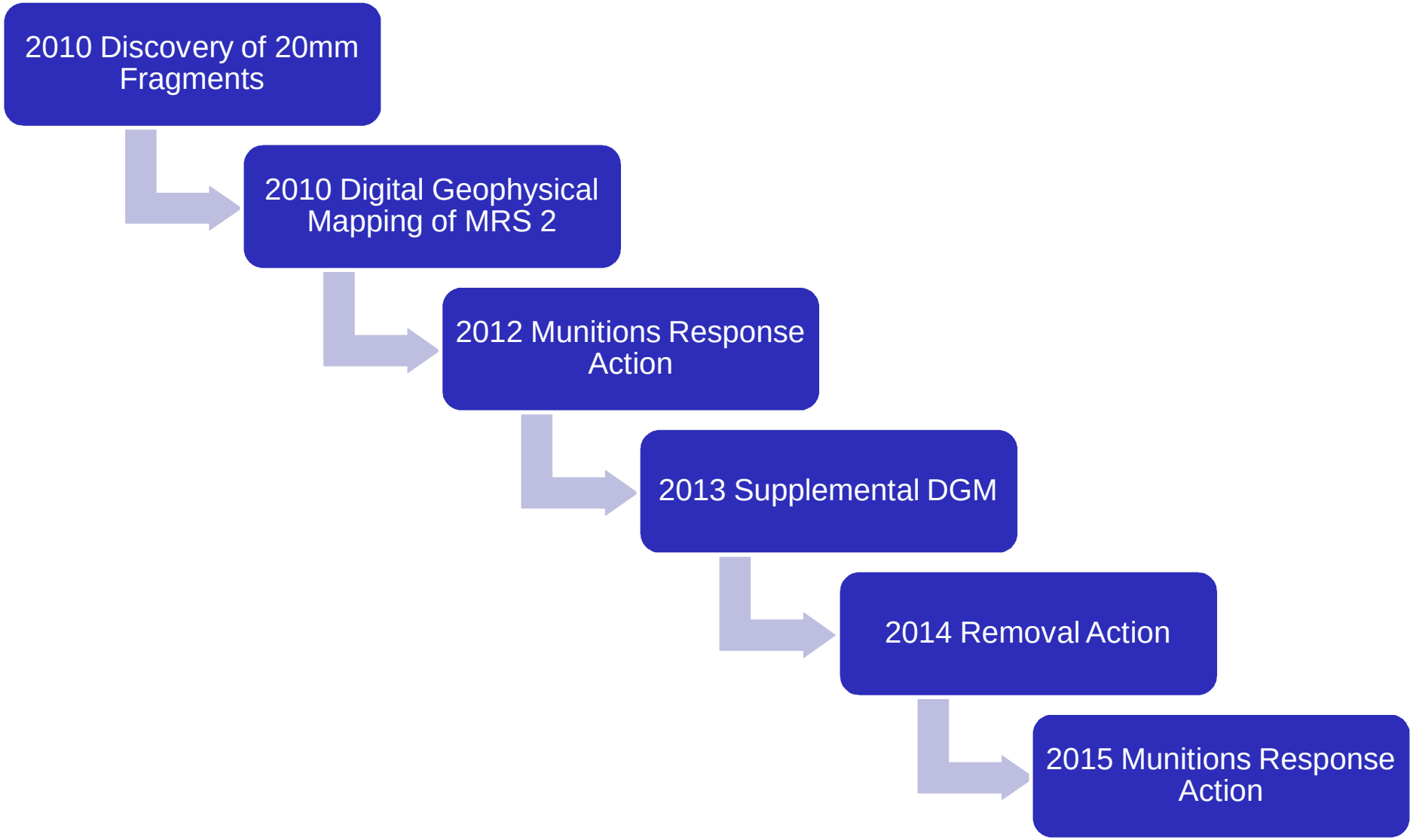
Site 2 Munitions Response Outline

- Site 2 Location
- Munitions Response Actions at Site 2 Summary
- 2012, 2014 Munitions Response/Removal Action Figure
- 2015 Munitions Response Action
- Site 2 Removal Summary
- Site 2 Path Forward

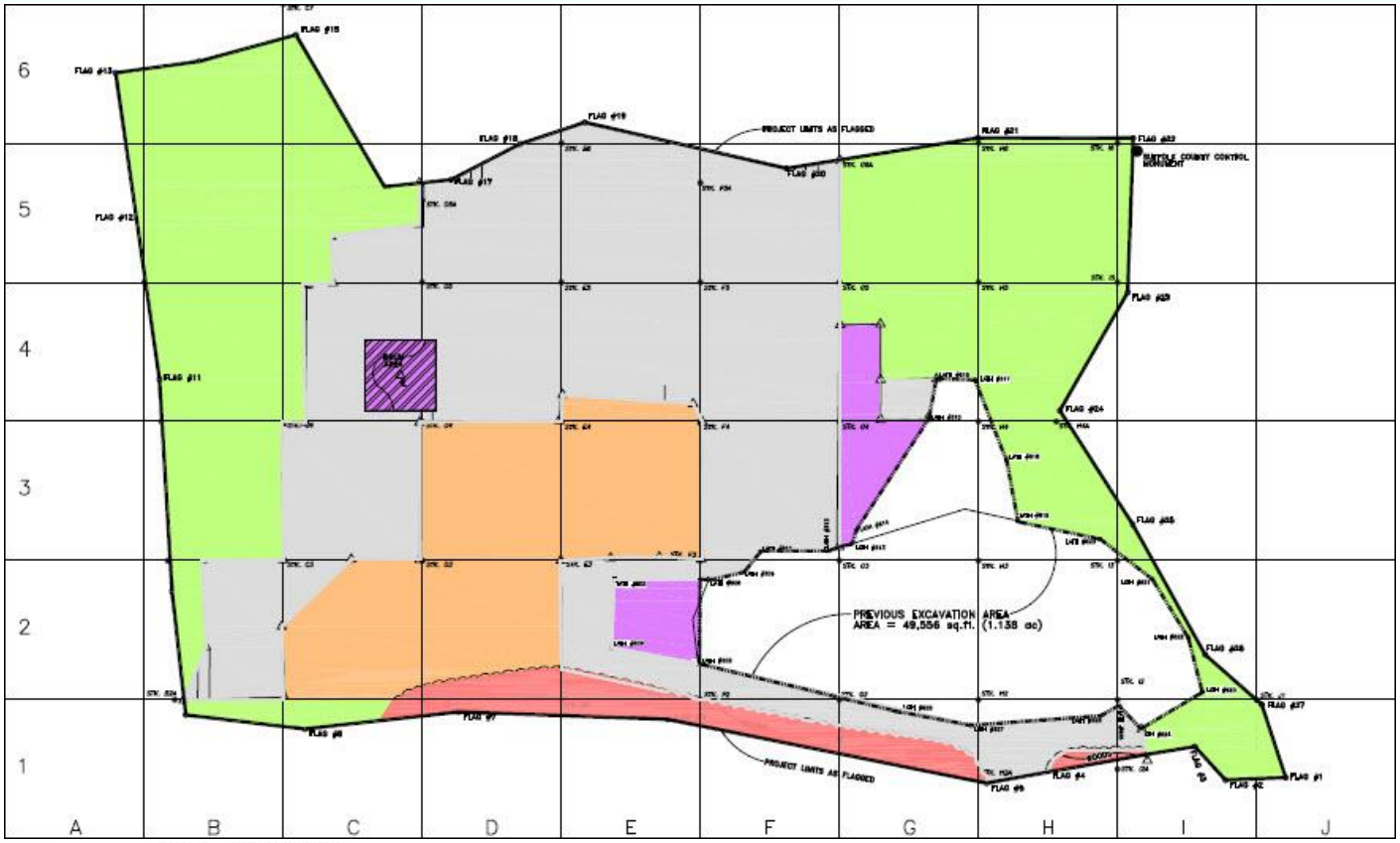
Site 2 Location



Site 2 Munitions Response – Summary



Site 2 – 2012, 2014 Munitions Response/Removal Action



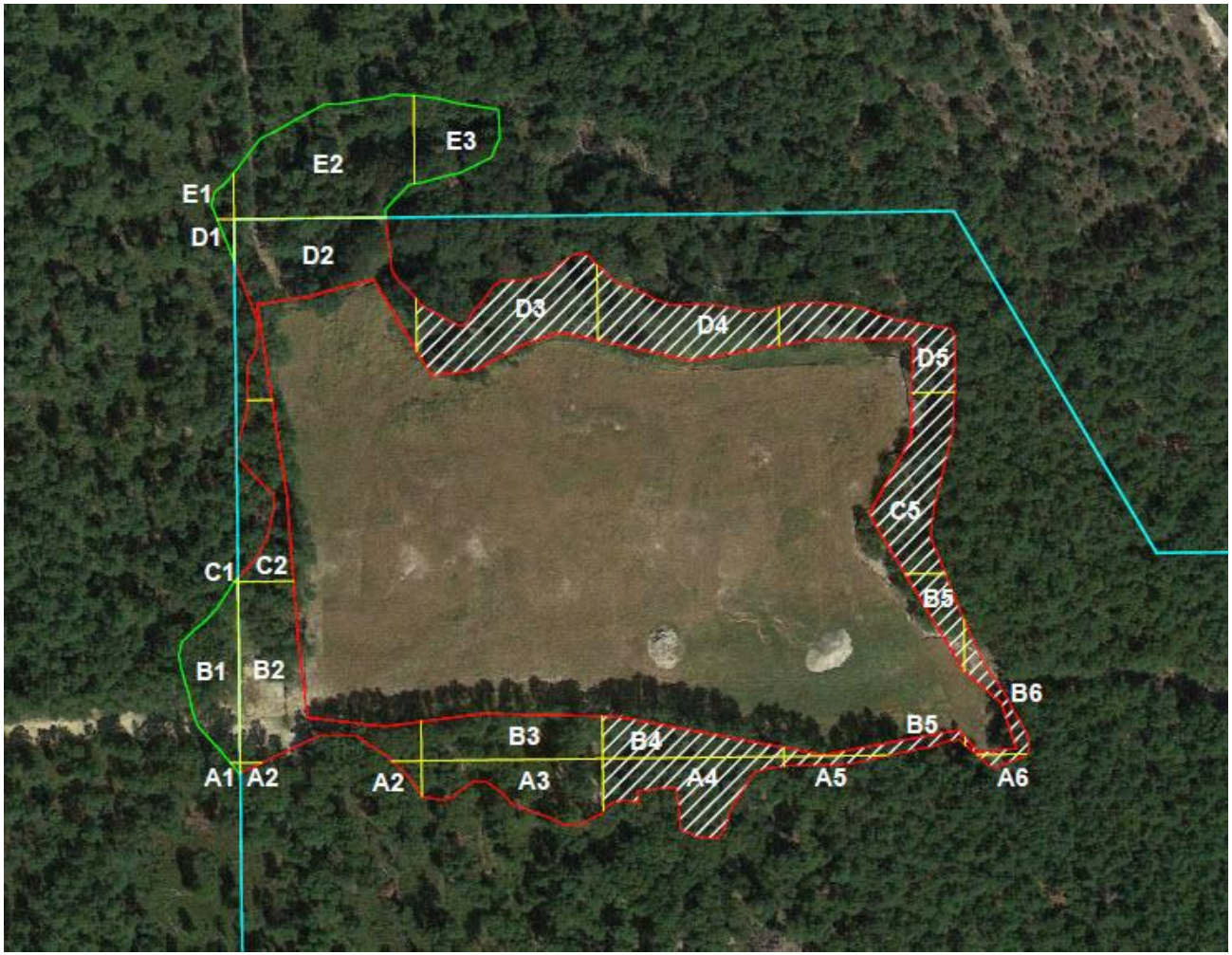
AREA = 2.07 ACRES
SUBSURFACE MANUAL EXCAVATION OF ANOMALIES COMPLETED TO DEPTH OF NON-DETECTION. RISK CODE NEGLIGIBLE

AREA = 0.86 ACRES
SUBSURFACE MECHANICAL EXCAVATION OF ANOMALIES COMPLETED TO AVERAGE DEPTH OF 18-INCHES BGS. RISK CODE NEGLIGIBLE.

AREA = 2,39 ACRES
SUBSURFACE MECHANICAL EXCAVATION OF ANOMALIES COMPLETED TO AVERAGE DEPTH OF 18-INCHES BGS, GREATER THAN AN AVERAGE OF 18 INCHES BGS TO DEPTHS OF NON-DETECTION REMAIN UNKNOWN AND UNDEFINED. RISK CODE B1A OR "CRITICAL".

AREA = 0.205 ACRES
PHASE II AND PHASE III PLANNED EXCAVATION AREAS TO ADDRESS ENVIRONMENTAL COCs.

Site 2 – 2015 Munitions Response Action



LEGEND

FORMER SITE 2 - FIRE TRAINING AREA (30.56 ACRES)

ESTIMATED EXTENT OF METALLIC ANOMALIES EXCAVATION DEPTH 18 INCHES (2.9 ACRES)

ESTIMATED EXTENT OF METALLIC ANOMALIES EXCAVATION DEPTH 36 INCHES (.88 ACRES)

COMPLETED GRIDS

A1 GRID NUMBER

LOT AND GRID NUMBERS

Lot	Grids
#1	A2/B2
#2	A1/B1
#3	C1/C2
#4	D1/D2
#5	E1/E2/E3
#6	D3/D4
#7	C5/D5
#8	A6/B6
#9	A5/B5
#10	B4/A4
#11	B3/A3

60 0 60 120
(feet)

Site 2 Munitions Response (2015) Photo Log

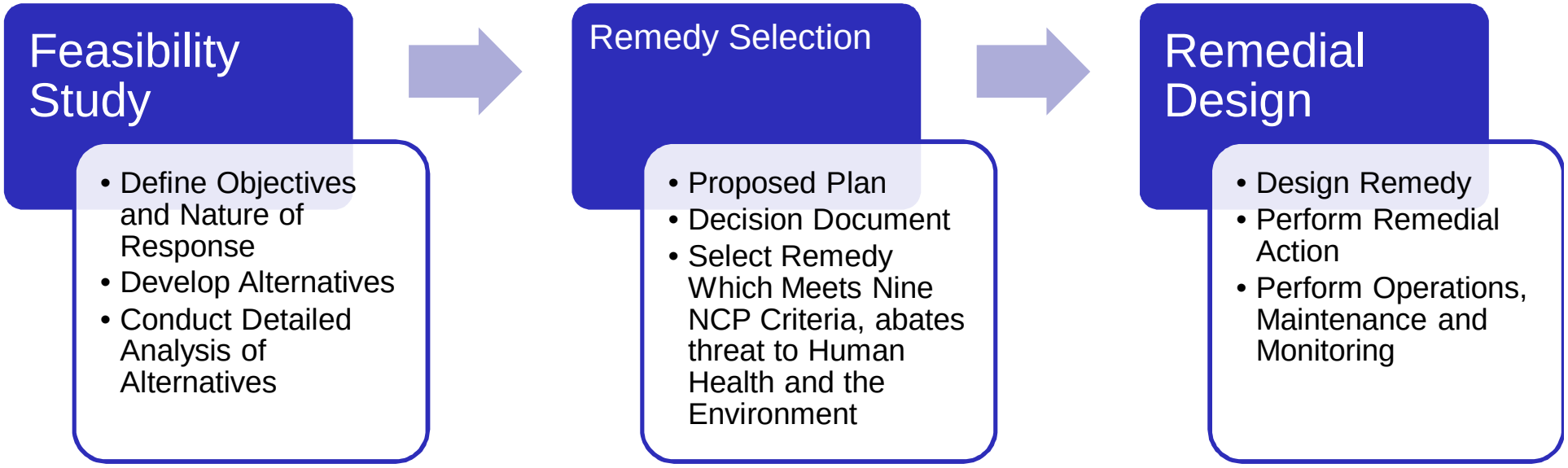
Site 2 – Removal Summary

Summary of Munitions Response Actions 2012 - 2015

Category	Item	Quantity	Disposition
MEC	20-mm M56A4 HE Projectile	2	Explosive Counter Charge
MEC	20-mm M97 HEI Projectile	2	Explosive Counter Charge
MPPEH	20-mm Projectiles or Pieces of Projectiles (Nomenclatures non-identifiable)	17,398	Explosive Counter Charge
MDAS	20-mm rounds	1,790	Thermal Flashing
MDAS	0.50 caliber armor piercing (AP) projectiles	59	Thermal Flashing
MDAS	3.5-inch Practice Rocket	1	Thermal Flashing

Soil Excavated, Screened & Backfilled	20,752	cu yds
Recyclable Metals Recovered	77,600	lb
Intact Drums	17	
Drum Carcasses	110	

Site 2 – Munitions Response Path Forward



State and community acceptance of the FS/CMS will be evaluated after regulatory and public comment.

The Navy will work with the State to select a preferred remedy pursuant to RCRA and CERCLA, and will provide the public opportunity for comment on a RCRA Statement of Basis and CERCLA Proposed Plan (PP).

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

April 2016 Restoration Advisory Board

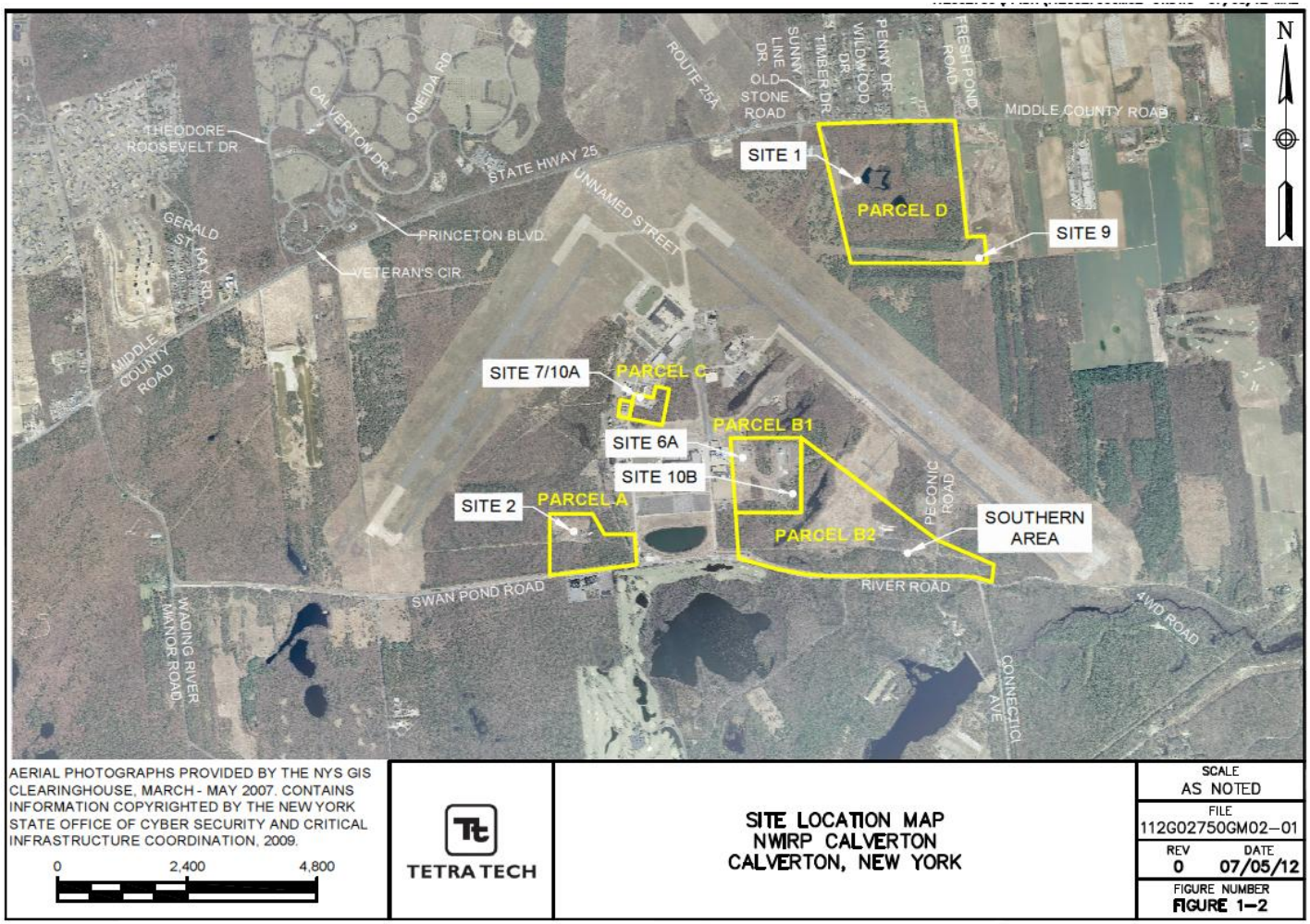
NWIRP CALVERTON, NEW YORK

April 21, 2016

Presentation Agenda

- Introduction
- System Overview
- System Operation
- System Performance / Recent Activities
- System Performance / Future Activities

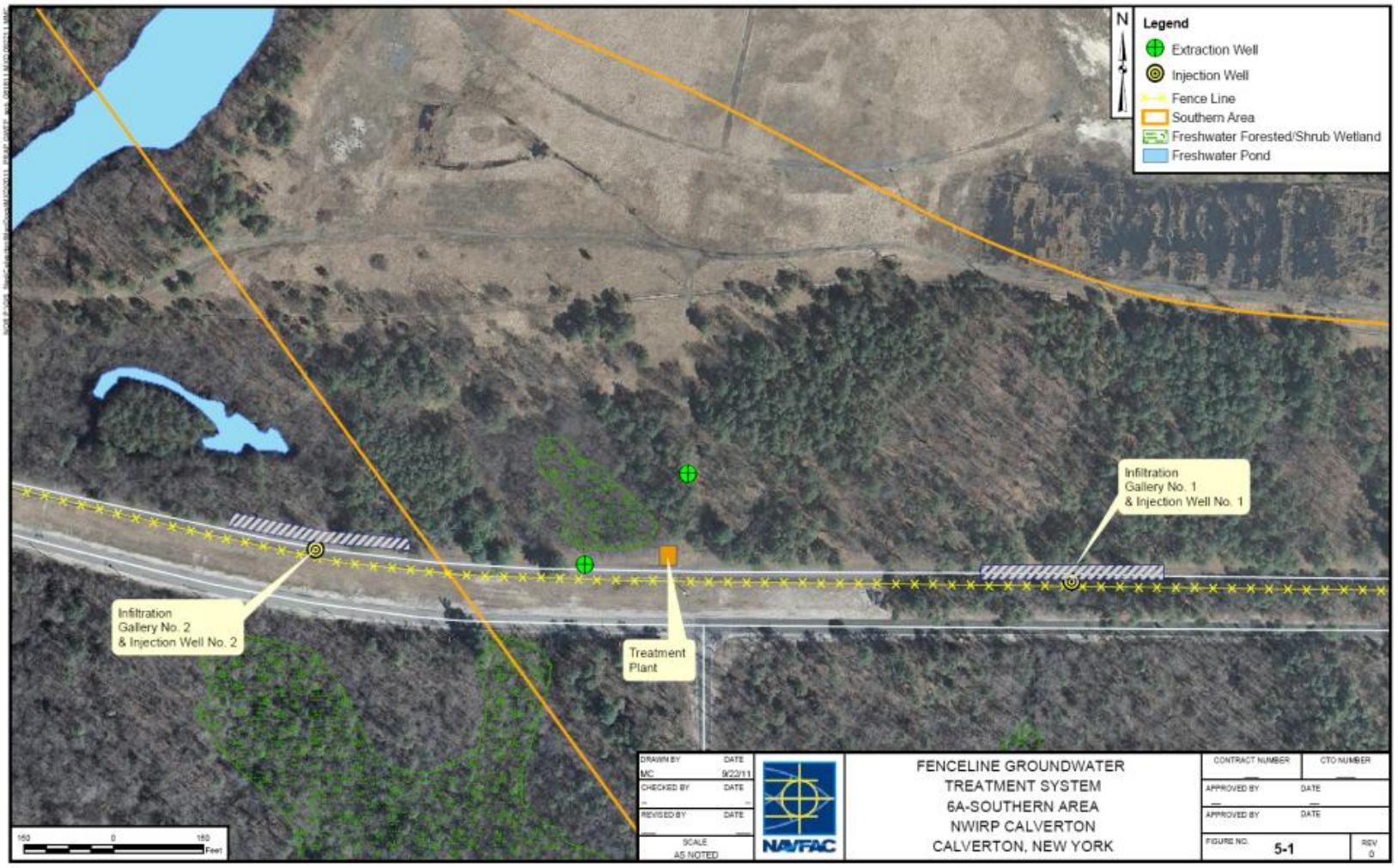
Site Layout


N
SITE 1
PARCEL D
SITE 9
SITE 7/10A
PARCEL C
PARCEL B1
SITE 6A
SITE 10B
SITE 2
PARCEL A
PARCEL B2
SOUTHERN AREA
THEODORE ROOSEVELT DR
CALVERTON DR.
ONEIDA RD
STATE HWAY 25
ROUTE 25A
OLD STONE ROAD
SUNNY LINE DR.
TIMBER DR.
WILDWOOD DR.
PENNY DR.
FRESH POND ROAD
MIDDLE COUNTY ROAD
PRINCETON BLVD.
VETERAN'S CIR.
UNNAMED STREET
GERALD ST.
KAY RD.
MIDDLE COUNTY ROAD
PECONIC ROAD
SWAN POND ROAD
RIVER ROAD
WADING RIVER MANOR ROAD
4WD ROAD
CONNECTICUT AVE
AERIAL PHOTOGRAPHS PROVIDED BY THE NYS GIS CLEARINGHOUSE, MARCH - MAY 2007. CONTAINS INFORMATION COPYRIGHTED BY THE NEW YORK STATE OFFICE OF CYBER SECURITY AND CRITICAL INFRASTRUCTURE COORDINATION, 2009.
0
2,400
4,800
TETRA TECH
SITE LOCATION MAP
NWIRP CALVERTON
CALVERTON, NEW YORK
SCALE
AS NOTED
FILE
112G02750GM02-01
REV
0
DATE
07/05/12
FIGURE NUMBER
FIGURE 1-2

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
- System start-up occurred 8 October 2013

Fence Line Treatment System Overview



Fence Line Treatment System Overview

Treatment Plant Building

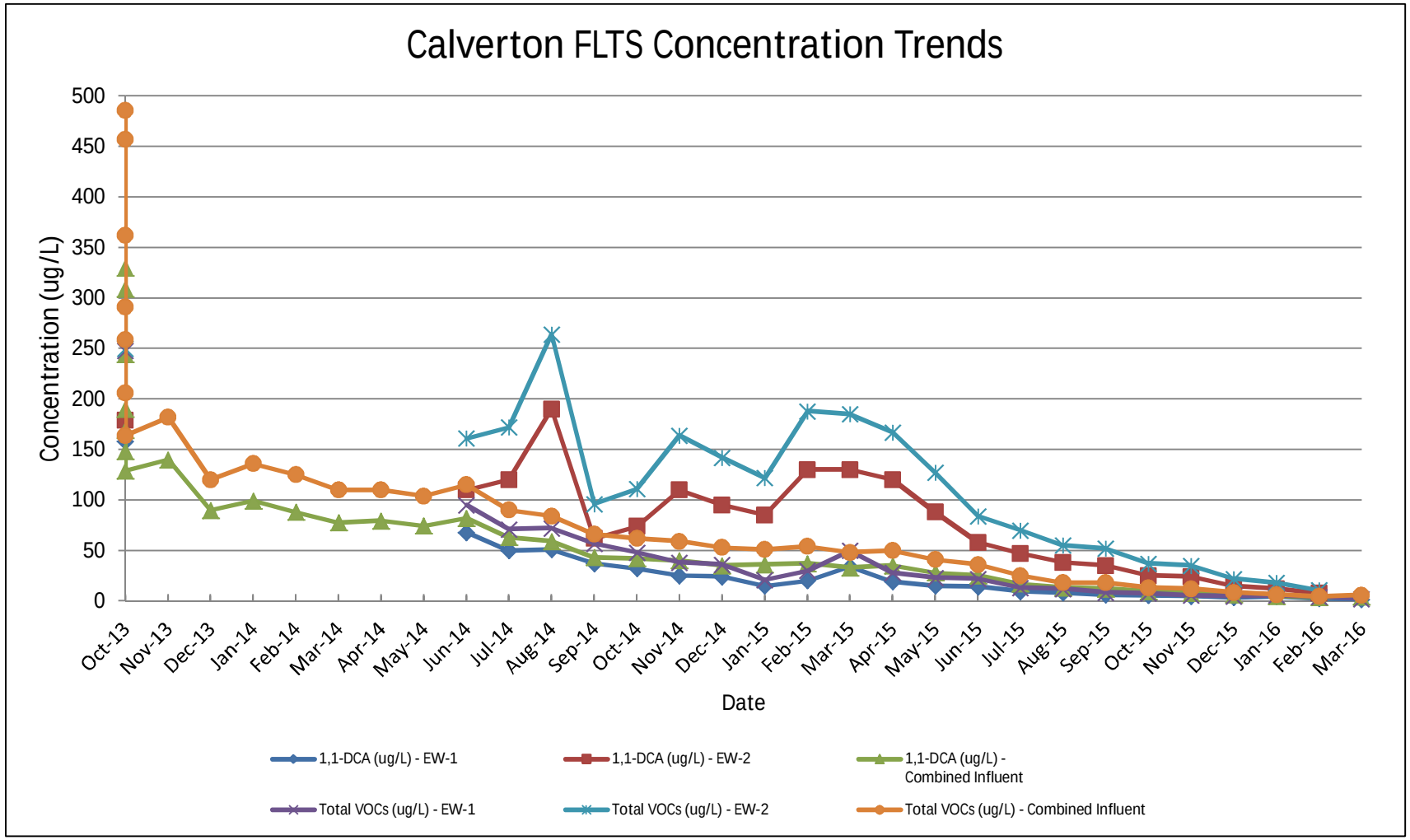
System Components

Fence Line Treatment System Operation

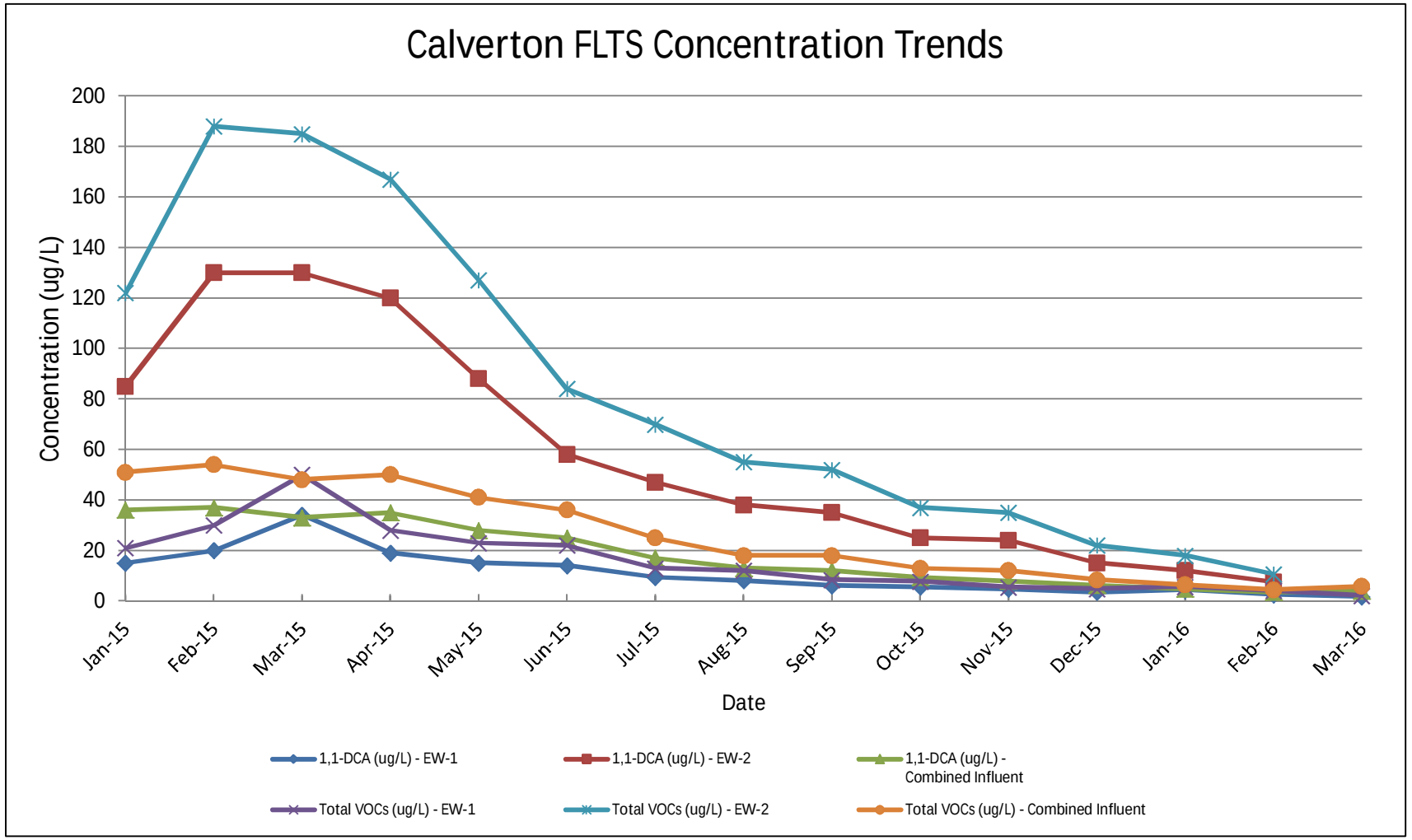
FLOW DATA			
Date	Total Monthly Flow (gal)	Total Cumulative Flow (gal)	Average Influent Flowrate (gpm)
Oct-13*	2,976,601	2,976,601	89.9
Nov-13	2,288,925	5,265,526	78.2
Dec-13	1,715,264	6,980,790	61.5
Jan-14	2,358,016	9,338,806	77.0
Feb-14	3,814,953	13,153,759	96.2
Mar-14	3,794,639	16,948,398	91.3
Apr-14	3,683,505	20,631,903	91.0
May-14	3,658,145	24,290,048	87.9
June-14	3,149,276	27,439,324	85.0
July-14	3,113,492	30,552,816	79.4
Aug-14	3,113,492	33,666,308	81.7
Sept-14	1,949,358	35,615,666	78.8
Oct-14	3,744,800	39,360,466	87.0
Nov-14	2,325,171	41,685,637	88.4
Dec-14	3,791,812	45,477,450	91.0

FLOW DATA			
Date	Total Monthly Flow (gal)	Total Cumulative Flow (gal)	Average Influent Flowrate (gpm)
Jan-15	3,711,714	49,189,164	87.1
Feb-15	3,331,398	52,520,562	87.0
Mar-15	2,435,158	54,955,720	77.3
Apr-15	3,152,581	58,108,301	76.1
May-15	3,020,310	61,128,611	77.2
June-15	2,700,213	63,828,824	73.1
July-15	3,167,585	66,996,409	71.1
Aug-15	2,660,132	69,656,541	64.5
Sept-15	2,849,371	72,505,912	68.6
Oct-15	2,725,555	75,231,467	65.1
Nov-15	2,506,673	77,738,140	68.8
Dec-15	2,642,380	80,380,520	67.5
Jan-16	2,160,582	82,541,102	69.8
Feb-16	2,832,957	85,374,059	73.4
Mar-16	3,931,870	89,305,929	94.5

Fence Line Treatment System Operation



Fence Line Treatment System Operation



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
Nov-14	1.14	37.58
Dec-14	1.64	39.22

VOC Mass Removal		
Date	Monthly VOC Mass Removal (lb)	Cumulative VOC Mass Removal (lb)
Jan-15	1.59	40.81
Feb-15	1.49	42.30
Mar-15	0.98	43.28
Apr-15	1.31	44.59
May-15	1.02	45.61
June-15	0.81	46.42
July-15	0.67	47.09
Aug-15	0.41	47.50
Sept-15	0.43	47.93
Oct-15	0.30	48.23
Nov-15	0.25	48.48
Dec-15	0.18	48.66
Jan-16	0.12	48.78
Feb-16	0.10	48.88
Mar-16	0.19	49.07

Fence Line Treatment System Performance / Recent Activities

- Continued compliance with all discharge goals
- Continued VOC removal efficiencies of >99%
- Decreasing trend observed in influent concentrations and flow rates
- Decision to install replacement extraction well (EW-3) ~100 feet north of existing EW-2 (based on September 2015 data)
- EW-3 installed in late November / December 2015

EW-3 Wellhead

Fence Line Treatment System Performance / Recent Activities

- Trenching and tie-in of EW-3 to FLTS performed in January – February 2016

EW-2 in forefront, EW-3 ~100 ft. north

Fence Line Treatment System Performance / Future Activities

- EW-3 brought on-line in late February 2016
- Influent analytical results nearing or below MCLs
- Begin evaluating groundwater concentrations and shut-down criteria
  - Perform sampling in Spring 2016 of Fence Line Area wells
- Continue to perform monthly compliance sampling and submit monthly compliance reports

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

April 2016 Restoration Advisory Board

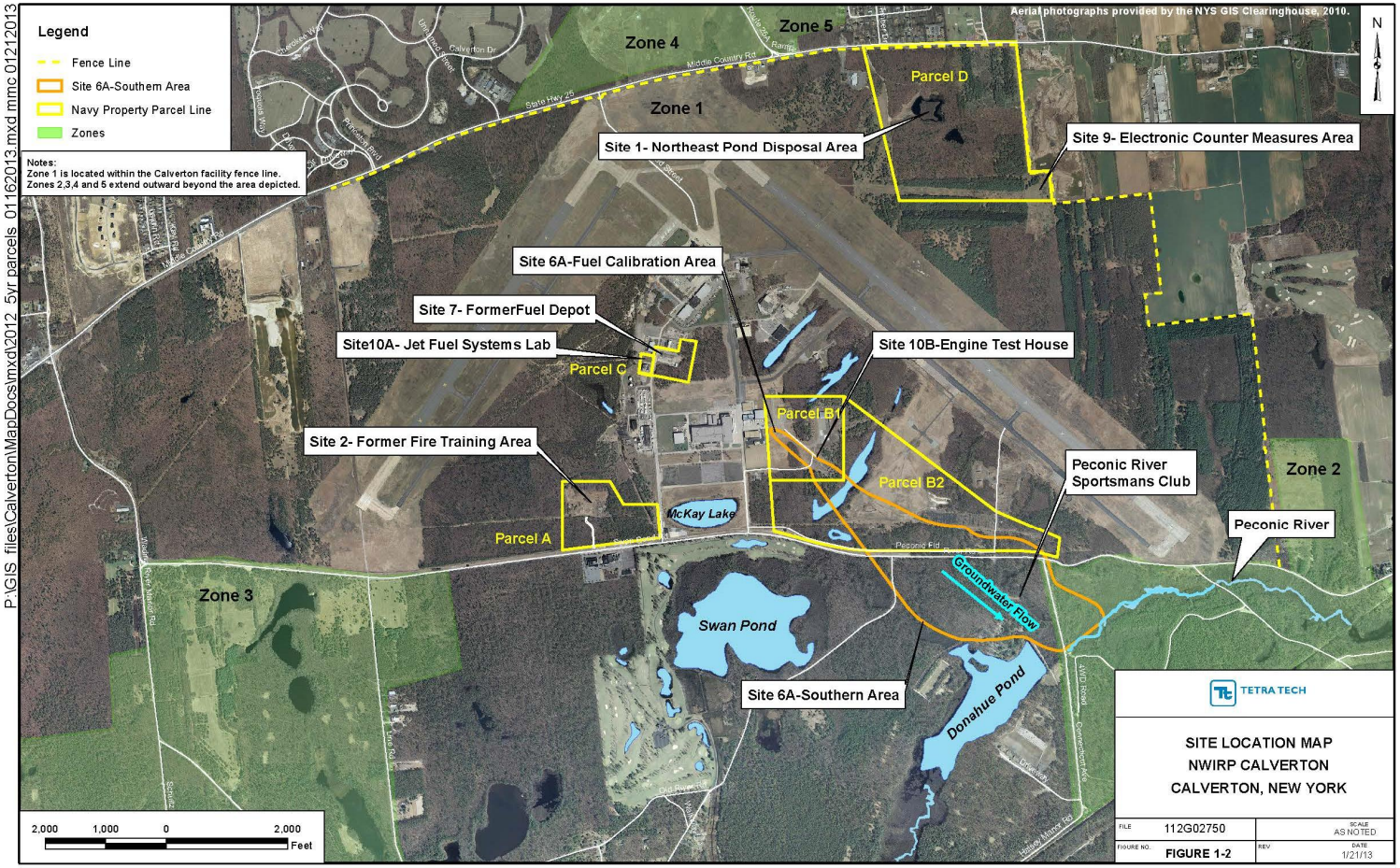
NWIRP CALVERTON, NEW YORK

April 21, 2016

Outline of Presentation

- Introduction
- System Performance / Background Information
- Recent Activities
  - Groundwater Sampling
  - Decommissioning of full-scale AS/SVE system
- Summary and Path Forward

Introduction

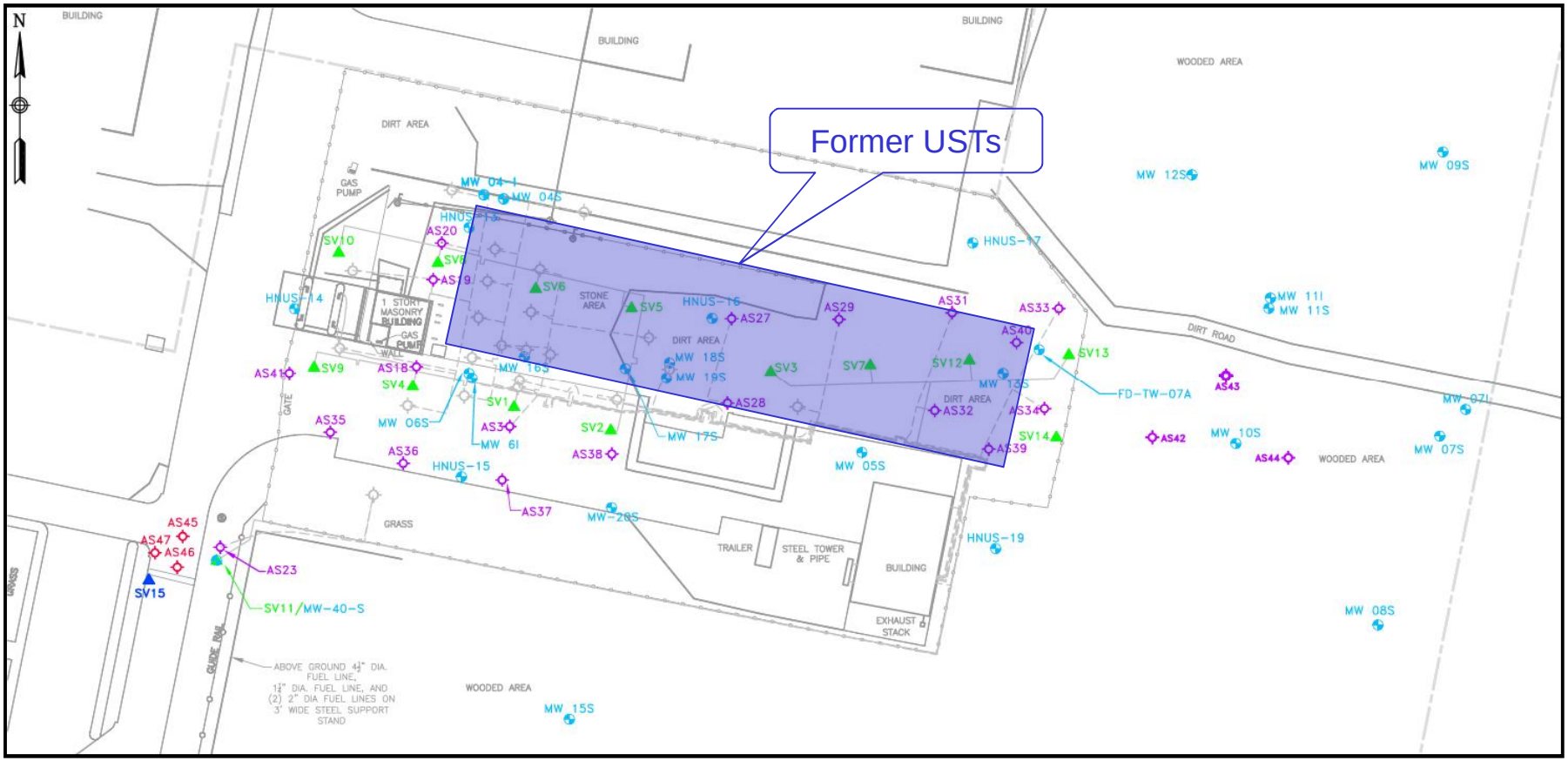


Introduction

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

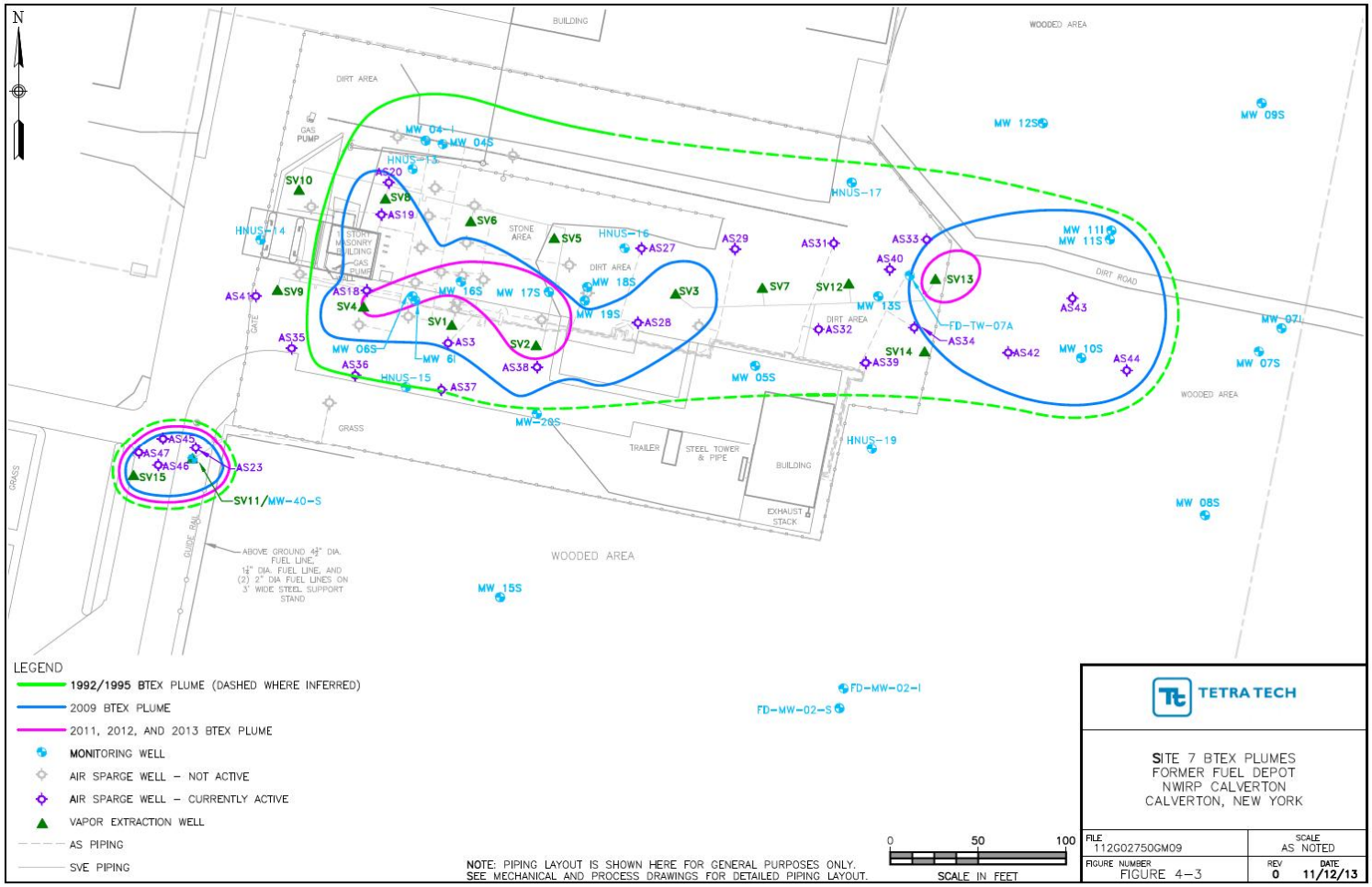
Introduction

Injection, Extraction, and Monitoring Wells



System Performance

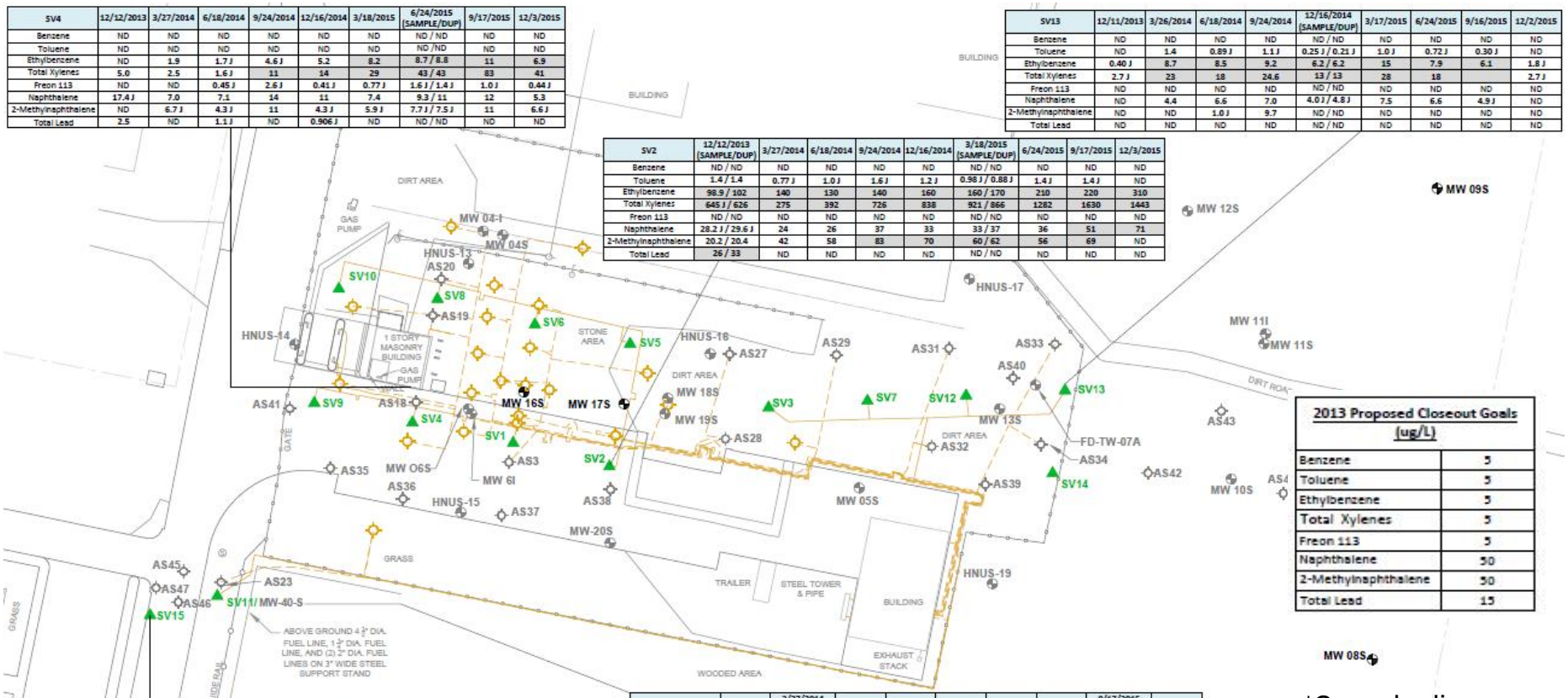
1992/1995, 2009, and 2011 to 2013 Plume Boundaries



Recent Activities

- Seasonal groundwater sampling post system shut-down
  - 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, December 2014 and 2015
    - Beginning September 2015, four downgradient sentry wells added to monitoring well network – MW-07S, MW-07I, MW-08S, MW-09S
    - In 2016, sampling frequency reduced to semi-annual (March, September)
    - Additional pre-injection parameters collected in March 2016

Quarterly Groundwater Sampling



SV4	12/12/2013	3/27/2014	6/18/2014	9/24/2014	12/16/2014	3/18/2015	6/24/2015 (SAMPLE/DUP)	9/17/2015	12/3/2015
Benzene	ND	ND	ND	ND	ND	ND	ND / ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND /ND	ND	ND
Ethylbenzene	ND	1.9	1.7 J	4.6 J	5.2	8.2	8.7 / 8.8	11	6.9
Total Xylenes	5.0	2.5	1.6 J	11	14	29	43 / 43	83	41
Freon 113	ND	ND	0.45 J	2.6 J	0.41 J	0.77 J	1.6 J / 1.4 J	1.0 J	0.44 J
Naphthalene	17.4 J	7.0	7.1	14	11	7.4	9.3 / 11	12	5.3
2-Methylnaphthalene	ND	6.7 J	4.3 J	11	4.3 J	5.9 J	7.7 J / 7.5 J	11	6.6 J
Total Lead	2.5	ND	1.1 J	ND	0.906 J	ND	ND / ND	ND	ND

SV13	12/11/2013	3/26/2014	6/18/2014	9/24/2014	12/16/2014 (SAMPLE/DUP)	3/17/2015	6/24/2015	9/16/2015	12/2/2015
Benzene	ND	ND	ND	ND	ND / ND	ND	ND	ND	ND
Toluene	ND	1.4	0.89 J	1.1 J	0.25 J / 0.21 J	1.0 J	0.72 J	0.30 J	ND
Ethylbenzene	0.40 J	8.7	8.5	9.2	6.2 / 6.2	15	7.9	6.1	1.8 J
Total Xylenes	2.7 J	23	18	24.6	13 / 13	28	18		2.7 J
Freon 113	ND	ND	ND	ND	ND / ND	ND	ND	ND	ND
Naphthalene	ND	4.4	6.6	7.0	4.0 J / 4.8 J	7.5	6.6	4.9 J	ND
2-Methylnaphthalene	ND	ND	1.0 J	9.7	ND / ND	ND	ND	ND	ND
Total Lead	ND	ND	ND	ND	ND / ND	ND	ND	ND	ND

SV2	12/12/2013 (SAMPLE/DUP)	3/27/2014	6/18/2014	9/24/2014	12/16/2014	3/18/2015 (SAMPLE/DUP)	6/24/2015	9/17/2015	12/3/2015
Benzene	ND / ND	ND	ND	ND	ND	ND / ND	ND	ND	ND
Toluene	1.4 / 1.4	0.77 J	1.0 J	1.6 J	1.2 J	0.98 J / 0.88 J	1.4 J	1.4 J	ND
Ethylbenzene	98.9 / 102	140	130	140	160	160 / 170	210	220	310
Total Xylenes	645 J / 626	275	392	726	838	921 / 866	1282	1630	1443
Freon 113	ND / ND	ND	ND	ND	ND	ND / ND	ND	ND	ND
Naphthalene	28.2 J / 29.6 J	24	26	37	33	33 / 37	36	51	71
2-Methylnaphthalene	20.2 / 20.4	42	58	83	70	60 / 62	56	69	ND
Total Lead	26 / 33	ND	ND	ND	ND	ND / ND	ND	ND	ND

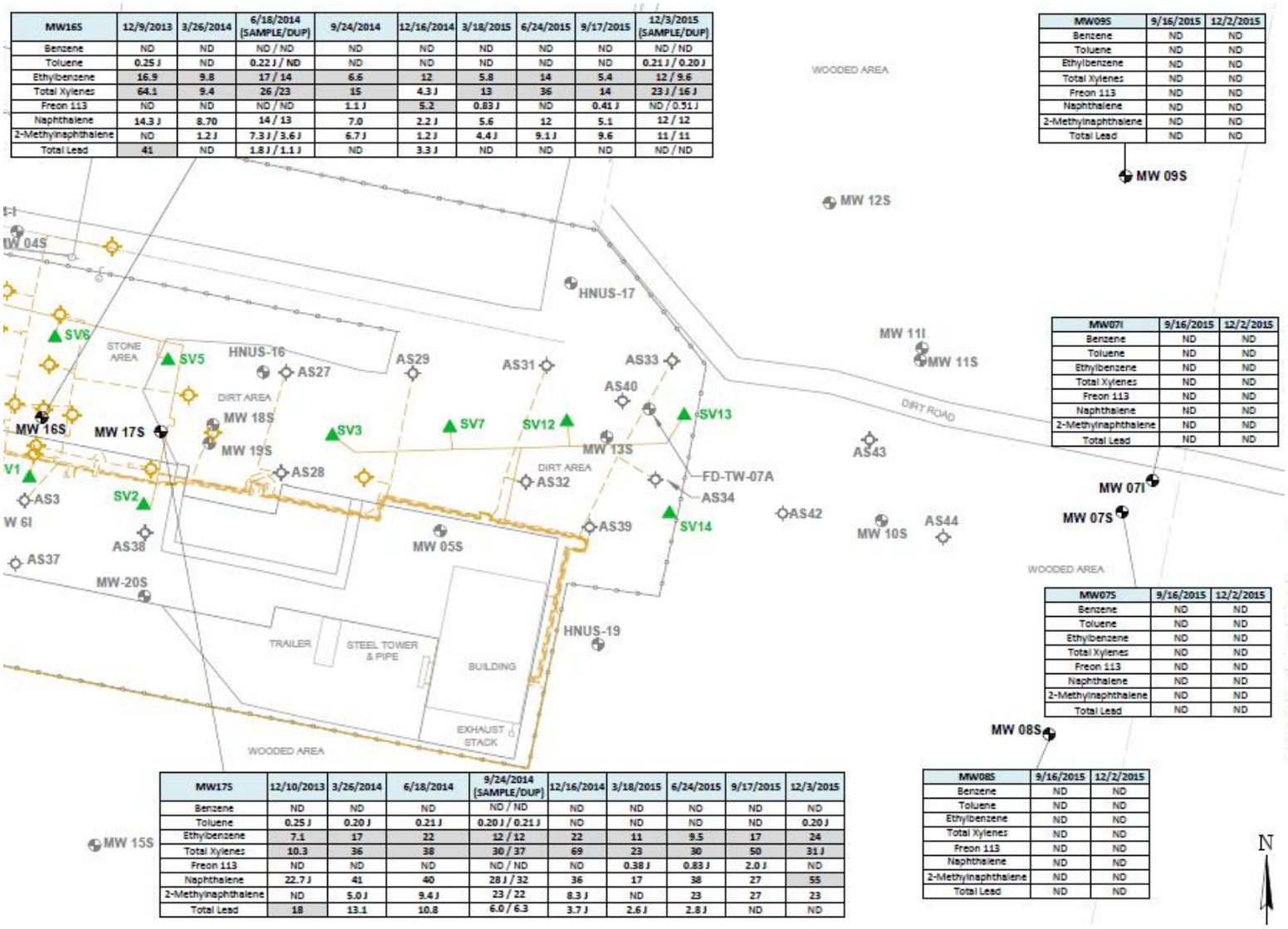
SV15	12/12/2013	3/27/2014	6/18/2014	9/24/2014	12/16/2014	3/18/2015	6/24/2015	9/17/2015	12/2/2015
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	ND	ND	ND	ND	ND	ND	ND	ND	ND
Freon 113	0.77 J	0.63 J	0.39 J	0.40 J	ND	ND	ND	ND	ND
Naphthalene	ND	1.2	ND	ND	0.63 J	ND	ND	0.27 J	ND
2-Methylnaphthalene	9.8	9.0 J	ND	1.4	4.0 J	ND	ND	ND	ND
Total Lead	1.1 J	ND	1.7 J	ND	ND	15.4	ND	ND	ND

SV11/MW40S	12/12/2013	3/27/2014 (SAMPLE/DUP)	6/18/2014	9/24/2014	12/16/2014	3/18/2015	6/24/2015	9/17/2015 (SAMPLE/DUP)	12/2/2015
Benzene	ND	ND / ND	ND	ND	ND	ND	ND	ND / ND	ND
Toluene	3.2 J	0.64 J / 0.48 J	0.28 J	0.78 J	ND	ND	0.27 J	0.47 J / 0.33 J	0.21 J
Ethylbenzene	1.8 J	1.2 / 0.86 J	0.27 J	0.54 J	0.21 J	0.27 J	0.20 J	0.93 J / 0.68 J	0.36 J
Total Xylenes	9.1 J	8.5 / 6.8	1.4 J	5.9 J	2.0 J	1.2 J	1.7 J	10.4 J / 7.5 J	2.8 J
Freon 113	137	52 J / 36 J	31	32	15	8.8	11	38 J / 28 J	15
Naphthalene	23.6 J	9.1 / 7.9	ND	6.9	2.6 J	ND	ND	9.6 / 7.3	ND
2-Methylnaphthalene	ND	2.6 J / 2.5 J	ND	ND	ND	ND	ND	3.7 J / 3.6 J	1.1 J
Total Lead	9.5	ND / ND	ND	ND	ND	ND	ND	ND /ND	ND

2013 Proposed Closeout Goals (ug/L)	
Benzene	5
Toluene	5
Ethylbenzene	5
Total Xylenes	5
Freon 113	5
Naphthalene	50
2-Methylnaphthalene	50
Total Lead	15

*Gray shading - value exceeds 2013 Proposed Closeout Goal

Quarterly Groundwater Sampling



MW16S	12/9/2013	3/26/2014	6/18/2014 (SAMPLE/DUP)	9/24/2014	12/16/2014	3/18/2015	6/24/2015	9/17/2015	12/3/2015 (SAMPLE/DUP)
Benzene	ND	ND	ND / ND	ND	ND	ND	ND	ND	ND / ND
Toluene	0.25 J	ND	0.22 J / ND	ND	ND	ND	ND	ND	0.21 J / 0.20 J
Ethylbenzene	16.9	9.8	17 / 14	6.6	12	5.8	14	5.4	12 / 9.6
Total Xylenes	64.1	9.4	26 /23	15	4.3 J	13	36	14	23 J / 16 J
Freon 113	ND	ND	ND / ND	1.1 J	5.2	0.83 J	ND	0.41 J	ND / 0.51 J
Naphthalene	14.3 J	8.70	14 / 13	7.0	2.2 J	5.6	12	5.1	12 / 12
2-Methylnaphthalene	ND	1.2 J	7.3 J / 3.6 J	6.7 J	1.2 J	4.4 J	9.1 J	9.6	11 / 11
Total Lead	41	ND	1.8 J / 1.1 J	ND	3.3 J	ND	ND	ND	ND / ND

MW09S	9/16/2015	12/2/2015
Benzene	ND	ND
Toluene	ND	ND
Ethylbenzene	ND	ND
Total Xylenes	ND	ND
Freon 113	ND	ND
Naphthalene	ND	ND
2-Methylnaphthalene	ND	ND
Total Lead	ND	ND

MW07I	9/16/2015	12/2/2015
Benzene	ND	ND
Toluene	ND	ND
Ethylbenzene	ND	ND
Total Xylenes	ND	ND
Freon 113	ND	ND
Naphthalene	ND	ND
2-Methylnaphthalene	ND	ND
Total Lead	ND	ND

MW07S	9/16/2015	12/2/2015
Benzene	ND	ND
Toluene	ND	ND
Ethylbenzene	ND	ND
Total Xylenes	ND	ND
Freon 113	ND	ND
Naphthalene	ND	ND
2-Methylnaphthalene	ND	ND
Total Lead	ND	ND

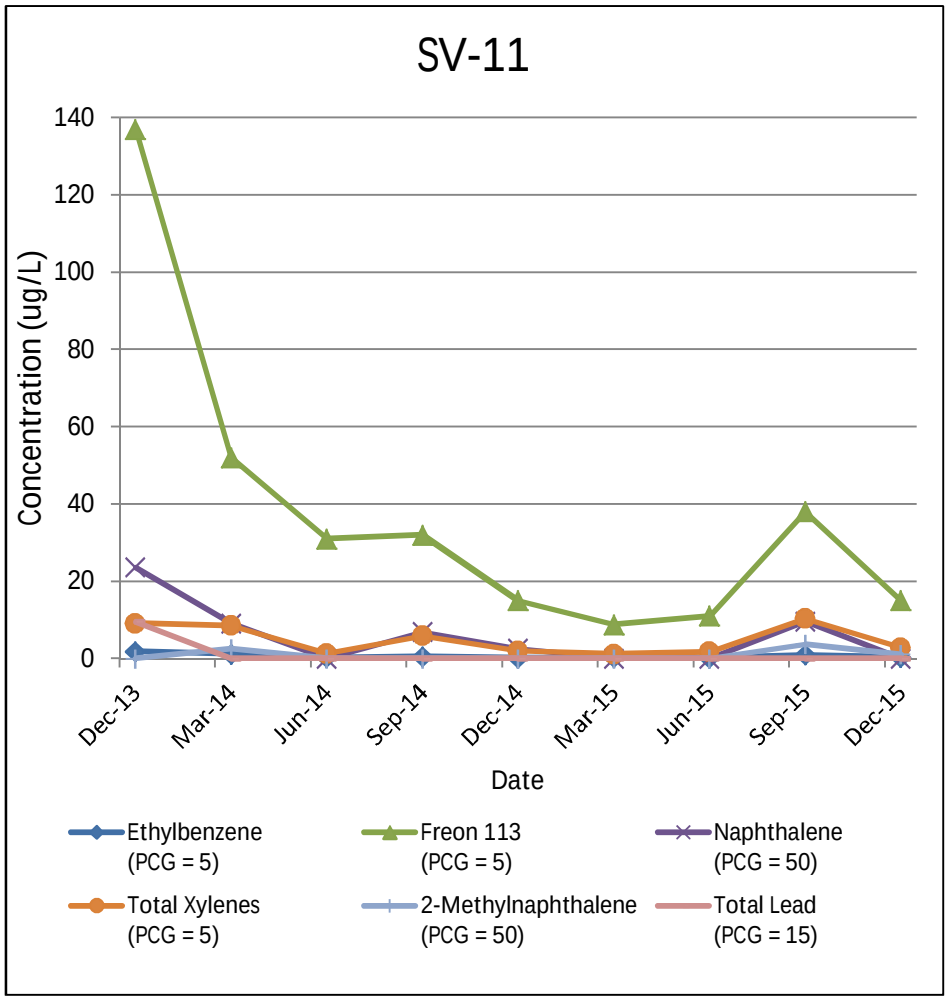
MW08S	9/16/2015	12/2/2015
Benzene	ND	ND
Toluene	ND	ND
Ethylbenzene	ND	ND
Total Xylenes	ND	ND
Freon 113	ND	ND
Naphthalene	ND	ND
2-Methylnaphthalene	ND	ND
Total Lead	ND	ND

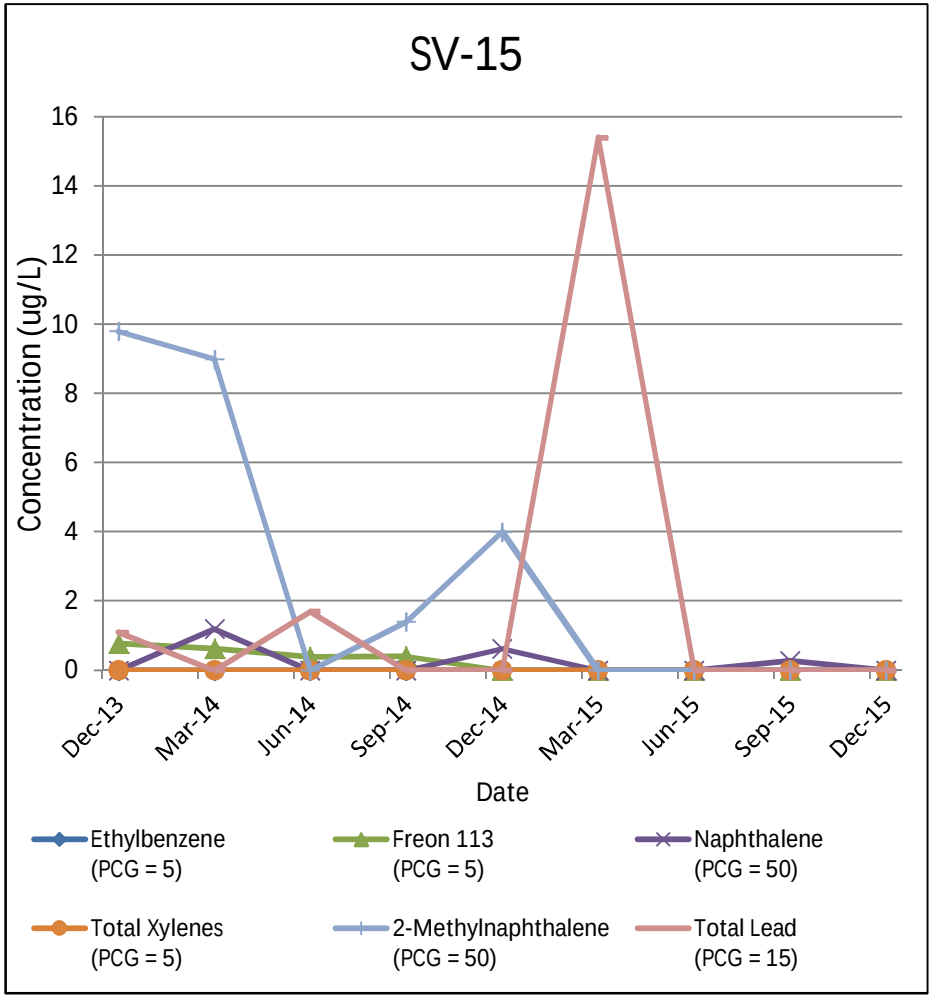
MW17S	12/10/2013	3/26/2014	6/18/2014	9/24/2014 (SAMPLE/DUP)	12/16/2014	3/18/2015	6/24/2015	9/17/2015	12/3/2015
Benzene	ND	ND	ND	ND / ND	ND	ND	ND	ND	ND
Toluene	0.25 J	0.20 J	0.21 J	0.20 J / 0.21 J	ND	ND	ND	ND	0.20 J
Ethylbenzene	7.1	17	22	12 / 12	22	11	9.5	17	24
Total Xylenes	10.3	36	38	30 / 37	69	23	30	50	31 J
Freon 113	ND	ND	ND	ND / ND	ND	0.38 J	0.83 J	2.0 J	ND
Naphthalene	22.7 J	41	40	28 J / 32	36	17	38	27	55
2-Methylnaphthalene	ND	5.0 J	9.4 J	23 / 22	8.3 J	ND	23	27	23
Total Lead	18	13.1	10.8	6.0 / 6.3	3.7 J	2.6 J	2.8 J	ND	ND

2013 Proposed Closeout Goals (ug/L)	
Benzene	5
Toluene	5
Ethylbenzene	5
Total Xylenes	5
Freon 113	5
Naphthalene	50
2-Methylnaphthalene	50
Total Lead	15

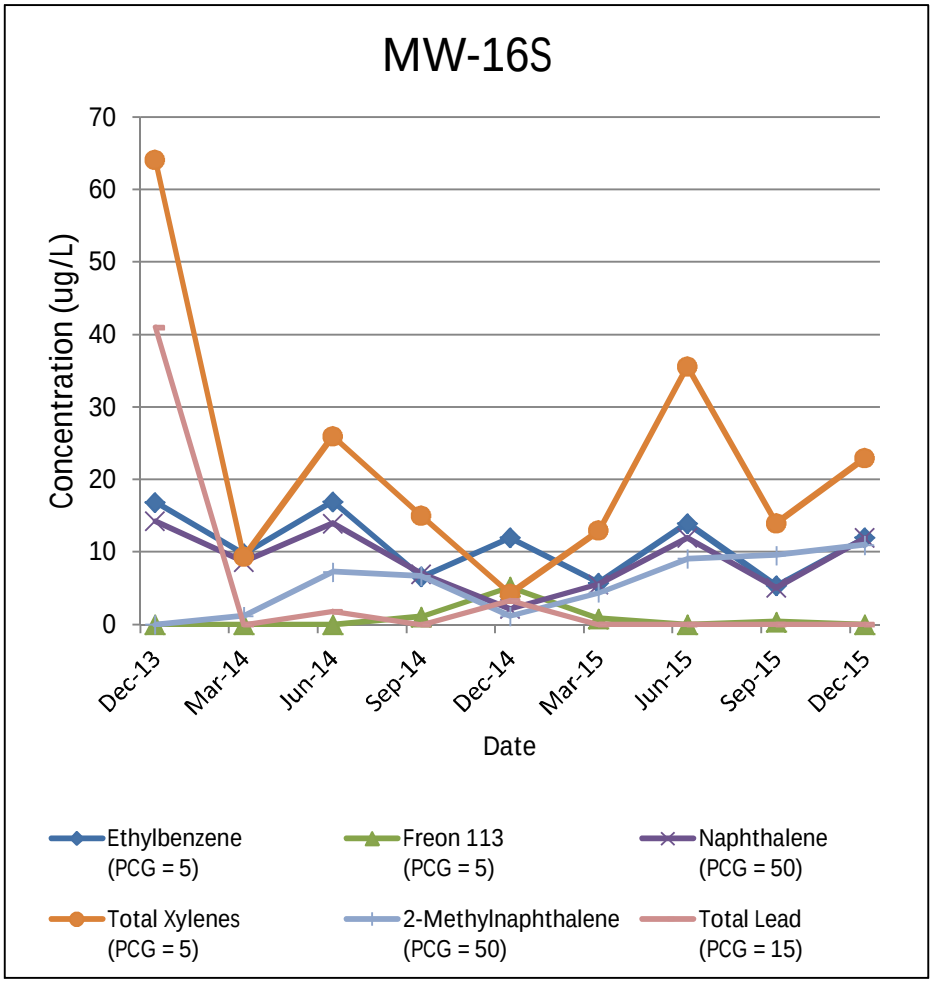
*Gray shading - value exceeds 2013 Proposed Closeout Goal

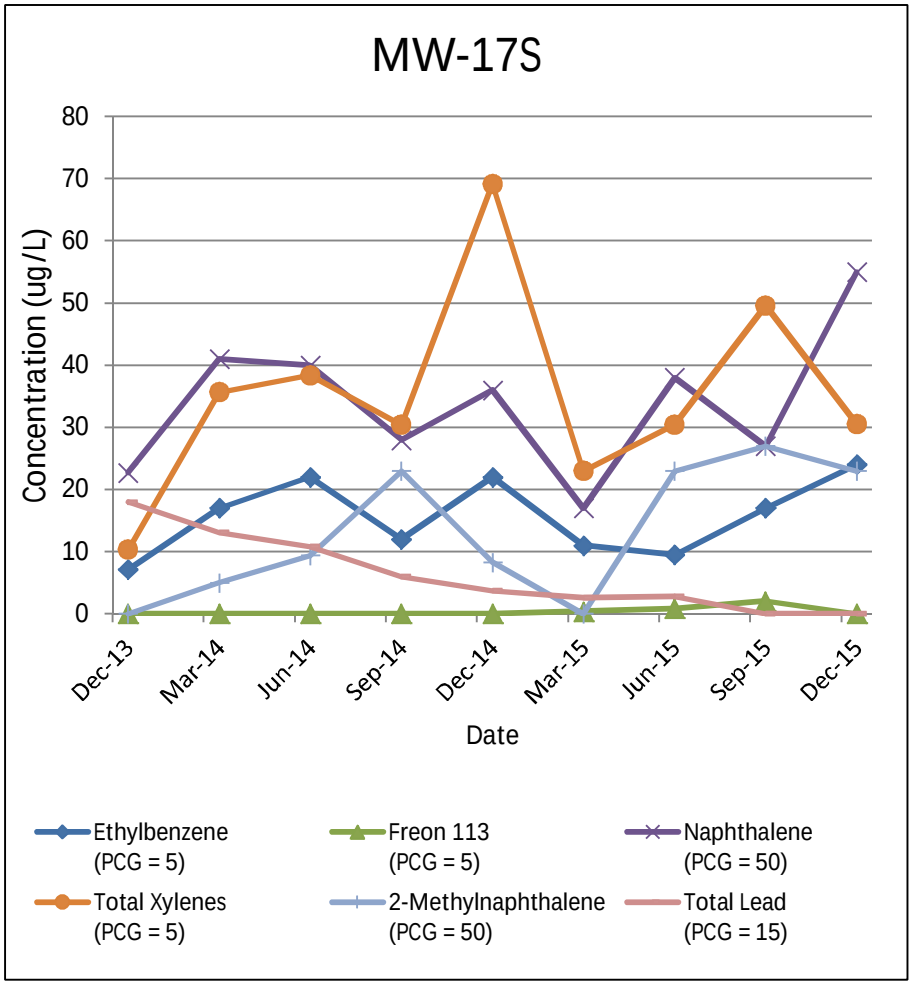
Quarterly Groundwater Sampling



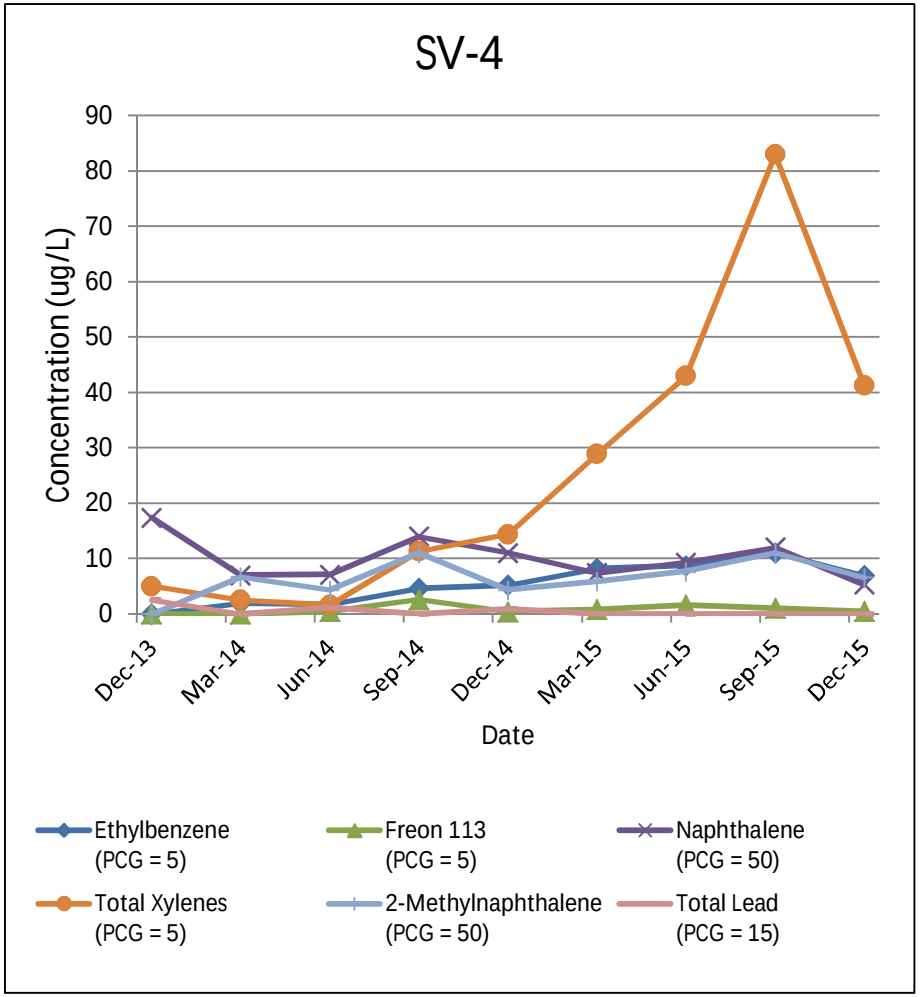


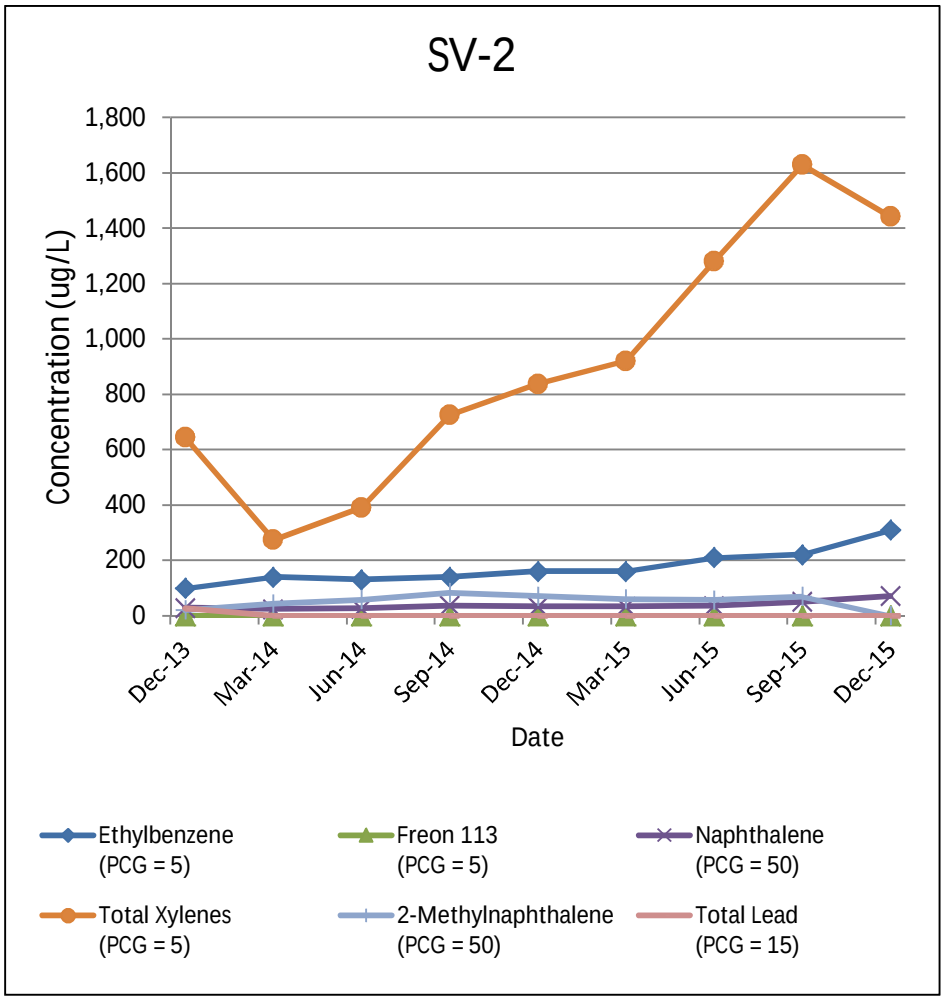
Quarterly Groundwater Sampling



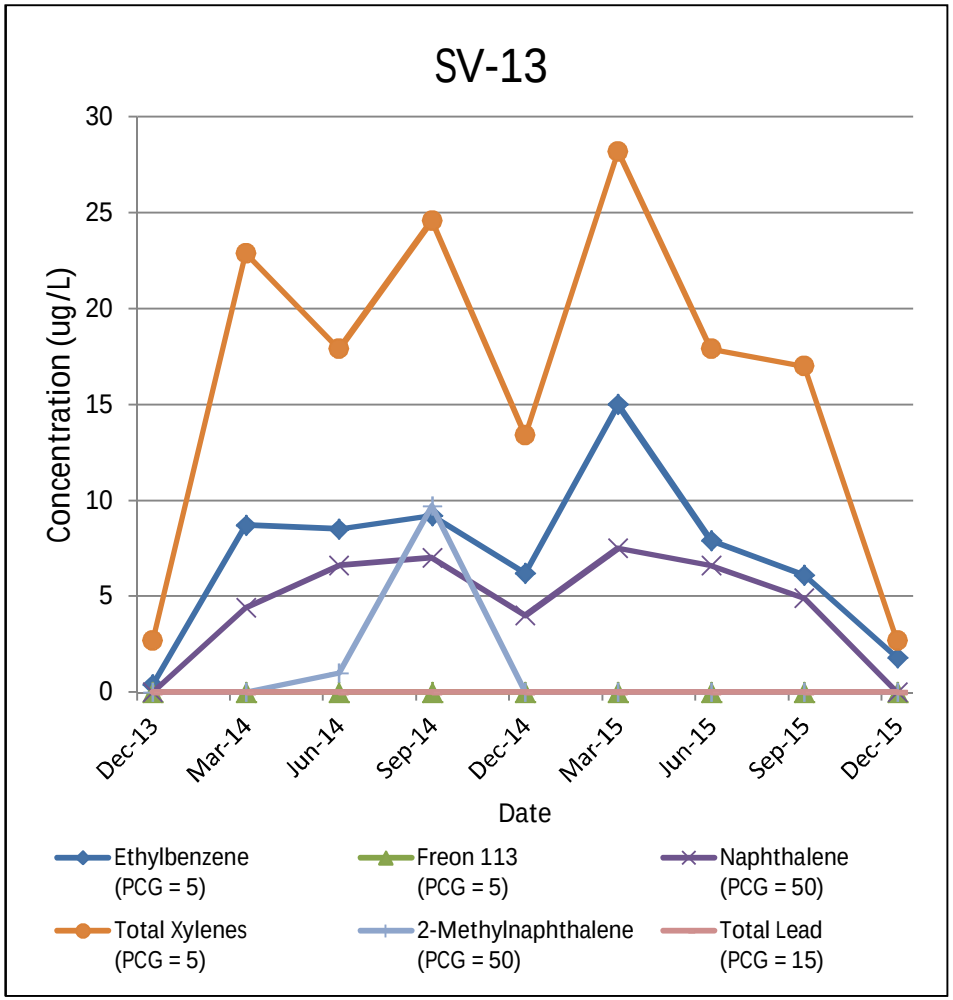


Quarterly Groundwater Sampling





Quarterly Groundwater Sampling



Decommissioning of Full-Scale AS/SVE System

- Contractor mobilized August 10, 2015
- Piping removed and wells decommissioned during first week
- Fabric structure repurposed for a museum
- All other material decontaminated and recycled or disposed

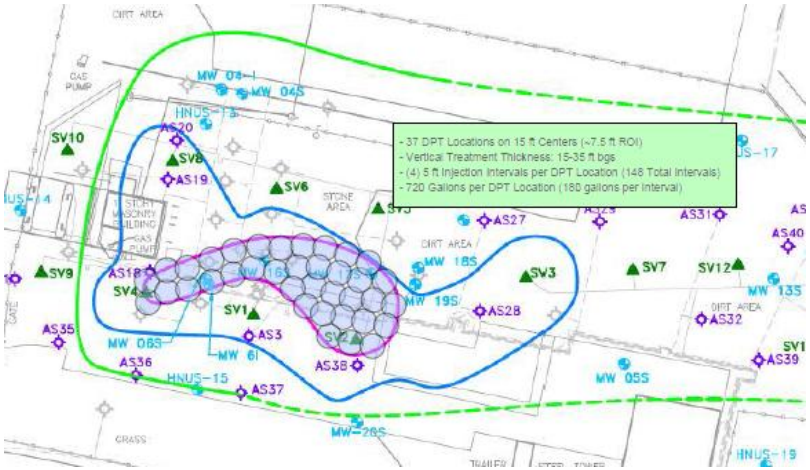
July 14 (Preconstruction)

August 13

October 14

Summary and Path Forward

- Decommissioning of existing full-scale AS/SVE system complete
- Continue groundwater monitoring throughout FY2015/2016
- Work plan for in-situ remediation pilot study under way
  - Letter Work Plan to summarize technology review & selection, design, and permitting issues
  - Preliminary plan calls for reagent injection on a 15-ft grid
  - Post-injection monitoring to evaluate performance
  - Work Plan submitted to regulators May 2016 (estimated); field work planned for August/September, depending on review and comments



MW16S	12/9/2013	3/26/2014	6/18/2014 (SAMPLE/DUP)	9/24/2014	12/16/2014	3/18/2015	6/24/2015	9/17/2015	12/3/2015 (SAMPLE/DUP)
Benzene	ND	ND	ND / ND	ND	ND	ND	ND	ND	ND / ND
Toluene	**0.25 J**	ND	**0.22 J / ND**	ND	ND	ND	ND	ND	**0.21 J / 0.20 J**
Ethylbenzene	**16.9**	**9.8**	**17 / 14**	**6.6**	**12**	**5.8**	**14**	**5.4**	**12 / 9.6**
Total Xylenes	**64.1**	**9.4**	**26 /23**	**15**	**4.3 J**	**13**	**36**	**14**	**23 J / 16 J**
Freon 113	ND	ND	ND / ND	**1.1 J**	**5.2**	**0.83 J**	ND	**0.41 J**	ND / 0.51 J
Naphthalene	**14.3 J**	**8.70**	**14 / 13**	**7.0**	**2.2 J**	**5.6**	**12**	**5.1**	**12 / 12**
2-Methylnaphthalene	ND	**1.2 J**	**7.3 J / 3.6 J**	**6.7 J**	**1.2 J**	**4.4 J**	**9.1 J**	**9.6**	**11 / 11**
Total Lead	**41**	ND	**1.8 J / 1.1 J**	ND	**3.3 J**	ND	ND	ND	ND / ND

MW09S	9/16/2015	12/2/2015
Benzene	ND	ND
Toluene	ND	ND
Ethylbenzene	ND	ND
Total Xylenes	ND	ND
Freon 113	ND	ND
Naphthalene	ND	ND
2-Methylnaphthalene	ND	ND
Total Lead	ND	ND

MW07I	9/16/2015	12/2/2015
Benzene	ND	ND
Toluene	ND	ND
Ethylbenzene	ND	ND
Total Xylenes	ND	ND
Freon 113	ND	ND
Naphthalene	ND	ND
2-Methylnaphthalene	ND	ND
Total Lead	ND	ND

MW07S	9/16/2015	12/2/2015
Benzene	ND	ND
Toluene	ND	ND
Ethylbenzene	ND	ND
Total Xylenes	ND	ND
Freon 113	ND	ND
Naphthalene	ND	ND
2-Methylnaphthalene	ND	ND
Total Lead	ND	ND

MW08S	9/16/2015	12/2/2015
Benzene	ND	ND
Toluene	ND	ND
Ethylbenzene	ND	ND
Total Xylenes	ND	ND
Freon 113	ND	ND
Naphthalene	ND	ND
2-Methylnaphthalene	ND	ND
Total Lead	ND	ND

MW17S	12/10/2013	3/26/2014	6/18/2014	9/24/2014 (SAMPLE/DUP)	12/16/2014	3/18/2015	6/24/2015	9/17/2015	12/3/2015
Benzene	ND	ND	ND	ND / ND	ND	ND	ND	ND	ND
Toluene	**0.25 J**	**0.20 J**	**0.21 J**	**0.20 J / 0.21 J**	ND	ND	ND	ND	**0.20 J**
Ethylbenzene	**7.1**	**17**	**22**	**12 / 12**	**22**	**11**	**9.5**	**17**	**24**
Total Xylenes	**10.3**	**36**	**38**	**30 / 37**	**69**	**23**	**30**	**50**	**31 J**
Freon 113	ND	ND	ND	ND / ND	ND	**0.38 J**	**0.83 J**	**2.0 J**	ND
Naphthalene	**22.7 J**	**41**	**40**	**28 J / 32**	**36**	**17**	**38**	**27**	**55**
2-Methylnaphthalene	ND	**5.0 J**	**9.4 J**	**23 / 22**	**8.3 J**	ND	**23**	**27**	**23**
Total Lead	**18**	**13.1**	**10.8**	**6.0 / 6.3**	**3.7 J**	**2.6 J**	**2.8 J**	ND	ND

Legend

- Monitoring Well (Gray Not Currently Sampled)
- Air Sparge Well - Not Active As Of December 2011
- Air Sparge Well - Not Active As Of November 2013
- Vapor Extraction Well - Not Active As Of November 2013
- Former AS Piping
- Former SVE Piping

Notes:

DUP - Duplicate Sample

ND - Not detected above laboratory detection limit (DL).

J - Estimated value

All values presented in micrograms per liter (ug/L).

Bold values indicate detections. Shading indicates detections in exceedance of the 2013 Proposed Closeout Goal.

2013 Proposed Closeout Goals (ug/L)	
Benzene	5
Toluene	5
Ethylbenzene	5
Total Xylenes	5
Freon 113	5
Naphthalene	50
2-Methylnaphthalene	50
Total Lead	15

Note: Piping layout is shown here for general purposes only. See mechanical and process drawings for detailed piping layout. Piping was removed in August 2015.

KGS
160 East Main Street
Suite 2F
Westborough, MA 01581

SCALE IN FEET
0 50

File: CV-2015_4thQtr.dwg
Date: 4/1/2016

FIGURE 4
GROUNDWATER CONCENTRATION MAP
MONITORING WELLS - 4TH QUARTER 2015
DECEMBER 2013 - DECEMBER 2015

NWIRP CALVERTON -
FORMER FUEL DEPOT - SITE 7
CALVERTON, NEW YORK

SV4	12/12/2013	3/27/2014	6/18/2014	9/24/2014	12/16/2014	3/18/2015	6/24/2015 (SAMPLE/DUP)	9/17/2015	12/3/2015
Benzene	ND	ND	ND	ND	ND	ND	ND / ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND /ND	ND	ND
Ethylbenzene	ND	**1.9**	**1.7 J**	**4.6 J**	**5.2**	**8.2**	**8.7 / 8.8**	**11**	**6.9**
Total Xylenes	**5.0**	**2.5**	**1.6 J**	**11**	**14**	**29**	**43 / 43**	**83**	**41**
Freon 113	ND	ND	**0.45 J**	**2.6 J**	**0.41 J**	**0.77 J**	**1.6 J / 1.4 J**	**1.0 J**	**0.44 J**
Naphthalene	**17.4 J**	**7.0**	**7.1**	**14**	**11**	**7.4**	**9.3 / 11**	**12**	**5.3**
2-Methylnaphthalene	ND	**6.7 J**	**4.3 J**	**11**	**4.3 J**	**5.9 J**	**7.7 J / 7.5 J**	**11**	**6.6 J**
Total Lead	**2.5**	ND	**1.1 J**	ND	**0.906 J**	ND	ND / ND	ND	ND

SV13	12/11/2013	3/26/2014	6/18/2014	9/24/2014	12/16/2014 (SAMPLE/DUP)	3/17/2015	6/24/2015	9/16/2015	12/2/2015
Benzene	ND	ND	ND	ND	ND / ND	ND	ND	ND	ND
Toluene	ND	**1.4**	**0.89 J**	**1.1 J**	**0.25 J / 0.21 J**	**1.0 J**	**0.72 J**	**0.30 J**	ND
Ethylbenzene	**0.40 J**	**8.7**	**8.5**	**9.2**	**6.2 / 6.2**	**15**	**7.9**	**6.1**	**1.8 J**
Total Xylenes	**2.7 J**	**23**	**18**	**24.6**	**13 / 13**	**28**	**18**		**2.7 J**
Freon 113	ND	ND	ND	ND	ND / ND	ND	ND	ND	ND
Naphthalene	ND	**4.4**	**6.6**	**7.0**	**4.0 J / 4.8 J**	**7.5**	**6.6**	**4.9 J**	ND
2-Methylnaphthalene	ND	ND	**1.0 J**	**9.7**	ND / ND	ND	ND	ND	ND
Total Lead	ND	ND	ND	ND	ND / ND	ND	ND	ND	ND

SV2	12/12/2013 (SAMPLE/DUP)	3/27/2014	6/18/2014	9/24/2014	12/16/2014	3/18/2015 (SAMPLE/DUP)	6/24/2015	9/17/2015	12/3/2015
Benzene	ND / ND	ND	ND	ND	ND	ND / ND	ND	ND	ND
Toluene	**1.4 / 1.4**	**0.77 J**	**1.0 J**	**1.6 J**	**1.2 J**	**0.98 J / 0.88 J**	**1.4 J**	**1.4 J**	ND
Ethylbenzene	**98.9 / 102**	**140**	**130**	**140**	**160**	**160 / 170**	**210**	**220**	**310**
Total Xylenes	**645 J / 626**	**275**	**392**	**726**	**838**	**921 / 866**	**1282**	**1630**	**1443**
Freon 113	ND / ND	ND	ND	ND	ND	ND / ND	ND	ND	ND
Naphthalene	**28.2 J / 29.6 J**	**24**	**26**	**37**	**33**	**33 / 37**	**36**	**51**	**71**
2-Methylnaphthalene	**20.2 / 20.4**	**42**	**58**	**83**	**70**	**60 / 62**	**56**	**69**	ND
Total Lead	**26 / 33**	ND	ND	ND	ND	ND / ND	ND	ND	ND

SV15	12/12/2013	3/27/2014	6/18/2014	9/24/2014	12/16/2014	3/18/2015	6/24/2015	9/17/2015	12/2/2015
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Xylenes	ND	ND	ND	ND	ND	ND	ND	ND	ND
Freon 113	**0.77 J**	**0.63 J**	**0.39 J**	**0.40 J**	ND	ND	ND	ND	ND
Naphthalene	ND	**1.2**	ND	ND	**0.63 J**	ND	ND	**0.27 J**	ND
2-Methylnaphthalene	**9.8**	**9.0 J**	ND	**1.4**	**4.0 J**	ND	ND	ND	ND
Total Lead	**1.1 J**	ND	**1.7 J**	ND	ND	**15.4**	ND	ND	ND

SV11/MW40S	12/12/2013	3/27/2014 (SAMPLE/DUP)	6/18/2014	9/24/2014	12/16/2014	3/18/2015	6/24/2015	9/17/2015 (SAMPLE/DUP)	12/2/2015
Benzene	ND	ND / ND	ND	ND	ND	ND	ND	ND / ND	ND
Toluene	**3.2 J**	**0.64 J / 0.48 J**	**0.28 J**	**0.78 J**	ND	ND	**0.27 J**	**0.47 J / 0.33 J**	**0.21 J**
Ethylbenzene	**1.8 J**	**1.2 / 0.86 J**	**0.27 J**	**0.54 J**	**0.21 J**	**0.27 J**	**0.20 J**	**0.93 J / 0.68 J**	**0.36 J**
Total Xylenes	**9.1 J**	**8.5 / 6.8**	**1.4 J**	**5.9 J**	**2.0 J**	**1.2 J**	**1.7 J**	**10.4 J / 7.5 J**	**2.8 J**
Freon 113	**137**	**52 J / 36 J**	**31**	**32**	**15**	**8.8**	**11**	**38 J / 28 J**	**15**
Naphthalene	**23.6 J**	**9.1 / 7.9**	ND	**6.9**	**2.6 J**	ND	ND	**9.6 / 7.3**	ND
2-Methylnaphthalene	ND	**2.6 J / 2.5 J**	ND	ND	ND	ND	ND	**3.7 J / 3.6 J**	**1.1 J**
Total Lead	**9.5**	ND / ND	ND	ND	ND	ND	ND	ND /ND	ND

Legend

- Monitoring Well (Gray Not Currently Sampled)
- Air Sparge Well - Not Active As Of December 2011
- Air Sparge Well - Not Active As Of November 2013
- Vapor Extraction Well - Not Active As Of November 2013
- Former AS Piping
- Former SVE Piping

Notes:

DUP - Duplicate Sample
ND - Not detected above laboratory detection limit (DL).
J - Estimated value
All values presented in micrograms per liter (ug/L).
Bold values indicate detections. Shading indicates detections in exceedance of the 2013 Proposed Closeout Goal.

2013 Proposed Closeout Goals (ug/L)	
Benzene	5
Toluene	5
Ethylbenzene	5
Total Xylenes	5
Freon 113	5
Naphthalene	50
2-Methylnaphthalene	50
Total Lead	15

Note: Piping layout is shown here for general purposes only. See mechanical and process drawings for detailed piping layout. Piping was removed in August 2015.

KGS
160 East Main Street
Suite 2F
Westborough, MA 01581

SCALE IN FEET
0 50

File: CV-2015_4thQtr.dwg
Date: 4/1/2016

FIGURE 5
GROUNDWATER CONCENTRATION MAP
SVE WELLS - 4TH QUARTER 2015
DECEMBER 2013 - DECEMBER 2015

NWIRP CALVERTON -
FORMER FUEL DEPOT - SITE 7
CALVERTON, NEW YORK

2015 GROUNDWATER INVESTIGATION SUMMARY

October 2015 Restoration Advisory Board

NWIRP CALVERTON, NEW YORK

April 21, 2016

Facility Map

Annual Monitoring Program

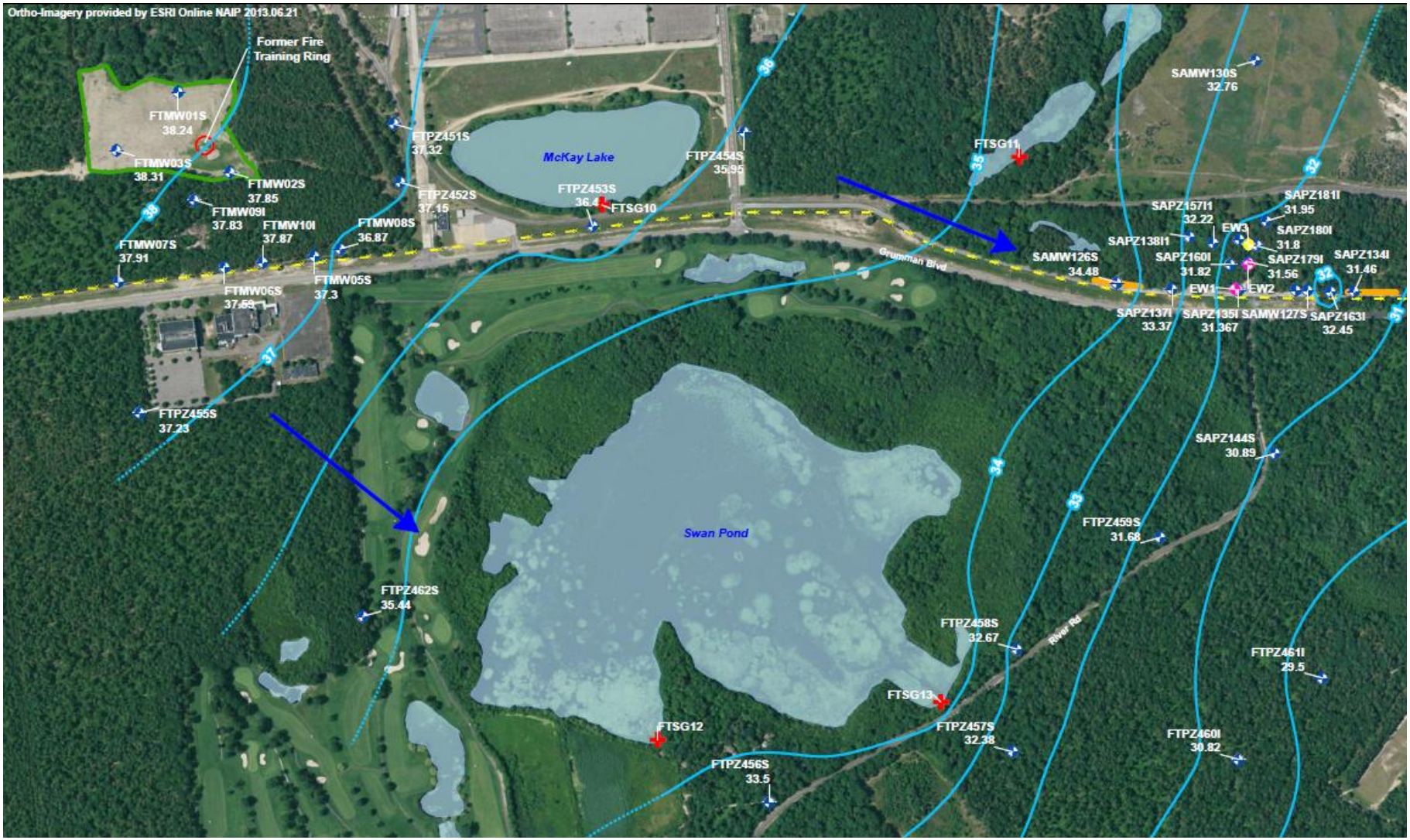
- Well & Piezometer Sampling
  - 73 locations, all sampled in September 2015
  - Site 2 (Fire Training Area)
    - 15 on-property locations, 8 off-property
  - Sites 6A (Fuel Calibration Area)
    - 12 locations
  - Southern Area
    - 18 on-site locations, 20 off-site locations
- Surface Water, Porewater and Sediment
  - 4 locations, all sampled in April and September 2015
    - 4 co-located surface water & sediment samples
    - 4 in-river piezometers
- Water Elevation Gauging
  - 103 wells/piezometers planned (10 not measured due to damage/access)
  - 7 staff gauges planned (6 locations measured as “dry” – no reading)

Additional 2015 Sampling

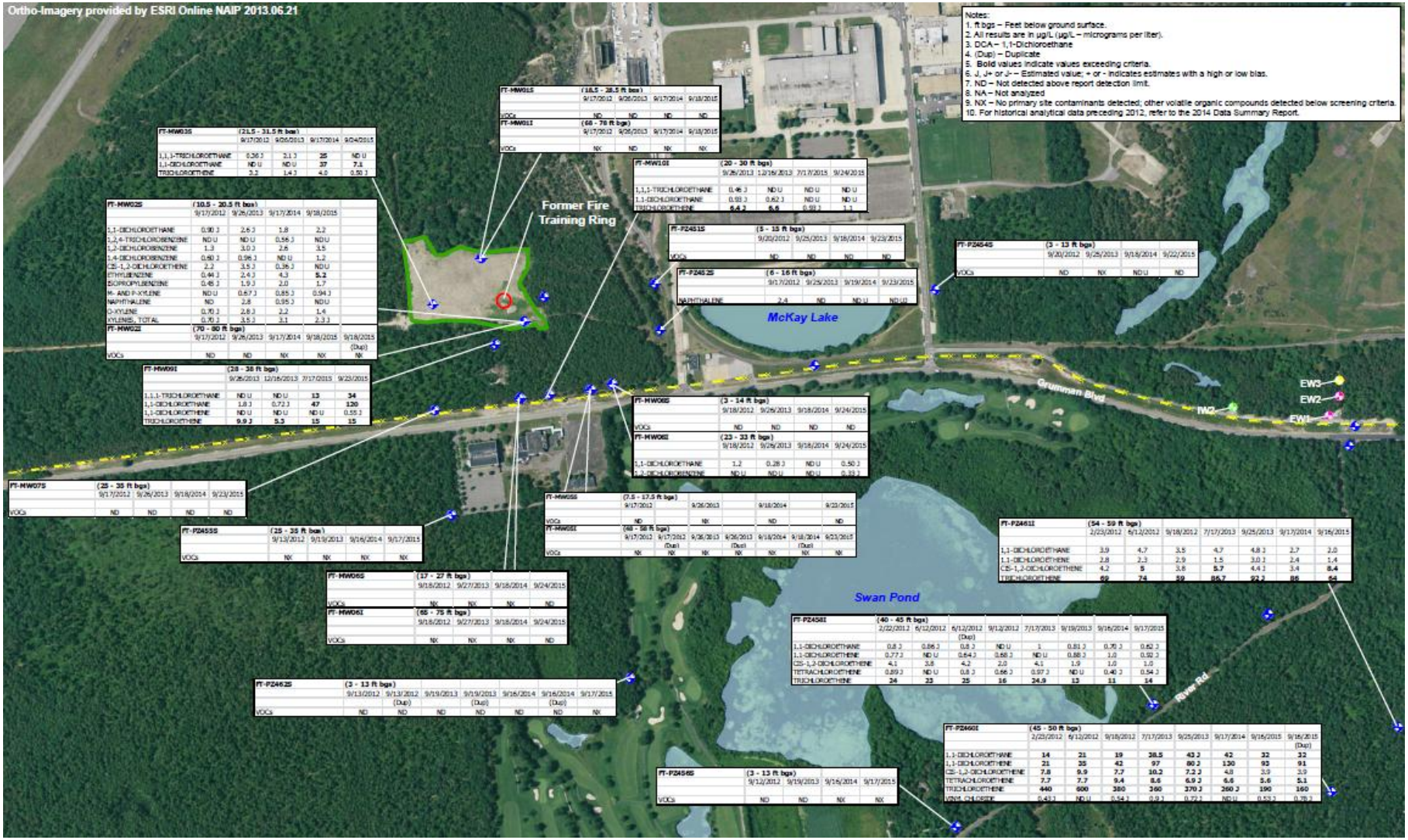
- Site 2
  - Address data gap from locations not sampled in 2014
  - Two locations sampled in July – FT-MW09I and 10I
  - Sampled again in September as part of annual monitoring program
- Site 6A
  - Monitoring of concentrations within 2009/10 removal area
  - Two locations sampled in July – FC-MW02SR2 and 03SR1
  - Sampled again in September as part of annual monitoring program
- Southern Area
  - Siting for FLTS extraction well EW-3
  - Three locations sampled in July and September – SA-PZ179, 180I and 181I

Site 2 Groundwater Flow (September 2014)

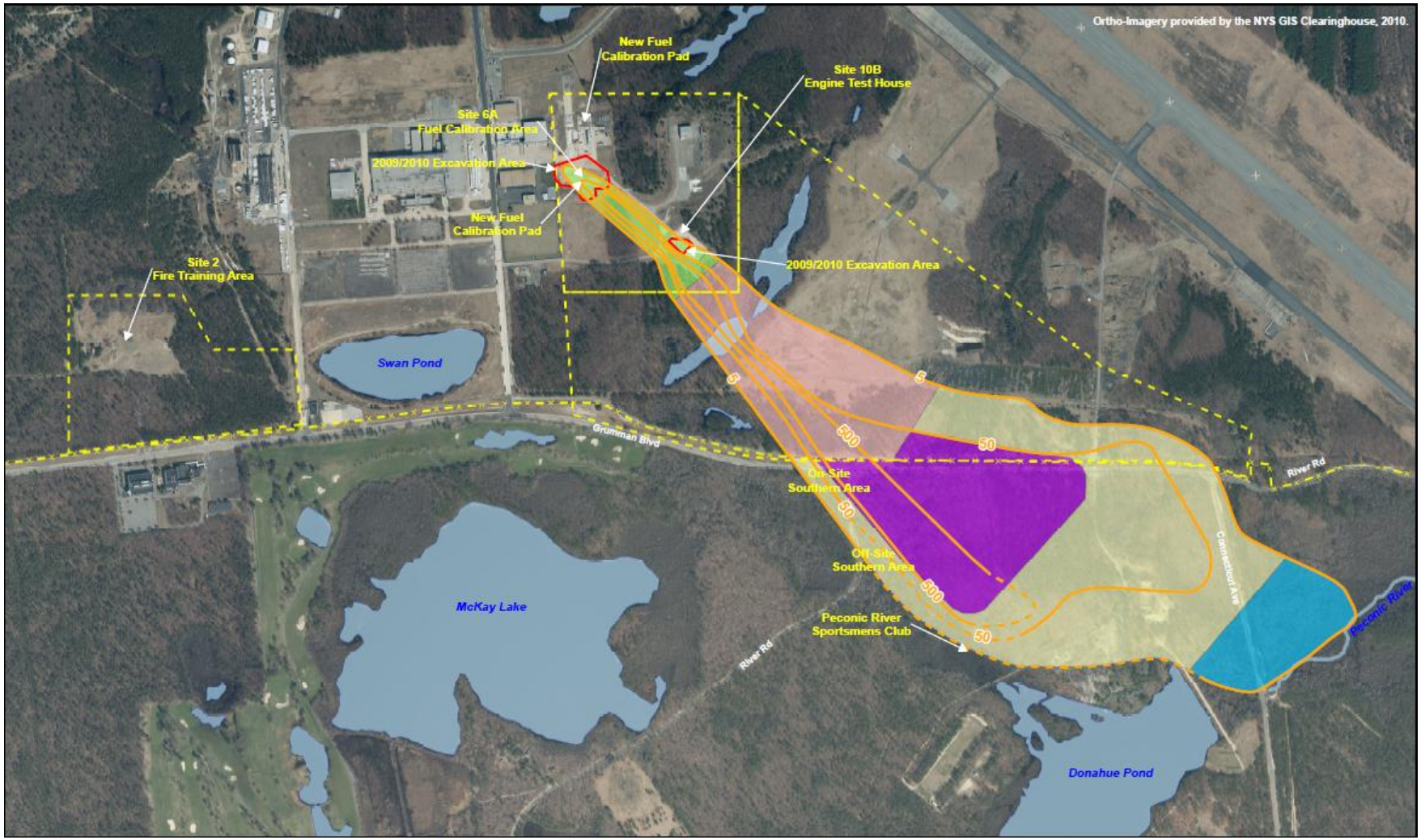
Site 2 Groundwater Flow (September 2015)



Site 2 Results

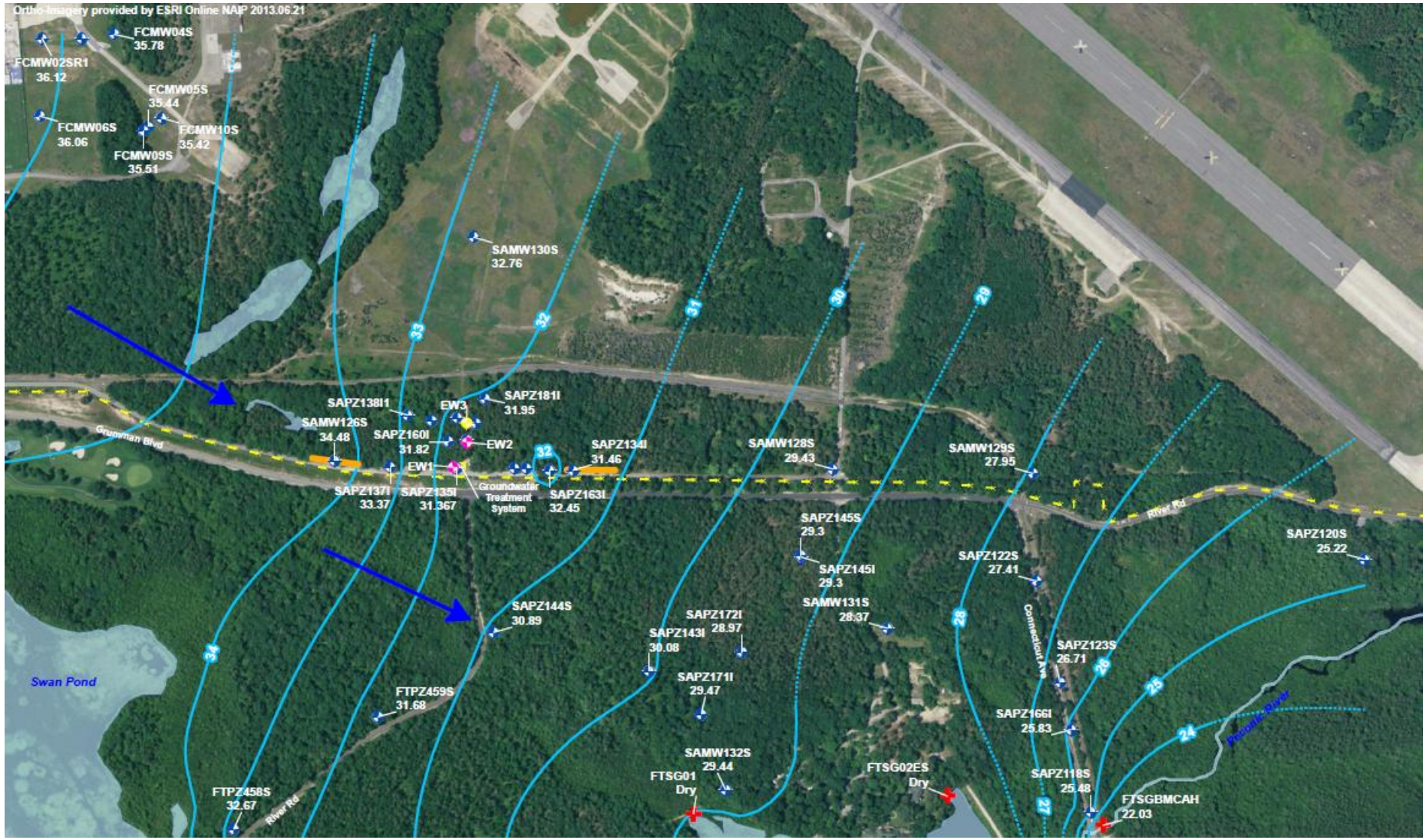


Southern Area Plume Map

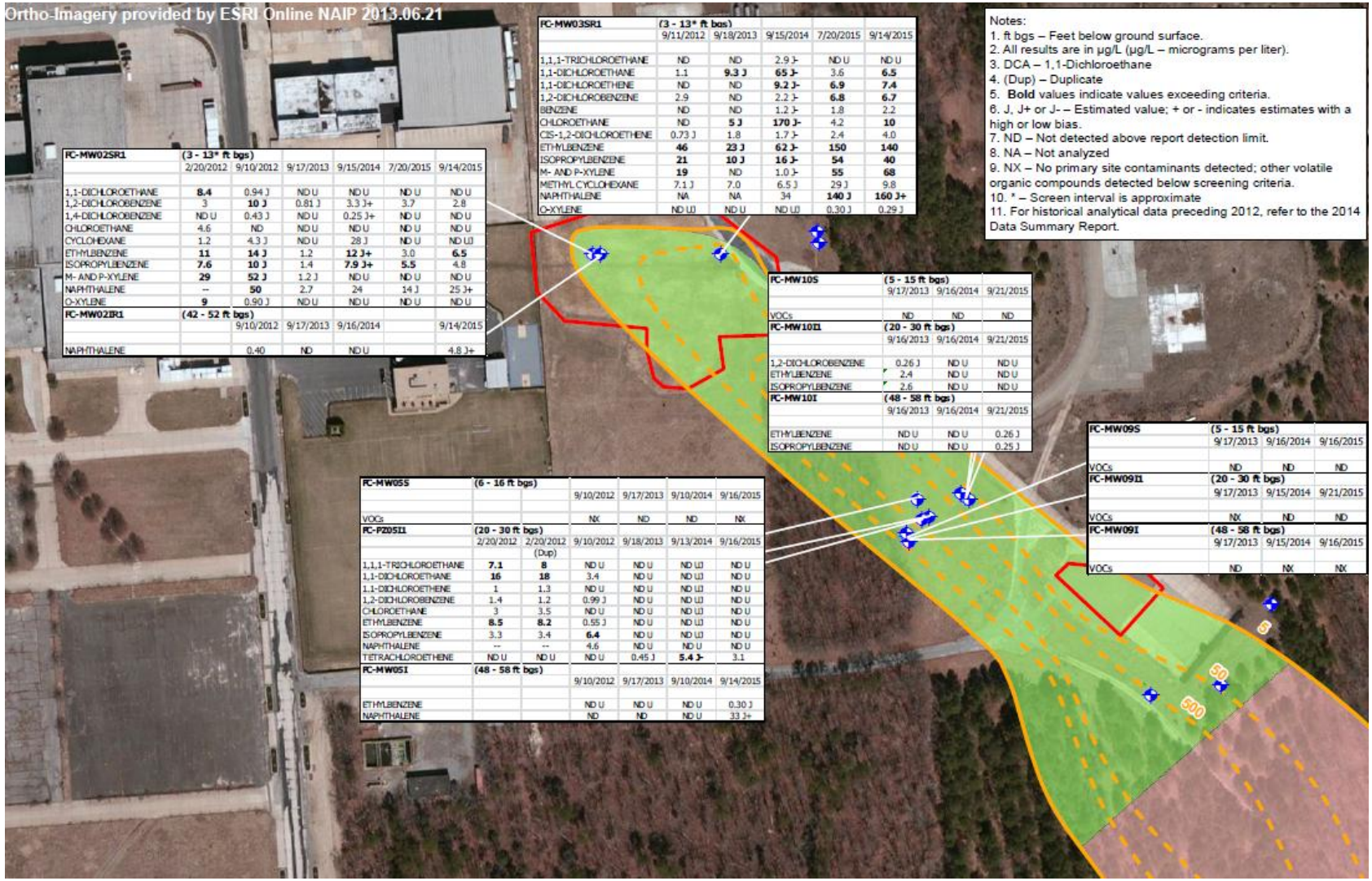


Groundwater Flow (September 2014)

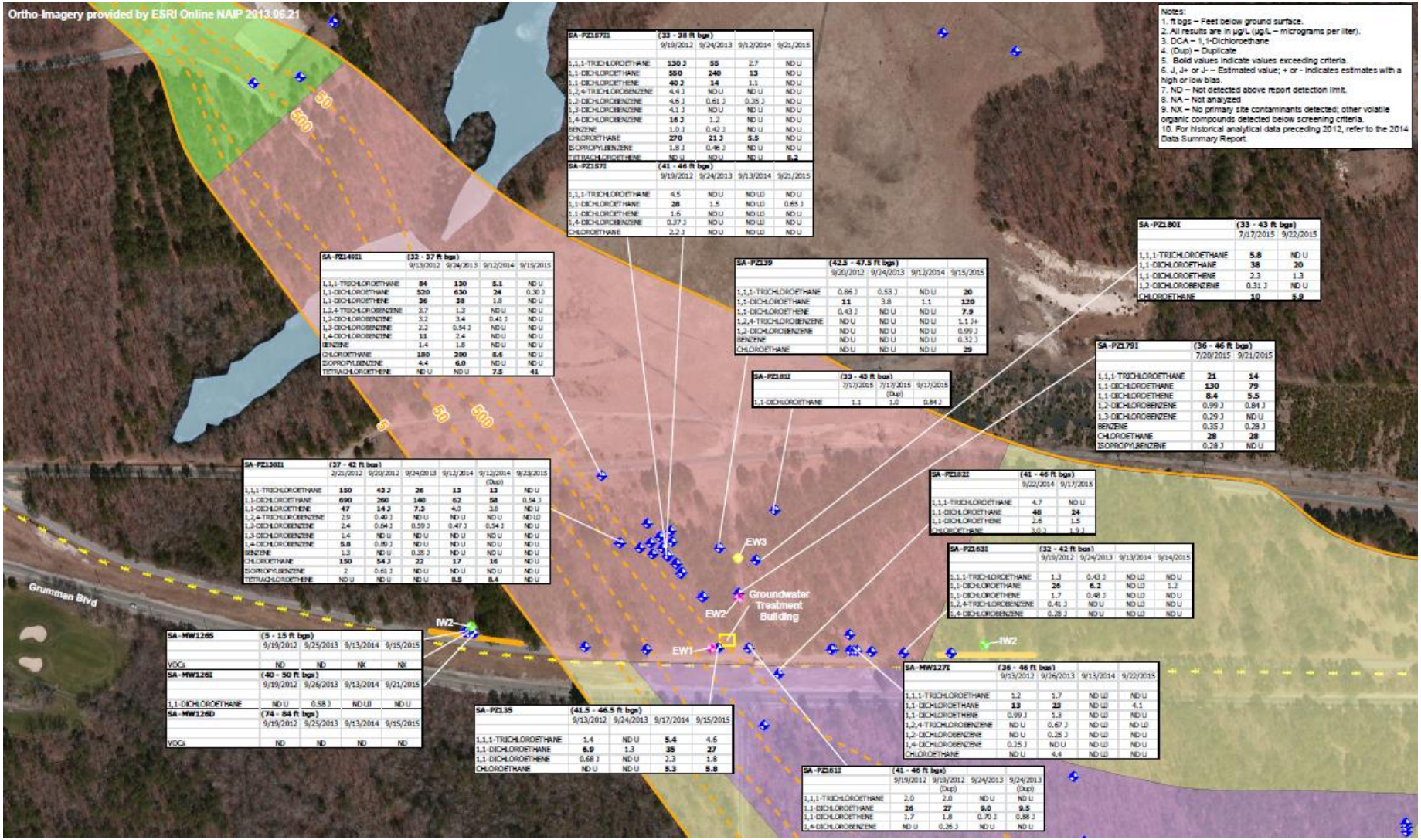
Groundwater Flow (September 2015)



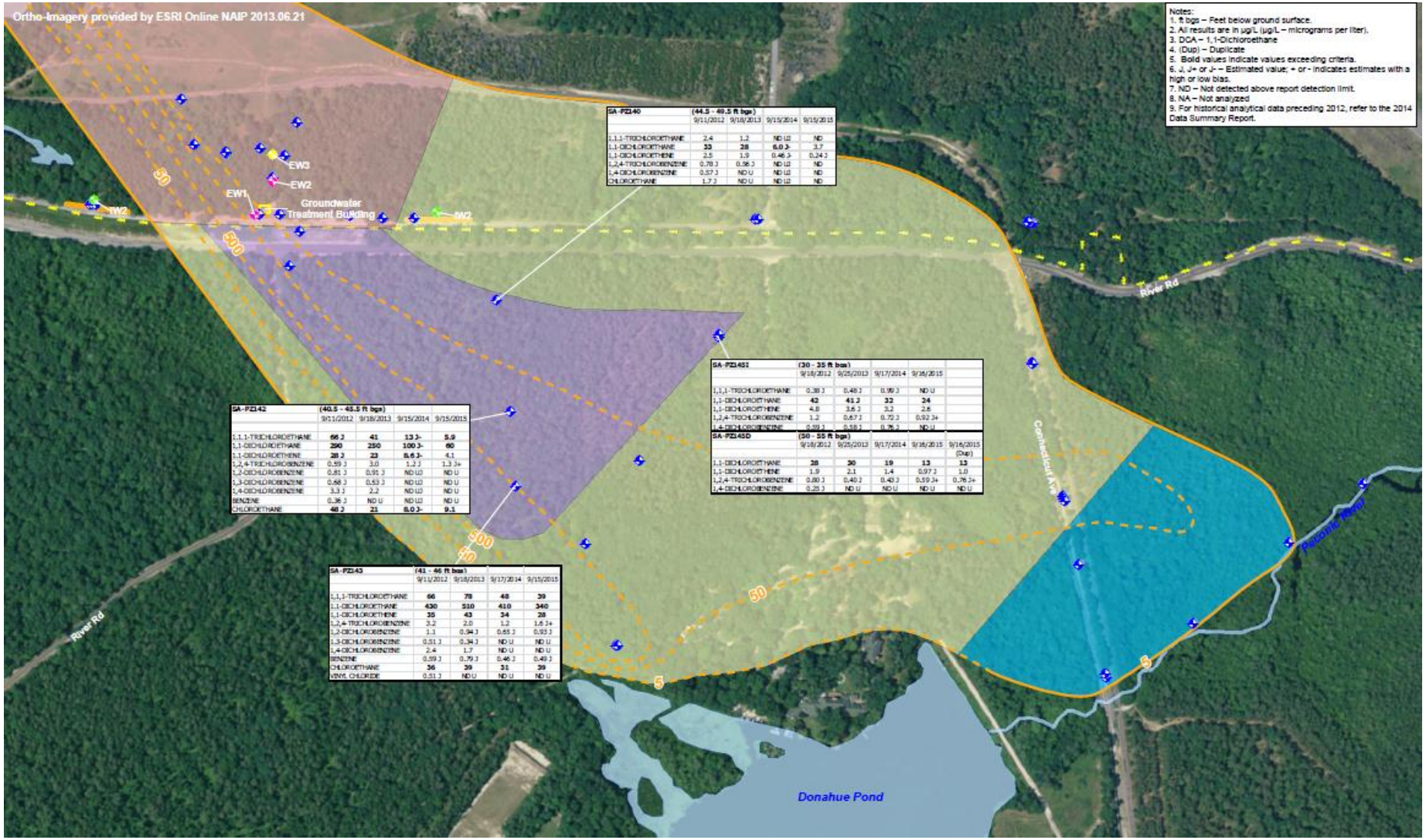
Site 6A Source Area Results



Fence Line Area Results



Off-Site High Concentration Area Results



SA-PZ140	(44.5 - 49.5 ft bgs)			
	9/11/2012	9/18/2013	9/15/2014	9/15/2015
1,1,1-TRICHLOROETHANE	2.4	1.2	ND U	ND
1,1-DICHLOROETHANE	**33**	**28**	**6.0 J-**	3.7
1,1-DICHLOROETHENE	2.5	1.9	0.46 J-	0.24 J
1,2,4-TRICHLOROBENZENE	0.78 J	0.56 J	ND U	ND
1,4-DICHLOROBENZENE	0.57 J	ND U	ND U	ND
CHLOROETHANE	1.7 J	ND U	ND U	ND

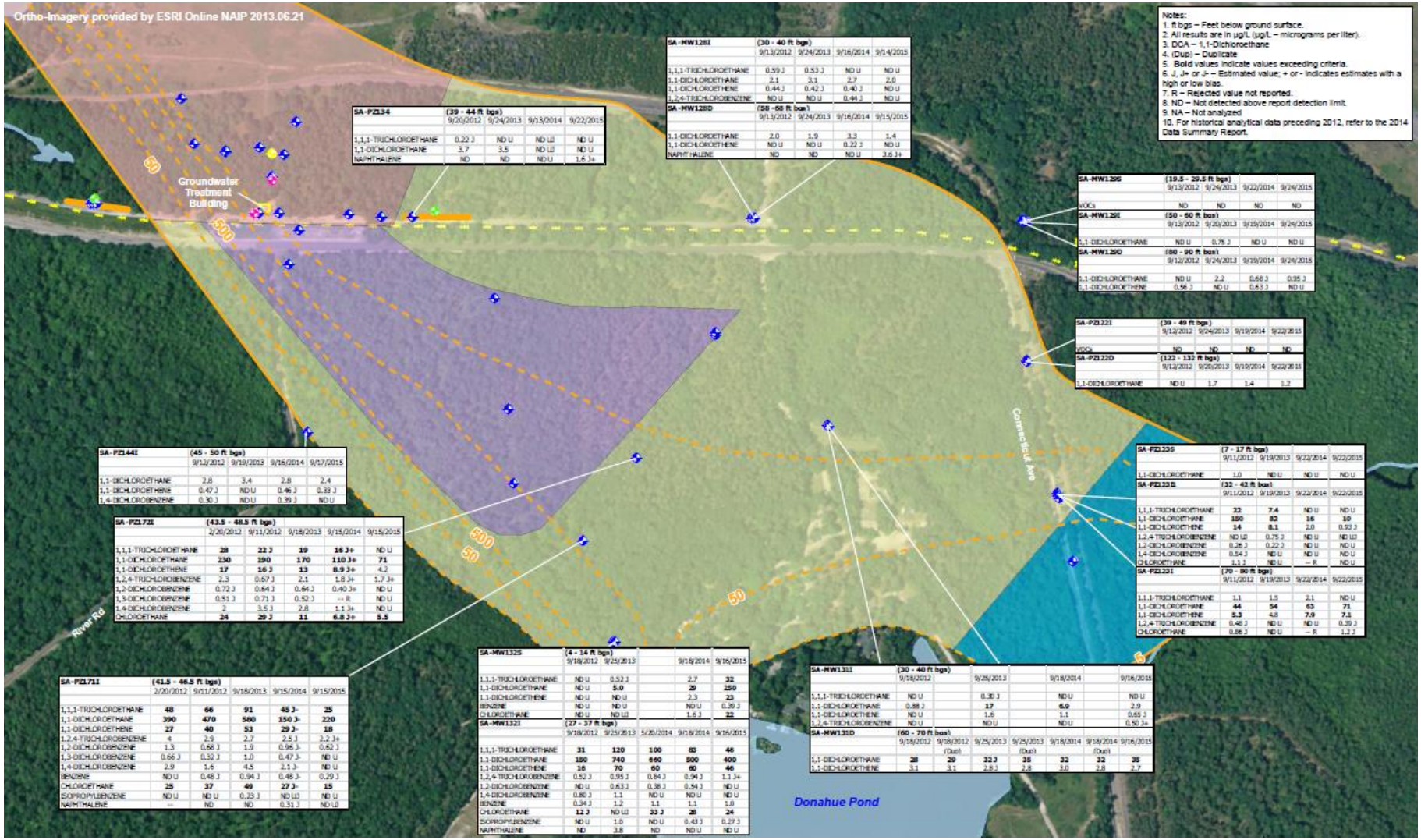
SA-PZ142	(40.5 - 45.5 ft bgs)			
	9/11/2012	9/18/2013	9/15/2014	9/15/2015
1,1,1-TRICHLOROETHANE	**66 J**	**41**	**13 J-**	**5.9**
1,1-DICHLOROETHANE	**290**	**250**	**100 J-**	**60**
1,1-DICHLOROETHENE	**28 J**	**23**	**8.6 J-**	4.1
1,2,4-TRICHLOROBENZENE	0.59 J	1.0	1.2 J	1.3 J+
1,2-DICHLOROBENZENE	0.61 J	0.91 J	ND U	ND U
1,3-DICHLOROBENZENE	0.68 J	0.53 J	ND U	ND U
1,4-DICHLOROBENZENE	3.3 J	2.2	ND U	ND U
BENZENE	0.36 J	ND U	ND U	ND U
CHLOROETHANE	**48 J**	**21**	**8.0 J-**	**9.1**

SA-PZ143	(41 - 46 ft bgs)			
	9/11/2012	9/18/2013	9/17/2014	9/15/2015
1,1,1-TRICHLOROETHANE	**66**	**78**	**48**	**39**
1,1-DICHLOROETHANE	**430**	**510**	**410**	**340**
1,1-DICHLOROETHENE	**35**	**43**	**34**	**28**
1,2,4- TRICHLOROBENZENE	3.2	2.0	1.2	1.6 J+
1,2-DICHLOROBENZENE	1.1	0.94 J	0.65 J	0.93 J
1,3-DICHLOROBENZENE	0.51 J	0.34 J	ND U	ND U
1,4-DICHLOROBENZENE	2.4	1.7	ND U	ND U
BENZENE	0.59 J	0.79 J	0.46 J	0.49 J
CHLOROETHANE	**36**	**39**	**31**	**39**
VINYL CHLORIDE	0.51 J	ND U	ND U	ND U

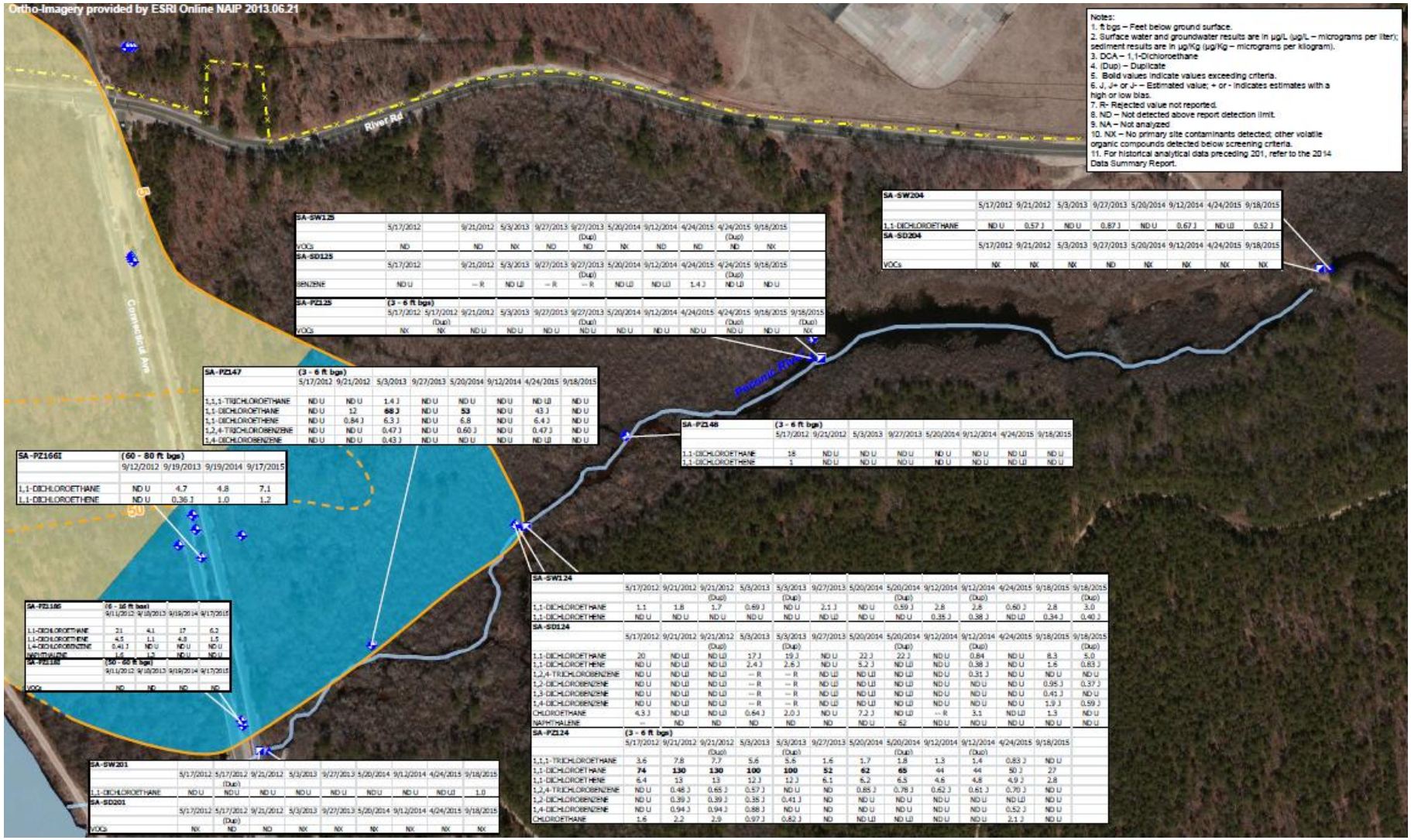
SA-PZ145I	(30 - 35 ft bgs)			
	9/18/2012	9/25/2013	9/17/2014	9/16/2015
1,1,1-TRICHLOROETHANE	0.39 J	0.48 J	0.99 J	ND U
1,1-DICHLOROETHANE	**42**	**41 J**	**32**	**24**
1,1-DICHLOROETHENE	4.8	3.6 J	3.2	2.6
1,2,4-TRICHLOROBENZENE	1.2	0.67 J	0.72 J	0.92 J+
1,4-DICHLOROBENZENE	0.99 J	0.58 J	0.76 J	ND U

SA-PZ145D	(50 - 55 ft bgs)				
	9/18/2012	9/25/2013	9/17/2014	9/16/2015	9/16/2015 (Dup)
1,1-DICHLOROETHANE	**28**	**30**	**19**	**13**	**13**
1,1-DICHLOROETHENE	1.9	2.1	1.4	0.97 J	1.0
1,2,4-TRICHLOROBENZENE	0.80 J	0.40 J	0.43 J	0.59 J+	0.76 J+
1,4-DICHLOROBENZENE	0.25 J	ND U	ND U	ND U	ND U

Off-Site Low Concentration Area Results



Peconic River Area Results



SA-SW125	5/17/2012		9/21/2012	5/3/2013	9/27/2013	9/27/2013 (Dup)	5/20/2014	9/12/2014	4/24/2015	4/24/2015 (Dup)	9/18/2015	
VOCs	ND		ND	NX	ND	ND	NX	ND	ND	ND	NX	
SA-SD125	5/17/2012		9/21/2012	5/3/2013	9/27/2013	9/27/2013 (Dup)	5/20/2014	9/12/2014	4/24/2015	4/24/2015 (Dup)	9/18/2015	
BENZENE	ND U		-- R	ND UJ	-- R	-- R	ND UJ	ND UJ	1.4 J	ND UJ	ND U	
SA-PZ125	(3 - 6 ft bgs)											
	5/17/2012	5/17/2012 (Dup)	9/21/2012	5/3/2013	9/27/2013	9/27/2013 (Dup)	5/20/2014	9/12/2014	4/24/2015	4/24/2015 (Dup)	9/18/2015	9/18/2015 (Dup)
VOCs	NX	NX	ND U	ND U	ND U	ND U	ND U	ND U	ND U	ND U	ND U	NX

SA-SW204	5/17/2012	9/21/2012	5/3/2013	9/27/2013	5/20/2014	9/12/2014	4/24/2015	9/18/2015
1,1-DICHLOROETHANE	ND U	0.57 J	ND U	0.87 J	ND U	0.67 J	ND UJ	0.52 J
SA-SD204	5/17/2012	9/21/2012	5/3/2013	9/27/2013	5/20/2014	9/12/2014	4/24/2015	9/18/2015
VOCs	NX	NX	NX	ND	NX	NX	NX	NX

SA-PZ147	(3 - 6 ft bgs)							
	5/17/2012	9/21/2012	5/3/2013	9/27/2013	5/20/2014	9/12/2014	4/24/2015	9/18/2015
1,1,1-TRICHLOROETHANE	ND U	ND U	1.4 J	ND U	ND U	ND U	ND UJ	ND U
1,1-DICHLOROETHANE	ND U	12	**68 J**	ND U	**53**	ND U	43 J	ND U
1,1-DICHLOROETHENE	ND U	0.84 J	6.3 J	ND U	6.8	ND U	6.4 J	ND U
1,2,4-TRICHLOROBENZENE	ND U	ND U	0.47 J	ND U	0.60 J	ND U	0.47 J	ND U
1,4-DICHLOROBENZENE	ND U	ND U	0.43 J	ND U	ND U	ND U	ND UJ	ND U

SA-PZ148	(3 - 6 ft bgs)								
	5/17/2012	9/21/2012	5/3/2013	9/27/2013	5/20/2014	9/12/2014	4/24/2015	9/18/2015	
1,1-DICHLOROETHANE	18	ND U	ND U	ND U	ND U	ND U	ND UJ	ND U	
1,1-DICHLOROETHENE	1	ND U	ND U	ND U	ND U	ND U	ND UJ	ND U	

SA-PZ116I	(60 - 80 ft bgs)			
	9/12/2012	9/19/2013	9/19/2014	9/17/2015
1,1-DICHLOROETHANE	ND U	4.7	4.8	7.1
1,1-DICHLOROETHENE	ND U	0.36 J	1.0	1.2

SA-PZ116S	(6 - 16 ft bgs)			
	9/11/2012	9/18/2013	9/19/2014	9/17/2015
1,1-DICHLOROETHANE	21	4.1	17	6.2
1,1-DICHLOROETHENE	4.5	1.1	4.8	1.5
1,4-DICHLOROBENZENE	0.41 J	ND U	ND U	ND U
NAPHTHALENE	1.6	1.2	ND U	ND U
SA-PZ116D	(50 - 60 ft bgs)			
	9/11/2012	9/18/2013	9/19/2014	9/17/2015
VOCs	ND	ND	ND	ND

SA-SW124	5/17/2012	9/21/2012	9/21/2012 (Dup)	5/3/2013	5/3/2013 (Dup)	9/27/2013	5/20/2014	5/20/2014 (Dup)	9/12/2014	9/12/2014 (Dup)	4/24/2015	9/18/2015	9/18/2015 (Dup)
1,1-DICHLOROETHANE	1.1	1.8	1.7	0.69 J	ND U	2.1 J	ND U	0.59 J	2.8	2.8	0.60 J	2.8	3.0
1,1-DICHLOROETHENE	ND U	ND U	ND U	ND U	ND U	ND UJ	ND U	ND U	0.35 J	0.38 J	ND UJ	0.34 J	0.40 J
SA-SD124	5/17/2012	9/21/2012	9/21/2012 (Dup)	5/3/2013	5/3/2013 (Dup)	9/27/2013	5/20/2014	5/20/2014 (Dup)	9/12/2014	9/12/2014 (Dup)	4/24/2015	9/18/2015	9/18/2015 (Dup)
1,1-DICHLOROETHANE	20	ND UJ	ND UJ	17 J	19 J	ND U	22 J	22 J	ND U	0.84	ND U	8.3	5.0
1,1-DICHLOROETHENE	ND U	ND UJ	ND UJ	2.4 J	2.6 J	ND U	5.2 J	ND UJ	ND U	0.38 J	ND U	1.6	0.83 J
1,2,4-TRICHLOROBENZENE	ND U	ND UJ	ND UJ	-- R	-- R	ND UJ	ND UJ	ND UJ	ND U	0.31 J	ND U	ND U	ND U
1,2-DICHLOROBENZENE	ND U	ND UJ	ND UJ	-- R	-- R	ND UJ	ND UJ	ND UJ	ND U	ND U	ND U	0.95 J	0.37 J
1,3-DICHLOROBENZENE	ND U	ND UJ	ND UJ	-- R	-- R	ND UJ	ND UJ	ND UJ	ND U	ND U	ND U	0.41 J	ND U
1,4-DICHLOROBENZENE	ND U	ND UJ	ND UJ	-- R	-- R	ND UJ	ND UJ	ND UJ	ND U	ND U	ND U	1.9 J	0.59 J
CHLOROETHANE	4.3 J	ND UJ	ND UJ	0.84 J	2.0 J	ND U	7.2 J	ND UJ	-- R	3.1	ND UJ	1.3	ND U
NAPHTHALENE	--	ND	ND	ND	ND	ND	ND U	62	ND U	ND U	ND U	ND U	ND U
SA-PZ124	(3 - 6 ft bgs)												
	5/17/2012	9/21/2012	9/21/2012 (Dup)	5/3/2013	5/3/2013 (Dup)	9/27/2013	5/20/2014	5/20/2014 (Dup)	9/12/2014	9/12/2014 (Dup)	4/24/2015	9/18/2015	
1,1,1-TRICHLOROETHANE	3.6	7.8	7.7	5.6	5.6	1.6	1.7	1.8	1.3	1.4	0.83 J	ND U	
1,1-DICHLOROETHANE	**74**	**130**	**130**	**100**	**100**	**52**	**62**	**65**	44	44	50 J	27	
1,1-DICHLOROETHENE	6.4	13	13	12 J	12 J	6.1	6.2	6.5	4.6	4.8	4.9 J	2.8	
1,2,4-TRICHLOROBENZENE	ND U	0.48 J	0.65 J	0.57 J	ND U	ND	0.85 J	0.78 J	0.62 J	0.61 J	0.70 J	ND U	
1,2-DICHLOROBENZENE	ND U	0.39 J	0.39 J	0.38 J	0.41 J	ND	ND U	ND U	ND U	ND U	ND UJ	ND U	
1,4-DICHLOROBENZENE	ND U	0.94 J	0.94 J	0.88 J	ND U	ND	ND U	ND U	ND U	ND U	0.52 J	ND U	
CHLOROETHANE	1.6	2.2	2.9	0.97 J	0.82 J	ND	ND UJ	ND UJ	ND U	ND U	2.1 J	ND U	

SA-SW201	5/17/2012	5/17/2012 (Dup)	9/21/2012	5/3/2013	9/27/2013	5/20/2014	9/12/2014	4/24/2015	9/18/2015
1,1-DICHLOROETHANE	ND U	ND U	ND U	ND U	ND U	ND U	ND U	ND UJ	1.0
SA-SD201	5/17/2012	5/17/2012 (Dup)	9/21/2012	5/3/2013	9/27/2013	5/20/2014	9/12/2014	4/24/2015	9/18/2015
VOCs	NX	ND	ND	NX	NX	NX	NX	NX	NX

Summary – 2015 Results

- Site 2 On-property
  - 15 VOCs detected across 8 of 15 locations
  - MCL exceedances FT-MW02S (ethylbenzene), 03S (DCA) and 09I (DCA, TCA, TCE)
  - All other locations less than 2 µg/L total VOCs (excluding acetone)
- Site 2 Off-property
  - 9 VOCs detected across 6 of 8 locations
  - 4 MCL exceedances (TCE, DCE, DCA and PCE) at FT-PZ460I “anomaly”
  - MCL exceedances at FT-PZ461I (TCE, 1,2-DCE) and FT-PZ458I (TCE)
  - Data in this area consistent with prior results; anomaly decreasing

Site 6A Summary – 2015 Results

- Sites 6A (Fuel Calibration Area) /10B (Engine Test House)
  - 15 VOCs detected across 8 of 12 locations
  - MCLs exceeded at 2 locations
    - FC-MW03SR1 exceeded MCLs for naphthalene, ethylbenzene, xylene, isopropyl benzene, DCE, and 1,2-dichlorobenzene in July and September, plus CA and DCA in September
    - FC-MW02SR1 exceeded MCLs for isopropyl benzene in July and ethylbenzene in September
  - Estimated VOC mass flux across FC-MW05/09/10 cluster is 0.2 lbs/yr, below benchmark to consider additional Source Area treatment
  - Except for naphthalene at FC-MW05I, results are consistent with recent years; continue monitoring of Source Area
  - Investigation of continued elevated concentrations within removal area scheduled for 2016

Summary (cont'd)

- Groundwater, Southern Area
  - Fence Line Area
    - 12 VOCs detected across 10 of 12 locations; MCLs exceeded at 7 locations
    - DCA, CA, TCA and DCE MCLs exceeded at SA-PZ139 and SA-PZ179
    - DCA and CA exceeded MCLs at SA-PZ135 and SA-PZ180
    - DCA exceeded MCL at SA-PZ182
    - PCE exceeded MCL at SA-PZ149I1 and SA-PZ157I1
  - Offsite High Concentration Area
    - 10 VOCs detected across all 5 locations; MCLs exceeded at 4 locations
    - Highest concentrations near center of plume; 4 MCLs exceeded at SA-PZ143 and 3 MCLs exceeded at SA-PZ142
    - Results indicate decreasing trend in VOC concentrations
  - Offsite Low Concentration Area
    - 14 VOCs detected across 14 of 18 locations
    - MCL exceedances mostly towards southern and western edges of the plume
    - MCLs exceeded at 7 locations; DCA exceeded MCL at all 7 of these locations

Summary (cont'd)

- Peconic River Area
  - Groundwater
    - 8 VOCs detected across 5 of 7 locations
    - No VOCs exceeded RD porewater benchmarks, but DCA concentrations exceeded one-half of the benchmark at SA-PZ124 and SA-PZ147
  - Sediment
    - 13 VOCs detected, but 4 are either lab contaminants (e.g., acetone) are or naturally-occurring (carbon disulfide)
    - Multiple chlorinated VOCs detected at SA-SD124 in September and benzene in SA-SD125 in April
    - Per RD recommendation, sediment sampling to be discontinued
  - Surface Water
    - 3 VOCs detected across all 4 locations, but acetone is a lab contaminant
    - DCA observed at SA-SW124 in April and September, and SA-SW201 and SA-SW204 in September
    - DCE at SA-SW124 in September only
    - All detections were below RD benchmarks

Look Forward – Peconic River Area

- Groundwater concentrations in eastern portion of High Concentration and Low Concentration Areas (HCA/LCA) provide "early notice"
  - Data to be compared to RD surface water/porewater benchmarks
- If data suggests sustained exceedance of RD benchmarks may occur in PRA, evaluate mitigation options
  - Conceptual options in RD include air stripping along north bank of river and in-situ degradation in HCA
- HCA/LCA data through September 2015
  - SA-PZ118S/I and 166I less than half of benchmark since 2011
  - SA-PZ123I near or above benchmark from 2011 through 2015; concentrations steady
  - SA-PZ123I1 below benchmark in 2014 and 2015; concentrations decreasing
  - SA-PZ131D below benchmark from 2011 through 2015; concentrations steady
  - SA-MW132I above benchmarks from 2012 through 2015
- Sustained exceedance of benchmarks at PRA does not appear likely in near term, continued monitoring will re-evaluate on an annual basis

Look Forward – Site 6A/Southern Area

- Data gap between SA-MW132 and SA-PZ123 clusters to be addressed
  - –2 additional well clusters on PRSC property
  - –Provide better definition of plume along northern shore of Donahue Pond
  - –Scheduled for summer or early fall 2016, pending access agreement

- Site 6A Source Investigation
  - –Driven by recent VOC concentrations at FC-MW02SR1 and FC-MW03SR1
  - –Will attempt to:
    - Determine if source is upwelling from below excavation, or from upgradient
    - Determine if there is a plume existing the source area to the east

Look Forward - Perfluorinated Compounds (PFCs)

- PFCs were a component of Aqueous Film Forming Foam (AFFF)
- Site 2 Former Fire Training Area
  - AFFF used in fire training exercises conducted from the 1950s to the mid-1990s
- Aircraft Hangers
  - Building 168 (New Aircraft Paint Hanger) and Building 318 (Rehab Existing Paint Hanger) had fire suppression systems utilizing AER-O-WATER 3EM (AFFF)
  - These systems were tested by a full dump of AFFF and water inside the structure
- SAP currently in development to include sampling existing wells at Site 2 and Site 6A for PFOS and PFOA
- Sampling to occur early summer 2016

Questions?

FC-MW02SR1	(3 - 13* ft bgs)					
	2/20/2012	9/10/2012	9/17/2013	9/15/2014	7/20/2015	9/14/2015
1,1-DICHLOROETHANE	**8.4**	0.94 J	ND U	ND U	ND U	ND U
1,2-DICHLOROBENZENE	3	**10 J**	0.81 J	3.3 J+	3.7	2.8
1,4-DICHLOROBENZENE	ND U	0.43 J	ND U	0.25 J+	ND U	ND U
CHLOROETHANE	4.6	ND	ND U	ND U	ND U	ND U
CYCLOHEXANE	1.2	4.3 J	ND U	28 J	ND U	ND UJ
ETHYLBENZENE	**11**	**14 J**	1.2	**12 J+**	3.0	**6.5**
ISOPROPYLBENZENE	**7.6**	**10 J**	1.4	**7.9 J+**	**5.5**	4.8
M- AND P-XYLENE	**29**	**52 J**	1.2 J	ND U	ND U	ND U
NAPHTHALENE	--	**50**	2.7	24	14 J	25 J+
O-XYLENE	**9**	0.90 J	ND U	ND U	ND U	ND U
FC-MW02IR1	**(42 - 52 ft bgs)**					
		9/10/2012	9/17/2013	9/16/2014		9/14/2015
NAPHTHALENE		0.40	ND	ND U		4.8 J+

FC-MW03SR1	(3 - 13* ft bgs)				
	9/11/2012	9/18/2013	9/15/2014	7/20/2015	9/14/2015
1,1,1-TRICHLOROETHANE	ND	ND	2.9 J-	ND U	ND U
1,1-DICHLOROETHANE	1.1	**9.3 J**	**65 J-**	3.6	**6.5**
1,1-DICHLOROETHENE	ND	ND	**9.2 J-**	**6.9**	**7.4**
1,2-DICHLOROBENZENE	2.9	ND	2.2 J-	**6.8**	**6.7**
BENZENE	ND	ND	1.2 J-	1.8	2.2
CHLOROETHANE	ND	**5 J**	**170 J-**	4.2	**10**
CIS-1,2-DICHLOROETHENE	0.73 J	1.8	1.7 J-	2.4	4.0
ETHYLBENZENE	**46**	**23 J**	**62 J-**	**150**	**140**
ISOPROPYLBENZENE	**21**	**10 J**	**16 J-**	**54**	**40**
M- AND P-XYLENE	**19**	ND	1.0 J-	**55**	**68**
METHYL CYCLOHEXANE	7.1 J	7.0	6.5 J	29 J	9.8
NAPHTHALENE	NA	NA	34	**140 J**	**160 J+**
O-XYLENE	ND UJ	ND U	ND UJ	0.30 J	0.29 J

FC-MW10S	(5 - 15 ft bgs)		
	9/17/2013	9/16/2014	9/21/2015
VOCs	ND	ND	ND
FC-MW10I1	**(20 - 30 ft bgs)**		
	9/16/2013	9/16/2014	9/21/2015
1,2-DICHLOROBENZENE	0.26 J	ND U	ND U
ETHYLBENZENE	2.4	ND U	ND U
ISOPROPYLBENZENE	2.6	ND U	ND U
FC-MW10I	**(48 - 58 ft bgs)**		
	9/16/2013	9/16/2014	9/21/2015
ETHYLBENZENE	ND U	ND U	0.26 J
ISOPROPYLBENZENE	ND U	ND U	0.25 J

FC-MW09S	(5 - 15 ft bgs)		
	9/17/2013	9/16/2014	9/16/2015
VOCs	ND	ND	ND
FC-MW09I1	**(20 - 30 ft bgs)**		
	9/17/2013	9/15/2014	9/21/2015
VOCs	NX	ND	ND
FC-MW09I	**(48 - 58 ft bgs)**		
	9/17/2013	9/15/2014	9/16/2015
VOCs	ND	NX	NX

FC-MW05S	(6 - 16 ft bgs)					
			9/10/2012	9/17/2013	9/10/2014	9/16/2015
VOCs			NX	ND	ND	NX
FC-PZ05I1	**(20 - 30 ft bgs)**					
	2/20/2012	2/20/2012 (Dup)	9/10/2012	9/18/2013	9/13/2014	9/16/2015
1,1,1-TRICHLOROETHANE	**7.1**	**8**	ND U	ND U	ND UJ	ND U
1,1-DICHLOROETHANE	**16**	**18**	3.4	ND U	ND UJ	ND U
1,1-DICHLOROETHENE	1	1.3	ND U	ND U	ND UJ	ND U
1,2-DICHLOROBENZENE	1.4	1.2	0.99 J	ND U	ND UJ	ND U
CHLOROETHANE	3	3.5	ND U	ND U	ND UJ	ND U
ETHYLBENZENE	**8.5**	**8.2**	0.55 J	ND U	ND UJ	ND U
ISOPROPYLBENZENE	3.3	3.4	**6.4**	ND U	ND UJ	ND U
NAPHTHALENE	--	--	4.6	ND U	ND U	ND U
TETRACHLOROETHENE	ND U	ND U	ND U	0.45 J	**5.4 J-**	3.1
FC-MW05I	**(48 - 58 ft bgs)**					
			9/10/2012	9/17/2013	9/10/2014	9/14/2015
ETHYLBENZENE			ND U	ND U	ND U	0.30 J
NAPHTHALENE			ND	ND	ND U	33 J+

Notes:
1. ft bgs – Feet below ground surface.
2. All results are in µg/L (µg/L – micrograms per liter).
3. DCA – 1,1-Dichloroethane
4. (Dup) – Duplicate
5. **Bold** values indicate values exceeding criteria.
6. J, J+ or J- – Estimated value; + or - indicates estimates with a high or low bias.
7. ND – Not detected above report detection limit.
8. NA – Not analyzed
9. NX – No primary site contaminants detected; other volatile organic compounds detected below screening criteria.
10. * – Screen interval is approximate
11. For historical analytical data preceding 2012, refer to the 2014 Data Summary Report.

Legend

- Monitoring Well/Piezometer
- 1,1 - DCA Contour ug/L
- 1,1 - DCA Contour ug/L (Inferred)
- Excavation Area 2009/2010
- Fence Line Area
- Source Area

DRAFT

N W E S

200 100 0 Feet

Groundwater Analytical Detections
Site 6A - Fuel Calibration Area
NWIRP Calverton
Calverton, New York

NAVFAC

RESOLUTION CONSULTANTS

Figure 4-3

Date: 4/12/2016

Project #: 60264489

File: P:\Projects\Govt\Projects\NavyCLEAN AECOM-EnSafe JV\Calverton\GIS\Projects\DataSummaryReport_2016-03\Figure 4-3 Groundwater Analytical Detections - Site 6A.mxd

Ortho-Imagery provided by ESRI Online NAIP 2013.06.21

Former Fire Training Ring

FTMW01S 38.24

FTMW03S 38.31

FTMW02S 37.85

FTMW09I 37.83

FTMW10I 37.87

FTMW07S 37.91

FTMW08S 36.87

FTMW06S 37.59

FTMW05S 37.3

FTPZ455S 37.23

FTPZ451S 37.32

FTPZ452S 37.15

McKay Lake

FTPZ453S 36.4

FTSG10

FTPZ454S 35.95

FTSG11

Grumman Blvd

SAMW130S 32.76

SAPZ157I1 32.22

SAPZ181I 31.95

SAPZ138I1

EW3

SAPZ180I 31.8

SAMW126S 34.48

SAPZ160I 31.82

SAPZ179I 31.56

SAPZ134I 31.46

EW1

EW2

SAPZ137I 33.37

SAPZ135I 31.367

SAMW127S

SAPZ163I 32.45

SAPZ144S 30.89

Swan Pond

FTPZ459S 31.68

FTPZ462S 35.44

FTPZ458S 32.67

River Rd

FTPZ461I 29.5

FTSG13

FTSG12

FTPZ457S 32.38

FTPZ460I 30.82

FTPZ456S 33.5

38 37 36 35 34 33 32 31

File: P:\Projects\Govt\Projects\Navy\CLEAN AECOM-EnSafe JV\Calverton\GIS\Projects\DataSummaryReport_2016-03\Figure 4-2 Groundwater Contours Map September 2015.mxd

Legend

- New Extraction Well
- Existing Extraction Well
- Monitoring Well/Piezometer
- Staff Gauge
- Water
- Former Fire Training Ring
- Fence Line
- Infiltration Gallery
- Groundwater Elevation Contour (Feet MSL)
- Groundwater Elevation Contour (Inferred) (Feet MSL)
- Flow Direction

DRAFT

N W E S

400 200 0 Feet

Groundwater Contours September 2015 Site 2 - Fire Training Area NWIRP Calverton Calverton, New York

NAVFAC

RESOLUTION CONSULTANTS

Figure 4-2

Date: 4/12/2016

Project #: 60264489

Ortho-Imagery provided by ESRI Online NAIP 2013.06.21

Notes:
1. ft bgs – Feet below ground surface.
2. All results are in µg/L (µg/L – micrograms per liter).
3. DCA – 1,1-Dichloroethane
4. (Dup) – Duplicate
5. **Bold** values indicate values exceeding criteria.
6. J, J+ or J- – Estimated value; + or - indicates estimates with a high or low bias.
7. ND – Not detected above report detection limit.
8. NA – Not analyzed
9. NX – No primary site contaminants detected; other volatile organic compounds detected below screening criteria.
10. For historical analytical data preceding 2012, refer to the 2014 Data Summary Report.

FT-MW03S	(21.5 - 31.5 ft bgs)			
	9/17/2012	9/26/2013	9/17/2014	9/24/2015
1,1,1-TRICHLOROETHANE	0.36 J	2.1 J	25	ND U
1,1-DICHLOROETHANE	ND U	ND U	37	7.1
TRICHLOROETHENE	3.2	1.4 J	4.0	0.50 J

FT-MW02S	(10.5 - 20.5 ft bgs)				
	9/17/2012	9/26/2013	9/17/2014	9/18/2015	
1,1-DICHLOROETHANE	0.90 J	2.6 J	1.8	2.2	
1,2,4-TRICHLOROBENZENE	ND U	ND U	0.56 J	ND U	
1,2-DICHLOROBENZENE	1.3	3.0 J	2.6	3.5	
1,4-DICHLOROBENZENE	0.60 J	0.96 J	ND U	1.2	
CIS-1,2-DICHLOROETHENE	2.2	3.5 J	0.36 J	ND U	
ETHYLBENZENE	0.44 J	2.4 J	4.3	5.2	
ISOPROPYLBENZENE	0.45 J	1.9 J	2.0	1.7	
M- AND P-XYLENE	ND U	0.67 J	0.85 J	0.94 J	
NAPHTHALENE	ND	2.8	0.95 J	ND U	
O-XYLENE	0.70 J	2.8 J	2.2	1.4	
XYLENES, TOTAL	0.70 J	3.5 J	3.1	2.3 J	

FT-MW02I	(70 - 80 ft bgs)				
	9/17/2012	9/26/2013	9/17/2014	9/18/2015	9/18/2015 (Dup)
VOCs	ND	ND	NX	NX	NX

FT-MW09I	(28 - 38 ft bgs)			
	9/26/2013	12/16/2013	7/17/2015	9/23/2015
1,1,1-TRICHLOROETHANE	ND U	ND U	13	34
1,1-DICHLOROETHANE	1.8 J	0.72 J	47	120
1,1-DICHLOROETHENE	ND U	ND U	ND U	0.55 J
TRICHLOROETHENE	9.9 J	5.3	15	15

FT-MW07S	(25 - 35 ft bgs)			
	9/17/2012	9/26/2013	9/18/2014	9/23/2015
VOCs	ND	ND	ND	ND

FT-PZ455S	(25 - 35 ft bgs)			
	9/13/2012	9/19/2013	9/16/2014	9/17/2015
VOCs	NX	NX	NX	NX

FT-MW06S	(17 - 27 ft bgs)			
	9/18/2012	9/27/2013	9/18/2014	9/24/2015
VOCs	NX	NX	NX	ND

FT-MW06I	(65 - 75 ft bgs)			
	9/18/2012	9/27/2013	9/18/2014	9/24/2015
VOCs	NX	NX	NX	ND

FT-PZ462S	(3 - 13 ft bgs)						
	9/13/2012	9/13/2012 (Dup)	9/19/2013	9/19/2013 (Dup)	9/16/2014	9/16/2014 (Dup)	9/17/2015
VOCs	ND	ND	ND	ND	ND	ND	NX

FT-MW01S	(18.5 - 28.5 ft bgs)			
	9/17/2012	9/26/2013	9/17/2014	9/18/2015
VOCs	ND	ND	ND	ND

FT-MW01I	(68 - 78 ft bgs)			
	9/17/2012	9/26/2013	9/17/2014	9/18/2015
VOCs	NX	ND	NX	NX

FT-MW10I	(20 - 30 ft bgs)			
	9/26/2013	12/16/2013	7/17/2015	9/24/2015
1,1,1-TRICHLOROETHANE	0.46 J	ND U	ND U	ND U
1,1-DICHLOROETHANE	0.93 J	0.62 J	ND U	ND U
TRICHLOROETHENE	6.4 J	6.6	0.93 J	1.1

FT-PZ451S	(5 - 15 ft bgs)			
	9/20/2012	9/25/2013	9/18/2014	9/23/2015
VOCs	ND	ND	ND	ND

FT-PZ452S	(6 - 16 ft bgs)			
	9/17/2012	9/25/2013	9/19/2014	9/23/2015
NAPHTHALENE	2.4	ND	ND U	ND UJ

FT-PZ454S	(3 - 13 ft bgs)			
	9/20/2012	9/25/2013	9/18/2014	9/22/2015
VOCs	ND	NX	ND U	ND

FT-MW08S	(3 - 14 ft bgs)			
	9/18/2012	9/26/2013	9/18/2014	9/24/2015
VOCs	ND	ND	ND	ND

FT-MW08I	(23 - 33 ft bgs)			
	9/18/2012	9/26/2013	9/18/2014	9/24/2015
1,1-DICHLOROETHANE	1.2	0.28 J	ND U	0.50 J
1,2-DICHLOROBENZENE	ND U	ND U	ND U	0.33 J

FT-MW05S	(7.5 - 17.5 ft bgs)							
	9/17/2012		9/26/2013		9/18/2014		9/23/2015	
VOCs	ND		NX		ND		ND	

FT-MW05I	(48 - 58 ft bgs)							
	9/17/2012	9/17/2012 (Dup)	9/26/2013	9/26/2013 (Dup)	9/18/2014	9/18/2014 (Dup)	9/23/2015	
VOCs	NX	NX	NX	NX	NX	NX	NX	

FT-PZ461I	(54 - 59 ft bgs)						
	2/23/2012	6/12/2012	9/18/2012	7/17/2013	9/25/2013	9/17/2014	9/16/2015
1,1-DICHLOROETHANE	3.9	4.7	3.5	4.7	4.8 J	2.7	2.0
1,1-DICHLOROETHENE	2.8	2.3	2.9	1.5	3.0 J	2.4	1.4
CIS-1,2-DICHLOROETHENE	4.2	5	3.8	5.7	4.4 J	3.4	8.4
TRICHLOROETHENE	69	74	59	86.7	92 J	86	64

FT-PZ458I	(40 - 45 ft bgs)							
	2/22/2012	6/12/2012	6/12/2012 (Dup)	9/12/2012	7/17/2013	9/19/2013	9/16/2014	9/17/2015
1,1-DICHLOROETHANE	0.8 J	0.86 J	0.8 J	ND U	1	0.81 J	0.70 J	0.62 J
1,1-DICHLOROETHENE	0.77 J	ND U	0.64 J	0.68 J	ND U	0.88 J	1.0	0.92 J
CIS-1,2-DICHLOROETHENE	4.1	3.8	4.2	2.0	4.1	1.9	1.0	1.0
TETRACHLOROETHENE	0.89 J	ND U	0.8 J	0.66 J	0.97 J	ND U	0.40 J	0.54 J
TRICHLOROETHENE	24	23	25	16	24.9	13	11	14

FT-PZ460I	(45 - 50 ft bgs)							
	2/23/2012	6/12/2012	9/18/2012	7/17/2013	9/25/2013	9/17/2014	9/16/2015	9/16/2015 (Dup)
1,1-DICHLOROETHANE	14	21	19	38.5	43 J	42	32	32
1,1-DICHLOROETHENE	21	35	42	97	80 J	130	93	91
CIS-1,2-DICHLOROETHENE	7.8	9.9	7.7	10.2	7.2 J	4.8	3.9	3.9
TETRACHLOROETHENE	7.7	7.7	9.4	8.6	6.9 J	6.6	5.6	5.1
TRICHLOROETHENE	440	600	380	360	370 J	260 J	190	160
VINYL CHLORIDE	0.43 J	ND U	0.54 J	0.9 J	0.72 J	ND U	0.53 J	0.78 J

FT-PZ456S	(3 - 13 ft bgs)			
	9/12/2012	9/19/2013	9/16/2014	9/17/2015
VOCs	ND	ND	NX	NX

Former Fire Training Ring

McKay Lake

Swan Pond

Grumman Blvd

River Rd

EW3

EW2

EW1

IW2

Legend

New Extraction Well
Injection Well
Existing Extraction Well
Monitoring Well/Piezometer
Site Boundary
Former Fire Training Ring
Water
Fence Line

DRAFT

400 200 0 Feet

Groundwater Analytical Detections
Site 2 - Fire Training Area
NWIRP Calverton
Calverton, New York

RESOLUTION CONSULTANTS

Figure 4-1
Date: 4/12/2016
Project #: 60264489

File: P:\Projects\Govt\Projects\NavyCLEAN AECOM-EnSafe JV\Calverton\GIS\Projects\DataSummaryReport_2016-03\Figure 4-1 Groundwater Analytical Detections.mxd

Ortho-Imagery provided by ESRI Online NAIP 2013.06.21

FCMW04S 35.78
FCMW02SR1 36.12
FCMW05S 35.44
FCMW06S 36.06
FCMW10S 35.42
FCMW09S 35.51
SAMW130S 32.76
SAPZ138I1
SAPZ181I 31.95
EW3
SAMW126S 34.48
SAPZ160I 31.82
EW2
EW1
SAPZ134I 31.46
SAMW128S 29.43
SAMW129S 27.95
SAPZ137I 33.37
SAPZ135I 31.367
Groundwater Treatment System
SAPZ163I 32.45
SAPZ145S 29.3
SAPZ145I 29.3
SAPZ120S 25.22
SAPZ122S 27.41
SAMW131S 28.37
SAPZ144S 30.89
SAPZ172I 28.97
SAPZ143I 30.08
SAPZ171I 29.47
SAPZ123S 26.71
FTPZ459S 31.68
SAPZ166I 25.83
SAMW132S 29.44
FTSG01 Dry
FTSG02ES Dry
SAPZ118S 25.48
FTSGBMCAH 22.03
FTPZ458S 32.67
Grumman Blvd
River Rd
Connecticut Ave
Swan Pond
Peconic River
33
32
31
30
29
28
34
26
25
24
27

Legend

New Extraction Well
Existing Extraction Well
Monitoring Well/Piezometer
Staff Gauge
Water
Fence Line
Infiltration Gallery
Groundwater Elevation Contour (Feet MSL)
Groundwater Elevation Contour (Inferred) (Feet MSL)
Flow Direction

DRAFT

400 200 0 Feet

Groundwater Contours September 2015 Site 6A and Southern Area NWIRP Calverton Calverton, New York

RESOLUTION CONSULTANTS

Figure 4-4
Date: 4/12/2016
Project #: 60264489

File: P:\Projects\Govt\Projects\Navy\CLEAN\ AECOM-EnSafe JV\Calverton\GIS\Projects\DataSummaryReport_2016-03\Figure 4-4 Groundwater Contours Map September 15 Site 6A, 10B and Southern Area.mxd

Ortho-Imagery provided by ESRI Online NAIP 2013.06.21

Notes:
1. ft bgs – Feet below ground surface.
2. All results are in µg/L (µg/L – micrograms per liter).
3. DCA – 1,1-Dichloroethane
4. (Dup) – Duplicate
5. **Bold** values indicate values exceeding criteria.
6. J, J+ or J- – Estimated value; + or - indicates estimates with a high or low bias.
7. ND – Not detected above report detection limit.
8. NA – Not analyzed
9. NX – No primary site contaminants detected; other volatile organic compounds detected below screening criteria.
10. For historical analytical data preceding 2012, refer to the 2014 Data Summary Report.

SA-PZ157I1	(33 - 38 ft bgs)			
	9/19/2012	9/24/2013	9/12/2014	9/21/2015
1,1,1-TRICHLOROETHANE	**130 J**	**55**	2.7	ND U
1,1-DICHLOROETHANE	**550**	**240**	**13**	ND U
1,1-DICHLOROETHENE	**40 J**	**14**	1.1	ND U
1,2,4-TRICHLOROBENZENE	4.4 J	ND U	ND U	ND U
1,2-DICHLOROBENZENE	4.6 J	0.61 J	0.35 J	ND U
1,3-DICHLOROBENZENE	4.1 J	ND U	ND U	ND U
1,4-DICHLOROBENZENE	**16 J**	1.2	ND U	ND U
BENZENE	1.0 J	0.42 J	ND U	ND U
CHLOROETHANE	**270**	**21 J**	**5.5**	ND U
ISOPROPYLBENZENE	1.8 J	0.46 J	ND U	ND U
TETRACHLOROETHENE	ND U	ND U	ND U	**8.2**

SA-PZ157I	(41 - 46 ft bgs)			
	9/19/2012	9/24/2013	9/13/2014	9/21/2015
1,1,1-TRICHLOROETHANE	4.5	ND U	ND UJ	ND U
1,1-DICHLOROETHANE	**28**	1.5	ND UJ	0.65 J
1,1-DICHLOROETHENE	1.6	ND U	ND UJ	ND U
1,4-DICHLOROBENZENE	0.37 J	ND U	ND UJ	ND U
CHLOROETHANE	2.2 J	ND U	ND UJ	ND U

SA-PZ149I1	(32 - 37 ft bgs)			
	9/13/2012	9/24/2013	9/12/2014	9/15/2015
1,1,1-TRICHLOROETHANE	**84**	**130**	**5.1**	ND U
1,1-DICHLOROETHANE	**520**	**630**	**24**	0.30 J
1,1-DICHLOROETHENE	**36**	**38**	1.8	ND U
1,2,4-TRICHLOROBENZENE	3.7	1.3	ND U	ND U
1,2-DICHLOROBENZENE	3.2	3.4	0.41 J	ND U
1,3-DICHLOROBENZENE	2.2	0.54 J	ND U	ND U
1,4-DICHLOROBENZENE	**11**	2.4	ND U	ND U
BENZENE	1.4	1.8	ND U	ND U
CHLOROETHANE	**180**	**200**	**8.6**	ND U
ISOPROPYLBENZENE	4.4	**6.0**	ND U	ND U
TETRACHLOROETHENE	ND U	ND U	**7.5**	**41**

SA-PZ139	(42.5 - 47.5 ft bgs)			
	9/20/2012	9/24/2013	9/12/2014	9/15/2015
1,1,1-TRICHLOROETHANE	0.86 J	0.53 J	ND U	**20**
1,1-DICHLOROETHANE	**11**	3.8	1.1	**120**
1,1-DICHLOROETHENE	0.43 J	ND U	ND U	**7.9**
1,2,4-TRICHLOROBENZENE	ND U	ND U	ND U	1.1 J+
1,2-DICHLOROBENZENE	ND U	ND U	ND U	0.99 J
BENZENE	ND U	ND U	ND U	0.32 J
CHLOROETHANE	ND U	ND U	ND U	**29**

SA-PZ180I	(33 - 43 ft bgs)	
	7/17/2015	9/22/2015
1,1,1-TRICHLOROETHANE	**5.8**	ND U
1,1-DICHLOROETHANE	**38**	**20**
1,1-DICHLOROETHENE	2.3	1.3
1,2-DICHLOROBENZENE	0.31 J	ND U
CHLOROETHANE	**10**	**5.9**

SA-PZ181I	(33 - 43 ft bgs)		
	7/17/2015	7/17/2015 (Dup)	9/17/2015
1,1-DICHLOROETHANE	1.1	1.0	0.84 J

SA-PZ179I	(36 - 46 ft bgs)	
	7/20/2015	9/21/2015
1,1,1-TRICHLOROETHANE	**21**	**14**
1,1-DICHLOROETHANE	**130**	**79**
1,1-DICHLOROETHENE	**8.4**	**5.5**
1,2-DICHLOROBENZENE	0.99 J	0.84 J
1,3-DICHLOROBENZENE	0.29 J	ND U
BENZENE	0.35 J	0.28 J
CHLOROETHANE	**28**	**28**
ISOPROPYLBENZENE	0.28 J	ND U

SA-PZ138I1	(37 - 42 ft bgs)					
	2/21/2012	9/20/2012	9/24/2013	9/12/2014	9/12/2014 (Dup)	9/23/2015
1,1,1-TRICHLOROETHANE	**150**	**43 J**	**26**	**13**	**13**	ND U
1,1-DICHLOROETHANE	**690**	**260**	**140**	**62**	**58**	0.54 J
1,1-DICHLOROETHENE	**47**	**14 J**	**7.3**	4.0	3.8	ND U
1,2,4-TRICHLOROBENZENE	2.9	0.49 J	ND U	ND U	ND U	ND UJ
1,2-DICHLOROBENZENE	2.4	0.64 J	0.59 J	0.47 J	0.54 J	ND U
1,3-DICHLOROBENZENE	1.4	ND U	ND U	ND U	ND U	ND U
1,4-DICHLOROBENZENE	**5.8**	0.89 J	ND U	ND U	ND U	ND U
BENZENE	1.3	ND U	0.35 J	ND U	ND U	ND U
CHLOROETHANE	**150**	**54 J**	**22**	**17**	**16**	ND U
ISOPROPYLBENZENE	2	0.61 J	ND U	ND U	ND U	ND U
TETRACHLOROETHENE	ND U	ND U	ND U	**8.5**	**8.4**	ND U

SA-PZ182I	(41 - 46 ft bgs)	
	9/22/2014	9/17/2015
1,1,1-TRICHLOROETHANE	4.7	ND U
1,1-DICHLOROETHANE	**48**	**24**
1,1-DICHLOROETHENE	2.6	1.5
CHLOROETHANE	3.0 J	1.9 J

SA-PZ163I	(32 - 42 ft bgs)			
	9/19/2012	9/24/2013	9/13/2014	9/14/2015
1,1,1-TRICHLOROETHANE	1.3	0.43 J	ND UJ	ND U
1,1-DICHLOROETHANE	**26**	**6.2**	ND UJ	1.2
1,1-DICHLOROETHENE	1.7	0.48 J	ND UJ	ND U
1,2,4-TRICHLOROBENZENE	0.41 J	ND U	ND UJ	ND U
1,4-DICHLOROBENZENE	0.28 J	ND U	ND UJ	ND U

SA-MW126S	(5 - 15 ft bgs)			
	9/19/2012	9/25/2013	9/13/2014	9/15/2015
VOCs	ND	ND	NX	NX

SA-MW126I	(40 - 50 ft bgs)			
	9/19/2012	9/26/2013	9/13/2014	9/21/2015
1,1-DICHLOROETHANE	ND U	0.58 J	ND UJ	ND U

SA-MW126D	(74 - 84 ft bgs)			
	9/19/2012	9/25/2013	9/13/2014	9/15/2015
VOCs	ND	ND	ND	ND

SA-PZ135	(41.5 - 46.5 ft bgs)			
	9/13/2012	9/24/2013	9/17/2014	9/15/2015
1,1,1-TRICHLOROETHANE	1.4	ND U	**5.4**	4.6
1,1-DICHLOROETHANE	**6.9**	1.3	**35**	**27**
1,1-DICHLOROETHENE	0.68 J	ND U	2.3	1.8
CHLOROETHANE	ND U	ND U	**5.3**	**5.8**

SA-MW127I	(36 - 46 ft bgs)			
	9/13/2012	9/26/2013	9/13/2014	9/22/2015
1,1,1-TRICHLOROETHANE	1.2	1.7	ND UJ	ND U
1,1-DICHLOROETHANE	**13**	**23**	ND UJ	4.1
1,1-DICHLOROETHENE	0.99 J	1.3	ND UJ	ND U
1,2,4-TRICHLOROBENZENE	ND U	0.67 J	ND UJ	ND UJ
1,2-DICHLOROBENZENE	ND U	0.25 J	ND UJ	ND U
1,4-DICHLOROBENZENE	0.25 J	ND U	ND UJ	ND U
CHLOROETHANE	ND U	4.4	ND UJ	ND U

SA-PZ161I	(41 - 46 ft bgs)			
	9/19/2012	9/19/2012 (Dup)	9/24/2013	9/24/2013 (Dup)
1,1,1-TRICHLOROETHANE	2.0	2.0	ND U	ND U
1,1-DICHLOROETHANE	**26**	**27**	**9.0**	**9.5**
1,1-DICHLOROETHENE	1.7	1.8	0.70 J	0.88 J
1,4-DICHLOROBENZENE	ND U	0.26 J	ND U	ND U

50
500
5
50
500
EW3
EW2
EW1
Groundwater Treatment Building
IW2
IW2
Grumman Blvd

Legend

- New Extraction Well
- Injection Well
- Existing Extraction Well
- Monitoring Well/Piezometer
- Fence Line Area
- Offsite High Concentration Area
- Offsite Low Concentration Area
- Source Area
- Water
- 1,1 - DCA Contour ug/L
- 1,1 - DCA Contour ug/L (Inferred)
- Fence Line
- Infiltration Gallery

DRAFT

N W E S

200 100 0 Feet

Groundwater Analytical Detections
Southern/Fence Line Area
NWIRP Calverton
Calverton, New York

NAVFAC

RESOLUTION CONSULTANTS

Figure 4-5
Date: 4/12/2016
Project #: 60264489

File: P:\Projects\Govt\Projects\NavyCLEAN AECOM-EnSafe JV\Calverton\GIS\Projects\DataSummaryReport_2016-03\Figure 4-5 Groundwater Analytical Detections - Southern_Fence Line Area.mxd

Ortho-Imagery provided by ESRI Online NAIP 2013.06.21

Notes:
1. ft bgs – Feet below ground surface.
2. All results are in µg/L (µg/L – micrograms per liter).
3. DCA – 1,1-Dichloroethane
4. (Dup) – Duplicate
5. **Bold** values indicate values exceeding criteria.
6. J, J+ or J- – Estimated value; + or - indicates estimates with a high or low bias.
7. ND – Not detected above report detection limit.
8. NA – Not analyzed
9. For historical analytical data preceding 2012, refer to the 2014 Data Summary Report.

SA-PZ140	(44.5 - 49.5 ft bgs)			
	9/11/2012	9/18/2013	9/15/2014	9/15/2015
1,1,1-TRICHLOROETHANE	2.4	1.2	ND UJ	ND
1,1-DICHLOROETHANE	**33**	**28**	**6.0 J-**	3.7
1,1-DICHLOROETHENE	2.5	1.9	0.46 J-	0.24 J
1,2,4-TRICHLOROBENZENE	0.78 J	0.56 J	ND UJ	ND
1,4-DICHLOROBENZENE	0.57 J	ND U	ND UJ	ND
CHLOROETHANE	1.7 J	ND U	ND UJ	ND

SA-PZ145I	(30 - 35 ft bgs)				
	9/18/2012	9/25/2013	9/17/2014	9/16/2015	
1,1,1-TRICHLOROETHANE	0.38 J	0.48 J	0.99 J	ND U	
1,1-DICHLOROETHANE	**42**	**41 J**	**32**	**24**	
1,1-DICHLOROETHENE	4.8	3.6 J	3.2	2.6	
1,2,4-TRICHLOROBENZENE	1.2	0.67 J	0.72 J	0.92 J+	
1,4-DICHLOROBENZENE	0.59 J	0.58 J	0.76 J	ND U	
SA-PZ145D	**(50 - 55 ft bgs)**				
	9/18/2012	9/25/2013	9/17/2014	9/16/2015	9/16/2015 (Dup)
1,1-DICHLOROETHANE	**28**	**30**	**19**	**13**	**13**
1,1-DICHLOROETHENE	1.9	2.1	1.4	0.97 J	1.0
1,2,4-TRICHLOROBENZENE	0.80 J	0.40 J	0.43 J	0.59 J+	0.76 J+
1,4-DICHLOROBENZENE	0.25 J	ND U	ND U	ND U	ND U

SA-PZ142	(40.5 - 45.5 ft bgs)			
	9/11/2012	9/18/2013	9/15/2014	9/15/2015
1,1,1-TRICHLOROETHANE	**66 J**	**41**	**13 J-**	**5.9**
1,1-DICHLOROETHANE	**290**	**250**	**100 J-**	**60**
1,1-DICHLOROETHENE	**28 J**	**23**	**8.6 J-**	4.1
1,2,4-TRICHLOROBENZENE	0.59 J	3.0	1.2 J	1.3 J+
1,2-DICHLOROBENZENE	0.81 J	0.91 J	ND UJ	ND U
1,3-DICHLOROBENZENE	0.68 J	0.53 J	ND UJ	ND U
1,4-DICHLOROBENZENE	3.3 J	2.2	ND UJ	ND U
BENZENE	0.36 J	ND U	ND UJ	ND U
CHLOROETHANE	**48 J**	**21**	**8.0 J-**	**9.1**

SA-PZ143	(41 - 46 ft bgs)			
	9/11/2012	9/18/2013	9/17/2014	9/15/2015
1,1,1-TRICHLOROETHANE	**66**	**78**	**48**	**39**
1,1-DICHLOROETHANE	**430**	**510**	**410**	**340**
1,1-DICHLOROETHENE	**35**	**43**	**34**	**28**
1,2,4-TRICHLOROBENZENE	3.2	2.0	1.2	1.6 J+
1,2-DICHLOROBENZENE	1.1	0.94 J	0.65 J	0.93 J
1,3-DICHLOROBENZENE	0.51 J	0.34 J	ND U	ND U
1,4-DICHLOROBENZENE	2.4	1.7	ND U	ND U
BENZENE	0.59 J	0.79 J	0.46 J	0.49 J
CHLOROETHANE	**36**	**39**	**31**	**39**
VINYL CHLORIDE	0.51 J	ND U	ND U	ND U

EW1 EW2 EW3 IW2 IW2 Groundwater Treatment Building

50 500 5 500 50 50 5

River Rd River Rd Connecticut Ave Peconic River Donahue Pond

Legend

New Extraction Well
Injection Well
Existing Extraction Well
Monitoring Well/Piezometer
Fence Line Area
Offsite High Concentration Area
Offsite Low Concentration Area
Peconic River Area
Water
1,1 - DCA Contour ug/L
1,1 - DCA Contour ug/L (Inferred)
Fence Line
Infiltration Gallery

DRAFT

N W E S

300 150 0 Feet

Groundwater Analytical Detections Southern/ Offsite High Concentration Area NWIRP Calverton Calverton, New York

RESOLUTION CONSULTANTS

Figure 4-6
Date: 4/12/2016
Project #: 60264489

File: P:\Projects\Govt\Projects\Navy\CLEAN AECOM-EnSafe JV\Calverton\GIS\Projects\DataSummaryReport_2016-03\Figure 4-6 Groundwater Analytical Detections - Southern_Offsite High Concentration Area.mxd

Ortho-Imagery provided by ESRI Online NAIP 2013.06.21

Notes:
1. ft bgs – Feet below ground surface.
2. All results are in µg/L (µg/L – micrograms per liter).
3. DCA – 1,1-Dichloroethane
4. (Dup) – Duplicate
5. **Bold** values indicate values exceeding criteria.
6. J, J+ or J- – Estimated value; + or - indicates estimates with a high or low bias.
7. R – Rejected value not reported.
8. ND – Not detected above report detection limit.
9. NA – Not analyzed
10. For historical analytical data preceding 2012, refer to the 2014 Data Summary Report.

SA-PZ134	(39 - 44 ft bgs)			
	9/20/2012	9/24/2013	9/13/2014	9/22/2015
1,1,1-TRICHLOROETHANE	0.22 J	ND U	ND UJ	ND U
1,1-DICHLOROETHANE	3.7	3.5	ND UJ	ND U
NAPHTHALENE	ND	ND	ND U	1.6 J+

SA-MW128I	(30 - 40 ft bgs)			
	9/13/2012	9/24/2013	9/16/2014	9/14/2015
1,1,1-TRICHLOROETHANE	0.59 J	0.53 J	ND U	ND U
1,1-DICHLOROETHANE	2.1	3.1	2.7	2.0
1,1-DICHLOROETHENE	0.44 J	0.42 J	0.40 J	ND U
1,2,4-TRICHLOROBENZENE	ND U	ND U	0.44 J	ND U
SA-MW128D	**(58 -68 ft bgs)**			
	9/13/2012	9/24/2013	9/16/2014	9/15/2015
1,1-DICHLOROETHANE	2.0	1.9	3.3	1.4
1,1-DICHLOROETHENE	ND U	ND U	0.22 J	ND U
NAPHTHALENE	ND	ND	ND U	3.6 J+

SA-MW129S	(19.5 - 29.5 ft bgs)			
	9/13/2012	9/24/2013	9/22/2014	9/24/2015
VOCs	ND	ND	ND	ND
SA-MW129I	**(50 - 60 ft bgs)**			
	9/13/2012	9/20/2013	9/19/2014	9/24/2015
1,1-DICHLOROETHANE	ND U	0.75 J	ND U	ND U
SA-MW129D	**(80 - 90 ft bgs)**			
	9/12/2012	9/24/2013	9/19/2014	9/24/2015
1,1-DICHLOROETHANE	ND U	2.2	0.68 J	0.95 J
1,1-DICHLOROETHENE	0.56 J	ND U	0.63 J	ND U

SA-PZ122I	(39 - 49 ft bgs)			
	9/12/2012	9/24/2013	9/19/2014	9/22/2015
VOCs	ND	ND	ND	ND
SA-PZ122D	**(122 - 132 ft bgs)**			
	9/12/2012	9/20/2013	9/19/2014	9/22/2015
1,1-DICHLOROETHANE	ND U	1.7	1.4	1.2

SA-PZ123S	(7 - 17 ft bgs)			
	9/11/2012	9/19/2013	9/22/2014	9/22/2015
1,1-DICHLOROETHANE	1.0	ND U	ND U	ND U
SA-PZ123I1	**(32 - 42 ft bgs)**			
	9/11/2012	9/19/2013	9/22/2014	9/22/2015
1,1,1-TRICHLOROETHANE	**22**	**7.4**	ND U	ND U
1,1-DICHLOROETHANE	**150**	**82**	**16**	**10**
1,1-DICHLOROETHENE	**14**	**8.1**	2.0	0.93 J
1,2,4-TRICHLOROBENZENE	ND UJ	0.75 J	ND U	ND UJ
1,2-DICHLOROBENZENE	0.26 J	0.22 J	ND U	ND U
1,4-DICHLOROBENZENE	0.54 J	ND U	ND U	ND U
CHLOROETHANE	1.1 J	ND U	-- R	ND U
SA-PZ123I	**(70 - 80 ft bgs)**			
	9/11/2012	9/19/2013	9/22/2014	9/22/2015
1,1,1-TRICHLOROETHANE	1.1	1.5	2.1	ND U
1,1-DICHLOROETHANE	**44**	**54**	**63**	**71**
1,1-DICHLOROETHENE	**5.3**	4.8	**7.9**	**7.1**
1,2,4-TRICHLOROBENZENE	0.48 J	ND U	ND U	0.39 J
CHLOROETHANE	0.86 J	ND U	-- R	1.2 J

SA-PZ144I	(45 - 50 ft bgs)			
	9/12/2012	9/19/2013	9/16/2014	9/17/2015
1,1-DICHLOROETHANE	2.8	3.4	2.8	2.4
1,1-DICHLOROETHENE	0.47 J	ND U	0.46 J	0.33 J
1,4-DICHLOROBENZENE	0.30 J	ND U	0.39 J	ND U

SA-PZ172I	(43.5 - 48.5 ft bgs)				
	2/20/2012	9/11/2012	9/18/2013	9/15/2014	9/15/2015
1,1,1-TRICHLOROETHANE	**28**	**22 J**	**19**	**16 J+**	ND U
1,1-DICHLOROETHANE	**230**	**190**	**170**	**110 J+**	**71**
1,1-DICHLOROETHENE	**17**	**16 J**	**13**	**8.9 J+**	4.2
1,2,4-TRICHLOROBENZENE	2.3	0.67 J	2.1	1.8 J+	1.7 J+
1,2-DICHLOROBENZENE	0.72 J	0.64 J	0.64 J	0.40 J+	ND U
1,3-DICHLOROBENZENE	0.51 J	0.71 J	0.52 J	-- R	ND U
1,4-DICHLOROBENZENE	2	3.5 J	2.8	1.1 J+	ND U
CHLOROETHANE	**24**	**29 J**	**11**	**6.8 J+**	**5.5**

SA-PZ171I	(41.5 - 46.5 ft bgs)				
	2/20/2012	9/11/2012	9/18/2013	9/15/2014	9/15/2015
1,1,1-TRICHLOROETHANE	**48**	**66**	**91**	**45 J-**	**25**
1,1-DICHLOROETHANE	**390**	**470**	**580**	**150 J-**	**220**
1,1-DICHLOROETHENE	**27**	**40**	**53**	**29 J-**	**18**
1,2,4-TRICHLOROBENZENE	4	2.9	2.7	2.5 J	2.2 J+
1,2-DICHLOROBENZENE	1.3	0.68 J	1.9	0.96 J-	0.62 J
1,3-DICHLOROBENZENE	0.66 J	0.32 J	1.0	0.47 J-	ND U
1,4-DICHLOROBENZENE	2.9	1.6	4.5	2.1 J-	ND U
BENZENE	ND U	0.48 J	0.94 J	0.48 J-	0.29 J
CHLOROETHANE	**25**	**37**	**49**	**27 J-**	**15**
ISOPROPYLBENZENE	ND U	ND U	0.23 J	ND UJ	ND U
NAPHTHALENE	--	ND	ND	0.31 J	ND UJ

SA-MW132S	(4 - 14 ft bgs)				
	9/18/2012	9/25/2013		9/18/2014	9/16/2015
1,1,1-TRICHLOROETHANE	ND U	0.52 J		2.7	**32**
1,1-DICHLOROETHANE	ND U	**5.0**		**29**	**250**
1,1-DICHLOROETHENE	ND U	ND U		2.3	**23**
BENZENE	ND U	ND U		ND U	0.39 J
CHLOROETHANE	ND U	ND UJ		1.6 J	**22**
SA-MW132I	**(27 - 37 ft bgs)**				
	9/18/2012	9/25/2013	5/20/2014	9/18/2014	9/16/2015
1,1,1-TRICHLOROETHANE	**31**	**120**	**100**	**83**	**46**
1,1-DICHLOROETHANE	**150**	**740**	**660**	**500**	**400**
1,1-DICHLOROETHENE	**16**	**70**	**60**	**60**	**46**
1,2,4-TRICHLOROBENZENE	0.52 J	0.95 J	0.84 J	0.94 J	1.1 J+
1,2-DICHLOROBENZENE	ND U	0.63 J	0.38 J	0.54 J	ND U
1,4-DICHLOROBENZENE	0.80 J	1.1	ND U	ND U	ND U
BENZENE	0.34 J	1.2	1.1	1.1	1.0
CHLOROETHANE	**12 J**	ND UJ	**33 J**	**28**	**24**
ISOPROPYLBENZENE	ND U	1.0	ND U	0.43 J	0.27 J
NAPHTHALENE	ND	3.8	ND	ND U	ND U

SA-MW131I	(30 - 40 ft bgs)						
	9/18/2012		9/25/2013		9/18/2014		9/16/2015
1,1,1-TRICHLOROETHANE	ND U		0.30 J		ND U		ND U
1,1-DICHLOROETHANE	0.88 J		**17**		**6.9**		2.9
1,1-DICHLOROETHENE	ND U		1.6		1.1		0.65 J
1,2,4-TRICHLOROBENZENE	ND U		ND U		ND U		0.50 J+
SA-MW131D	**(60 - 70 ft bgs)**						
	9/18/2012	9/18/2012 (Dup)	9/25/2013	9/25/2013 (Dup)	9/18/2014	9/18/2014 (Dup)	9/16/2015
1,1-DICHLOROETHANE	**28**	**29**	**32 J**	**35**	**32**	**32**	**35**
1,1-DICHLOROETHENE	3.1	3.1	2.8 J	2.8	3.0	2.8	2.7

Groundwater Treatment Building

Connecticut Ave

River Rd

Donahue Pond

50

500

5

Legend

- New Extraction Well
- Injection Well
- Existing Extraction Well
- Monitoring Well/Piezometer
- Fence Line Area
- Offsite High Concentration Area
- Offsite Low Concentration Area
- Peconic River Area
- Water
- 1,1 - DCA Contour ug/L
- 1,1 - DCA Contour ug/L (Inferred)
- Fence Line
- Infiltration Gallery

DRAFT

N W E S

300 150 0 Feet

Groundwater Analytical Detections Southern/ Offsite Low Concentration Area NWIRP Calverton Calverton, New York

RESOLUTION CONSULTANTS

Figure 4-7

Date: 4/12/2016

Project #: 60264489

File: P:\Projects\Govt\Projects\Navy\CLEAN AECOM-EnSafe JV\Calverton\GIS\Projects\DataSummaryReport_2016-03\Figure 4-7 Groundwater Analytical Detections - Southern_Offsite Low Concentration Area.mxd

Ortho-Imagery provided by ESRI Online NAIP 2013.06.21

River Rd

Connecticut Ave

Pecomic River

5

50

Notes:
1. ft bgs – Feet below ground surface.
2. Surface water and groundwater results are in µg/L (µg/L – micrograms per liter); sediment results are in µg/Kg (µg/Kg – micrograms per kilogram).
3. DCA – 1,1-Dichloroethane
4. (Dup) – Duplicate
5. **Bold** values indicate values exceeding criteria.
6. J, J+ or J- – Estimated value; + or - indicates estimates with a high or low bias.
7. R- Rejected value not reported.
8. ND – Not detected above report detection limit.
9. NA – Not analyzed
10. NX – No primary site contaminants detected; other volatile organic compounds detected below screening criteria.
11. For historical analytical data preceding 201, refer to the 2014 Data Summary Report.

SA-SW125												
	5/17/2012		9/21/2012	5/3/2013	9/27/2013	9/27/2013 (Dup)	5/20/2014	9/12/2014	4/24/2015	4/24/2015 (Dup)	9/18/2015	
VOCs	ND		ND	NX	ND	ND	NX	ND	ND	ND	NX	
SA-SD125												
	5/17/2012		9/21/2012	5/3/2013	9/27/2013	9/27/2013 (Dup)	5/20/2014	9/12/2014	4/24/2015	4/24/2015 (Dup)	9/18/2015	
BENZENE	ND U		-- R	ND UJ	-- R	-- R	ND UJ	ND UJ	1.4 J	ND UJ	ND U	
SA-PZ125	(3 - 6 ft bgs)											
	5/17/2012	5/17/2012 (Dup)	9/21/2012	5/3/2013	9/27/2013	9/27/2013 (Dup)	5/20/2014	9/12/2014	4/24/2015	4/24/2015 (Dup)	9/18/2015	9/18/2015 (Dup)
VOCs	NX	NX	ND U	ND U	ND U	ND U	ND U	ND U	ND U	ND U	ND U	NX

SA-SW204								
	5/17/2012	9/21/2012	5/3/2013	9/27/2013	5/20/2014	9/12/2014	4/24/2015	9/18/2015
1,1-DICHLOROETHANE	ND U	0.57 J	ND U	0.87 J	ND U	0.67 J	ND UJ	0.52 J
SA-SD204								
	5/17/2012	9/21/2012	5/3/2013	9/27/2013	5/20/2014	9/12/2014	4/24/2015	9/18/2015
VOCs	NX	NX	NX	ND	NX	NX	NX	NX

SA-PZ147	(3 - 6 ft bgs)							
	5/17/2012	9/21/2012	5/3/2013	9/27/2013	5/20/2014	9/12/2014	4/24/2015	9/18/2015
1,1,1-TRICHLOROETHANE	ND U	ND U	1.4 J	ND U	ND U	ND U	ND UJ	ND U
1,1-DICHLOROETHANE	ND U	12	**68 J**	ND U	**53**	ND U	43 J	ND U
1,1-DICHLOROETHENE	ND U	0.84 J	6.3 J	ND U	6.8	ND U	6.4 J	ND U
1,2,4-TRICHLOROBENZENE	ND U	ND U	0.47 J	ND U	0.60 J	ND U	0.47 J	ND U
1,4-DICHLOROBENZENE	ND U	ND U	0.43 J	ND U	ND U	ND U	ND UJ	ND U

SA-PZ148	(3 - 6 ft bgs)							
	5/17/2012	9/21/2012	5/3/2013	9/27/2013	5/20/2014	9/12/2014	4/24/2015	9/18/2015
1,1-DICHLOROETHANE	18	ND U	ND U	ND U	ND U	ND U	ND UJ	ND U
1,1-DICHLOROETHENE	1	ND U	ND U	ND U	ND U	ND U	ND UJ	ND U

SA-PZ166I	(60 - 80 ft bgs)			
	9/12/2012	9/19/2013	9/19/2014	9/17/2015
1,1-DICHLOROETHANE	ND U	4.7	4.8	7.1
1,1-DICHLOROETHENE	ND U	0.36 J	1.0	1.2

SA-PZ118S	(6 - 16 ft bgs)			
	9/11/2012	9/18/2013	9/19/2014	9/17/2015
1,1-DICHLOROETHANE	21	4.1	17	6.2
1,1-DICHLOROETHENE	4.5	1.1	4.8	1.5
1,4-DICHLOROBENZENE	0.41 J	ND U	ND U	ND U
NAPHTHALENE	1.6	1.3	ND U	ND U
SA-PZ118I	(50 - 60 ft bgs)			
	9/11/2012	9/18/2013	9/19/2014	9/17/2015
VOCs	ND	ND	ND	ND

SA-SW201									
	5/17/2012	5/17/2012 (Dup)	9/21/2012	5/3/2013	9/27/2013	5/20/2014	9/12/2014	4/24/2015	9/18/2015
1,1-DICHLOROETHANE	ND U	ND U	ND U	ND U	ND U	ND U	ND U	ND UJ	1.0
SA-SD201									
	5/17/2012	5/17/2012 (Dup)	9/21/2012	5/3/2013	9/27/2013	5/20/2014	9/12/2014	4/24/2015	9/18/2015
VOCs	NX	ND	ND	NX	NX	NX	NX	NX	NX

SA-SW124														
	5/17/2012	9/21/2012	9/21/2012 (Dup)	5/3/2013	5/3/2013 (Dup)	9/27/2013	5/20/2014	5/20/2014 (Dup)	9/12/2014	9/12/2014 (Dup)	4/24/2015	9/18/2015	9/18/2015 (Dup)	
1,1-DICHLOROETHANE	1.1	1.8	1.7	0.69 J	ND U	2.1 J	ND U	0.59 J	2.8	2.8	0.60 J	2.8	3.0	
1,1-DICHLOROETHENE	ND U	ND U	ND U	ND U	ND U	ND UJ	ND U	ND U	0.35 J	0.38 J	ND UJ	0.34 J	0.40 J	
SA-SD124														
	5/17/2012	9/21/2012	9/21/2012 (Dup)	5/3/2013	5/3/2013 (Dup)	9/27/2013	5/20/2014	5/20/2014 (Dup)	9/12/2014	9/12/2014 (Dup)	4/24/2015	9/18/2015	9/18/2015 (Dup)	
1,1-DICHLOROETHANE	20	ND UJ	ND UJ	17 J	19 J	ND U	22 J	22 J	ND U	0.84	ND U	8.3	5.0	
1,1-DICHLOROETHENE	ND U	ND UJ	ND UJ	2.4 J	2.6 J	ND U	5.2 J	ND UJ	ND U	0.38 J	ND U	1.6	0.83 J	
1,2,4-TRICHLOROBENZENE	ND U	ND UJ	ND UJ	-- R	-- R	ND UJ	ND UJ	ND UJ	ND U	0.31 J	ND U	ND U	ND U	
1,2-DICHLOROBENZENE	ND U	ND UJ	ND UJ	-- R	-- R	ND UJ	ND UJ	ND UJ	ND U	ND U	ND U	0.95 J	0.37 J	
1,3-DICHLOROBENZENE	ND U	ND UJ	ND UJ	-- R	-- R	ND UJ	ND UJ	ND UJ	ND U	ND U	ND U	0.41 J	ND U	
1,4-DICHLOROBENZENE	ND U	ND UJ	ND UJ	-- R	-- R	ND UJ	ND UJ	ND UJ	ND U	ND U	ND U	1.9 J	0.59 J	
CHLOROETHANE	4.3 J	ND UJ	ND UJ	0.64 J	2.0 J	ND U	7.2 J	ND UJ	-- R	3.1	ND UJ	1.3	ND U	
NAPHTHALENE	--	ND	ND	ND	ND	ND	ND U	62	ND U	ND U	ND U	ND U	ND U	
SA-PZ124	(3 - 6 ft bgs)													
	5/17/2012	9/21/2012	9/21/2012 (Dup)	5/3/2013	5/3/2013 (Dup)	9/27/2013	5/20/2014	5/20/2014 (Dup)	9/12/2014	9/12/2014 (Dup)	4/24/2015	9/18/2015		
1,1,1-TRICHLOROETHANE	3.6	7.8	7.7	5.6	5.6	1.6	1.7	1.8	1.3	1.4	0.83 J	ND U		
1,1-DICHLOROETHANE	**74**	**130**	**130**	**100**	**100**	**52**	**62**	**65**	44	44	50 J	27		
1,1-DICHLOROETHENE	6.4	13	13	12 J	12 J	6.1	6.2	6.5	4.6	4.8	4.9 J	2.8		
1,2,4-TRICHLOROBENZENE	ND U	0.48 J	0.65 J	0.57 J	ND U	ND	0.85 J	0.78 J	0.62 J	0.61 J	0.70 J	ND U		
1,2-DICHLOROBENZENE	ND U	0.39 J	0.39 J	0.35 J	0.41 J	ND	ND U	ND U	ND U	ND U	ND UJ	ND U		
1,4-DICHLOROBENZENE	ND U	0.94 J	0.94 J	0.88 J	ND U	ND	ND U	ND U	ND U	ND U	0.52 J	ND U		
CHLOROETHANE	1.6	2.2	2.9	0.97 J	0.82 J	ND	ND UJ	ND UJ	ND U	ND U	2.1 J	ND U		

Legend

- Monitoring Well/Piezometer
- Sediment Sampling Location
- Surface Water Sampling Location
- 1,1 - DCA Contour ug/L
- 1,1 - DCA Contour ug/L (Inferred)
- Offsite Low Concentration Area
- Peconic River Area
- Water
- Fence Line

DRAFT

N W E S

200 100 0 Feet

Analytical Detections Southern/Peconic River Area NWIRP Calverton Calverton, New York

RESOLUTION CONSULTANTS

Figure 4-8
Date: 4/12/2016
Project #: 60264489

File: P:\Projects\Govt\Projects\NavyCLEAN AECOM-EnSafe JV\Calverton\GIS\Projects\DataSummaryReport_2016-03\Figure 4-8 Groundwater Analytical Detections - Southern_Peconic River Area.mxd