THIRD FIVE-YEAR REVIEW REPORT FOR SOLVENTS RECOVERY SERVICE OF NEW ENGLAND, INC. SUPERFUND SITE SOUTHINGTON, CONNECTICUT

Prepared by

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SEMS Doc ID 100015302

Table of Contents

LIST OF FREQUENTLY-USED ABBREVIATIONS & ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	contaminant of concern
CT DEEP	Connecticut Department of Energy and Environmental Protection
CT DPH	Connecticut Department of Public Health
ELUR	Environmental Land Use Restriction
EPA	United States Environmental Protection Agency
FYR	Five-Year Review
HCTS	hydraulic containment and treatment system
ICs	Institutional Controls
ISTR	*in situ* thermal remediation
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MNA	Monitored Natural Attenuation
NAPL	non-aqeuous phase liquid
ng/L	nanograms per liter
NTCRA	non-time critical removal action
PCB	polychlorinated biphenyl
PFAS	per- and polyfluoroalkyl substances
POTW	publicly-owned treatment works
ppm	parts per million
ppt	parts per trillion
PRP	Potentially Responsible Party
RAO	Remedial Action Objectives
RCRA	Resources Conservation and Recovery Act
ROD	Record of Decision
ROW	right-of-way
RPM	Remedial Project Manager
RSRs	Connecticut Remediation Standard Regulations
SRSNE	Solvents Recovery Service of New England
TBC	To be considered
TCE	trichloroethylene
TVOC	total volatile organic compound
µg/dL	micrograms per deciliter
µg/L	micrograms per liter
UU/UE	unlimited use & unrestricted exposure
VOC	volatile organic compound

I. INTRODUCTION

The purpose of a Five-Year Review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this five-year review pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Section 300.430(f)(4)(ii)), and in consideration of EPA policy.

This is the third FYR for the Solvents Recovery Service of New England, Inc (SRSNE) Superfund Site (the "Site"). The triggering action for this statutory review is the completion of the previous FYR on September 24, 2015. This FYR has been prepared due to the fact that hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE). The Site consists of one Operable Unit (OU) that will be addressed in this FYR.

The SRSNE Superfund Site FYR was led by Karen Lumino, Remedial Project Manager (RPM) for EPA Region 1. Other participants from EPA Region 1 include Kevin Heine (co-RPM and Hydrogeologist); RuthAnn Sherman (Senior Enforcement Counsel); Paulina Do (Human-Health Risk Assessor); Bart Hoskins (Ecological Risk Assessor) and Darriel Swatts (Community Involvement Coordinator). Shannon Pociu (Environmental Analyst) with the Connecticut Department of Energy and Environmental Protection (CT DEEP) also participated in this review. The *SRSNE Site Group*, comprised of companies that were solvent-recycling customers of SRSNE and are performing the remedy, was notified of the initiation of the five-year review which began on January 10, 2020.

Site Background

The SRSNE Site is located on Lazy Lane, in the Town of Southington, Hartford County, Connecticut, approximately 15 miles southwest of Hartford (Figure 1). The Site encompasses the former SRSNE Operations Area, the former Cianci Property, and the extent of impacted groundwater, which total approximately 42 acres, including Southington's Curtiss Street Well Field, a 28-acre parcel of undeveloped land containing two inactive municipal drinking water wells (Figure 2). The production wells were closed in the late 1970s after volatile organic compounds (VOCs) were detected in drinking water and remain closed at this time.

Groundwater impacted by the Site is currently not used as drinking water or for any uses. The aquifer retains a CT DEEP "GA" classification, which means the State's goal is to restore groundwater to its natural quality, suitable for consumption. Land use in the immediate vicinity of the Site is mixed residential, commercial and light industrial, and has not changed since the Record of Decision (ROD) was issued in 2005. The former Operations Area was treated with *in situ* thermal remediation and is now capped. The abandoned railroad right-of-way (ROW) that passed through the site was refurbished, adding a new section to the Farmington Canal Heritage Trail, a regional "rails-to-trails" greenway that runs approximately 84 miles from New Haven, CT to Northampton, MA (www.farmingtoncanal.org).

From 1955 to 1991, SRSNE operated as a spent solvent processing and reclamation facility. Over 41 million gallons of waste solvents, fuels, paints and similar liquids were reportedly handled, stored and processed in the Operations Area. Contaminant-laden distillation process water flowed through a buried concrete culvert to the nearby Quinnipiac River. Process sludge and still bottoms were disposed of in two unlined lagoons in the Operations Area that periodically overflowed onto the neighboring Cianci Property. After the lagoons were closed in 1967, the sludge, still bottoms and other flammable liquid wastes were burned on site in an open burn pit that was decommissioned in 1974. Ash from the burn pit was used as fill material in the Operations Area.

Past operating practices, and, poor housekeeping during the unloading/loading tank trucks, transfer of spent solvents to storage tanks, and the improper handling and storage of drums, resulted in numerous leaks and spills to the bare ground and into both the underlying overburden and fractured bedrock aquifers.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Solvents Recovery Service of New England		
EPA ID: CTD009717604		
Region: 1	**State:** CT	**City/County:** Southington/Hartford County
SITE STATUS		
National Priorites List Status: Final		
Multiple Operable Units? No	**Has the site achieved construction completion?** Yes	
REVIEW STATUS		
Lead agency: EPA		
Author name (Federal or State Project Manager): Karen Lumino		
Author affiliation: EPA Region 1		
Review period: 1/10/2020 - 9/15/2020		
Date of site inspection: 3/19/2020		
Type of review: Statutory		
Review number: 3		
Triggering action date: 9/24/2015		
Due date *(five years after triggering action date)*: 9/24/2020		

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

This section summarizes the extent of contamination found at the Site and the human-health and ecological risks associated with exposure to that contamination.

Soil. The distribution of contaminants in soil covered much of the Operations Area and isolated "hot spots" on the neighboring Cianci Property. Likely sources include two unlined lagoons, drum storage areas, and truck loading/unloading areas. Overflow from the lagoons drained into a ditch alongside the railroad tracks and into a culvert that crossed the Cianci Property, discharging directly to the Quinnipiac River. Risks and hazards to potential residential/recreational receptors, and, workers via incidental ingestion and dermal contact with soils exceeded EPA benchmarks for remedial actions. Young children were particularly at risk from incidental ingestion of soil containing tetrachloroethylene (PCE), trichloroethylene (TCE), dioxin and furan compounds (expressed as 2,3,7,8-TCDD equivalents), and polychlorinated biphenyls (PCBs). Several compounds also exceeded the Connecticut direct exposure and pollutant mobility remediation standards.

Groundwater. The plume of Site-related contamination in the overburden aquifer extends from the former Operations Area to the Curtiss Street Well Field. The highest concentrations were found beneath the Operations Area. The plume in the bedrock aquifer does not extend as far into the municipal well field but does extend into the northern portion of the Cianci Property. It is believed that a Cianci production well pulled the plume in the bedrock to its current location, which is hydraulically upgradient of the Operations Area. EPA determined that the future consumption of groundwater from the overburden or bedrock aquifers represented a significant risk to human health. Cancer risk was calculated to be as high as "unity" (i.e., $1x10^0$) meaning every person to drink the water would potentially get cancer over the course of his or her lifetime. Non-cancer effects were estimated at 700 times greater than protective benchmarks. Vinyl chloride, carbon tetrachloride, TCE, PCE, 1,2-dichloroethene, and Aroclor 1254 (a PCB congener) were the principal contributors to human health risk. Lead was found in excess of the federal maximum contaminant level (MCL) of 15 micrograms per liter (µg/L) as were numerous other chemical compounds.

NAPL Zones. Waste oil and solvents are present as non-aqueous phase liquid (NAPL) within the unconsolidated overburden deposits as well as the matrix and fractures of the sandstone bedrock.

Surface Water and Wetlands Soils. Surface water and wetland soils, including river sediment located at the outlet of the concrete culvert to the Quinnipiac River, had historically been impacted by runoff from the two unlined lagoons formerly located in the Operations Area. Surface water and wetland soils were also impacted from contaminated groundwater seeping into the cracked culvert, resulting in unacceptable ecological risks.

Response Actions

The presence of VOCs in drinking water forced the closure of the Town of Southington's Production Well 4 in 1976, and Production Well 6 in 1979 (Figure 2). Subsequent environmental investigations

revealed that SRSNE was the major source of VOC contamination in groundwater. Significant investigations and actions taken before issuance of the ROD in 2005 are summarized below. A more complete description of these and other environmental studies can be found in Section 2.5 of the *Remedial Investigation Report* (Blasland, Bouck & Lee, Inc., June 1998).

- In 1979, EPA filed suit against SRSNE under the Resource Conservation and Recovery Act (RCRA) for contaminating Southington's municipal wells, and, under the Clean Water Act for the unpermitted discharge of pollutants to the Quinnipiac River. The suit was amended in 1982 to include claims under CERCLA.

- In September 1983, EPA placed the SRSNE Site on the National Priorities List making it eligible for federal assistance for cleanup.

- In 1983, EPA's lawsuit against SRSNE was settled. Under the Consent Decree, SRSNE was required to make improvements to its solvents handling procedures; construct a network of wells (the on-site interceptor system or OIS) to reduce the migration of contaminated groundwater; construct a cooling tower/air stripper to remove contaminants from the groundwater captured by the OIS; and, to install an off-site interceptor system to capture contaminated groundwater beyond the facility boundaries.

- From 1983 to 1988, the federal and state governments took steps to ensure SRSNE's compliance with the 1983 Consent Decree, a 1986 Hazardous and Solid Waste Amendments to RCRA permit issued by EPA, and a 1986 RCRA operating permit issued by CT DEP (now CT DEEP). Numerous deficiencies remained, however, and in August 1988, EPA obligated Superfund monies to conduct work on the Site.

- On May 29, 1991, SRSNE closed permanently due to an inability to obtain adequate liability insurance for sudden accidental occurrences. CT DEP took over operation of the OIS, modified to include an ultra-violet/oxidation system to treat air emissions, until 1995.

- EPA initiated a Remedial Investigation/Feasibility Study (RI/FS) in 1990. Between 1990 and 1992, EPA funded three phases of remedial investigations to determine the nature and extent of contamination at the Site, and to assess human-health and ecological risks.

- Mutiple rounds of residential well sampling were conducted during the 1990s. The single location found to have elevated levels of TCE, a solvent associated with historic operations at SRSNE, was supplied with bottled water and later connected to public water.

- During August and September of 1992, EPA conducted a time-critical removal action for contaminated soil and sediment in the drainage ditch along the eastern edge of the Operations Area. Approximately 19 drums of material containing up to 100 parts per million (ppm) total VOCs and 350 ppm PCBs were removed.

- Also in 1992, EPA initiated an Engineering Evaluation/Cost Analysis (EE/CA) to evaluate alternatives that could be implemented as a non-time critical removal action (NTCRA). After a public comment period, EPA issued an Action Memorandum for NTCRA 1 on

April 1, 1993, which required (a) construction of a containment and treatment system to prevent the migration of contaminated groundwater in the overburden aquifer, and (b) additional soil investigations. This work was performed by the SRSNE Site Group pursuant to a 1994 Administrative Order on Consent (AOC). The NTCRA 1 groundwater containment and treatment system commenced operation in July 1995.

- In January 1994, EPA conducted a second time-critical removal action to remove and dispose of laboratory chemicals and asbestos that SRSNE had abandoned at the Site.

- Also in 1994, EPA initiated a second EE/CA to evaluate further alternatives that could be implemented as a NTCRA. After a public comment period, EPA issued an Action Memorandum for NTCRA 2 on June 1, 1995, which required (a) construction of a containment and treatment system to minimize the migration of contaminated groundwater in the bedrock aquifer, and (b) completion of the RI/FS started by EPA. This work was performed by the SRSNE Site Group pursuant to a 1997 AOC. The NTCRA 2 groundwater containment and treatment system commenced operation in June 1999.

- In 1999, the SRSNE Site Group decontaminated and removed all remaining structures within the Operations Area including a process building, tank farm, drum storage area, processing area, tank car and trailer parking area, and two fuel blending tanks.

The Remedial Action Objectives (RAOs) specified in the September 30, 2005 ROD included measures to mitigate existing and future threats to public health and the environment from exposure to contaminants in soil and wetland soil, overburden and bedrock groundwater, and NAPL in the overburden and bedrock aquifers, and, requirements to meet applicable or relevant and appropriate requirements (ARARs). The RAOs are summarized in the following table.

Area/Medium	Protection of Human Heath RAO	Protection of the Environment RAO
Former SRSNE Operations Area/ Railroad Soil	Prevent potential human exposure (dermal contact, ingestion, inhalation) to soil with contaminants that exceed an excess carcinogenic risk of 10^{-4} to 10^{-6}, that pose a non-carcinogenic hazard index greater than 1, or that exceed ARARs. Prevent migration of contaminants from soils to groundwater that would result in groundwater concentrations in excess of ARARs or which otherwise present an unacceptable risk groundwater.	Prevent migration of contaminants from soils to groundwater that would result in groundwater concentrations in excess of ARARs.
Former Cianci Property Soil	Same as above.	Prevent ecological risks associated with SRSNE-related contaminants.

Overburden NAPL Area	Reduce or stabilize contaminants in the NAPL area that would otherwise result in groundwater concentrations that pose a carcinogenic risk in excess of 10^{-4} to 10^{-6}, non-carcinogenic hazard index greater than 1, or that exceed ARARs.	Reduce contaminants in the NAPL area to achieve one or more of the following: ✓ Shorten the timeframe that groundwater standards are exceeded ✓ Shrink the size of the groundwater plume ✓ Reduce groundwater constituent concentrations ✓ Prevent the migration of NAPL
Overburden Groundwater	Prevent potential human exposure (dermal contact, ingestion, inhalation) to groundwater in the overburden aquifer with contaminants that pose a carcinogenic risk in excess of 10^{-4} to 10^{-6}, non-carcinogenic hazard index greater than 1, or that exceed ARARs.	Restore groundwater quality to meet ARARs.
Bedrock NAPL Area	Minimize expansion of the extent of impacted bedrock groundwater due to further NAPL migration.	Minimize expansion of the extent of impacted bedrock groundwater due to further NAPL migration.
Bedrock Groundwater	Prevent potential human exposure (dermal contact, ingestion, inhalation) to groundwater in the bedrock aquifer with contaminants that pose a carcinogenic risk in excess of 10^{-4} to 10^{-6}, non-carcinogenic hazard index greater than 1, or that exceed ARARs.	Prevent continuing migration of contaminants that exceed ARARs, and restore bedrock groundwater to meet ARARs once VOC residuals are depleted.

Key elements of the remedy selected in the 2005 ROD are as follows:

- Heat, mobilize and capture contaminants in the overburden NAPL area using *in situ* thermal remediation (ISTR) until site-specific performance standards are achieved;
- Excavate, consolidate and cap soil and wetland soil that exceeds cleanup levels;
- Capture and on-site treatment of contaminated groundwater in both the overburden and bedrock aquifers, until federal safe drinking water standards and other risk-based levels are achieved;
- Over time, modification of the configuration of the on-site groundwater extraction and treatment system, as appropriate, based on expected reductions in contamination;
- Monitored natural attenuation (MNA) of the groundwater plume outside the capture zone of the extraction and treatment system (a.k.a. the "Severed Plume"), and, the bedrock NAPL area until cleanup levels are achieved;

- Implement restrictions on uses of the site property in perpetuity to prevent human exposure to contaminants in subsurface soils, and, to prohibit activities that might harm the cap. Implement institutional controls (ICs) to prevent human exposure to contaminated groundwater and NAPL areas until appropriate levels are met. These restrictions will also prohibit construction above that portion of the groundwater plume that exceeds the State's volatilization criteria, if remedial design studies confirm the need for such restrictions.

- Maintain the RCRA cap in the long term; and

- Perform reviews at least every five years to ensure that the remedy remains protective of human health and the environment.

The 2005 ROD also established a contingent component to the remedy:

- Additional groundwater containment should the Town of Southington activate municipal production wells located near the Site before federal drinking water standards are attained.

Groundwater interim cleanup levels for 70 chemical compounds are shown in Appendix B, Table 1. Because the aquifer under the Site is a potential source of drinking water (Class GA), interim cleanup levels were set based on the most stringent of the following: MCLs and non-zero maximum contaminant level goals (MCLGs) established by EPA, and, Connecticut's Remediation Standard Regulations (RSRs). Once interim groundwater cleanup levels have been achieved, EPA will complete a risk evaluation on any residual groundwater contamination to determine whether the remedial action remains protective.

Soil and wetland soil cleanup levels for the protection of human health and the aquifer are shown in Appendix B, Table 2. EPA selected a remedial action that will allow for reuse of the Site for recreational purposes. Because CT DEEP cleanup requirements for recreational use are the same as for residential use, Connecticut direct exposure criteria for residential soils and pollutant mobility criteria for a GA aquifer were identified as the cleanup levels for soils and wetland soils.

NAPL cleanup levels that are not indicative of the presence of pooled or residual NAPL were developed during ISTR remedial design and are as follows:

- TCE – 222 milligrams per kilogram (mg/kg)
- PCE – 46 mg/kg
- 1,1,1-Trichloroethane – 221 mg/kg
- Ethylbenzene – 59 mg/kg
- Toluene – 48 mg/kg
- p/m-Xylene – 70 mg/kg
- o-Xylene – 42 mg/kg

An Explanation of Significant Differences (ESD) was issued for the Site on November 21, 2016. The ESD described three minor modifications to the cleanup plan selected in the 2005 ROD.

- A smaller engineered cap. Rather than cap contaminated soils in place along the railroad ROW, they will be excavated and placed in the former Operations Area prior to that area being capped. This change reduced the final footprint of the capped area requiring maintenance and facilitated the construction of the rails-to-trails greenway.

- Soil dioxin cleanup level selected. The soil cleanup level selected in the ROD for 2,3,7,8-TCDD TEQ ("dioxin") would be "the lower of the EPA policy for residential sites (0.001 mg/kg) and the background concentration which will be determined based on future field study, or, another concentration consistent with the CT RSRs, but not lower than background." EPA approved a risk-based dioxin cleanup level of 50 parts per trillion (ppt), consistent with Agency policy[1].

- Modification of Hydraulic Containment System. This change allowed for the transition from on-site treatment of contaminated groundwater to discharge to the Southington Water Pollution Control Authority - provided all requirements of the Connecticut Discharge of Groundwater Remediation Wastewater to a Sanitary Sewer are met, and, CT DEEP issues the permit.

Status of Implementation

The remedy selected in the ROD is being performed by the SRSNE Site Group, pursuant to a Consent Decree entered on March 26, 2009, by the United States District Court for the District of Connecticut. This section summarizes the status of key components of the selected remedy.

- Treat waste oil and solvents in the overburden aquifer using ISTR until the NAPL cleanup levels are met. **Completed in 2015.** Removed approximately 500,000 pounds of VOCs from the subsurface in the former Operations Area. (*In Situ Thermal Remediation Construction Report*, de maximis, inc., September 2015)

- Excavate soils exceeding cleanup levels from five discrete "hot spots" on the former Cianci Property, and based on PCB concentrations either (a) dispose off site at a licensed facility, or, (b) relocate to the former Operations Area for placement beneath the cap. **Completed in 2017**. (*RCRA Subtitle C Construction Completion Report,* GEI Consultants, Inc, June 2018)

- Following ISTR, install a low-permeability, multi-layered RCRA Subtitle C cap over the former Operations Area, and a 53 kilowatt solar array. **Completed in 2017.** (*RCRA Subtitle C Construction Completion Report,* GEI Consultants, Inc, June 2018)

- Capture and treat groundwater that contains Site-related contaminants in the overburden and bedrock aquifers that exceeds federal drinking water standards. Achieved through continued operation, maintenance and modification (as needed) of a series of four extraction wells (three in deep

[1] An alternative recreational cleanup soil level of 34 ppt was established to satisfy CT RSR criteria.

overburden, one in bedrock) that comprise the hydraulic containment system. Since August 2018, captured groundwater is discharged to the Southington Water Pollution Control Authority. **Ongoing.**

- Monitor natural attenuation of Site-related contaminants outside the hydraulic capture zone in the Severed Plume, and, NAPL that is present in fractures in bedrock and those portions of the overburden not treated with ISTR until cleanup levels for groundwater are met. **Ongoing.**

- Continue with long-term groundwater monitoring, habitat restoration and cap operation and maintenance. **Ongoing**.

- Implement institutional controls to minimize the potential for human exposure to Site-related constituents in groundwater, soil and vapor intrusion, and, to prohibit activities that might affect the performance or integrity of the cap (see "IC Summary" below). **In process**.

IC Summary

Institutional controls are needed to restrict certain activities on and adjacent to the Site. The SRSNE Site Group prepared an IC Plan that was approved by EPA in April 2018 (GEI, April 2018). The planned ICs are summarized below, and the impacted parcels are depicted in Figure 3.

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument (All Planned)
Groundwater	Yes	Yes	133070, 133071, 145001, 145002, 145003, 145004, 145005, 145006, 145007, 145008, 145010, 145011, 145012, Railroad ROW	Groundwater use restricted for any purpose other than hydraulic contaminant, treatment, and monitoring in accordance with the remedial action approved in the ROD.	Environmental Land Use Restriction (ELUR)

Buffer Zone Groundwater	Yes	Yes	133061, 145013, 145014, 145022, 1450390001, 1450400002, 1450410003, 1450420004, 145046, Railroad ROW	Groundwater use restricted for any purpose other than hydraulic contaminant, treatment, and monitoring in accordance with the remedial action approved in the ROD.	Written agreement (e.g., policy, ordinance) with CT DEEP and/or Southington Health District
Soil	Yes	Yes	133071, 145001, 145002, 145003, 145005, 145007, 145011, 145012, Railroad ROW	No human exposure to soil 4 feet below ground surface as a result of excavation, demolition or other activities.	ELUR
Vapor	Yes	Yes	145011, 145012, Railroad ROW	No residential use of parcels currently industrial/commercial to prevent exposure to vapors that could present an unacceptable risk, and, prevent new construction without vapor barriers or other mitigation systems.	ELUR
RCRA Cap	Yes	Yes	145011, 145012, Railroad ROW	No disturbances that could adversely impact the cap, such as excavation, demolition, plant root growth, or other activities.	ELUR

Systems Operations/Operation & Maintenance

The SRSNE Site Group conducts routine operation and maintenance (O&M) activities of the physical components of the remedy in accordance the approved Operation, Maintenance and Monitoring (OM&M) Plan (GEI, November 2019).

The OM&M plan is a comprehensive document that in addition to the operation and maintenance activities also summarizes planned inspections and monitoring across the Site. These include implementation of the groundwater monitoring program and periodic inspections to document the continued performance, functionality, and/or effectiveness of other completed remedial components.

The OM&M Plan is in a modular format, comprised of a series of attachments to allow for ease of updates, as needed. The contents of each module are summarized below.

- **Health and Safety Plan (Attachment A)**. Provides the minimum health and safety requirements that are applicable to all contractors, regulatory representatives, and other visitors to the Site.

- **Quality Assurance Project Plan (Attachment B).** Summarizes the various procedures, sampling methods, analytical methods, and related protocols associated with sampling and analysis activities that will be done during the O&M phase of the project.

- **General Site Maintenance (Attachment C).** Summarizes routine site maintenance activities such as mowing, snow removal, access controls, access roads and related activities.

- **Groundwater Monitoring Program (Attachment D).** Summarizes the groundwater monitoring program, a network of over 100 wells, with schedules for sampling and analyses.

- **Hydraulic Containment and Treatment System Operation and Maintenance (HCTS) (Attachment E).** Summarizes the O&M requirements for the various components of the HCTS, including extraction wells and equipment, CT DEEP discharge permit monitoring requirements, and facility upkeep. It also includes a potential contingency should the on-site groundwater treatment system need to reactivated.

- **Inspections, Monitoring and Maintenance of Completed Remediation Areas (Attachment F).** Addresses the various inspection and maintenance requirements for areas where remedial activities have been completed, such as the RCRA Subtitle C cap, soil excavation areas, and the restored rails-to-trails greenway.

- **Vegetation Monitoring Plan (Attachment G).** Summarizes the scope, schedule and reporting requirements for on-site habitat restoration.

- **Invasive Species Control Plan (Attachment H).** Provides a plan for the identification and control of invasive vegetative species as needed to facilitate the establishment and growth of target species in restored areas of the Site.

- **Monitoring Well Inspection, Maintenance and Abandonment (Attachment I).** Includes provisions for monitoring well inspections, maintenance and, as appropriate, well abandonment.

- **Monitored Natural Attenuation Plan Update (Attachment J).** Summarizes the approach for periodic evaluations and reporting of the ongoing occurrence of natural attenuation of VOCs in overburden and bedrock groundwater.

- **Monitoring of Institutional Controls (Attachment K), *Planned*.** Once ELURs are established, it is anticipated that periodic inspections and monitoring will be performed to ensure the continued effectiveness of and compliance with the institutional controls.

- **Memorandum of Agreement (MOA) (Attachment L).** The September 2014 MOA documents an agreement among EPA, CT DEEP, the Southington Water District (SWD), Town of Southington, and the SRSNE Site Group that sets up procedures through which the SWD/Town of Southington could reactive water supply wells in the Curtiss Street Well Field.

- **Supplemental Containment Action Plan (SCAP) (Attachment M).** The November 2014 SCAP is a companion piece to the MOA and describes activities that will be undertaken by the SRSNE Site Group if the Town of Southington notifies of its plans to resume groundwater production from the Town Well Field Property. These activities could lead to the design and construction of a Supplemental Containment System that may in the future require OM&M.

III. PROGRESS SINCE THE LAST REVIEW

This section includes the protectiveness determinations and statements from the **last** five-year review as well as the recommendations from the **last** five-year review and the current status of those recommendations.

Protectiveness Determinations/Statements from the 2015 FYR

OU #	Protectiveness Determination	Protectiveness Statement
Sitewide	Will be Protective	*Protectiveness Statement* The remedy at the SRSNE Site is expected to be protective of human health and the environment upon completion of the components selected in the 2005 ROD. In the interim, remedial activities completed to date have adequately addressed all exposure pathways that could result in unacceptable risk across the Site. Although 1,4-dioxane was not identified as a contaminant of concern in the ROD, the selected remedy is effective at treating it and thus the remedy selected in the ROD will be protective when completed.

Status of Recommendations from the 2015 FYR

OU #	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
Entire Site	None	None	Completed		Click here to enter a date

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

A public notice was made available by press release on 3/13/2020, stating that there was a five-year review (https://www.epa.gov/newsreleases/epa-begins-reviews-three-connecticut-superfund-site-cleanups-year). The results of the review and the report will be posted on EPA's website at www.epa.gov/superfund/srs and will be available at the Site information repository located at US Environmental Protection Agency Region 1, 5 Post Office Square, Boston, MA 02109-3912.

Site Interviews

During the FYR process, interviews were conducted to document any perceived problems or successes with the remedy that has been implemented to date**.** The interviews are summarized below.

- Mark J. Sciota, Southington Town Manager (June 8, 2020). Mr. Sciota stated that he is fully aware of the environmental issues at the Site, and that the SRSNE Site Group's on-site manager [Jessie McCusker, *de maximis, inc*] has kept the Health Director [Shane Lockwood] and him updated on progress at the Site. In addition, EPA has had numerous meetings at the Site and has kept not only the surrounding property owners but also the Town government fully informed. He stated that he is not aware of any unusual or unexpected activities such as emergency response, vandalism or trespassing. He is not aware of any changes to state laws or local regulations that might affect the protectiveness of the remedy selected for the Site, nor is he aware of any changes in projected land uses at the Site.

- Shane Lockwood, Health Director, Plainville-Southington Health District (June 19, 2020). Mr. Lockwood stated that he is aware of the cleanup activities that have taken place at the Site and feels very well informed regarding the Site's activities and remedial progress. He is not aware of any problems at the Site since the completion of the *in situ* thermal remediation and installation of the walking trail. Through the website and meetings, EPA has done a fantastic job in answering neighbor's questions. He hasn't heard of any questions or concerns lately but would say keep information on the website in case people do have them in the future. He is not aware of any changes to state laws or local regulations that might affect the protectiveness of the remedy selected for the Site and believes that land use at the Site will remain in its current condition for some time. In closing, he stated that "*This was a great conversion of land from a Superfund site (I know parts remain) to a walking trail letting the taxpayers enjoy land that in part, their taxes helped restore. This should be an example for other such sites when feasible."*

- Shannon Pociu, Environmental Analyst, CT DEEP (September 10, 2020). Ms. Pociu stated that the project serves as an excellent example of how a Superfund site can be effectively remediated and transformed into a site where impact to the environment has been significantly reduced and a portion made useable to the public. The innovative use of *in situ* thermal remediation to remove approximately 500,000 pounds of volatile organics from overburden groundwater is estimated to reduce by half the length of time groundwater is expected to be impacted. The protective cap placed over the former Operations Area was designed to allow for safe passage of a paved walking path across the site. In addition, placement of a solar array on the cap, the energy generated from which is being used to power the hydraulic containment system extraction wells, adds a "green" component to the remedy. On occasion, DEEP has received inquiries about the site from the public and abutting property owners, though the frequency of inquiries has decreased over time. Most recently, DEEP received an inquiry from an abutter with questions about the land use restrictions being sought on his property. DEEP is assisting the SRSNE Site Group with the review and processing of the ELURs. She stated that she is not aware of any changes to state laws or projected land uses at the Site that might affect the protectiveness of the remedy. In closing, she stated that *"The entire SRSNE team, including EPA and the SRSNE Site Group's consultants, are a pleasure to work with."*

Data Review

With the completion of ISTR in 2015 and cap installation in 2017, SRSNE is now primarily a groundwater restoration site. Groundwater is to be remediated until concentrations of all Site-related constituents are below cleanup levels for a period of three years. Groundwater remediation activities include continued extraction and discharge for treatment to the Southington publicly-owned treatment works (POTW) and MNA.

In accordance with the *Groundwater Monitoring Program* and *Monitored Natural Attenuation Plan Update* (Attachments D and J to the OM&M Plan, respectively), a comprehensive groundwater sampling event was performed in June 2019 and is the basis for the evaluations in this FYR. It included sampling at 99 monitoring wells for VOCs and 1,4-dioxane, ten monitoring wells for metals, and 39 wells for MNA parameters. Post-thermal treatment monitoring of VOCs in the ISTR treatment zone also occurred in December 2018, March 2019 and June 2019. A summary of the key findings of groundwater monitoring and the MNA evaluation is provided below.

Hydraulic Containment System and Discharge to Southington POTW

An ongoing and critical component of the remedy is the hydraulic containment and treatment of groundwater in both the overburden and bedrock that exceeds federal drinking water standards. This is achieved through the continued operation, maintenance and modification (as needed) of the hydraulic containment system, which is a series of four extraction wells – three in overburden (RW-13, RW-14, and RW-15) and one bedrock (RW-1R) – that maintain a minimum constant pumping rate of 30 gallons per minute (gpm).

Samples were taken from 14 monitoring wells in the Severed Plume, immediately downgradient of the extraction wells. The location of these monitoring wells, the extraction wells, and the estimated capture zone are shown on Figures 4a (overburden) and 4b (bedrock). The sampling results are included in

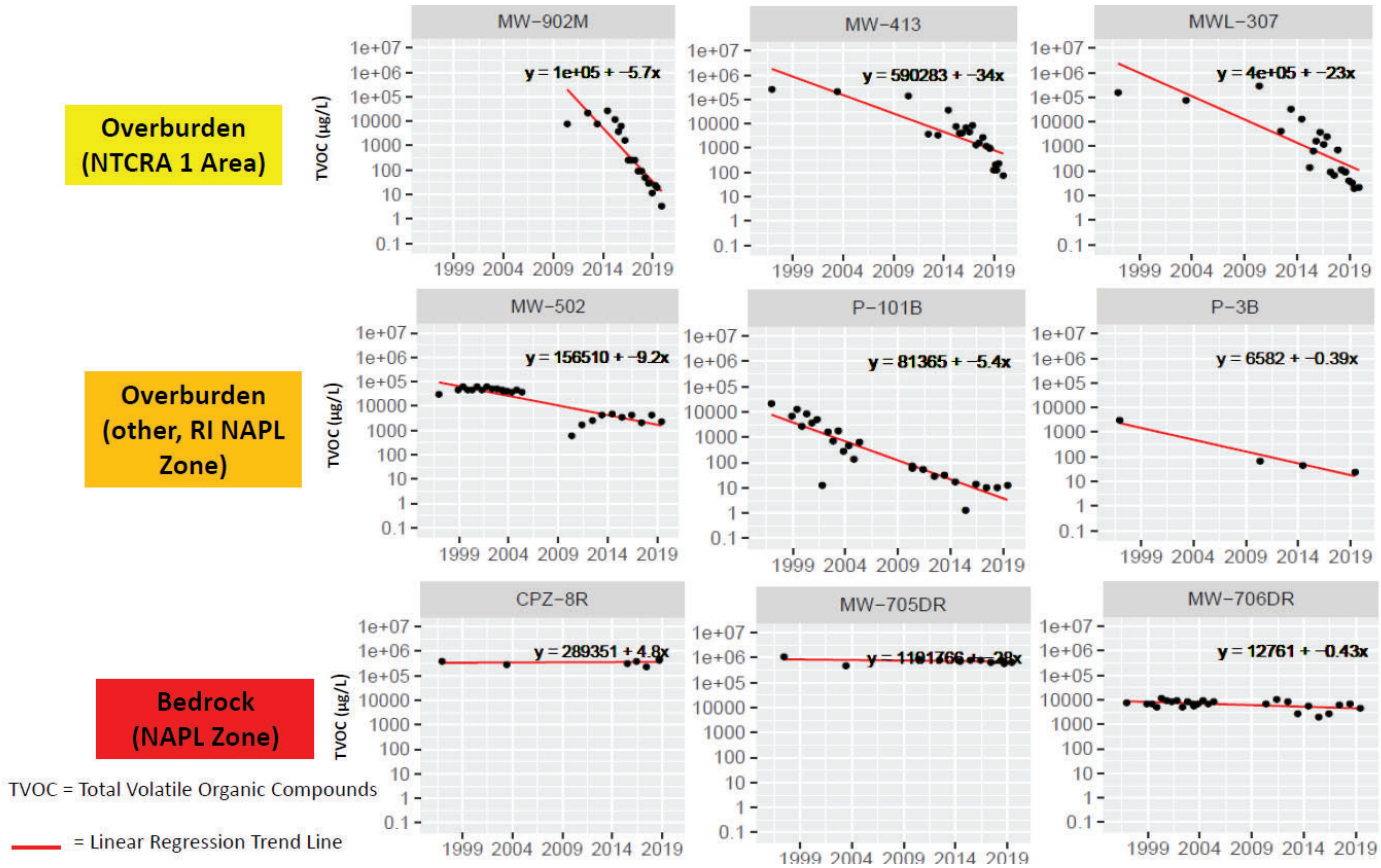
Appendix B, Table 3. There were no exceedances of federal drinking water standards in the Severed Plume. The highest 1,4 dioxane concentration was 2.85 µg/L.

Since August 2018, groundwater has been redirected from the on-site treatment system and discharge to the Quinnipiac River to the Southington Water Pollution Control Authority under a Connecticut General Permit for the Discharge of Groundwater Remediation Wastewater to POTW. There have been no exceedances of permit limits. The maximum total VOCs measured leaving the Site is 0.044 milligrams per liter (mg/L), well below the permissible limit of 5 mg/L. Per- and polyfluoroalkyl substances (PFAS), and, 1,4 dioxane do not have permit limits but are measured in Site discharge. The maximum sum total of PFAS was 0.0365 µg/L in November 2019; 1,4 dioxane was 66.4 µg/L in July 2019.

Monitored Natural Attenuation

Until concentrations of individual contaminants get nearer to the cleanup levels identified in Appendix B, Table 1, tracking trends in total VOCs (TVOCs) across the Site is a practical way to evaluate MNA effectiveness in the NAPL source zones, and, the dissolved phase plume. Data from wells that illustrate representative trends in TVOC concentrations in groundwater in different areas of the Site are presented below in a series of graphs. [Note that the y-axes are on a logarithmic scale.] Refer to Figure 5 for the location of the overburden wells and Figure 6 for the bedrock wells.

MNA in NAPL source zones. The series of graphs below show TVOC trends in monitoring wells located in the overburden and bedrock NAPL source zones.

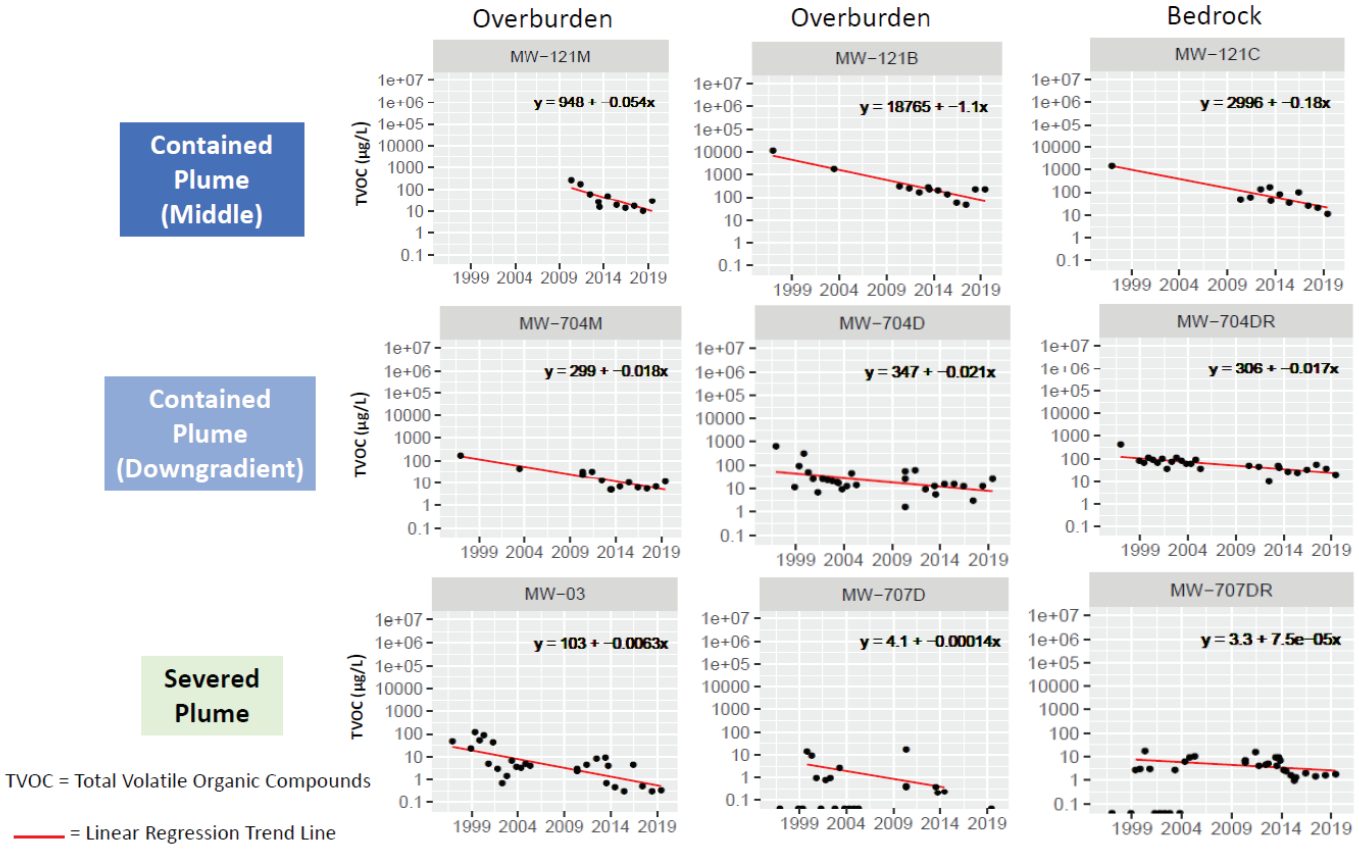


- Overburden NAPL/NTCRA 1 Area (top row). These wells are screened at different depths within the overburden, immediately downgradient of the former Operations Area. This area had visible NAPL in soils borings and wells before ISTR in 2014 and 2015. TVOC concentrations have declined by orders of magnitude due to NAPL depletion and increased natural degradation that was enhanced by residual warmer groundwater temperatures from the thermal treatment.

- Overburden NAPL/Outside NTCRA 1 (middle row). Near the eastern fringe of the Overburden NAPL Zone, TVOC concentrations in P-3B and P-101B have decreased by orders of magnitude due to dissolution of former trace quantities of NAPL in that area and natural attenuation processes. TVOC concentrations also decreased at deep overburden well MW-502, but remain elevated because of upward migration of groundwater containing dissolved VOCs from the underlying bedrock in that area.

- Bedrock NAPL Zone (bottom row). TVOC concentrations remain relatively steady. This is expected because traces of NAPL remain at one location (CPZ-8R) and significant VOC mass has diffused from fractures into the matrix of the sandstone bedrock.

MNA in groundwater plume. The second series of graphs shows trends in TVOC concentrations in the overburden and bedrock within the dissolved phase plume located downgradient (generally south) of the NAPL Zones. The top and middle rows show data from wells within the hydraulic capture zone; the bottom row within the Severed Plume.



- Contained Plume/Middle (top row). In the middle of the VOC plume in the hydraulic capture zone, TVOC concentrations are declining due to natural attenuation processes in the overburden and bedrock. Even downgradient of the Bedrock NAPL zone (where elevated TVOC concentrations remain), TVOCs in bedrock groundwater are attenuating (see MW-121C).

- Contained Plume/Downgradient (middle row). Near the HCTS extraction wells, monitoring wells show low and declining TVOC concentrations. Untreated effluent from the HCTS extraction wells typically meets MCLs for VOCs before it is sent off site to the Southington Water Pollution Control Authority.

- Severed Plume (bottom row). Beyond the hydraulic capture zone - in the Severed Plume - TVOC concentrations in both the overburden and bedrock are very low and declining, and they meet MCLs.

A more detail discussion of the data that were collected during the June 2019 comprehensive sampling event in support of MNA as a remedy can be found in the *2019 Monitored Natural Attenuation Report* included as Attachment 3 of the *Annual State of Compliance Report #11* (*de maximis, inc,* June 2020).

Per- and Polyfluoroalkyl Substances (PFAS) Monitoring

The following table shows PFAS results from across the SRSNE Site, in the core of the groundwater plume as well as locations downgradient of the hydraulic capture zone in the Severed Plume, since PFAS sampling began in April 2016.

Summary Statistics for PFAS Analytical Data in All Monitoring Wells
SRSNE Superfund Site

Analyte	CAS No.	Number of Results	Number of Nondetects	Number of Detects	Minimum Detect	Maximum Detect
PFAS (all units ng/L)						
N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2991-50-6	168	168	0	-	-
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2355-31-9	168	168	0	-	-
Perfluorobutanesulfonic acid (PFBS)	375-73-5	168	61	107	0.66	26
Perfluorobutanoic acid (PFBA)	375-22-4	168	33	135	0.88	140
Perfluorodecanesulfonic acid (PFDS)	335-77-3	168	167	1	2	2
Perfluorodecanoic acid (PFDA)	335-76-2	168	165	3	0.55	2.1
Perfluorododecanoic acid (PFDoA)	307-55-1	168	168	0	-	-
Perfluoroheptanesulfonic acid (PFHpS)	375-92-8	168	165	3	0.52	1.2
Perfluoroheptanoic acid (PFHpA)	375-85-9	168	77	91	1.1	47
Perfluorohexanoic acid (PFHxA)	307-24-4	168	46	122	0.72	190
Perfluorooctanesulfonamide (FOSA)	754-91-6	168	168	0	-	-
Perfluoropentanoic Acid (PFPeA)	2706-90-3	168	28	140	0.51	97

Perfluorotetradecanoic acid (PFTA/PFTeDA)	376-06-7	168	168	0	-	-
Perfluorotridecanoic acid (PFTriA/PFTrDA)	72629-94-8	168	168	0	-	-
Perfluoroundecanoic acid (PFUnA)	2058-94-8	168	164	4	0.3	0.38
Sodium 1H,1H,2H,2H-Perfluorodecane Sulfonate (8:2)	39108-34-4	168	168	0	-	-
Sodium 1H,1H,2H,2H-Perfluorooctane Sulfonate (6:2)	27619-97-2	168	168	0	-	-
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	168	91	77	0.84	14
Perfluorononanoic Acid (PFNA)	375-95-1	168	123	45	0.4	8.5
Perfluorooctanesulfonic acid (PFOS)	1763-23-1	168	45	123	1.2	60
Perfluorooctanoic Acid (PFOA)	335-67-1	168	37	131	1	190

Notes:
1. Statistics based on unvalidated groundwater data and do not reflect laboratory data qualifiers.
2. All samples analyzed for PFAS usin a laboratory-modified version of USEPA Method 537.

The maximum total PFAS concentration in discharge from the HCTS to the Southington POTW was 36.5 ppt in November 2019. No discharge limits have yet been established, but quarterly monitoring is an on-going permit requirement.

Sixteen of the 99 monitoring wells sampled during the June 2019 event for purposes of this FYR included analysis for PFAS. Of those, three are located in the Severed Plume: overburden MW-03, shallow bedrock MW-127C and deep bedrock MW-707DR.

The maximum concentrations detected in the three wells that are outside the hydraulic containment system are PFOA at 1.4 ppt; PFOS at 1.9 ppt; PFNA at 1.9 ppt; PFHxS at 1.7 ppt and PFHpA at 1.9 ppt. The maximum concentrations detected for PFOA and PFOS were below EPA's groundwater screening values of 40 ppt for PFOA and PFOS. In addition, none of the three wells indicated a cumulative concentration for the five PFAS compounds for which the CT Department of Public Health (CT DPH) has established a guidance value of 70 ppt in drinking water. This demonstrates that the hydraulic containment system is as effective at mitigating potential PFAS migration as well as VOCs and other site constituents of interest.

Site Inspection

A Site inspection with a focus on evaluating the success of the habitat restoration before leaf out was conducted on 3/19/2020. In attendance from EPA Region 1 were Karen Lumino and Bart Hoskins. Representing the SRSNE Site Group was Jessie McCusker of *de maximis, inc*.

The site visit observations focused on the restored wetland areas, particularly along the Quinnipiac River. As noted in the vegetation monitoring reports, work is ongoing to achieve the targeted percent survival for trees and shrubs. Herbaceous layer plants observed in the restored wetlands appear to have taken hold sufficiently to prevent erosion, and those shrubs that were present did not exhibit any signs of stress such as dead branches, deer browse damage, or evidently stunted growth. The site inspection did not include any systematic counting of shrub species, however it appeared that the variety of shrubs targeted for each area has not yet been achieved. Only a few species of shrub were observed. The need

to augment shrub species also has been noted in periodic vegetation monitoring reports and is expected to be addressed over time (GEI, October 2019). In general, the restored wetlands are well established and the vegetation that is present appears healthy.

Invasive species were not observed in the wetland areas. On-site restored upland areas visited have good control of invasive species. Invasive control will likely have to continue until all restored areas have achieved percent cover targets because the presence of invasive species immediately off-site will provide seeds with potential to colonize any open ground on-site.

All above-ground components of the remedy appear to be in good condition and functioning as designed. No undesirable vegetation, animals, vandalism (i.e., ruts/tire tracks) or differential settlement from the solar panels/pad were observed on the cap in the former Operations Area. A swale lined with rip rap to control the flow of water away from the cap is in good repair; no erosion was observed. The security fence appears to be in good condition. No evidence of vandalism or unauthorized access to the Site through the fence was observed. On-site access gates were locked and in good working order.

The rails-to-trails greenway, maintained by the Southington Parks & Recreation Department, also appears to be in good condition.

V. TECHNICAL ASSESSMENT

QUESTION A: Is the remedy functioning as intended by the decision documents?

Question A Summary:

Yes. Review of available documents, evaluation of compiled data, and the results of the Site inspection indicate that the remedy is functioning as intended in the 2005 ROD and 2016 ESD.

In situ thermal remediation (ISTR), which was completed during the previous Five-Year Review evaluation period, successfully removed approximately 500,000 pounds of VOCs from the overburden NAPL source area. Post-ISTR groundwater monitoring in the thermal treatment area shows a decreasing trend of contaminants of concern (COC) concentrations, which is expected until temperatures in the subsurface decrease to pre-thermal levels. Further, moderately to strongly reducing conditions support ongoing MNA.

Soil “hot spots” on the Cianci Property and sediment from the former outfall to the Quinnipiac River were excavated and placed in the Operations Area prior to installation of a multi-layer RCRA Subtitle C hazardous waste cap over soils that exceeded clean up levels. The cap and rails-to-trails greenway which extends from Lazy Lane to Curtiss Street, with a section constructed directly over the RCRA cap are in EPA-approved O&M programs and no issues have been reported or observed.

The hydraulic containment and treatment system is performing as expected, capturing those portions of the overburden and bedrock groundwater plumes that exceed federal drinking water standards, and are meeting discharge requirements set forth in the General Permit for the Discharge of Groundwater Remediation Wastewater issued by CT DEEP.

MNA continues to be an effective remedy for Site-related contaminants in groundwater as evaluations indicate that:

- The VOC plumes are generally stable in terms of spatial extent.
- TVOCs continue to attenuate at monitoring wells within the HCTS capture zone and also in the downgradient Severed Plume.
- Site geochemical conditions are consistent with those previously documented and are favorable for continued biodegradation.
- VOC concentrations in groundwater extracted by the hydraulic containment and treatment system remain low and well below permit reporting requirements.
- VOCs and 1,4 dioxane above action levels are contained within the capture zone.

Historically, 16 monitoring wells at the SRSNE Site contained NAPL. ISTR eliminated NAPL from the overburden in the former Operations Area. NAPL-bearing locations in bedrock have been reduced from six to one (CPZ-8R) through bailing to depletion and/or natural attenuation.

Insitutional controls are required by the ROD to prevent unacceptable exposure to groundwater, vapor, and soil. Fourteen properties will require ICs, in the form of ELURs. ELURs for three properties – the two that the SRSNE Site Group controls (the former Operations Area and Cianci), and, the railroad ROW – have been drafted and are under review by CT DEEP. The SRSNE Site Group is working with the owners of the eleven abutting properties to secure access rights to peform land surveys, and, subordination agreements.

QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

Question B Summary:

No. There have been changes in toxicity values, exposure pathways and methods of evaluating risk, potential standards, and "to be considereds" (TBCs) since the 2005 ROD was issued. The changes which are described below are not expected to alter the protectiveness of the remedy because groundwater that has been impacted by the Site is not used as drinking water or for any purpose.

Changes in Standards and TBCs

New standards should be considered during the five-year review process as part of the protectiveness determination. Under the National Contingency Plan, if a new requirement is promulgated after the ROD is signed, and the requirement is determined to be an ARAR, the new requirement must be attained only if necessary to ensure that the remedy is protective of human health and the environment.

EPA guidance states:

> "Subsequent to the initiation of the remedial action new standards based on new scientific information or awareness may be developed and these standards may differ from the cleanup standards on which the remedy was based. These new … [standards] should be considered as part of the review conducted at least every five years under CERCLA §121(c) for sites where

hazardous substances remain on-site. The review requires EPA to assure that human health and the environment are being protected by the remedial action. Therefore, the remedy should be examined in light of any new standards that would be applicable or relevant and appropriate to the circumstances at the site or pertinent new [standards], in order to ensure that the remedy is still protective. In certain situations, new standards or the information on which they are based may indicate that the site presents a significant threat to health or environment. If such information comes to light at times other than at the five-year reviews, the necessity of acting to modify the remedy should be considered at such times." (See CERCLA *Compliance with Other Laws Manual: Interim Final (Part 1)* EPA/540/G-89/006 August 1988, p. 1-56.)

PFAS

In May 2016, EPA issued final lifetime drinking water health advisories (HA) for PFOA and PFOS. The EPA HA for PFOA and PFOS is 70 nanograms per liter (ng/L or ppt) individually or combined. See also EPA's *Interim Recommendations to Address Groundwater Contaminated with Per-fluorooctanoic Acid and Pefluorooctanesulfonate* [OSWER DIRECTIVE 9283.1-47, Dec. 19, 2019]

Connecticut has not promulgated drinking water or groundwater standards for PFAS. In November 2016, CT DPH did issue a drinking water action level of 70 ng/L (ppt) for the sum of five PFAS compounds: PFOA, PFOS, PFNA, PFHxS and PFHpA. For groundwater, without specific numbers for groundwater protection criteria for PFAS compounds, the Connecticut Remediation Standards (RCSA 22a-133k-1 through 22a-133k-3) require remediation using the procedures for Additional Polluting Substances (RCSA 22a-133k-3(h)).

Sixteen of the 99 monitoring wells sampled during the June 2019 event for purposes of this FYR included analysis for PFAS. Of those, three are located in the Severed Plume: overburden MW-03, shallow bedrock MW-127C and deep bedrock MW-707DR. The maximum concentrations detected in the three wells that are outside the hydraulic containment system are PFOA at 1.4 ppt; PFOS at 1.9 ppt; PFNA at 1.9 ppt; PFHxS at 1.7 ppt and PFHpA at 1.9 ppt. The maximum concentrations detected for PFOA and PFOS were below EPA's groundwater screening values of 40 ppt for PFOA and PFOS. In addition, none of the three wells indicated a cumulative concentration for the five PFAS compounds listed above for which the CT DPH has established a guidance value of 70 ppt in drinking water. The presence of PFAS compounds does not alter the current protectiveness of the remedy because groundwater is currently not used as drinking water or for any other uses.

1,4-Dioxane

Using 2013 updated IRIS toxicity information and the standard Superfund risk assessment approach, EPA's carcinogenic risk range of 10-6 to 10-4 for 1,4-dioxane equates to a concentration range of 0.46 to 46 µg/L. Concentrations of 1,4 dioxane in the Severed Plume range from 0.126 to 2.85 µg/L. Detected concentrations of 1,4-dioxane concentration are within EPA's acceptable risk range and CT DPH's guidance level for 1,4-dioxane of 3 µg/L in drinking water. The presense of 1,4 dioxane does not alter the current protectiveness of the remedy.

Changes in Toxicity and Other Contaminant Characteristics

There have not been any toxicity changes for the Site COC's. PFAS has been added to the Site monitoring program since April 2016. Additionally, EPA has an updated policy addressing lead in soil, which is described below. These changes do not impact the protectiveness of the remedy because there is no use of Site-impacted groundwater and ICs are being implemented that will restrict land use to commercial.

- 2016 PFOA/PFOS non-cancer toxicity values

In May 2016, EPA issued final lifetime drinking water health advisories for PFOA and PFOS, which identified a chronic oral reference dose (RfD) of 2E-05 mg/kg-day for PFOA and PFOS (USEPA, 2016a and USEPA, 2016b). These RfD values should be used when evaluating potential risks from ingestion of contaminated groundwater at Superfund sites where PFOA and PFOS might be present based on site history. Potential estimated health risks from PFOA and PFOS, if identified, would likely increase total site risks due to groundwater exposure. Further evaluation of potential risks from exposure to PFOA and PFOS in other media at the Site might be needed based on site conditions and may also affect total site risks.

- 2014 PFBS non-cancer toxicity value

Perfluorobutanesulfonic acid (PFBS) has a chronic oral RfD of 2E-02 mg/kg-day based on an EPA Provisional Peer Reviewed Toxicity Value (PPRTV) (USEPA, 2014). This RfD value should be used when evaluating potential risks from ingestion of contaminated groundwater at Superfund sites where PFBS might be present based on site history. Potential estimated health risks from PFBS, if identified, would likely increase total site risks due to groundwater exposure. Further evaluation of potential risks from exposure to PFBS in other media at the Site might be needed based on site conditions and may also affect total site risks.

PFOA, PFOS, and PFBS monitoring began at the SRSNE site in 2016 and will continue periodically, including downgradient of the hydraulic capture zone. The presence of PFAS compounds does not alter the current protectiveness of the remedy because groundwater is currently not used as drinking water or for any other uses.

- Lead in Soil Cleanups

Updated scientific information indicates that adverse health effects are associated with blood lead levels (BLLs) at less than 10 micrograms per deciliter (µg/dL). Several studies have observed "clear evidence of cognitive function decrements in young children with mean or group BLLs between 2 and 8 µg/dL." Soil screening, action or cleanup level developed based on the previous target BLL of 10 µg/dL may not be protective.

EPA's approach to evaluate potential lead risks is to limit exposure to residential and commercial soil lead levels such that a typical (or hypothetical) child or group of similarly exposed children would have an estimated risk of no more than 5% of the population exceeding a 5 µg/dL BLL. This is based on evidence indicating cognitive impacts at BLLs below 10 µg/dL. Additionally, this approach aligns with the Lead Technical Review Workgroup's current support for using a BLL of 5 µg/dL as the level of

concern in the Integrated Exposure Uptake Biokinetic Model (IEUBK) and Adult Lead Methodology (ALM). A target BLL of 5 µg/dL reflects current scientific literature on lead toxicology and epidemiology that provides evidence that the adverse health effects of lead exposure do not have a threshold.

EPA's 2017 OLEM memorandum "Transmittal of Update to the Adult Lead Methodology's Default Baseline Blood Lead Concentration and Geometric Standard Deviation Parameters" (OLEM Directive 9285.6-56) provides updates on the default baseline blood lead concentration and default geometric standard deviation input parameters for the Adult Lead Methodology. These updates are based on the analysis of the NHANES 2009-2014 data, with recommended updated values for baseline blood lead concentration being 0.6 µg/dL and geometric standard deviation being 1.8.

Using updated default IEUBK and ALM parameters at a target BLL of 5 µg/dL, site-specific lead soil screening levels of 200 ppm and 1,000 ppm are developed for residential and commercial/industrial exposures, respectively.

During the remedial investigation, lead was detected in the soil in the former Operations Area and railroad ROW. The average lead concentration (315 mg/kg) was below EPA's screening benchmark of 400 mg/kg for residential land use (OSWER Directive #9355.4-12 July 14, 1994), and a formal evaluation of the potential hazards from exposure to lead was not performed. Although this average lead concentration is above the current residential screening level, it is below the commercial screening level. ICs will restrict land use to commercial purposes; therefore, this new EPA policy does not call into question the protectiveness of the remedy.

Changes in Risk Assessment Methods

Overall, there have been no changes in current or expected land use, human health, or ecological receptors. Additionally, there are no changes in exposure pathways at SRSNE since the previous FYR conducted in 2015.

Changes in Exposure Pathways

- 2018 EPA VISL Calculator

In February 2018, EPA launched an online Vapor Intrusion Screening Level (VISL) calculator which can be used to obtain risk-based screening level concentrations for groundwater, sub-slab soil gas, and indoor air. The VISL calculator uses the same database as the Regional Screening Levels for toxicity values and physiochemical parameters and is automatically updated during the semi-annual RSL updates. Please see the User's Guide for further details on how to use the VISL calculator. https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator .

Vapor Intrustion Evaluation at SRSNE

A vapor intrustion evaluation was conducted as part of the 2015 FYR. Groundwater data was assessed using vapor instrusion screening levels. In the 2015 evaluation, some exceedances were observed, however no structures were identified above the area where groundwater might present possible vapor

intrusion. Currently, there are no buildings on site within 100 feet of the groundwater plume that could have potential vapor intrusion issues.

The 2005 ROD identified implementing ICs to prevent human exposure to contaimanted groundwater and NAPL areas until appropriate levels are met. The restrictions prohibit residential uses, and construction above the portion of the groundwater plume until appropriate cleanup levels are met. IC's, in the form of ELURs, planned for the Site are not yet in place, however, they are underway and would require mitigation systems for any new buildings that are constructed.

Expected Progress Towards Meeting RAOs

The remedy is progressing as expected and there are no new conditions at the Site that impact remedy protectiveness.

QUESTION C: Has any **other** information come to light that could call into question the protectiveness of the remedy?

No.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the Five-Year Review:
None

Issues and Recommendations Identified in the Five-Year Review:

OU(s): Site-wide	**Issue Category: Institutional Controls**			
	Issue: Not all ICs have been implemented			
	Recommendation: Complete implementation of ICs to restrict groundwater and land use, and to protect the constructed components of the remedy.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA/State	9/30/2021

No additional issues have been identified during this FYR that affect the protectiveness of the remedy at the Site.

OTHER FINDINGS

- Develop and implement a plan for monitoring compliance with the institutional controls, once the ELURs are established. (SRSNE Site Group)

- As required by the RD/RA SOW, submit an *Optimization Report* to incorporate the modifications to NTCRA 1, which have been shown to successfully treat residual VOCs migrating from the area treated with ISTR, into the remedy for Site. (SRSNE Site Group)

- Continue to collect PFAS data. (SRSNE Site Group)

- Augment shrub species in restored wetlands. (SRSNE Site Group)

VII. PROTECTIVENESS STATEMENT

Sitewide Protectiveness Statement	
Protectiveness Determination: Short-term Protective	September 2020
Protectiveness Statement: The remedy is currently protective of human health and the environment in the short-term because *in situ* thermal treatment, soil and sediment excavation, and capping is preventing direct contact exposures to waste solvents and other Site-related contaminants. Groundwater containing Site-related contaminants is not being used for drinking water or any other uses. However, in order for the remedy to be protective in the long-term, the institutional controls must be finalized.	

VIII. NEXT REVIEW

The next five-year review report for the SRSNE Superfund Site is required five years from the completion date of this review.

APPENDIX A – REFERENCE LIST

Anchor QEA 2018. *Monitored Natural Attenuation Plan Update*. Solvents Recovery Service of New England, Inc., Superfund Site, Southington, Connecticut. June 2018.

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APPENDIX B – ADDITIONAL TABLES AND FIGURES

Table 1. Groundwater Interim Cleanup Levels for the Groundwater from the 2005 ROD (Table L-1)

Chemical Name	Units	Interim Cleanup Level [1]	Basis of Interim Cleanup Level
1,**1,**1-Trichloroethane	ug/l	0.5	CTRSR
1,**1,**1,2-Tetrachloroethane	ug/l	0.5	CTRSR
1.1.2-Trichloroethane	ug/l	0.5	CTRSR
1,1-Dichloroethane	ug/l	0.5	CTRSR
1,1-Dichloroethene	ug/l	0.5	CTRSR
1,2-Dibromo-3-chloroprooane	ug/l	0.05	CTRSR
1,2-Dichlorobenzene	ug/l	0.5	CTRSR
1,2-Dichloroethane	ug/l	0.5	CTRSR
1,4-Dichlorobenzene	ug/l	0.5	CTRSR
2-Butanone	ug/l	5	CTRSR
2-Hexanone	ug/l	5	CTRSR
4-MethYl-2-pentanone	ug/l	5	CTRSR
Acetone	ug/l	5	CTRSR
Benzene	ug/l	0.5	CTRSR
Bromomethane	ug/l	0.5	CTRSR
Carbon Disulfide	ug/l	0.5	CTRSR
Carbon tetrachloride	ug/l	0.5	CTRSR
Chlorobenzene	ug/l	0.5	CTRSR
Chloroethane	ug/l	0.5	CTRSR
Chloroform	ug/l	0.5	CT RSR
Chloromethane	ug/l	0.5	CTRSR
cis-1,2-Dichloroethene	ug/l	0.5	CTRSR
Ethvlbenzene	ug/l	0.5	CTRSR
Methylene chloride	ug/l	0.5	CTRSR
Stvrene	ug/l	0.5	CTRSR
Tetrachloroethene	ug/l	0.5	CTRSR
Tetrahydrofuran	ug/l	0.5	CTRSR
Toluene	ug/l	0.5	CTRSR
trans-1,2-Dichloroethene	ug/l	0.5	CTRSR

Chemical Name	Units	Interim Cleanup Level [1]	Basis of Interim Cleanup Level
trans-1,3-Dichloropropene	ug/l	0.5	CTRSR
Trichloroethene	ug/l	0.5	CTRSR
Vinyl chloride	ug/l	0.5	CTRSR
Xylenes	ug/l	0.5	CTRSR
1,2,4-Trichlorobenzene	ug/l	2	CTRSR
2,4-Dimethylphenol	ug/l	10	CTRSR
2-Methvlohenol	ug/l	10	CTRSR
4-Methylohenol	ug/l	10	CTRSR
Benzoic Acid	ug/l	10	CTRSR
bis(2-Ethvlhexvllnhthalate	ug/l	10	CTRSR
Di-n-butyl phthalate	ug/l	10	CTRSR
Di-n-octyl phthalale	ug/l	10	CT RSR
Hexachlorobutadiene	ug/l	0.45[2]	CTRSR
lsoohorone	ug/l	10	CT RSR
Napthalene	ug/l	0.5[3]	CTRSR
Phenol	ug/l	10	CTRSR
Aroclor-1254	ug/l	0.5	CTRSR
Aroclor-1260	ug/l	0.5	CTRSR
Aluminum	ug/l	(1)	CTRSR
Antimony	ug/l	(1)	CTRSR
Arsenic	ug/l	(1)	CTRSR
Barium	ug/l	(1)	CTRSR
Beryllium	ug/l	(1)	CTRSR
Cadmium	ug/l	(1)	CTRSR
Chromium (Total)	ug/l	(1)	CTRSR
Cobalt	ug/l	(1)	CTRSR
Copper	ug/l	(1)	CTRSR
Iron	ug/l	(1)	CT RSR
Lead	ug/l	(1)	CTRSR
Manganese	ug/l	(1)	CT RSR

Chemical Name	Units	Interim Cleanup Level [1]	Basis of Interim Cleanup Level
Nickel	ug/l	(1)	CTRSR
Silver	ug/l	(1)	CTRSR
Thallium	ug/l	(1)	CTRSR
Vanadium	ug/l	(1)	CT RSR
Zinc	ug/l	(1)	CT RSR
4.4'-DDD	ug/l	0.1	CT RSR
Aldrin	ug/l	0.05	CT RSR
Ethanol	ug/l	1000	CT RSR
Isopropanol	ug/l	1000	CT RSR
Methanol	ug/l	1000	CT RSR
Sec-Butanol	ug/l	1000	CT RSR

Notes:

1. CT Remediation Standards Regulation requires that "Remediation of groundwater in a GA area shall result in reduction of each substance therein to a concentration equal to or less than the background concentration for groundwater of such substance (RCSA 22a-133k-3(a)(2). Where background concentrations are reported as non-detects, the analytical detection level as defined in the CT RSRs shall be the remedial goal. Background levels for metals will be established based on future field sampling and laboratory analyses.

2. A special request to the laboratory is needed to provide an analytical detection limit of 0.45 ug/1 for Hexachlorobutadiene.

3. The analytical detection limit for naphthalene is 0.5 ug/1 via EPA Test Method 8260.

Table 2. Soil and Wetland Soil Cleanup Levels for the protection of Human Health and the Aquifer from the 2005 ROD (Table L-2)

Chemical Name	Connecticut Residential Direct Exposure Criteria (mg/kg)	Connecticut GA, GAA Pollutant Mobility Criteria (mg/kg)[2]	Soil Cleanup Level (mg/kg)[1]	Basis of Cleanup Level	Carcinogenic Risk [3]	Non-Carcinogenic Hazard Quotient [3]	Non-cancer Target Endpoint
1,1,1-Trichlorethane	500	4	4	CT RSR	-	NA	-
1,1,2,2-Tetrachloroethane	3.1	0.01	0.01	CT RSR	2.E-08	1.E-05	liver
1.1.2-Trichloroethane	11	0.1	0.1	CT RSR	1.E-07	3.E-03	blood
1-Dichloroethane	500	1.4	1.4	CT RSR	-	3.E-03	kidney
1,1-Dichloroethene	1	0.14	0.14	CT RSR	-	1.E-03	liver
1,2-Dichloroethene, Total	500	1.4	1.4	CT RSR	-	3.E-02	blood
1,2-Dichloropropane	9	0.1	0.1	CT RSR	3.E-07	NA	-
2-Butanone	500	8	8	CT RSR	-	4.E-03	fetal weight
4-Methyl-2-pentanone	500	7	7	CT RSR	-	1.E-03	liver/ kidney
Acetone	500	14	14	CT RSR	-	1.E-03	kidney
Benzene	21	0.02	0.02	CT RSR	3.E-08	1.E-03	blood
Carbon tetrachloride	4.7	0.1	0.1	CT RSR	4.E-07	5.E-02	liver
Chlorobenzene	500	2	2	CT RSR	-	1.E-02	liver
Chlorodibromomethane	7.3	0.01	0.01	CT RSR	9.E-09	3.E-04	liver
Chloroform	100	0.12	0.12	CT RSR	6.E-07	2.E-03	liver
Ethylbenzene	500	10.1	10.1	CT RSR	-	5.E-03	liver
Methylene chloride	82	0.1	0.1	CT RSR	1.E-08	5.E-05	liver
Styrene	500	2	2	CT RSR	-	5.E-04	blood/ immune
Tetrachloroethene	12	0.1	0.1	CT RSR	2.E-07	3.E-03	liver
Toluene	500	20	20	CT RSR	-	3.E-02	liver/kidney
Trichloroethane	56	0.1	0.1	CT RSR	2.E-06	6.E-03	liver/ kidney/ developmental
Vinyl chloride	0.32	0.04	0.04	CT RSR	5.E-07	1.E-03	liver
Xylenes, Total	500	19.5	19.5	CT RSR	-	7.E-02	body weight
2-Methylnapthalene	474	0.98	0.98	CT RSR	NA	NA	-
4-Chloroaniline	270	1	1	CT RSR	-	4.E-03	spleen
4-Methylphenol	340	0.7	0.7	CT RSR	-	2.E-03	nervous system
Benzo(a)anthracene	1	1	1	CT RSR	2.E-06	-	-
Benzo(a)pyrene	1	1	1	CT RSR	2.E-05	-	-

Chemical Name	Connecticut Residential Direct Exposure Criteria (mg/kg)	Connecticut GA, GAA Pollutant Mobility Criteria (mg/kg)[2]	Soil Cleanup Level (mg/kg)[1]	Basis of Cleanup Level	Carcinogenic Risk [3]	Non-Carcinogenic Hazard Quotient [3]	Non-cancer Target Endpoint
Benzo(b)fluoranthene	1	1	1	CT RSR	2.E-06	-	-
Benzo(k)fluoranthene	8.4	1	1	CT RSR	2.E-07	-	-
bis(2-Ethylhexyl) phthalate	44	1	1	CT RSR	3.E-08	1.E-03	liver
Chrysene	84	1	1	CT RSR	2.E-08	-	-
Dibenzofuran	270	1	1	CT RSR	-	7.E-03	kidney
Di-n-butyl phthalate	1000	14	14	CT RSR	-	2.E-03	mortality
Di-n-octyl phthalate	1000	2	2	CT RSR	-	8.E-04	liver/thyroid
Fluoranthene	1000	5.6	5.6	CT RSR	-	2.E-03	liver
lndeno(1,2,3-cd)pyrene	1	1	1	CT RSR	2.E-06	-	-
Phenanthrene	1000	4	4	CT RSR	NA	NA	-
Pyrene	1000	4	4	CT RSR	-	2.E-03	kidney
2,3,7,8 TCDD -TEQ	NA[4]	NA[4]	lower of 0.001 mg/kg or background [4]	EPA Policy [4] background	To be determined	-	-
PCBs Total	1	0.0005 mg/L [2]	1 mg/kg and 0.0005 mg/L [2]	CT RSR	5.E-06	9.E-01	immune
Antimony	27	0.006 mg/I [2]	27 mg/kg and 0.006 mg/L [2]	CT RSR	-	9.E-01	mortality/ blood
Arsenic	10	0.05 mg/I [2]	10 mg/kg and 0.05 mg/L [2]	CT RSR	3.E-05	5.E-01	skin
Barium	4700	1 mg/L[2]	4700 mg/kg and 1 mg/L [2]	CT RSR	-	9.E-01	kidney
Beryllium	2	0.004 mg/L [2]	2 mg/kg and 0.004 mg/L[2]	CT RSR	1.E-09	1.E-02	small intestine
Cadmium	34	0.005 mg/L [2]	34 mg/kg and 0.005 mg/L [2]	CT RSR	2.E-08	9.E-01	kidney
Chromium [+3]	3900	0.05 mg/L [2 5]	3900 mg/kg and 0.05 mg/L [2 5]	CT RSR	-	3.E-02	none

Chemical Name	Connecticut Residential Direct Exposure Criteria (mg/kg)	Connecticut GA, GAA Pollutant Mobility Criteria (mg/kg)[2]	Soil Cleanup Level (mg/kg)[1]	Basis of Cleanup Level	Carcinogenic Risk [3]	Non-Carcinogenic Hazard Quotient [3]	Non-cancer Target Endpoint
Chromium [+6]	100	0.05 mg/L[2 5]	100 mg/kg and 0.05 mg/L [2,5]	CT RSR	3.E-06	5.E-01	none
Lead	500	0.015 mg/L [2]	400 mg/kg [6] and 0.015 mg/L [2]	EPA Policy[6] CT RSR	NA	NA[6]	nervous system

Total Cancer Risk[7] = 7.E-05

Cumulative HI by Target Endpoint

kidney	2.E+00
immune	9.E-01
mortality	9.E-01
skin	5.E-01
other endpoints	HI below 1

Notes:
NA = Not Available or Not Applicable

1. Soil Cleanup levels are the more stringent of the Connecticut Residential Direct Exposure Criteria (RDEC) or Pollutant Mobility Criteria (PMC) for those depths of soil where both RDEC and PMC apply, and where both RDEC and PMC are expressed in mass concentrations (e.g. mg/kg). Cleanup levels for those substances where PMC are leachate concentrations (see footnote 3), both RDEC and PMC apply except for lead where the cleanup level is based on EPA policy (see footnote 7) and the CT PMC for lead. Cleanup levels may revert to background concentrations if adequate documentation is provided.

2. For inorganics and PCBs, the Pollutant Mobility Criteria are based on leachate concentrations (expressed in mg/I) as obtained via either the SPLP or TCLP leaching procedures.

3. Cancer risk and non-cancer hazard are based on residential exposure and assume exposure parameters consistent with EPA Region 9 Preliminary Remediation Goals which reflect ingestion, dermal contact, and inhalation of the soil medium. Values for PCBs and inorganics reflect risk or hazard for cleanup levels expressed as a soil concentration (mg/kg).

4. There are no CT residential DEC or PMC for 2,3,7,8 TCDD-TEQ (Dioxin) in the CT RSRs. EPA and CT DEP have agreed that the cleanup level for 2,3,7,8-TCDD TEO will be the lower of the EPA policy for residential sites (0.001 mg/kg per OSWER Directive# 9200.4-26 April 1998) and the background concentration which will be determined based on future field study, or another concentration consistent with CT RSRs, but not lower than background.

5. The PMC based cleanup levels for chromium (both trivalent and hexavalent) are based on a total chromium concentration.

6. The value of 400 mg/kg lead protects 95% of the exposed population from blood lead levels in excess of 10 ug/dl consistent with EPA's policy for lead (OSWER Directive #9355.4-12 July 14, 1994).

7. The total cancer risk does not include the risk attributed to 2,3,7,8 TCDD-TEOs as the cleanup level will be determined during remedial design.

Table 1 – Severed Plume Groundwater Sample Results – June 2019
Solvents Recovery Service of New England, Inc. (SRSNE) Superfund Site
Southington, Connecticut

				Sample Location	MW-707S		P-13		MW-03		MW-707M		MW-905M		PZO-4M		MW-707D		PZO-4D		SRS-1		MW-127C		MW-707R		PZR-5R		MW-707DR		PZR-4DR	
				Sample Date	6/3/2019		6/4/2019		6/5/2019		6/3/2019		6/4/2019		6/4/2019		6/4/2019		6/3/2019		6/4/2019		6/7/2019		6/8/2019		6/5/2019		6/6/2019		6/3/2019	
				Well Group	C		C		R		C		C		R		C		C+		C		C+		C		C+		R		R	
				HydroStratZone(s)	SOB		SOB		MOB		MOB		MOB		MOB		DOB		DOB		DOB		SBR		SBR		SBR		DBR		DBR	
Analyte	**CAS No.**	**Unit**	**Action Level**	**ICL**																										
VOCs																														
1,1,1,2-Tetrachloroethane	630-20-6	ug/l	1	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,1,1-Trichloroethane	71-55-6	ug/l	200	0.5	0.5	U	**0.558**	--	0.5	U	0.5	U	**0.678**	--	0.5	U	0.5	U	0.5	U	0.5	U	**0.835**	--	0.5	U	**1.62**	--	0.5	U	0.5	U
1,1,2-Trichloroethane	79-00-5	ug/l	5	0.5	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
1,1-Dichloroethane	75-34-3	ug/l	70	0.5	0.75	U	**0.319**	J	0.75	U	0.75	U	**0.468**	J	0.75	U	0.75	U	0.75	U	0.75	U	**3.29**	--	0.75	U	**6.68**	--	**0.588**	J	**1.19**	--
1,1-Dichloroethene	75-35-4	ug/l	7	0.5	0.5	U	0.5	U	0.5	U	0.5	U	**0.351**	J	0.5	U	0.5	U	0.5	U	0.5	U	**1.48**	--	0.5	U	**4.56**	--	**0.18**	J	0.5	U
1,2,4-Trichlorobenzene	120-82-1	ug/l	70	2	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2-Dichlorobenzene	95-50-1	ug/l	600	0.5	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
1,2-Dichloroethane	107-06-2	ug/l	1	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
1,4-Dichlorobenzene	106-46-7	ug/l	75	0.5	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
2-Butanone (MEK)	78-93-3	ug/l	400	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
2-Hexanone	591-78-6	ug/l	140	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone (MIBK)	108-10-1	ug/l	350	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Acetone	67-64-1	ug/l	700	5	**2.58**	J	5	U	5	U	**4.28**	J	5	U	5	U	5	U	5	U	5	U	5	U	**1.94**	J	**3.21**	J	5	U	5	U
Benzene	71-43-2	ug/l	1	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Bromomethane	74-83-9	ug/l	9.8	0.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Carbon disulfide	75-15-0	ug/l	700	0.5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Carbon tetrachloride	56-23-5	ug/l	5	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chlorobenzene	108-90-7	ug/l	100	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Chloroethane	75-00-3	ug/l	12.1	0.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Chloroform	67-66-3	ug/l	6	0.5	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	**0.247**	J	**0.247**	J	0.75	U	0.75	U	0.75	U	0.75	U
Chloromethane	74-87-3	ug/l	2.7	0.5	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
cis-1,2-Dichloroethene	156-59-2	ug/l	70	0.5	0.5	U	**0.384**	J	0.5	U	0.5	U	**0.941**	--	0.5	U	0.5	U	0.5	U	0.5	U	**2.27**	--	**0.209**	J	**3.02**	--	**0.411**	J	0.5	U
Ethylbenzene	100-41-4	ug/l	700	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Hexachlorobutadiene	87-68-3	ug/l	0.45	0.45	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
Methylene chloride	75-09-2	ug/l	5	0.5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Naphthalene	91-20-3	ug/l	280	0.5	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U	**0.243**	J	2.5	U
Styrene	100-42-5	ug/l	100	0.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Tetrachloroethene	127-18-4	ug/l	5	0.5	0.5	U	**0.362**	J	0.5	U	0.5	U	**0.431**	J	0.5	U	0.5	U	0.5	U	**0.234**	J	**0.183**	J	0.5	U	0.5	U	0.5	U	0.5	U
Tetrahydrofuran	109-99-9	ug/l	4.6	0.5	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Toluene	108-88-3	ug/l	1000	0.5	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
trans-1,2-Dichloroethene	156-60-5	ug/l	100	0.5	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U	0.75	U
trans-1,3-Dichloropropene	10061-02-6	ug/l	0.5	0.5	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U
Trichloroethene	79-01-6	ug/l	5	0.5	**0.267**	J	**0.24**	J	**0.333**	J	**0.274**	J	**0.402**	J	0.5	U	0.5	U	0.5	U	0.5	U	**0.615**	--	**0.876**	--	**0.721**	--	0.5	U	0.5	U
Vinyl chloride	75-01-4	ug/l	2	0.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U
Xylenes, Total	1330-20-7	ug/l	530	0.5	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	1	U	**0.345**	J	1	U
Total Volatile Organics L-1 GW	TVO	ug/l	--	--	**2.847**	--	**1.863**	--	**0.333**	--	**4.554**	--	**3.271**	--	0	U	0	U	0	U	**0.481**	--	**8.92**	--	**3.025**	--	**19.811**	--	**1.767**	--	**1.19**	--

Analyte	**CAS No.**	**Unit**	**Action Level**	**ICL**	MW-707S		P-13		MW-03		MW-707M		MW-905M		PZO-4M		MW-707D		PZO-4D		SRS-1		MW-127C		MW-707R		PZR-5R		MW-707DR		PZR-4DR	
					6/3/2019		6/4/2019		6/5/2019		6/3/2019		6/4/2019		6/4/2019		6/4/2019		6/3/2019		6/4/2019		6/7/2019		6/8/2019		6/5/2019		6/6/2019		6/3/2019	
1,4-Dioxane	123-91-1	ug/L	20	NA	0.15	U	0.156	U	**1.54**	--	**0.173**	--	**0.126**	J	0.144	U	0.144	U	0.144	U	0.156	U	**2.85**	--	**0.581**	--	**1.24**	--	**1.5**	--	**1.43**	--

Notes:

U = Analyte not detected above the laboratory reporting limit
J = Analyte result is estimated
ug/L = micrograms per liter
VOCs = volatile organic compounds
Action Level = the lower of the USEPA Maximum Contaminant Level
ICL = Interim Cleanup Level based on Table L-1 from Record of Decision
Bold = Analyte detected above the laboratory reporting limit

Shaded Cell = Analyte detected above the Action Level
SOB = Shallow Overburden
MOB = Middle Overburden
DOB = Deep Overburden
SBR = Shallow Bedrock
DBR = Deep Bedrock

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Table 4. Example reporting sheet for discharge to Southington Water Pollution Control Facility (June 17, 2020)

Application #: **2018099581**
Site Name: SRSNE PRP Group c/o *de maximis, inc.*
Address: 90 Lazy Lane
City/State/Zip: Southington, CT 06489
POTW Receiving I **Town of Southinton Water Pollution Control Facility**

Table 2 - (NetDMR Reporting Required)

Discharge Serial Number: **001-1** | Monitoring Location: **1**

Wastewater Description: Pretreated groundwater contaminated with volatile organic compounds1,4-dioxane, and poly/perfluronated compounds

Monitoring Location Description: Sanitary Sewer of Town of Southington Water Pollution Control Facility (POTW)

Discharge is to: Town of Southington Water Pollution Control Facility

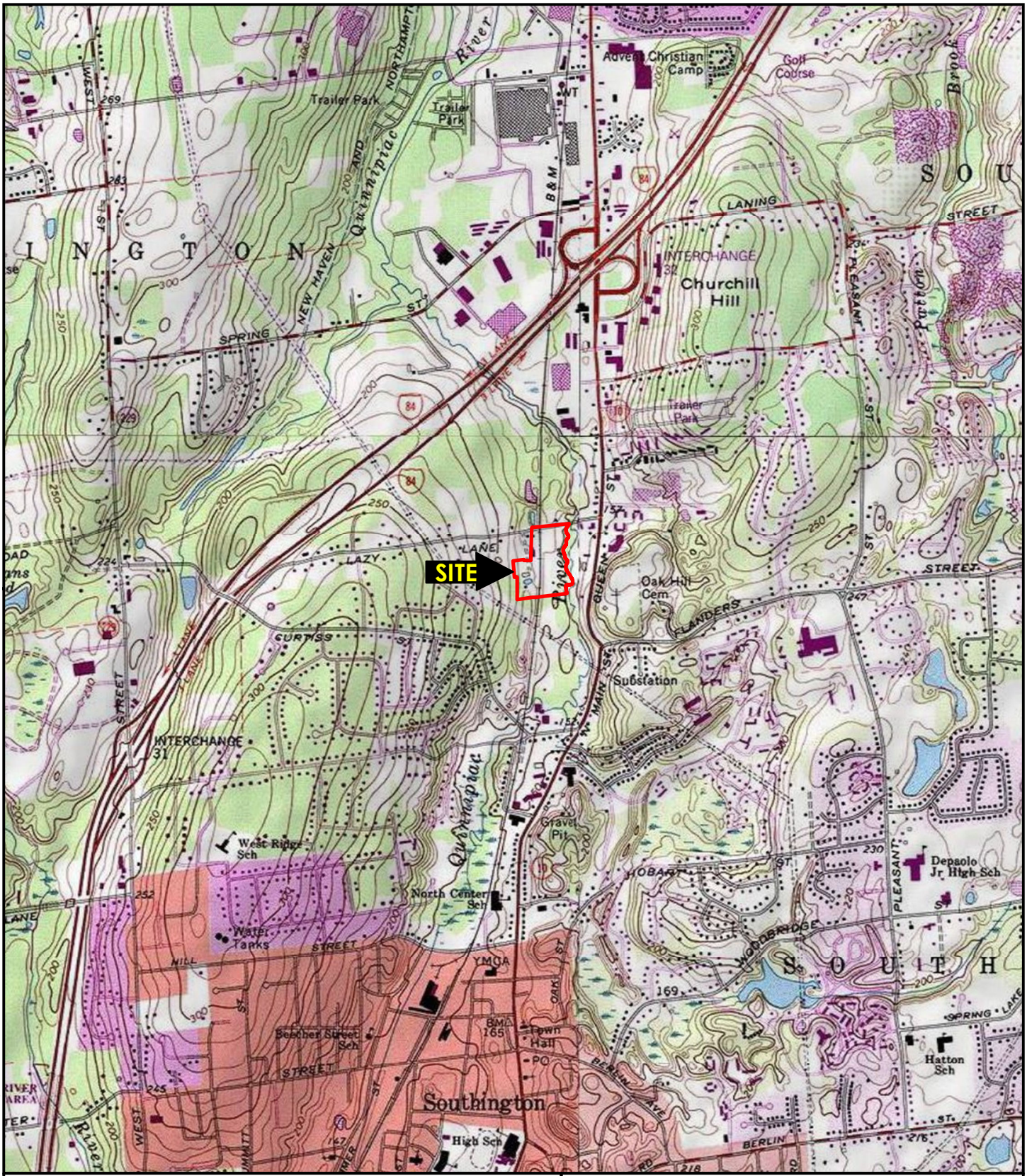
PARAMETER	UNITS	FLOW/TIME BASED MONITORING				INSTANTANEOUS MONITORING			Sample Date/Result
		Average Daily Limit	Maximum Daily Limit	Sample/ Reporting Frequency [2]	Sample Type or Measurement to be Reported	Instantaneous Limit or Required Range	Sample/Reporting Frequency [2]	Sample Type or Measurement to be Reported	17-Jun-20
Flow, average daily [1]	Gpd	----	NA	Daily/Monthly	Daily Flow	NA	NR	NA	43,618
Flow, maximum daily [1]	Gpd	NA	72,000	Daily/Monthly	Daily Flow	NA	NR	NA	NA
Flow, day of sampling	Gpd	NA	72,000	Monthly	Daily Flow	NA	NR	NA	NA
pH, day of sampling	S.U.	NA	NA	NR	NA	5.0-10	Monthly	Grab	6.08
Total Volatile Organics	mg/l	NA	NA	NR	Grab	5.0	Monthly	Grab	< 5.0
Total Per-and Polyfluoroalkyl (PFAS)[3]	mg/l	NA	NA	NR	Grab	No Limit	Quarterly	Grab	NA
1,4-Dioxine	mg/l	NA	NA	NR	Composite	No Limit	Quarterly	Grab	NA

Table Footnotes

[1] For this parameter, the Permitee shall maintain at the facility a reord of Total Daily Flow for each day of discharge and shall report the Average Daily Flow for each sampling month

[2] Reporting shall be in accordance with Section 5(c) of the General Permit

[3] Parameter to be reported as an attachment in NetDMR

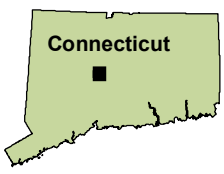


FILE PATH: R:\Projects\DEF\demax-154713212-SRSNE\DataAnalysis\GISData\Site_Location_Map.mxd DATE: 5/22/2019 ARC OPERATOR: LDS

SOURCE: Copyright:© 2013 National Geographic Society, i-cubed
QUAD: MERIDEN, CT
DATE: 1992

0 2,000 4,000 Feet

Approximate Scale
1 inch = 2,000 feet



N

SRSNE SUPERFUND SITE
SOUTHINGTON, CONNECTICUT

3rd Five Year Review

SITE LOCATION MAP

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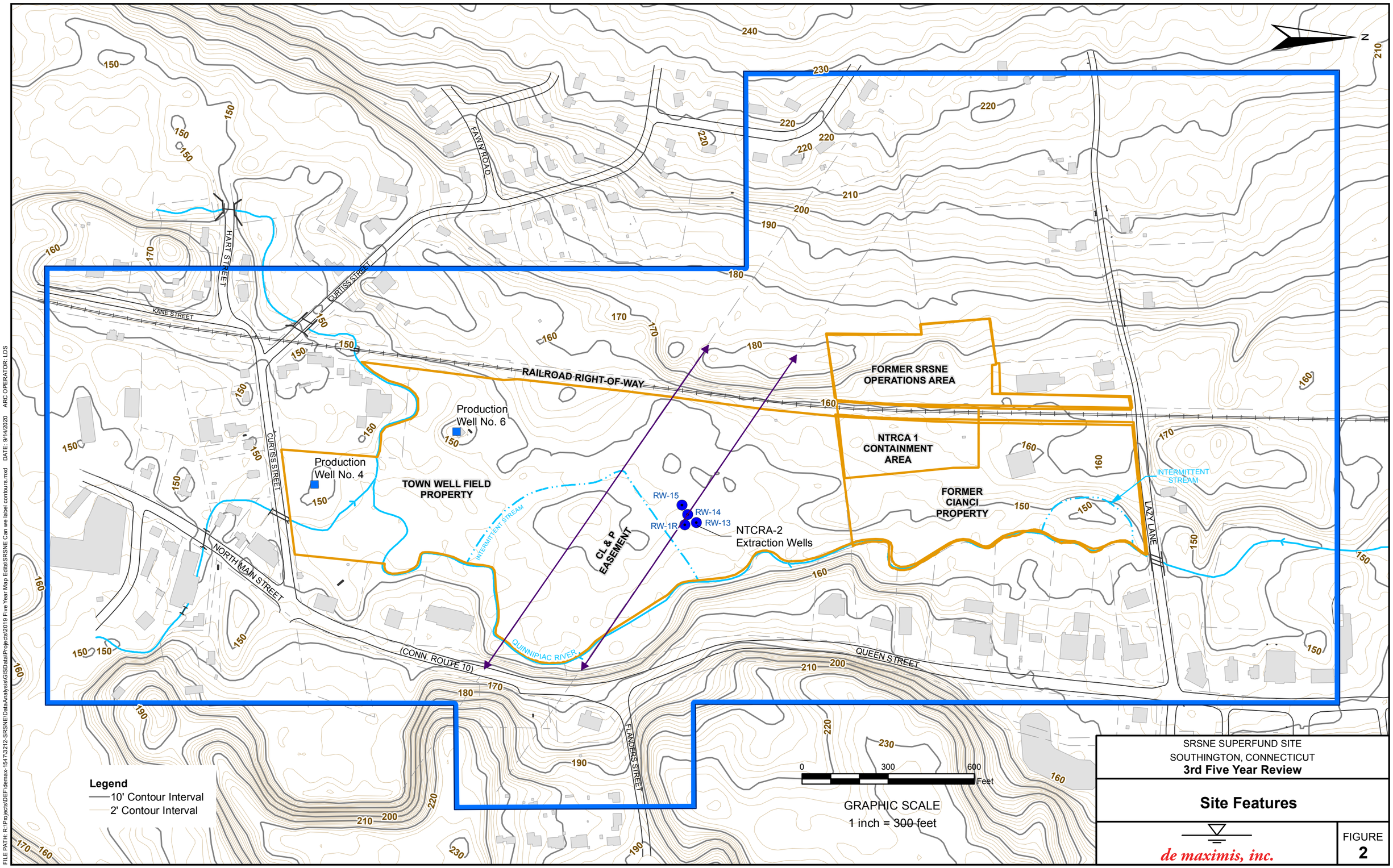
FIGURE
1



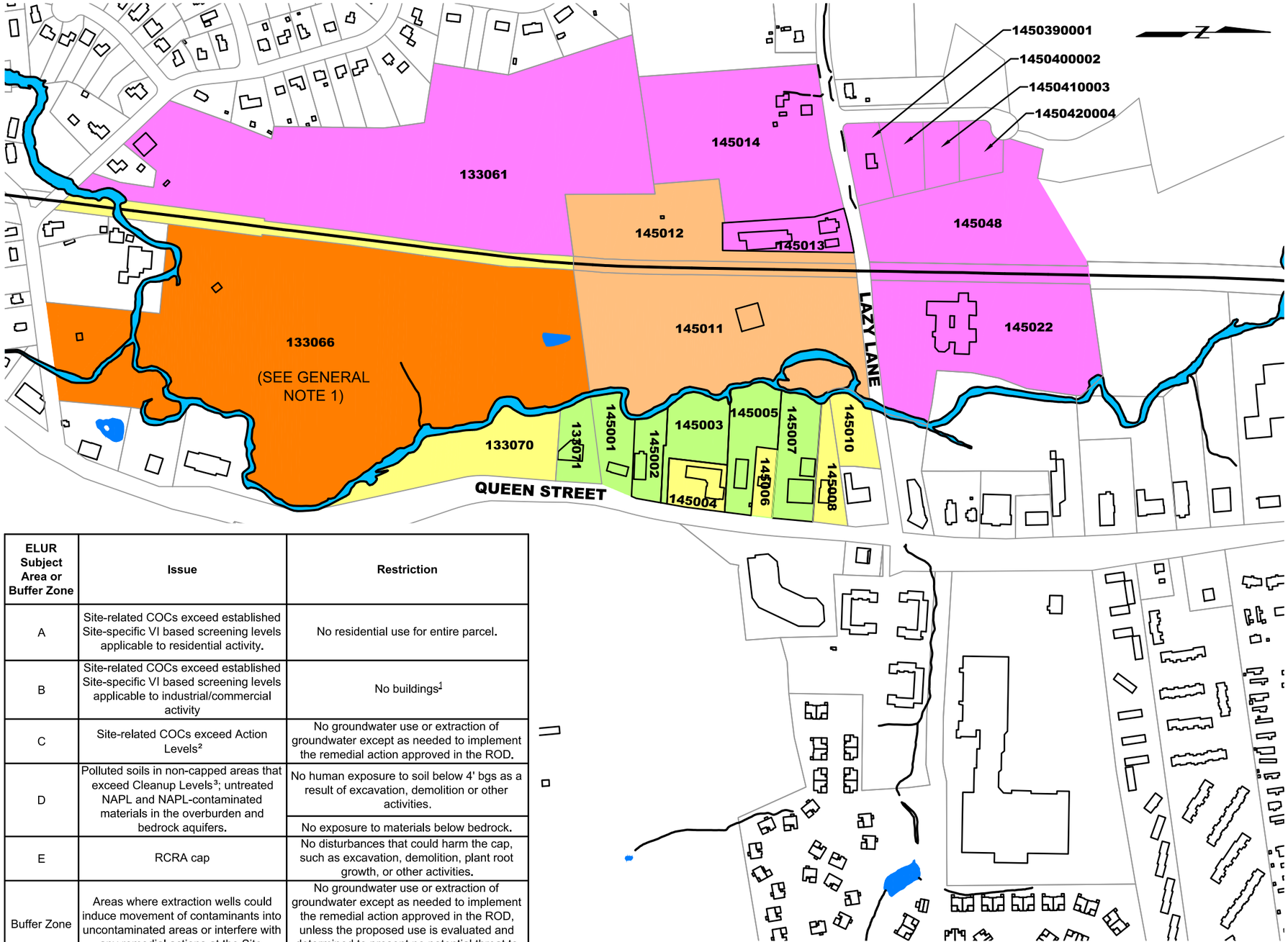
SRSNE SUPERFUND SITE
SOUTHINGTON, CONNECTICUT
3rd Five Year Review

Site Features

de maximis, inc.

FIGURE **2**

FILE PATH: R:\Projects\DEF\demax-1547\3212-SRSNE\DataAnalysis\GIS\Data\Projects\2019 Five Year Map Edits\SRSNE Can we label contours.mxd DATE: 9/14/2020 ARC OPERATOR: LDS



ELUR Subject Area or Buffer Zone	Issue	Restriction
A	Site-related COCs exceed established Site-specific VI based screening levels applicable to residential activity.	No residential use for entire parcel.
B	Site-related COCs exceed established Site-specific VI based screening levels applicable to industrial/commercial activity	No buildings[1]
C	Site-related COCs exceed Action Levels[2]	No groundwater use or extraction of groundwater except as needed to implement the remedial action approved in the ROD.
D	Polluted soils in non-capped areas that exceed Cleanup Levels[3]; untreated NAPL and NAPL-contaminated materials in the overburden and bedrock aquifers.	No human exposure to soil below 4' bgs as a result of excavation, demolition or other activities. No exposure to materials below bedrock.
E	RCRA cap	No disturbances that could harm the cap, such as excavation, demolition, plant root growth, or other activities.
Buffer Zone	Areas where extraction wells could induce movement of contaminants into uncontaminated areas or interfere with any remedial actions at the Site.	No groundwater use or extraction of groundwater except as needed to implement the remedial action approved in the ROD, unless the proposed use is evaluated and determined to present no potential threat to public health or the environment.

Notes:

1. Note that buildings could be constructed within this area provided that they include appropriate vapor barriers or other measures to mitigate potential vapor intrusion. This would require an ELUR release pending approval by the USEPA and CT DEEP that the measures will be a suitable control.
2. The more stringent of the federal drinking water standards (i.e., Maximum Contaminant Levels (MCLs) or the Connecticut Groundwater Protection Criteria (GWPC).
3. Per Table L-2 of the Statement of Work (SOW).

0 400 800

SCALE: 1" = 400'

SOURCE:

1. PLAN BASED ON MAP PREPARED BY ARCADIS TITLED *PARCELS PROPOSED FOR ELURs* DATED 8/29/2012.

LEGEND:

- RAILROAD
- STREAM
- BUILDING
- LAKE
- RIVER
- PARCEL BOUNDARY
- RESTRICTIONS ASSOCIATED WITH SUBJECT AREA C APPLY
- RESTRICTIONS ASSOCIATED WITH SUBJECT AREA C AND D APPLY
- RESTRICTIONS ASSOCIATED WITH SUBJECT AREA D APPLY
- RESTRICTIONS ASSOCIATED WITH SUBJECT AREA A, B, C, D, AND E APPLY
- BUFFER ZONE (PROPERTIES NOT PRESENTLY AFFECTED BY THE PLUME, BUT WHICH COULD BE AFFECTED IF A WATER SUPPLY WELL WAS INSTALLED AND OPERATED IN A MANNER THAT COULD CAUSE THE PLUME TO MIGRATE BEYOND ITS CURRENT CONFIGURATION) (SEE GENERAL NOTE 2).

GENERAL NOTES:

1. PARCEL 133066 IS THE TOWN WELL FIELD PROPERTY. IT FALLS WITHIN THE AFFECTED GROUNDWATER PLUME AND WOULD BE SUBJECT TO THE RESTRICTIONS OF SUBJECT AREA C. HOWEVER, AS REQUIRED BY THE SOW, AN ALTERNATIVE APPROACH FOR GROUNDWATER MANAGEMENT EXISTS WITHIN THIS PROPERTY (THE MEMORANDUM OF AGREEMENT AND SUPPLEMENTAL CONTAINMENT ACTION PLAN; SEE SECTION 4.3 OF THE IC PLAN TEXT). RESTRICTING PARCEL GROUNDWATER USE ON THIS PARCEL VIA AN ELUR WOULD BE INCONSISTENT WITH THOSE COMPONENTS OF THE APPROVED REMEDY.
2. THE SRSNE SITE GROUP PROPOSES TO WORK WITH THE SOUTHINGTON HEALTH DEPARTMENT AND CT DEEP PERMITTING AUTHORITY TO ESTABLISH MEASURES WHEREBY APPLICATIONS FOR NEW WELL INSTALLATIONS WITHIN THE "BUFFER ZONE" WOULD BE DENIED OR, AT A MINIMUM, THAT THE PERMITTING AGENCY WOULD CONSULT WITH THE SRSNE SITE GROUP TO SIMULATE THE LOCATION AND EXPECTED FLOW RATE OF SUCH NEW WELL(S) TO ASSESS THE POTENTIAL FOR AFFECTING THE SRSNE-RELATED PLUME (AS IT EXISTS AT THAT FUTURE POINT IN TIME) PRIOR TO ISSUING ANY PERMIT.

SRSNE Superfund Site
Southington, Connecticut

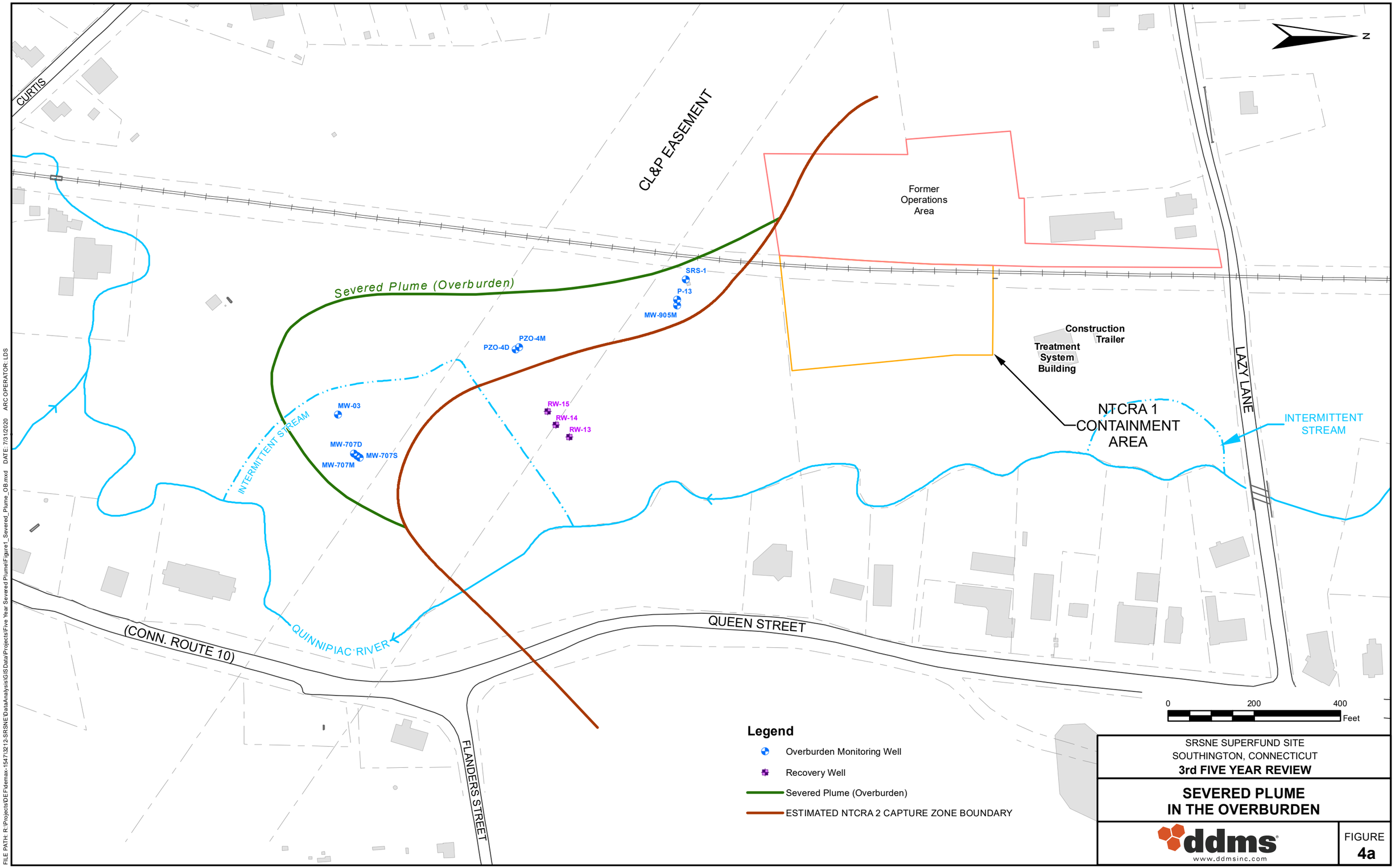
GEI Consultants

PARCELS PROPOSED FOR ELURs AND BUFFER ZONE DESIGNATION

Project 1611283

Fig. 3

Figure source: Figure 7 of May 2018 Institutional Control Plan (GEI) ---- I:\Project\SRSNE\CAD\Figures\ICP\1611283-F7.dwg - 2/16/2018



SRSNE SUPERFUND SITE
SOUTHINGTON, CONNECTICUT
3rd FIVE YEAR REVIEW

SEVERED PLUME IN THE OVERBURDEN

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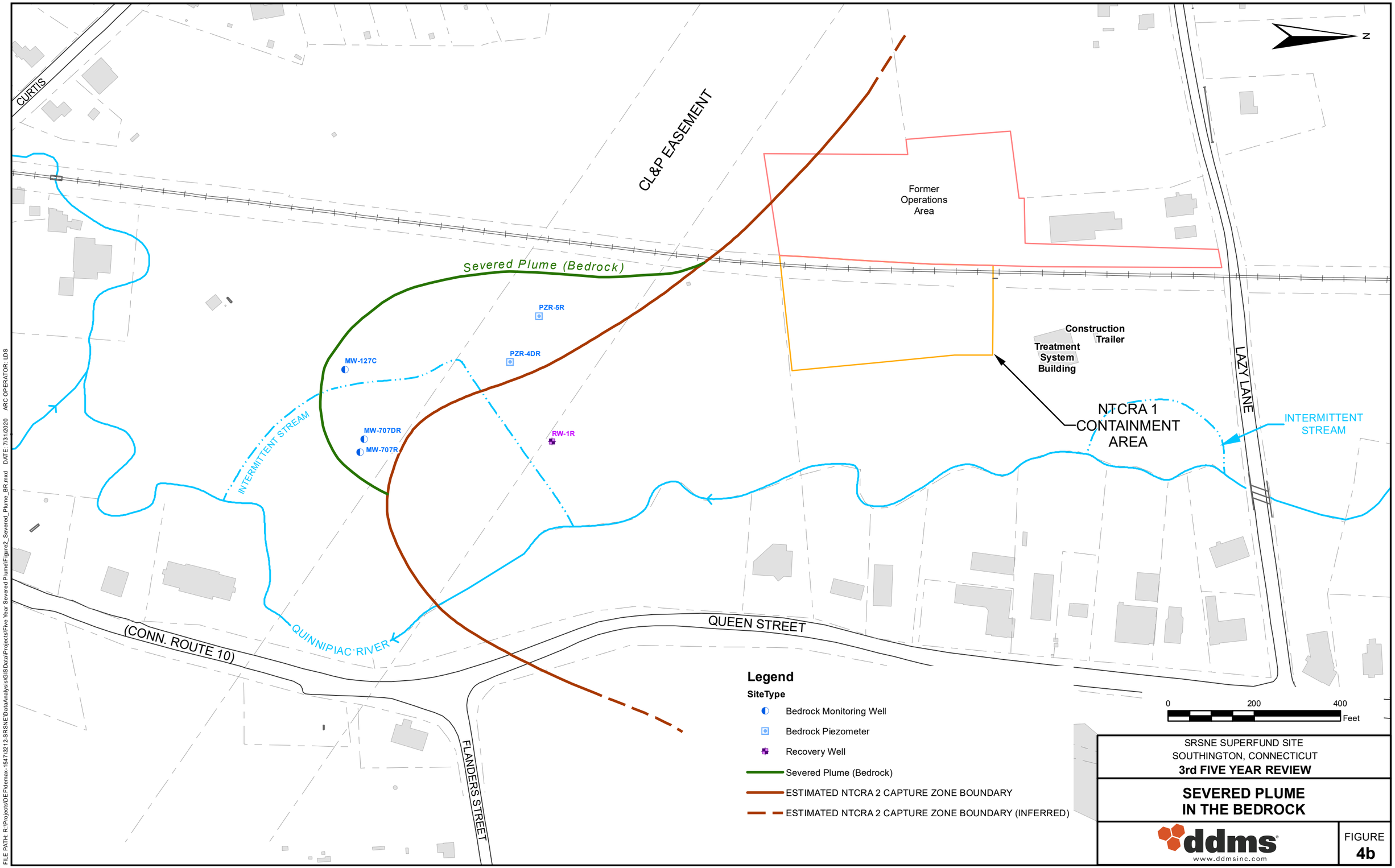
FIGURE
4a

FILE PATH: R:\Projects\DE\Fidemax-1547\32\12-SRSNE\DataAnalysis\GIS\Data\Projects\Five Year Severed Plume\Figure1_Severed_Plume_OB.mxd DATE: 7/31/2020 ARC OPERATOR: LDS



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SRSNE SUPERFUND SITE
SOUTHINGTON, CONNECTICUT
3rd FIVE YEAR REVIEW

SEVERED PLUME IN THE BEDROCK

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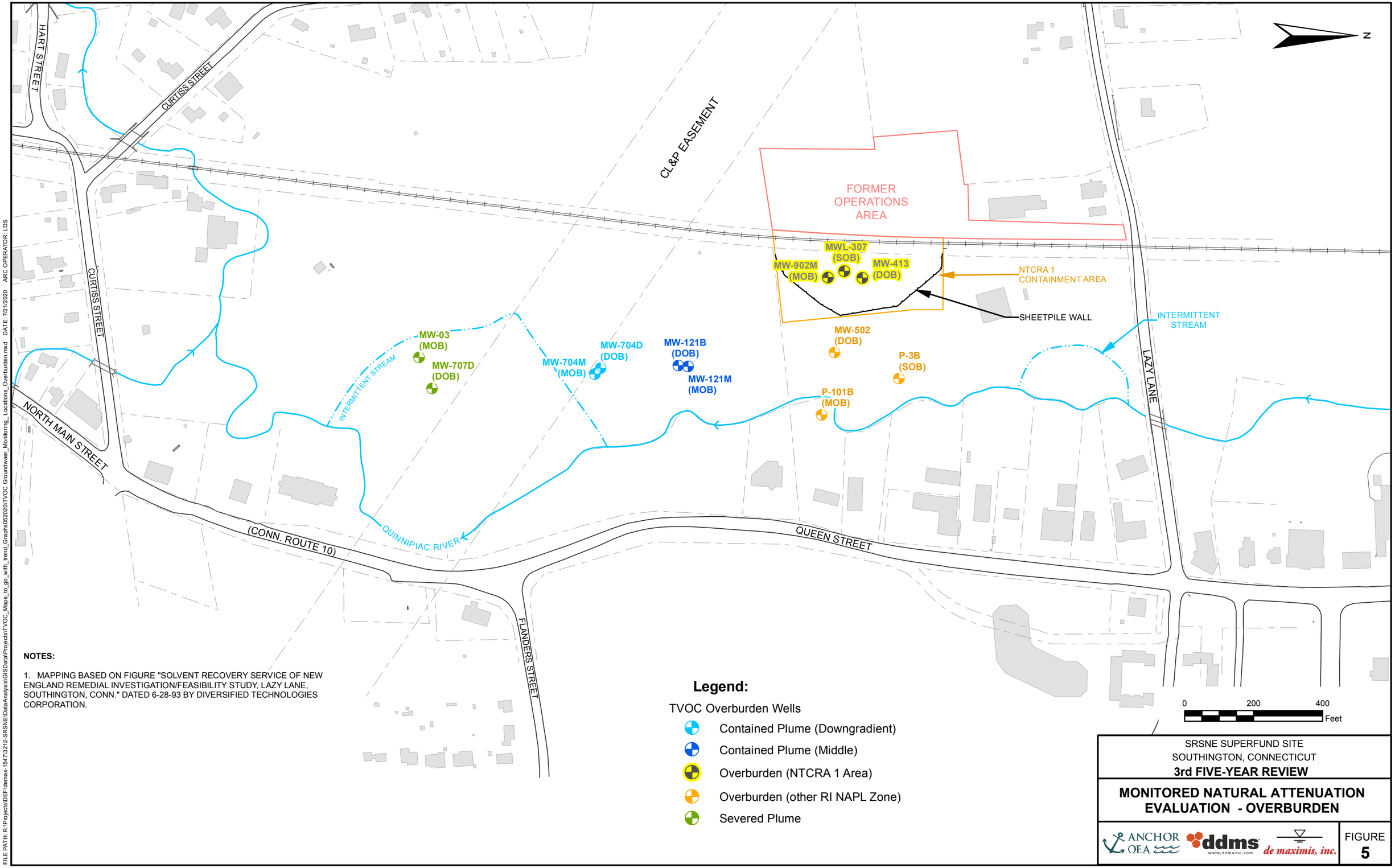
FIGURE
4b



NOTES:

1. MAPPING BASED ON FIGURE "SOLVENT RECOVERY SERVICE OF NEW ENGLAND REMEDIAL INVESTIGATION/FEASIBILITY STUDY, LAZY LANE, SOUTHINGTON, CONN." DATED 6-28-93 BY DIVERSIFIED TECHNOLOGIES CORPORATION.

Legend:

TVOC Overburden Wells

- Contained Plume (Downgradient)
- Contained Plume (Middle)
- Overburden (NTCRA 1 Area)
- Overburden (other RI NAPL Zone)
- Severed Plume

SRSNE SUPERFUND SITE
SOUTHINGTON, CONNECTICUT
3rd FIVE-YEAR REVIEW

MONITORED NATURAL ATTENUATION EVALUATION - OVERBURDEN

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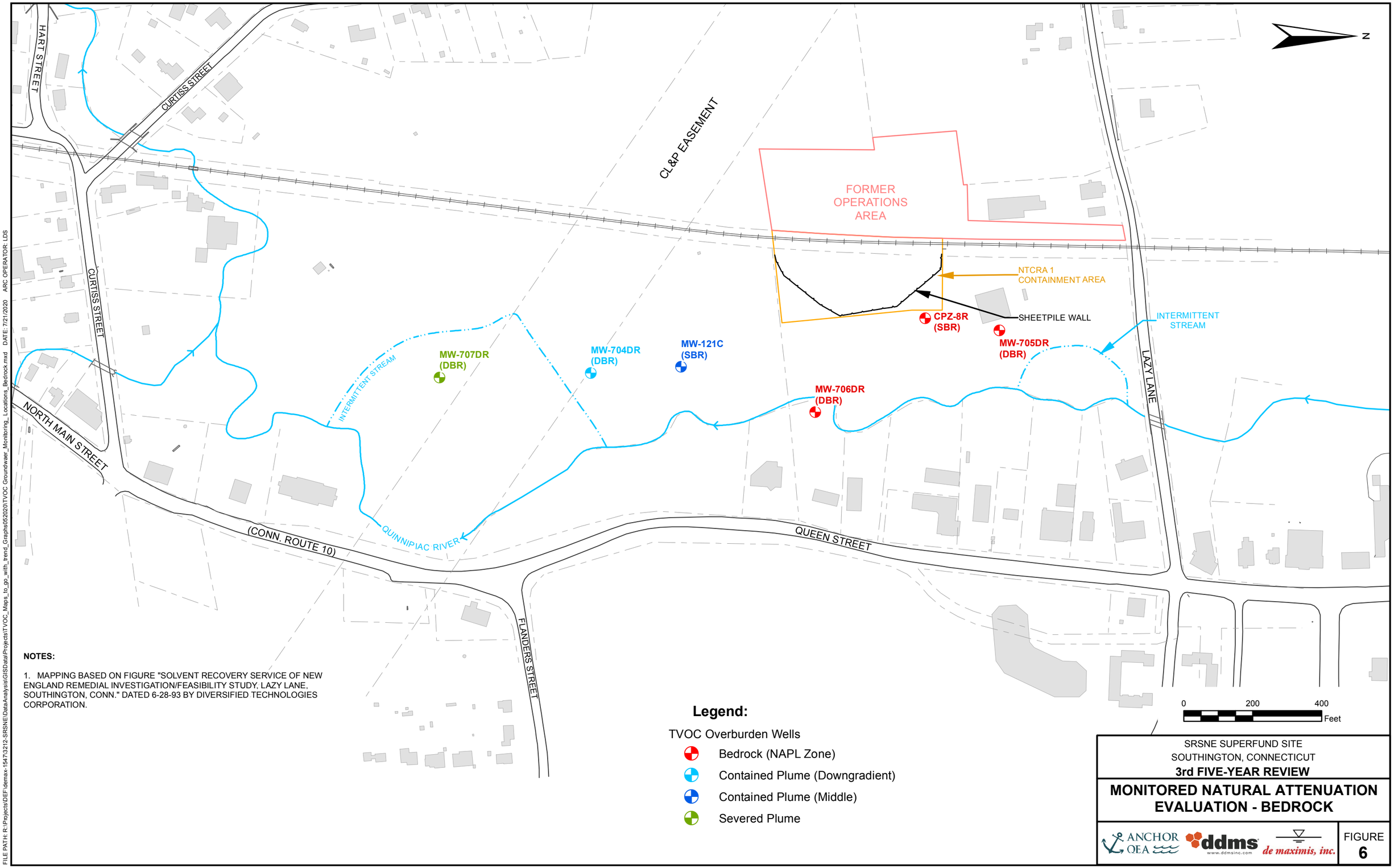
FIGURE **5**

FILE PATH: R:\Projects\DEF\demax-1547\3212-SRSNE\DataAnalysis\GISData\Projects\TVOC_Maps_to_go_with_trend_Graphs052020\TVOC Groundwaer_Monitoring_Locations_Overburden.mxd DATE: 7/21/2020 ARC OPERATOR: LDS



NOTES:

1. MAPPING BASED ON FIGURE "SOLVENT RECOVERY SERVICE OF NEW ENGLAND REMEDIAL INVESTIGATION/FEASIBILITY STUDY, LAZY LANE, SOUTHINGTON, CONN." DATED 6-28-93 BY DIVERSIFIED TECHNOLOGIES CORPORATION.

Legend:

TVOC Overburden Wells

- Bedrock (NAPL Zone)
- Contained Plume (Downgradient)
- Contained Plume (Middle)
- Severed Plume

SRSNE SUPERFUND SITE
SOUTHINGTON, CONNECTICUT
3rd FIVE-YEAR REVIEW

MONITORED NATURAL ATTENUATION EVALUATION - BEDROCK

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FIGURE **6**

FILE PATH: R:\Projects\DEF\demax-1547\3212-SRSNE\DataAnalysis\GISData\Projects\TVOC_Maps_to_go_with_trend_Graphs052020\TVOC Groundwaer_Monitoring_Locations_Bedrock.mxd DATE: 7/21/2020 ARC OPERATOR: LDS