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Remedial Design Work Plan Attachment M

Pre-ISTR Preparation Plan

Solvents Recovery Service of New England, Inc.
(SRSNE) Superfund Site
Southington, Connecticut

April 2009

ARCADIS

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Southington, Connecticut

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Executive Summary

This *Pre-ISTR Preparation Plan* (PIPP) has been prepared to provide concept-level design for certain remedial action activities to be conducted at the Solvents Recovery Service of New England, Inc. (SRSNE) Superfund Site in Southington, Connecticut (Site). The PIPP provides a concept-level design for certain activities to be conducted to prepare the Site for implementation of the In-Situ Thermal Remediation (ISTR) component of the remedial approach for the Site that was identified in the United States Environmental Protection Agency's (USEPA's) 2005 Record of Decision.

The primary pre-ISTR activities addressed in this plan include:

- Relocation of an existing 30-inch diameter culvert that drains from railroad right-of-way to Quinnipiac River.
- Grading and earthwork construction within the former Operations Area to provide an accessible and suitable surface for subsequent implementation of ISTR activities.
- Modifications to the existing Hydraulic Containment and Treatment System (HCTS) to accommodate operational impacts associated with the ISTR implementation.
- Utility-related modifications, including relocation of an existing fiber optic telephone line that passes through the ISTR area and establishment of a new utility corridor to provide required utility services (e.g., sewer, natural gas) from existing service points to the ISTR area.
- An approach for soil sampling adjacent to the former railroad to characterize areas to be graded or excavated as part of the culvert relocation and surface grading activities.

Conceptual-level design information supporting these activities includes:

- Evaluation of anticipated flow rates and culvert sizing requirements
- Identification of planned culvert relocation route and materials

- Identification of preliminary grading details to provide a surface that is suitable for ISTR implementation, and for subsequent cap installation

- Identification of planned modifications to the HCTS, and additional evaluations planned to assess the need for, scope, and design of additional modifications

- The planned approach for providing a utility corridor to service the ISTR operations and for relocating an existing fiber optic line within the ISTR area

- A sampling plan for further characterization of soils along the railroad right of way in support of health and safety requirements, fiber optic relocation, and evaluation of capping/consolidation requirements

This plan also presents conceptual design level information regarding implementation of the design activities, including permits and approvals, erosion control measures, and planned contracting approach.

The information presented herein represents a 50% conceptual design. Preliminary information presented herein – including the specific area targeted for ISTR activities – is subject to modification as a result of planned pre-design investigations. A detailed design report summarizing the planned final design of pre-ISTR activities will be submitted within 90 days of receipt of validated soil investigation data, completion of a thermal model to assess ISTR-related temperature effects, completion of the overburden NAPL delineation activities, or USEPA approval of this work plan, whichever occurs later.

1. Introduction

1.1 Purpose and Scope

This document has been prepared on behalf of the SRSNE Site Group, an unincorporated association of Settling Defendants to a Consent Decree (CD) and Statement of Work (SOW) for the Remedial Design/Remedial Action (RD/RA) at the Solvents Recovery Service of New England, Inc. (SRSNE) Superfund Site in Southington, Connecticut (Site). The CD was lodged on October 30, 2008 with the United States District Court for the District of Connecticut in connection with Civil Actions No. 3:08cv1509 (SRU) and No. 3:08cv1504 (WWE). The CD was entered by the Court on March 26, 2009.

The purpose of this *Pre-ISTR Preparation Plan* (PIPP) is to provide a concept-level design for certain activities to be conducted to prepare the Site for implementation of the In-Situ Thermal Remediation (ISTR) component of the remedial approach. ISTR of soils within the area where non-aqueous phase liquid (NAPL) has been observed in the overburden zone (i.e., the Overburden NAPL Area, Figure M-1) was a component of the remedial approach for the Site that was identified in the Record of Decision (ROD) (United States Environmental Protection Agency [USEPA] 2005).

The scope of pre-ISTR activities addressed in this plan includes:

- Relocation of an existing 30-inch diameter culvert that drains from railroad right-of-way to Quinnipiac River (Figure M-2). The culvert relocation is necessary because the current orientation passes through the planned overburden ISTR zone and because the current reinforced concrete pipe is susceptible to groundwater infiltration within the affected groundwater plume.

- Grading and earthwork construction within the former Operations Area to provide an accessible and suitable surface for subsequent implementation of ISTR activities.

- Modifications to the existing Hydraulic Containment and Treatment System (HCTS) to accommodate operational impacts associated with the ISTR implementation.

- Utility-related modifications, including relocation of an existing fiber optic telephone line that passes through the ISTR area and establishment of a

new utility corridor to provide required utility services (e.g., sewer, natural gas) from existing service points to the ISTR area.

- An approach for soil sampling adjacent to the former railroad to characterize areas to be graded or excavated as part of the culvert relocation and surface grading activities.

This PIPP is included as an attachment to the *Remedial Design Work Plan* (RDWP) for the Site. While the SOW specified several component work plans to be attached to the RDWP, the SOW did not specifically require preparation of this PIPP or the component activities described herein. Rather, the SRSNE Site Group prepared this plan to facilitate timely implementation of the remedial activities at the Site. The culvert relocation, ISTR area grading, and HCTS modifications are necessary prior implementing ISTR, and the design and implementation of these activities can be initiated in advance of the ISTR design.

The Pre-ISTR Preparation Plan, as presented, represents an approximately 50% conceptual design of the culvert relocation and surface grading activities. Pending USEPA approval of this plan and completion of proposed soil sampling activities, the final design for the pre-ISTR activities will commence.

This PIPP represents a collaborative effort among several firms on behalf of the SRSNE Site Group. In particular, ARCADIS is responsible for design related to the grading and culvert relocation and Weston Solutions is responsible for HCTS modifications.

1.2 Document Format

This document is organized into sections that detail the existing Site conditions and pre-ISTR design elements. The sections include:

- **Section 1 – Introduction:** describes the purpose, scope, and organization of this document.

- **Section 2 – Background:** details the existing Site conditions pertinent to the pre-ISTR preparation, including topography, existing culverts and information regarding the HCTS.

- **Section 3 – Culvert Relocation:** describes the culvert relocation approach and compares the performance of the existing and proposed culverts.

- **Section 4 – ISTR Area Surface Grading:** outlines the objectives of the proposed Pre-ISTR grading design and describes the proposed grading design approach.

- **Section 5 – HCTS Modifications:** identifies a planned thermal distribution model to assess potential temperature-related affects on influent groundwater from the NTCRA 1 extraction wells, as well as potential modifications that may be required as a result of the evaluation. It also identifies other planned system modifications that are necessary given that the ISTR area encompasses certain system components.

- **Section 6 – Utilities:** describes the need for and approach for relocating a fiber optic line that currently exists within the railroad right-of-way and ISTR area, as well as establishment of a new utility corridor to support the thermal remediation equipment and activities.

- **Section 7 – Implementation Plan:** provides a preliminary description of how the pre-ISTR preparation activities will be implemented, including details of the soil characterization plan, required permits and approvals, contracting, erosion control measures, and construction sequence.

- **Section 8 – Schedule:** contains the anticipated time line for implementation of the pre-ISTR activities.

- **Section 9 – References:** lists documents cited herein.

Various figures are also included with this PIPP and referenced within the text.

2. Existing Site Conditions

2.1 Topography and Site Drainage

The Site is located in an area of flat to rolling terrain with slope gradients averaging from approximately 1 to 8 percent. The immediate Site area and the adjacent upland areas generally slope to the east towards the Quinnipiac River. The typical land uses present in the watersheds that drain to the Site consist mainly of a mix of agricultural and residential development. From the current Natural Resources Conservation Service soil survey, soils in the area are predominantly Cheshire fine sandy loams and Ludlow silty loam with hydrologic soil group ratings of B and C, respectively (Figures M-3 and M-4).

Surface runoff from a number of sources including a 36-acre watershed area west of the Site (Area A), a ditch along the railroad on the north side of Lazy Lane (Area B), the adjacent property on the north side of the Site (Area C), and the Operations Area (Area D), is collected in a drainage channel located on the west side of the existing railroad right-of-way east of the former Operations Area. A 17-acre watershed area directly west of the Site (Area E) consists mainly of agricultural fields with a few widely spaced residences. Surface runoff from this area is largely diverted and infiltrated before it reaches the Site due to presence of a heavily wooded area, stone fence and soil piles along the west border of the former Operations Area and adjacent property on the north side of the Site (Figure M-3).

Overland flow from the 36-acre watershed area and the ditch on the north side of Lazy Lane is controlled by a pond and a 24-inch concrete culvert that crosses beneath Lazy Lane and outlets to the channel east of the former Operations Area. This channel drains south to an existing 24-inch steel culvert beneath the railroad ballast which outlets to a ditch on the east side. The ditch then drains to an existing 30-inch concrete culvert that runs beneath the former Cianci Property and drains east to an outlet located approximately 150 feet from the Quinnipiac River (Figure M-3).

The following table summarizes the contributing watershed hydrologic data and provides an estimated combined peak flow to the existing drainage channel and existing 24-inch concrete culvert on the west side of the railroad for the 10, 25, 50 and 100-year storm events:

Table 1 – Watershed Hydrologic Data

Watershed Area ID	Area (Acres)	Curve Number (CN)	Time of Concentration, T_c (min)	Combined Peak Flow			
				Q_{10} (cfs)	Q_{25} (cfs)	Q_{50} (cfs)	Q_{100} (cfs)
A	35.8	63	52.8	14	17	20	24
B	0.6	72	11.8				
C	2.1	93	5.0				
D	3.9	70	18.0				
E	16.9	69	42.8				

2.2 Existing Culvert Condition

The existing 24-inch steel culvert beneath the railroad has stone block headwalls on both the inlet and outlet sides of the culvert. The headwalls are stable but missing grout between blocks and have a few blocks that are cracked and displaced. The culvert itself is generally in good condition with some minor rust. The inlet of the culvert is depressed about 1 foot below the existing (approximately 6-foot-wide) channel due to the vegetative growth and sedimentation that has occurred within the upgradient channel. The existing outlet ditch from the outlet of the 24-inch culvert also contains some debris and vegetation but has a well-defined open channel flow path.

The existing 30-inch diameter culvert starts approximately 35 feet east of the 24-inch culvert outlet. The 30-inch culvert is constructed of reinforced concrete pipe and has projecting barrels on both the inlet and outlet ends. The visible portions of the culvert are in good condition. The outlet of the culvert discharges to a small 1- to 2-foot-deep depression below the culvert where water is pooled. The pool appears to be naturally formed and it is likely that the pool functions as an energy dissipater to slow the velocity of the flow at the outlet. Water overflows from the pool and follows an irregular drainage path to the Quinnipiac River. The 30-inch culvert outlet invert (elevation 149.61) is located within the 100-year floodplain boundary and below the estimated 100-year flood elevation of 154.00 feet (based on Flood Insurance Rate Map, Hartford County Connecticut (All Jurisdictions), Panel 582 of 675, Map Number 09003C0582F with an effective date of September 26, 2008).

It has been anecdotally noted in previous reports (ROD Page 27 [USEPA 2005], Draft Feasibility Study [FS] Page 1-18 [BBL and USEPA 2005]) that the existing 30-inch culvert may be subject to infiltration by groundwater through the joints and/or cracks in the pipe. Because the pipe traverses an area of known groundwater impacts, such infiltration could convey impacted groundwater to downgradient surface water and wetland soils.

2.3 Hydraulic Containment and Treatment System

The HCTS comprises two groundwater extraction systems (NTCRA 1 and 2) and a groundwater treatment facility (GWTF) located within the former Cianci Property downgradient (east and northeast) of the Operations Area (Figure M-1). The NTCRA 1 extraction system consists of an array of 12 overburden groundwater extraction wells (RW-1 through RW-12), and a downgradient hydraulic barrier (steel sheet piling) wall that hydraulically and physically contains overburden groundwater migrating from the SRSNE Operations Area. The overburden groundwater extraction wells recover groundwater on the upgradient (west) side of the hydraulic barrier wall, establishing an inward hydraulic gradient across the hydraulic barrier wall. Figure M-8 shows the current configuration of the NTCRA 1 Containment Area.

The NTCRA 2 extraction system consists of one bedrock well (RW-1R) and two deep overburden groundwater extraction wells (RW-13 and RW-14) just north of the Connecticut Light & Power (CL&P) easement. These wells began operating in 2001, 1999 and 2007, respectively. The NTCRA 2 system provides hydraulic containment of impacted groundwater migrating in deep overburden soil or bedrock.

The GWTF consists of metals pretreatment, followed by ultraviolet organic destruction and granular activated carbon polishing of extracted groundwater prior to discharge. The combined NTCRA1/2 flow rate of 25-50 gallons per minute (gpm) is treated and discharged to the Quinnipiac River in accordance with the Connecticut Department of Environmental Protection (CTDEP) Substantive Requirements for Discharge.

The NTCRA 1 groundwater containment system (now a component of the HCTS) began operation in July 1995. The system performance continues to be monitored in accordance with the Demonstration of Compliance Plan (DCP) prepared by Blasland, Bouck & Lee, Inc. (BBL) in June 1995. The DCP performance standards for the NTCRA 1 Groundwater Containment system are:

- Prevent migration of contaminated overburden groundwater from the Operations Area of the SRSNE Site; and

- Prevent the migration of contaminated overburden groundwater from the Operations Area into the bedrock aquifer through the lower till window that forms the eastern boundary of the containment area.

The groundwater extracted by the NTCRA 1 extraction system is pumped directly to the GWTF.

ISTR will be implemented within the former Operations Area immediately upgradient and overlapping portions of the NTCRA 1 groundwater containment area in the northwest corner. The subsurface heating in the thermal treatment area will increase the temperature of the NTCRA 1 groundwater containment area soils and groundwater and where the thermal treatment overlaps a portion of the NTCRA 1 area, these systems will require removal or relocation to an area where acceptable operating temperatures will be maintained. Depending on the nature and extent of the temperature increase, this may affect the performance of the groundwater containment system components. Section 5 describes the technical approach that will be employed to confirm the HCTS modifications that will be required to maintain hydraulic containment standards during and following the ISTR. Although this evaluation will confirm what modifications will be necessary, the following items are anticipated to be required. These anticipated HCTS modifications are also shown on Figure M-8.

- Existing Recovery Well RW-5 is located within the ISTR treatment area and will be abandoned. This will also require removal of existing recovery well equipment, including pump, motor, submersible cable, level controls and ancillary items. The well will be abandoned in accordance with the Connecticut Department of Consumer Protection Regulations, particularly Sections 25-128-56 and 25-128-57.

- Existing Recovery Well RW-6 is located in close proximity (approximately 50 feet) of the ISTR treatment area and will be abandoned. This will also require removal of existing recovery well equipment and abandonment as performed for RW-5.

- Recovery Wells RW-5 and RW-6 will be disconnected from the existing subsurface groundwater conveyance network. In addition, the NTCRA 1 electrical power supply will be disconnected from each recovery well.

- NTCRA 1 compliance piezometers and monitoring wells CPZ-9, CPZ-9R and MWD-601 will require abandonment as they are within the ISTR treatment area. Pending further design of the ISTR system, additional wells in this area may require abandonment due to their proximity to the heating zone (e.g., TW-08A and B). The piezometers and wells will be abandoned in accordance with the Connecticut Department of Consumer Protection Regulations, particularly Sections 25-128-56 and 25-128-57.

- The existing NTCRA 1 extraction system conveyance piping may require relocation to an area further away from the ISTR treatment area that will be suitable for continued operations during and following the ISTR. This work would require construction of a new 6-inch diameter high-density polyethylene (HDPE) NTCRA 1 conveyance pipe at an alternate location, and removal or abandonment of existing HDPE piping. Additional details for potential subsurface conveyance piping modifications are provided on Figure M-8.

- The existing NTCRA 1 subsurface electrical systems may require modification or relocation to an area further away from the ISTR treatment area that that will be suitable for continued operations during and following the ISTR. This work would require construction of a new electrical service at an alternate location and removal or abandonment of existing subsurface electrical systems. Additional detail for potential electrical system modifications are provided on Figure M-8.

- The DCP for the HCTS will be updated based on the modifications implemented for ISTR system operation and any additional modifications necessary to maintain and monitor hydraulic performance standards.

3. Culvert Relocation

3.1 Conceptual Design

The key objectives of the culvert relocation are as follows:

- Relocate the portion of the existing culvert/drainage system that passes through the area subject to in-situ thermal treatment.
- Utilize pipe materials and construction methods that minimize the potential for future groundwater infiltration into the culvert.
- Accommodate existing surface water flows, plus foreseeable changes in surface runoff as a result of remedial activities (e.g., surface cap installation).
- Provide a culvert alignment that accommodates future remedial activities, including the surface cap in the former Operations Area and railroad right-of-way.
- Minimize potential conflicts with existing wells, structures and utilities along the culvert alignment.

In consideration of these objectives, Figure M-2 indicates the planned culvert relocation alignment. This approach will position the culvert to be outside the thermal treatment area/cap area and minimize conflicts with existing wells, structures and utilities that exist in the vicinity of the alignment. The proposed alignment will intercept the flow from the drainage channel approximately 100 feet north of the existing 24-inch steel culvert inlet. The culvert will then connect to a manhole located on the existing 30-inch pipe alignment approximately 30 feet east of the existing gravel drive on the Cianci Property. The upstream portion of the existing 30-inch concrete culvert will be abandoned or removed and the remaining portion of the existing culvert downstream of the manhole would be removed. The existing 24-inch steel culvert would also be abandoned or removed. If the culverts are abandoned, it is anticipated that this work would be done by placing bulkheads at the pipe ends and completely filling the culverts with flowable concrete. The new culvert would follow the alignment of the existing 30-inch pipe from the new manhole to the existing outlet location (Figures M-2 and M-7). The pipe material selected for the culvert is anticipated to be HDPE pipe installed with

heat fusion joining methods. The heat fusion joining methods will eliminate joints and the potential for groundwater infiltration.

3.2 Culvert Relocation Design Approach

The performance of the existing culverts was analyzed and compared to the performance of the proposed 30-inch HDPE culvert pipe for the 10-, 25-, 50- and 100-year 24-hour storm events using both free discharge and the 100-year flood elevation of the Quinnipiac River for the tailwater condition at the outlet of the culvert. The performance analysis was conducted using the culvert design methods presented in the Federal Highway Administration (FHWA) publication "Hydraulic Design Series (HDS) No. 5 – Hydraulic Design of Highway Culverts" and the computer program HY-8 7.1 (a program that employs the FHWA HDS No. 5 publication culvert analysis methods). The results of the analysis are summarized in the following table:

Table 2 – Existing Culvert Performance

Storm Event/Peak Discharge [1]	Tailwater Condition (at 30-inch Pipe Outlet)	Existing 24" Culvert Headwater Elevation (feet)	Proposed 30" Culvert Headwater Elevation (feet)
10-Year (14 cfs)	Free Discharge	159.15	158.04
	Water Elevation 154'	159.15	158.04
25-Year (17 cfs)	Free Discharge	160.05	158.17
	Water Elevation 154'	160.05	158.17
50-Year (20 cfs)	Free Discharge	161.00	158.32
	Water Elevation 154'	161.00	158.32
100-Year (24 cfs)	Free Discharge	162.00	158.50
	Water Elevation 154'	162.00	158.50

[1] Based on flow calculations presented in Section 2.1

From the table, it can be seen that the headwater elevations at the inlet of the proposed 30-inch pipe culvert are below the headwater elevations for the existing 24-inch culvert for the given range of flows and tailwater conditions. There was no change to the headwater elevation for either existing or proposed culverts assuming a 100-year flood elevation of 154.00 feet as the

tailwater condition at the outlet. Based on this analysis, the proposed 30-inch culvert would perform at least as well as, or better than, the existing culverts for the anticipated range of flows and tailwater conditions.

The HDPE pipe may be subjected to traffic loading at the railroad/recreational trail crossing and where it crosses the treatment plant access drive. According to the Plastics Pipe Institute (PPI) Handbook of Polyethylene Pipe, a minimum of three feet of cover is recommended over the top of the pipe when the pipe is subjected to H20 loading. Additional grading will be required on the east side of the railroad right-of-way and former Cianci Property to obtain the required cover. An additional surface water collection pipe and manhole will be necessary to intercept the drainage from the swale on the east side of the railroad that currently flows south from Lazy Lane to the existing 30-inch concrete culvert. Designs for inlet and outlet protection will be provided during final design of the culvert relocation.

4. ISTR Area Surface Grading Design

The key objectives of the surface grading design for the ISTR area are as follows:

- Eliminate existing concrete protrusions (e.g., former foundation walls) that could affect installation of the thermal well field during the initial ISTR implementation.

- Provide surface grades suitable for access by drill rigs for the purpose of installing the thermal well field.

- Provide a surface grade suitable for placement of an area-wide thin (approximately 3-inch thick) concrete surface cover (to be installed as part of ISTR implementation) that will extend to approximately 10 to 14 feet outside the planned treatment area.

- Minimize the amount of excavation of existing soils necessary to achieve ISTR surface grades.

- Provide for positive drainage from the prepared surface grade and minimize the potential for run-on of surface water from surrounding areas.

- Allow for multiple points of access by equipment and personnel to the work area.

- Provide a grading plan for the ISTR area that does not impede, and preferably facilitates (to the extent practicable), the future construction of a surface cap in the Operations Area and railroad right-of-way.

- Allow for placement and grading of soil cuttings from thermal well installations within the treatment area prior to placing the concrete surface cover.

The ISTR treatment area encompasses areas that have relatively steep (~2H: 1V) slopes along the west and south side of the Operations Area. As such, the design must accommodate drilling rigs and other support equipment to access these steep slope areas for the purposes of installing the thermal well field and related system components. Presently, vehicle access to the treatment area is limited to a gated entrance located north of the Operations Area (Figure M-2).

A conceptual surface grading design has been developed for the ISTR area in consideration of existing Site conditions, remedial objectives and requirements, and is illustrated on Figures M-2, M-5 and M-6.

Prior to the start of grading, certain site preparation activities will be performed within the ISTR work area. These activities include Overburden NAPL Delineation (refer to the *Overburden NAPL Delineation Plan* in Attachment A to the RDWP), clearing (not grubbing), abandoning wells and piezometers in accordance with the Connecticut Department of Consumer Protection Regulations, and demolition of portions of concrete foundations that extend above the ground surface. The portions of the existing foundations that are above grade will be removed to the extent necessary to facilitate the maneuvering, installation and operation of ISTR-related components and equipment. It is anticipated that the foundations will be demolished using a hydraulic excavator with a hoe ram attachment.

Access to the ISTR work area will be provided by gravel roads constructed around the perimeter of the area. The maximum grade for the perimeter access roads will be 10%. Ingress and egress to the site access roads will be from the driveway to the treatment plant located on the east side of the railroad right-of-way (former Cianci Property). Based on the present delineation of the Overburden NAPL Area (i.e., the target area in which ISTR will be applied), the access road and thermal treatment area will extend beyond the property limits at the northwest corner of the property. Note that this area is subject to further delineation of the extent of NAPL in the overburden (refer to the *Overburden NAPL Delineation Plan* in Attachment A to the RDWP). Depending on the results of that investigation, the access road at this location would be modified as part of detailed design to be located within the property line, if possible.

Filling and grading will be necessary for portions of the treatment area to obtain an approximately 0.50% slope allowing for placement of the concrete surface cover. Repairs will be made to the existing surface covers (asphalt and concrete) that are unaltered by the treatment area grading to provide a suitable working surface. In addition, some of the concrete slabs may be broken up and resurfaced to reduce the effects of embedded steel rebar on the well drilling and grading activities.

Slope terracing is proposed in areas at the west and south side of the treatment area where the existing slopes are steep and inaccessible to vehicular equipment. The terraces will be a minimum of 10 feet wide and

slope at approximately 0.50% perpendicular to the travel direction. The thermal treatment wells will be placed along the terraces and will receive a concrete surface cover. Each terrace will be separated by 2H: 1V slopes, approximately 3 feet high. Presently, it is expected that the slopes will be covered with a concrete surface cover consisting of two layers of shotcrete with an insulation board placed between the layers. The proposed slope cover treatment will be assessed further during the pre-ISTR final design. Access to the terraced slope area will be provided by ramps located at each end of the treatment area. The grade of the ramps is anticipated to be approximately 6 to 7 percent.

The treatment area and surface cover would be graded to drain to a drainage channel located on the east side of the area. The channel would outlet to a catch basin with a frame and grate located on the north side of the Operations Area, at the end of the channel. The drainage from the catch basin would be directed to the existing channel and proposed 30-inch culvert inlet through a proposed 18-inch corrugated steel pipe.

A drainage ditch will be constructed outside of the perimeter access roads to minimize drainage run-on to the treatment area.

The grading for the thermal treatment activities will closely match the existing surface in the majority of the paved areas of the former Operations Area and require some fill over the existing railroad right-of-way and existing culverts to the north and east. Both excavation and fill will be required to attain the necessary terracing for the treatment area on the west side of the Operations Area. Based on typical RCRA Subtitle C cap requirements, it is anticipated that some minor re-grading of the fills on the north and east side of the Operations Area will be required to install the cap and make this section compatible with the proposed “rails to trails” future use.

Fill needed to meet the proposed subgrade surface elevation will be obtained from both on-site and off-site sources. Based on the preliminary grading (Figures M-2, M-5 and M-6), it is estimated that approximately 10,000 to12,000 cubic yards of fill and 1,200 to 1,500 cubic yards of excavation will be required to achieve the ISTR surface grades. The grading would result in a net fill or borrow of approximately 9,000 to 10,500 cubic yards to be obtained from other sources.

Potential sources of on-site fill that could be used include:

(1) culvert relocation spoils – 500 to 600 cubic yards

(2) existing soil piles (see Figure M-2) – 1,500 to 1,700 cubic yards

(3) existing concrete foundations - 10 to 30 cubic yards

(4) fiber optic line relocation (see Section 6) – 200 to 350 cubic yards

(5) Cianci Property soil remediation areas – 1,700 to 1,800 cubic yards

(6) soil consolidation from portions of the railroad right-of-way – volume to be determined pending evaluation of analytical data for sampling discussed in Section 7.1

Depending on how the well fieldwork progresses, the cuttings from the thermal well installations may also be available for fill within the ISTR area (possibly along the railroad right-of-way and terraced areas). The estimated quantity of cuttings from the wells is 130 to 140 cubic yards based on a preliminary estimate from the thermal remediation contractor. The potential total volume of fill that could be obtained from the on-site sources listed is at least 4,000 to 4,600 cubic yards (in-place measure). The remaining fill volume would be obtained from off-site sources. Additional fill sources and volumes of on-site fill will be evaluated further during the pre-ISTR final design.

5. HCTS Modifications

ISTR will be implemented within the former Operations Area immediately upgradient and overlapping portions of the NTCRA 1 groundwater extraction system and containment area. During active remediation the ISTR extraction system is expected to maintain hydraulic control of the treatment area, which is upgradient of the NTCRA 1 groundwater extraction system and containment area. As a result of the upgradient hydraulic control, reduced groundwater flow into the downgradient NTCRA 1 groundwater extraction system is anticipated.

A portion of the ISTR area extends into the northwest corner of the NTCRA 1 groundwater extraction system and containment area as shown on Figure M-1. Furthermore, the anticipated zone of the thermal treatment is expected to extend several feet beyond the target treatment limits, and will therefore encroach further on the NTCRA 1 groundwater extraction system and containment area. The subsurface heating in the thermal treatment area will increase the temperature of the NTCRA 1 groundwater extraction system area soils and groundwater. Depending on the nature and extent of the temperature increase, this may affect the performance of the groundwater extraction system components. Accordingly, system modifications are anticipated to allow for continued effective performance of the system during and following the ISTR implementation period. The anticipated modifications required for the HCTS are discussed in Section 2.3 and shown on Figure M-8.

As further described in Section 5.1, a thermal evaluation will be performed to confirm the HCTS modifications that will be required to maintain hydraulic containment standards during and following the ISTR period. The purpose of this plan is to identify the steps necessary to evaluate and implement the required HCTS modifications in order to maintain satisfactory system performance during the thermal phase. In concert with evaluating the required changes to the system, impacts to the existing NTCRA 1 DCP will be evaluated and an updated DCP will be prepared as part of the work.

5.1 NTCRA 1 Groundwater Extraction System Thermal Evaluation

A thermal distribution model will be prepared in support of the ISTR design to assess the potential nature and extent of increased groundwater temperatures that may occur at the NTCRA 1 groundwater extraction system and containment area. The thermal model will likely be a linear model that predicts temperature based on distance from the ISTR area over time, and the results of this analysis will be used to evaluate potential temperature impacts to the

HCTS during operation and post-ISTR operation following completion of the thermal treatment.

A second evaluation will also be performed to determine the thermal capabilities of all subsurface monitoring and extraction wells, pumping and control equipment, and utilities that are part of the NTCRA 1 groundwater extraction system. This analysis is intended to determine the temperature limitations of the materials of construction as well as potential impacts to system performance. The evaluation will include, but is not limited to the following:

1. Monitoring well materials of construction.

2. Groundwater recovery well and manhole materials of construction.

3. Groundwater pumping equipment including pump, pump motor, submersible cable, in-well discharge piping and valves, and recovery well level control equipment.

4. Water level compliance monitoring transducers and submersible transducer cable.

5. Subsurface NTCRA 1 groundwater conveyance piping.

6. Subsurface NTCRA 1 electrical distribution wiring and conduit.

The two separate but related evaluations will be compared to confirm how the ISTR operations will impact the existing NTCRA 1 extraction area equipment during and following the thermal treatment. A reasonable factor of safety will be applied to the thermal model results to ensure equipment is not being operated at its design temperature limits. When specific components are confirmed to not be suitable, they will require one of the following corrective measures:

1. Upgrade component so it will be capable of operating under the higher operating temperatures.

2. Eliminate, disconnect or abandon component (either temporarily or permanently) that are not essential or required to maintain or monitor NTCRA 1 hydraulic containment standards.

3. Relocate essential components to alternate locations that will have lower operating temperatures that are below the component limits.

The recommended corrective measures will be further evaluated to confirm how these modifications will impact the ability for the NTCRA 1 system to meet current DCP standards and confirm if additional recovery or monitoring wells will be required to maintain or monitor hydraulic performance standards. As discussed in Section 2.3, it is anticipated that recovery wells RW-5 and RW-6 will be eliminated. Based on historical evidence, it is likely that current compliance standards can be maintained without operation of these recovery wells; however, this will be evaluated as part of this work. Section 2.3 also discusses elimination of compliance piezometers and monitoring wells. It is unlikely that these wells will be necessary to confirm hydraulic performance standards are being met, although this will be further evaluated as part of this work. Following this evaluation, a new DCP will be prepared. Any additional changes shall be incorporated into the HCTS Modifications Plan.

5.2 HCTS Modifications Plan and Final Design Report

Following completion of the thermal evaluation a final design report shall be prepared and submitted to the USEPA for review and approval. The final design report shall include the following:

1. A summary of the thermal evaluations and a list of all recommended corrective measures.

2. Updated drawings showing the proposed modifications to the HCTS.

3. A modified NTCRA 1 DCP will be prepared that is consistent with the proposed modifications.

6. Utilities

The thermal treatment process equipment and work area will require the installation of new utilities to the equipment staging and ISTR treatment area. These utilities are anticipated to include electric, gas, water, and sanitary sewer services. A designated utility corridor will likely be established on the Cianci Property between the GWTF access road and the railroad right-of-way (Figure M-2). A 10-foot-wide utility corridor is proposed for the installation of a 2" to 3" gas service, 4" sewer lateral and possibly electric service (if overhead service on existing poles is not feasible). Verification of existing utility locations and coordination with utility companies will be conducted during final design. This corridor would bring utilities to the vicinity of the thermal treatment area and the existing GWTF. Connection to the utilities could then be made as part of the design and implementation of the ISTR component of the remedy.

An active AT&T fiber optic telephone line and an abandoned copper line exist within portions of the railroad right-of-way and pass through the area subject to thermal treatment (Figure M-2). The fiber optic line will require relocation prior to any grading, well installation, or other intrusive ISTR-related site work activities. On behalf of the SRSNE Site Group, ***de maximis, inc.*** (de maximis) has begun coordinating with AT&T to evaluate, design, and implement a relocation approach for the fiber optic line. Key points from these discussions are as follows:

- The subject fiber optic line is a key link in the New England area communications network and the relocation must be performed in a manner that will keep the line active at all times.

- AT&T will design and conduct/oversee the relocation with input from the SRSNE Site Group regarding the potential options for the relocation route.

- The relocation will require a subsurface installation of the fiber optic line; temporary overhead rerouting is not feasible.

- A one time, permanent relocation is preferable to a temporary relocation followed by replacement in the existing location.

- AT&T requires the establishment of a new 20-foot wide easement along the relocation route.

As shown on Figure M-2, the preferred approach involves a one-time, permanent relocation of the fiber optic line to the west of the Operations Area. This route requires relocation of approximately 1,200 linear feet of fiber optic telephone line commencing at the northeast corner of the former Operations Area and reconnecting with the existing line to the south of the former Operations Area. The proposed route would avoid the thermal treatment area and future cap installation area, as well as utilities, impacted soils, wells, and HCTS features associated with an easterly relocation.

Pending final confirmation of the ISTR application area, the preferred fiber optic relocation route shown on Figure M-2 extends onto property not owned or controlled by the SRSNE Site Group. Accordingly, such relocation would require coordination with the subject property owners and establishment of a permanent new utility easement. de maximis will continue coordination with AT&T to identify a preferred and, if necessary, alternate relocation route. The resulting relocation plan will be developed and presented with the pre-ISTR final design.

7. Implementation Plan

This section summarizes various activities to be implemented during and following the design of the pre-ISTR preparation activities.

7.1 Soil Characterization Plan

Installation of the relocated culvert will require excavation and handling of soils from the existing ditch in the western portion of the railroad right-of way to create a new culvert inlet and facilitate flow into that inlet. It will also require excavation of soils and existing concrete pipe along the path of the relocated culvert. Due to proximity to the former operations area and associated potential for impacts, soils in the vicinity of the proposed culvert inlet will be sampled as part of a pre-design investigation. Specifically, 20 samples will be collected from 10 locations in the ditch and adjacent areas as shown on Figure M-9. The purpose of these samples will be to characterize the soils so that appropriate health and safety and grading design considerations can be incorporated into the detailed design. The resulting data will also support future delineation of the required extent of the RCRA C cap (refer to the *Soil Investigation Plan* provided as Attachment I to the RDWP), as well as the planned relocation of the fiber optic line (discussed in Section 6).

The soil samples will be collected from depths of 0 to 2 feet and 2 to 4 feet. The surficial interval (0 to 2 feet) represents soils most likely to be excavated or regraded in the course of modifying the culvert inlet area. These samples will also facilitate evaluation of the cap limits and re-routing of the fiber optic line. Samples from the 2- to 4-foot depth interval will be collected to assess the potential for deeper impacts that may affect design-related decisions regarding the RCRA C cap limits and the fiber optic cable relocation. All samples will be analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and metals. The results will be presented in the final design plan for the pre-ISTR activities, and will be considered, as appropriate, in development of the final design of the culvert relocation approach.

Downgradient of the inlet, trenching will be required to remove the existing culvert and to provide a suitable bedding material for installation of the new 30-inch HDPE pipe and appurtenances. Soil and concrete excavated for this purpose will be placed in the former Process Area for subsequent consolidation and grading beneath the Operations Area cap. Clean soil from

an off-site source will then be imported for backfill around the new pipe and structures.

7.2 Permits and Approvals

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) exempts the need to get permits or implement administrative requirements under federal law (e.g., dredge and fill permits), state law (e.g., water discharge permits), and local law (e.g., building construction permits relative to fire prevention, electrical, and other code requirements). Notwithstanding the permit exemption, remedial action under CERCLA must comply with the substantive requirements of federal, state and local laws and regulations if they are identified as applicable or relevant and appropriate requirements (ARARs). Compliance with the substantive requirements of federal, state and local laws is also referred to as “permit equivalency.” It is anticipated that the pre-ISTR work would require compliance with the substantive requirements of the following permits:

Federal

- Clean Water Act (CWA)-Discharge to Waters of the United States, Section 404 Permit.

State of Connecticut

- General Permit for Contaminated Soil and/or Sediment Management (Staging and Transfer) (DEP-SW-GP-001).
- General Permit for Placement of Utilities and Drainage within Inland Wetlands and Stream Channel Encroachment Lines (DEP-IWRD-GP-005).
- General Permit for Minor Grading within Inland Wetlands and Stream Channel Encroachment Lines (DEP-IWRD-GP-007).
- General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (DEP-PERD-GP-015).

Town of Southington

- Town of Southington Conservation Commission Wetlands and Watercourses Permit.

- Town of Southington Earth Excavation, Filling and Grading Permit.

To the extent possible, the substantive requirements of these permits will be incorporated and addressed as part of the detailed design process.

7.3 Erosion Control Measures

Erosion control measures will be used to minimize impacts resulting from construction activities, to the extent practicable. Best management practices will be used throughout the Site for the duration of the site work to minimize adverse impacts on water quality, wetlands, floodplains, wildlife and its habitat in accordance with the requirements of the CTDEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (DEP-PERD-GP-015). Erosion control measures which may be used include silt fence, diversion ditches or berms, stone or hay bale check dams, sediment traps, and stabilized construction entrances.

Designs for erosion control measures will be performed during the pre-ISTR final design phase.

7.4 Detailed Design Approach

The information presented herein plan represents a conceptual (50%) design for the pre-ISTR activities. Pending USEPA review of this design work plan and concurrent completion of proposed soil sampling, the final (100%) design package for the pre-ISTR grading, culvert relocation, HCTS modifications, and utility corridor layout will be submitted. The final design plan will include the following components:

- Results of the pre-design soil characterization sampling and analysis.

- Pre-ISTR Preparation Plan drawings, specifications and calculations. Drawings will include, at a minimum, Site Plan, ISTR Area Grading Plan, Culvert Relocation and Grading Plan, Soil Erosion and Sediment Control Details, ISTR Area Grading and Drainage Details, Culvert Relocation Profile, and Culvert Details.

- A description of implementation-related details, including a perimeter air monitoring plan.

- A summary of how the substantive requirements of permits have been addressed in the design.

- An Independent Quality Assurance Testing (IQAT) Plan.

- A Remedial Action Work Plan and Project Operations Plan providing RA-related information associated with the pre-ISTR preparation activities.

- A proposed implementation schedule.

While it is anticipated that a “final” (i.e., 100%) design will be submitted as a next step for the pre-ISTR preparation activities, the SRSNE Site Group would respond to comments and/or resubmit the plan if necessary based on the nature of USEPA comments regarding the planned final submittal.

7.5 Contracting

It is anticipated that Weston will self-perform HCTS modifications with assistance of a local driller/contractor for well abandonment and trenching, as needed.

AT&T will be responsible for the design and implementation of the fiber optic line relocation. However, it is yet to be determined whether the work will be performed by AT&T, a direct contractor to AT&T, or by a contractor to the SRSNE Site Group under the direction of AT&T. To the extent that the relocation involves potential exposure to impacted soils or groundwater, the work will be performed by appropriately trained personnel.

A qualified environmental contractor will be solicited for implementing the earthwork activities associated with the culvert relocation, ISTR grading activities, and the utility corridor. It is anticipated that the contractor will be selected via a process of competitive bidding, and that the bid and contracting process will occur concurrent with USEPA review of the final design package. In this manner, the bid process will reflect the scope of work reflected in the final design package.

7.6 Implementation

The pre-ISTR preparation activities will be performed once the final design is approved by the USEPA and a remedial contractor has been procured. The following is a preliminary planned sequence for the construction activities associated with the pre-ISTR preparation activities:

1. Relocate perimeter fencing and block access to the segment of the abandoned railroad that traverses the Site (to provide access control to the work area).

2. Relocate the AT&T fiber optic line around the work area.

3. Abandon existing monitoring wells within the thermal treatment area and specific wells within the NTCRA 1 containment area; remove/relocate necessary piping and utilities associated with the NTCRA 1 extraction wells.

4. Implement required modifications to the HCTS (can be done at any time prior to ISTR implementation).

5. Establish appropriate soil erosion and sedimentation control measures.

6. Install new 30-inch culvert relocation and utility corridor.

7. Abandon existing 24-inch and 30-inch culverts.

8. Construct perimeter access roads and water diversion features.

9. Remove portions of foundations that extend above the existing grade in the ISTR area. Remove utility poles located within the area.

10. Break up concrete slabs and remove rebar (if present) to facilitate drilling for installation of thermal wells.

11. Place fill, bench slopes and grade the ISTR area for the surface cover.

At this point, the area will be prepared for implementation of the ISTR activities, including installation of thermal wells and placement of the concrete cover. Those activities will be addressed in the design of the ISTR component of the remedy.

8. Schedule

The work described in this PIPP is intended to facilitate timely implementation of the ISTR component of the remedial approach for the Site. It describes certain site preparation activities that will be required so that, once implemented, the Site is ready for the ISTR contractor to access it and perform ISTR-related work. These preparation activities were segregated from the ISTR design because they essentially represent an earthwork project that is more related to civil design; this allows the ISTR contractor to focus on their core competencies. Also, it represents a work package that can easily be broken out, designed, approved, and implemented in advance of the ISTR design. Thus, the preparation activities can be implemented so that the Site is prepared once the ISTR design is finalized and approved.

Specific to the work of this PIPP, the following schedule-related information is provided:

- The proposed soil sampling will be conducted following submittal of the RDWP. Because this information will be necessary for design and health and safety purposes, and to facilitate the most timely overall approach, the SRSNE Site Group intends to perform the sampling “at risk” and, if necessary, prior to USEPA approval of the RDWP and related documents.

- Recognizing the magnitude of documentation submitted concurrent with this plan, and recognizing that the work described herein represents an initial step in expediting the remedial action to the extent possible, accelerated USEPA review and approval is requested for this plan. This was discussed with USEPA prior to the plan submittal.

- A detailed design report summarizing the planned final design will be submitted within 90 days of receipt of validated data, completion of the thermal model, completion of the overburden NAPL delineation activities, or USEPA approval of this work plan, whichever occurs later.

- While de maximis will continue coordination with AT&T to identify a timely and feasible approach for relocation of the fiber optic line, the timeframe over which this process will occur is beyond the control of de maximis or the SRSNE Site Group. This is particularly true in the event that relation requires establishment of a new easement and construction through third-party-owned properties. Nonetheless, relocation of the fiber optic line

represents a critical first step in the pre-ISTR preparation activities, as grading and culvert installation activities cannot be initiated until this utility is relocated.

9. References

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US Department of Transportation, Federal Highway Department, September 2001 (revised May 2005), Hydraulic Design Series No. 5, Design of Highway Culverts, Publication FHWA-NHI-01-020.

US Department of Transportation, Federal Highway Department, June 19, 2008 (Build Date), HY8.7.1 Computer Program.

USEPA. 2005. Record of Decision Summary, Solvents Recovery Service of New England, Inc. (SRSNE) Superfund Site, Southington, Connecticut, USEPA New England, September 2005.

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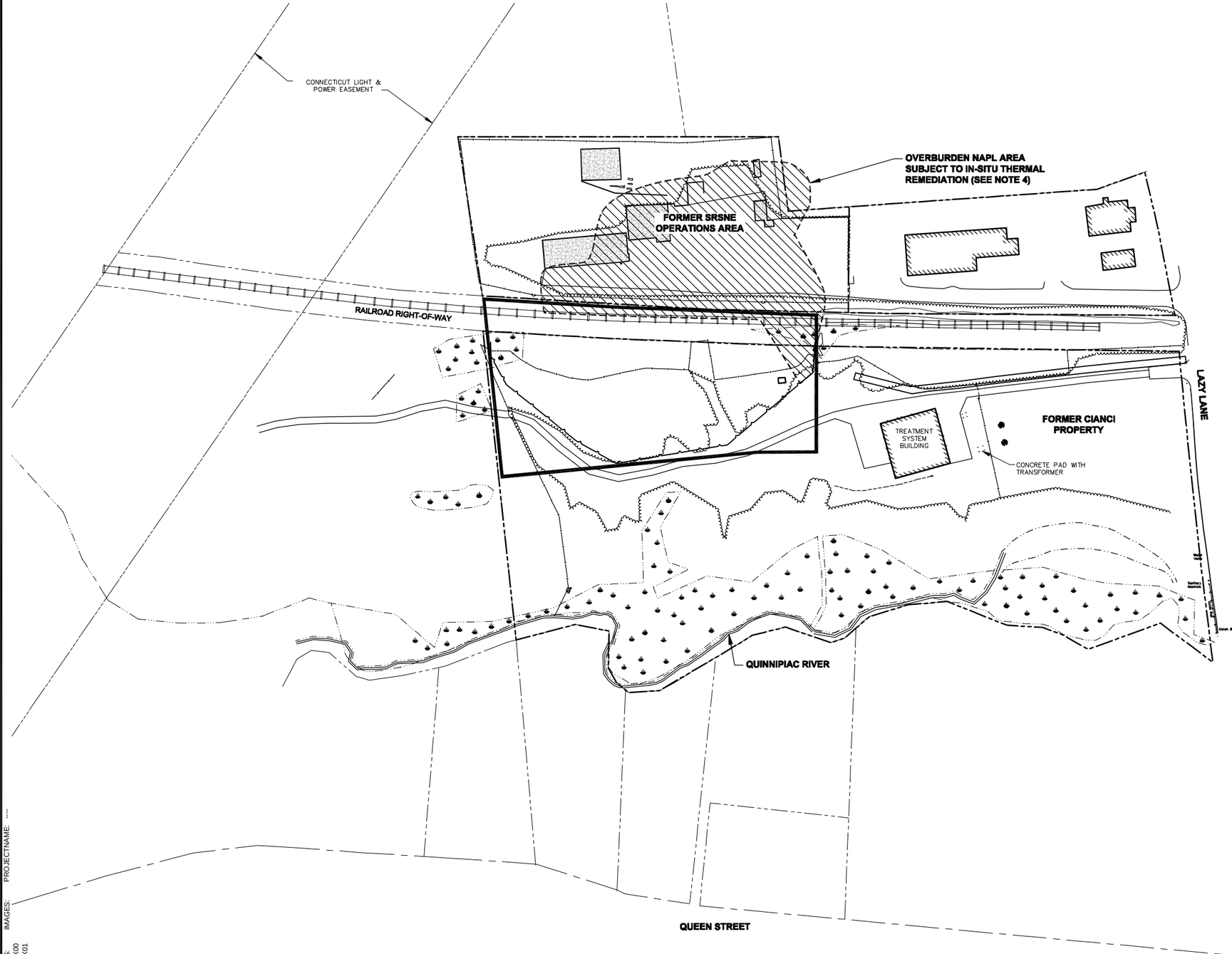
Figures



LEGEND:

- APPROXIMATE PROPERTY SITE LINE
- APPROXIMATE PROPERTY LINE ABUTTER
- BUILDING STRUCTURE
- FOUNDATION STRUCTURE
- FORMER RAILROAD
- EXISTING PAVED ROAD
- EXISTING GRAVEL ROAD
- WETLAND BOUNDARY
- APPROXIMATE FLOODWAY BOUNDARY
- EXISTING CHAINLINK FENCE
- EXISTING SHEETPILE
- EXISTING TREELINE
- EXISTING BOLLARD
- EXISTING WETLAND
- NTCRA 1 CONTAINMENT AREA

NOTES:

1. BASEMAP INFORMATION SHOWN ON THIS DRAWING TAKEN FROM TOPOGRAPHIC SURVEY DATED JANUARY 13, 2009 BY CONKLIN AND SOROKA, INC.
2. ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929.
3. WETLAND AREAS WERE TAKEN FROM THE FINAL REMEDIAL INVESTIGATION REPORT (HNUS, MAY 1994).
4. OVERBURDEN NAPL AREA LIMITS SHOWN WERE OBTAINED FROM THE TREATMENT LIMITS PRESENTED IN THE USEPA RECORD OF DECISION (ROD) DATED SEPTEMBER 2005. THE OVERBURDEN NAPL AREA LIMITS ARE PRELIMINARY AND SUBJECT TO MODIFICATION AS A RESULT OF PLANNED ADDITIONAL DELINEATION ACTIVITIES.

PRELIMINARY
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PROJECTNAME: ---

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1"=80'

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USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: **JEFFREY HOLDEN**
Professional Engineer's No.: 0023403
State: CT | Date Signed: | Project Mgr.:
Designed by: JEM | Drawn by: | Checked by: PHB

ARCADIS U.S., INC.

SRSNE SUPERFUND SITE • SOUTHINGTON, CONNECTICUT
REMEDIAL DESIGN WORK PLAN
PRELIMINARY IN-SITU THERMAL REMEDIATION PREPARATION PLAN

GENERAL SITE PLAN

GENERAL

ARCADIS Project No.
B0054634.0000.10013

Date
APRIL 2009

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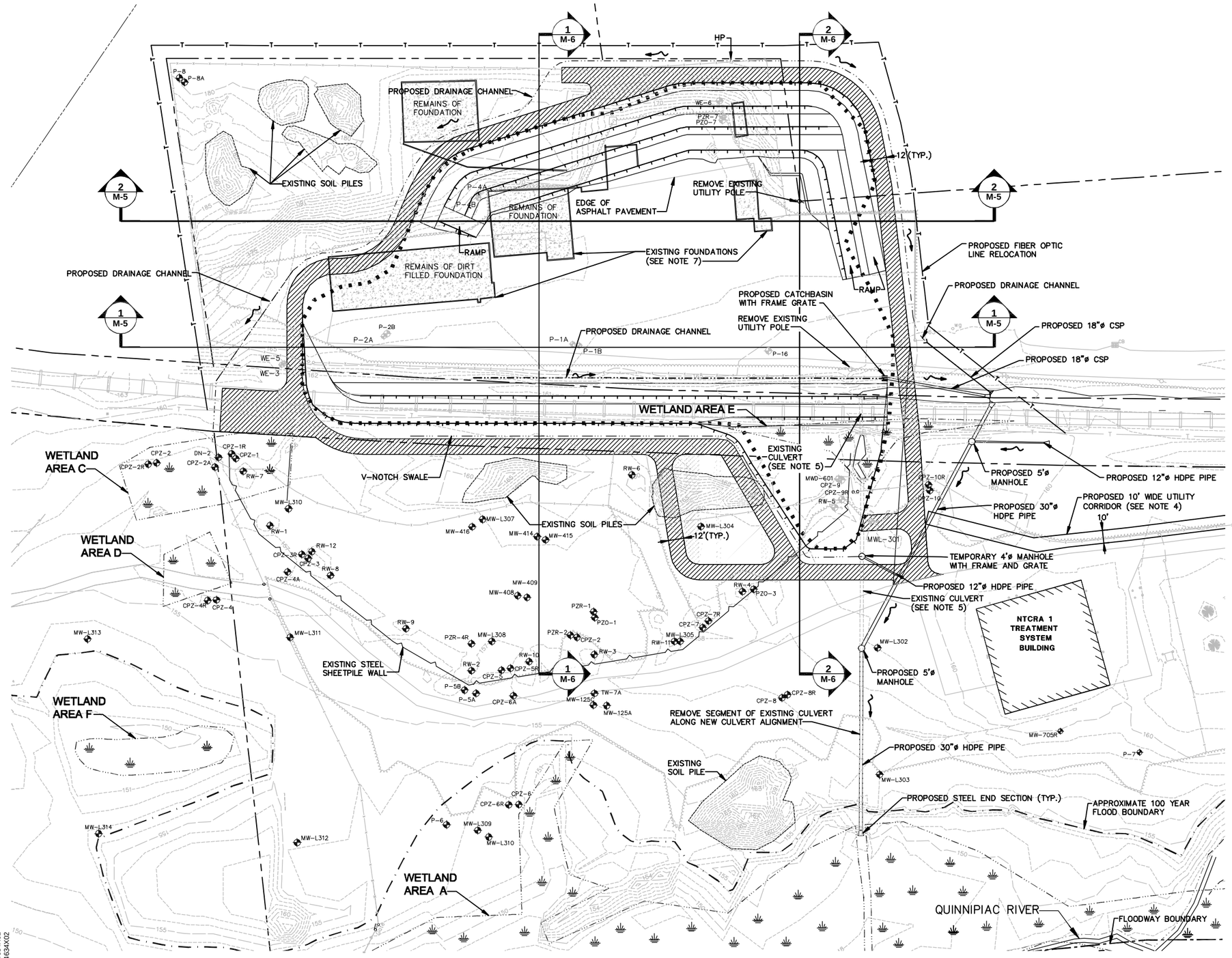
M-1



LEGEND:

- EXISTING BUILDING
- PROPOSED ACCESS ROAD
- APPROXIMATE LIMITS OF ISTR AREA
- APPROXIMATE SITE PROPERTY LINE
- EXISTING WETLAND BOUNDARY
- EXISTING FOUNDATION STRUCTURE
- EXISTING FENCE
- PROPOSED TOP OF SLOPE
- APPROXIMATE LOCATION OF EXISTING FIBER OPTIC LINE
- FORMER RAILROAD
- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- EXISTING WELL TO BE DECOMMISSIONED DURING PRE-ISTR PREPARATION
- EXISTING MONITORING WELL
- EXISTING UTILITY POLE
- EXISTING BOLLARD
- FLOW DIRECTION
- DETAIL NUMBER / FIGURE NUMBER

NOTES:

1. BASEMAP INFORMATION SHOWN ON THIS DRAWING TAKEN FROM TOPOGRAPHIC SURVEY DATED JANUARY 13, 2009 BY CONKLIN AND SOROKA, INC.
2. ELEVATIONS ARE BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929.
3. FLOOD BOUNDARY LOCATIONS WERE COMPILED FROM FLOOD INSURANCE RATE MAP, HARTFORD COUNTY CONNECTICUT (ALL JURISDICTIONS), PANEL 582 OF 675, MAP NUMBER 09003C0582F WITH AN EFFECTIVE DATE OF SEPTEMBER 26, 2008.
4. PROPOSED UTILITY CORRIDOR TO INCLUDE GAS, SANITARY SEWER AND POSSIBLY ELECTRIC SERVICES.
5. EXISTING CULVERTS TO BE REMOVED OR ABANDONED IN-PLACE.
6. LIMITS OF THERMAL REMEDIATION AREA SHOWN HEREON REFLECT THE LIMITS OF THE PROPOSED THERMAL WELLFIELD AND ASSOCIATED SURFACE COVER. THE LIMITS ARE BASED ON THE TREATMENT LIMITS PRESENTED IN THE USEPA RECORD OF DECISION (ROD) DATED SEPTEMBER 2005 AND ARE SUBJECT TO MODIFICATION AS A RESULT OF PLANNED ADDITIONAL DELINEATION ACTIVITIES.
7. ABOVE GRADE PORTIONS OF EXISTING FOUNDATIONS TO BE KNOCKED DOWN AND/OR BROKEN UP AS PART OF SITE PREPARATION ACTIVITIES.

PRELIMINARY
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1"=40'

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No.	Date	Revisions	By	Ckd.

Professional Engineer's Name: JEFFREY HOLDEN
Professional Engineer's No.: 0023403

State	Date Signed	Project Mgr.
CT		
Designed by: JEM	Drawn by: KLS	Checked by: PHB

ARCADIS U.S., INC.

SRSNE SUPERFUND SITE • SOUTHINGTON, CONNECTICUT
REMEDIAL DESIGN WORK PLAN
PRELIMINARY IN-SITU THERMAL REMEDIATION PREPARATION PLAN

SITE PLAN

GENERAL

ARCADIS Project No.: B0054634.0000.10013
Date: APRIL 2009

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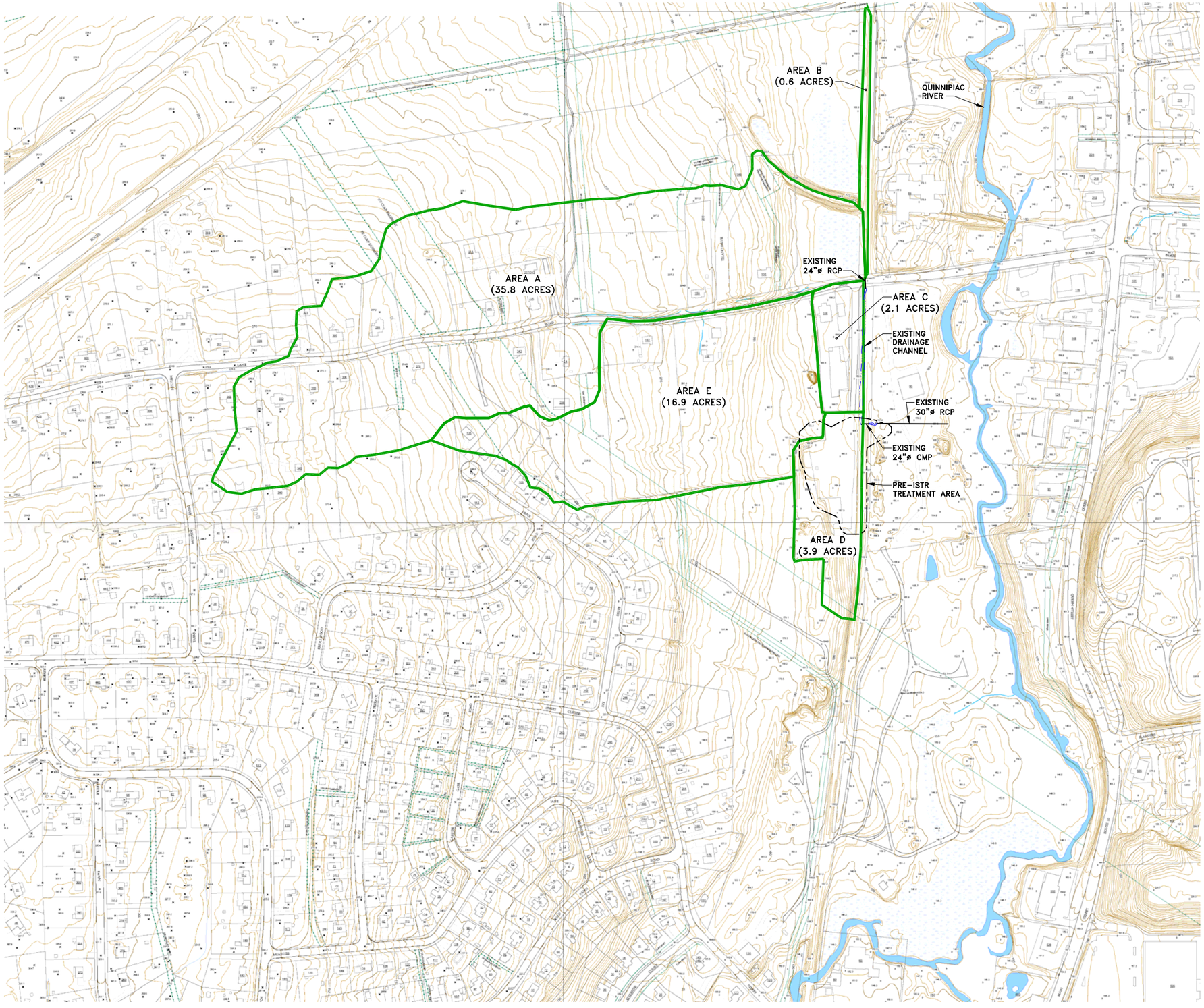

LEGEND:

	WATERSHED AREA BOUNDARY
AREA X	WATERSHED AREA ID
(X ACRES)	WATERSHED AREA ACREAGE

NOTES:

1. BASEMAP OBTAINED FROM TOWN OF SOUTHINGTON, CONNECTICUT, GEOGRAPHIC AND PROPERTY INFORMATION NETWORK. PLANIMETRIC INFORMATION DEVELOPED BY NEW ENGLAND GEOSYSTEMS FOR THE TOWN OF SOUTHINGTON THROUGH THE USE OF 2002 AERIAL PHOTOGRAPHS.
2. WATERSHED BOUNDARIES ARE APPROXIMATE ONLY AND HAVE NOT BEEN FIELD VERIFIED.

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GRAPHIC SCALE

SRSNE SUPERFUND SITE
SOUTHINGTON, CONNECTICUT
PRE-ISTR PREPARATION PLAN

WATERSHED AREA MAP

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FIGURE
M-3

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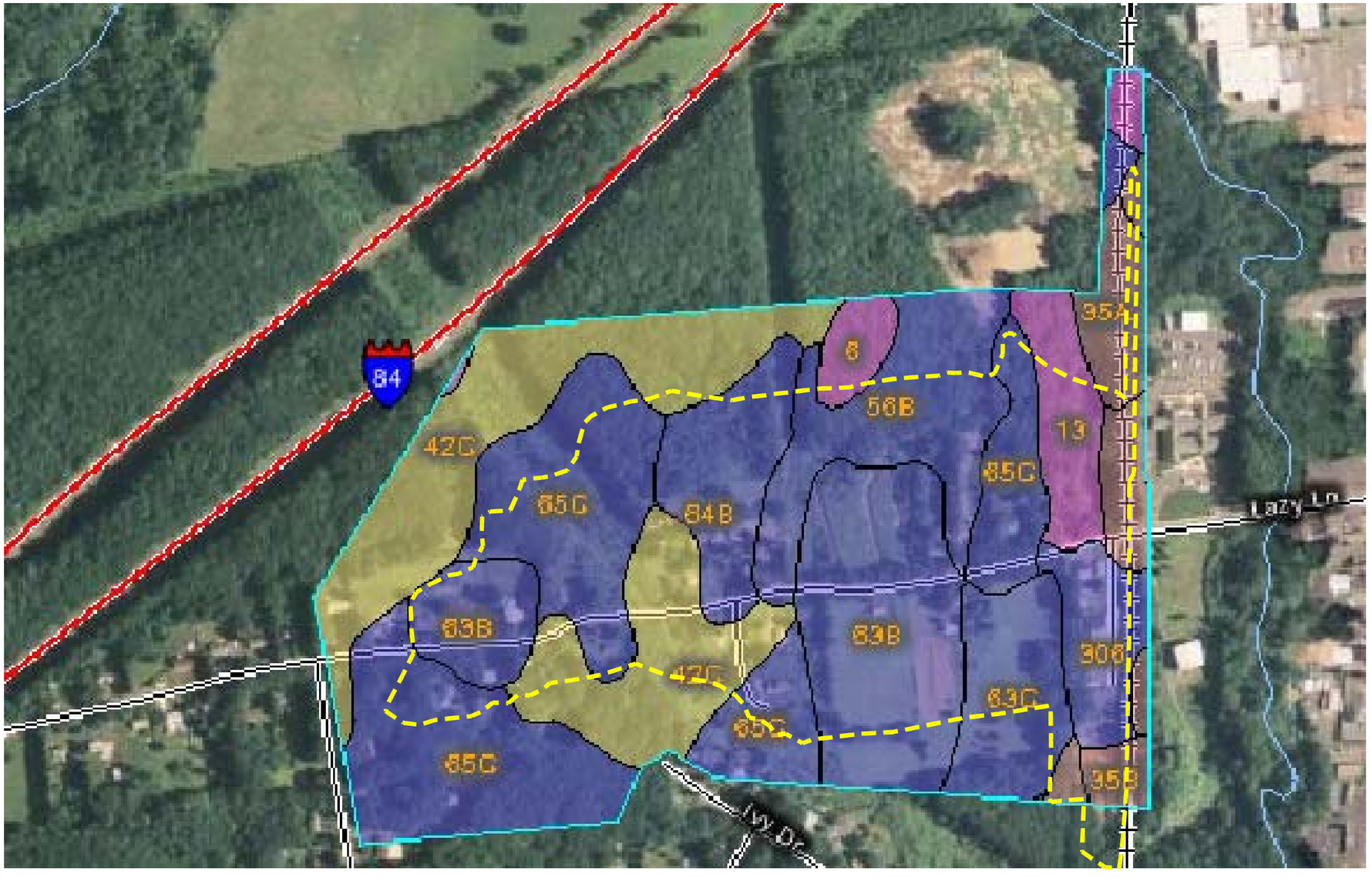

HYDROLOGIC SOIL GROUP – SUMMARY BY MAP UNIT STATE OF CONNECTICUT		
MAP UNIT SYMBOL	MAP UNIT NAME	RATING
6	WILBRAHAM AND MENLO SOILS, EXTREMELY STONY	D
13	WALPOLE SANDY LOAM	D
23A	SUDBURY SANDY LOAM, 0 TO 5 PERCENT SLOPES	B
35A	PENWOOD LOAMY SAND, 0 TO 3 PERCENT SLOPES	A
35B	PENWOOD LOAMY SAND, 3 TO 8 PERCENT SLOPES	A
37C	MANCHESTER GRAVELLY SANDY LOAM, 3 TO 15 PERCENT SLOPE	A
42C	LUDLOW SILT LOAM, 2 TO 15 PERCENT SLOPES, EXTREMELY STONY	C
56B	WATCHAUG FINE SANDY LOAM, 2 TO 8 PERCENT SLOPES, VERY STONY	B
63B	CHESHIRE FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES	B
63C	CHESHIRE FINE SANDY LOAM, 8 TO 15 PERCENT SLOPES	B
64B	CHESHIRE FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES, VERY STONY	B
65C	CHESHIRE FINE SANDY LOAM, 3 TO 15 PERCENT SLOPES, EXTREMELY STONY	B
103	RIPPOWAM FINE SANDY LOAM	D
306	UDORTHENTS–URBAN LAND COMPLEX	B

NOTE:

1. SOIL AREA DESCRIPTIONS AND MAPPING INFORMATION PROVIDED BY THE NATIONAL COOPERATIVE SOIL SURVEY AS PUBLISHED BY THE USDA NATURAL RESOURCES CONSERVATION SERVICE. THE SOIL SURVEY AREA DATE IS MARCH 22, 2007. AERIAL IMAGES WERE PHOTOGRAPHED ON AUGUST 13 AND 14, 2006.

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GRAPHIC SCALE

SRSNE SUPERFUND SITE
SOUTHINGTON, CONNECTICUT
PRE-ISTR PREPARATION PLAN

WATERSHED SOIL MAP

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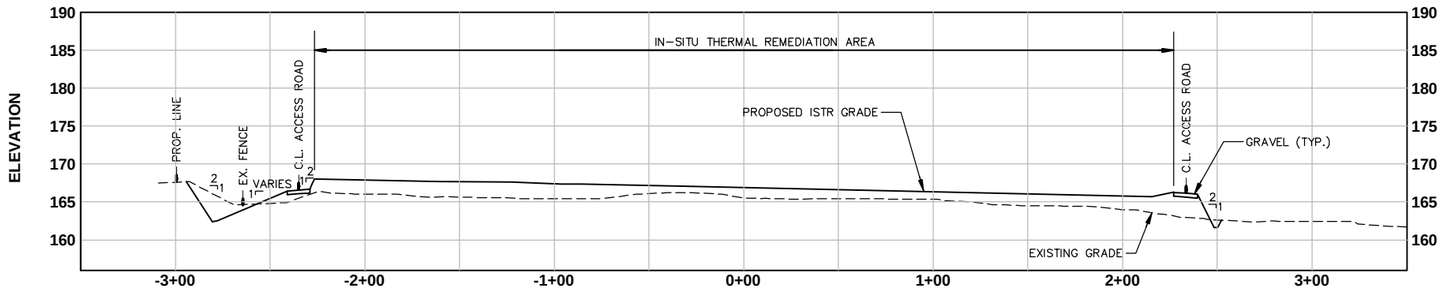
FIGURE
M-4



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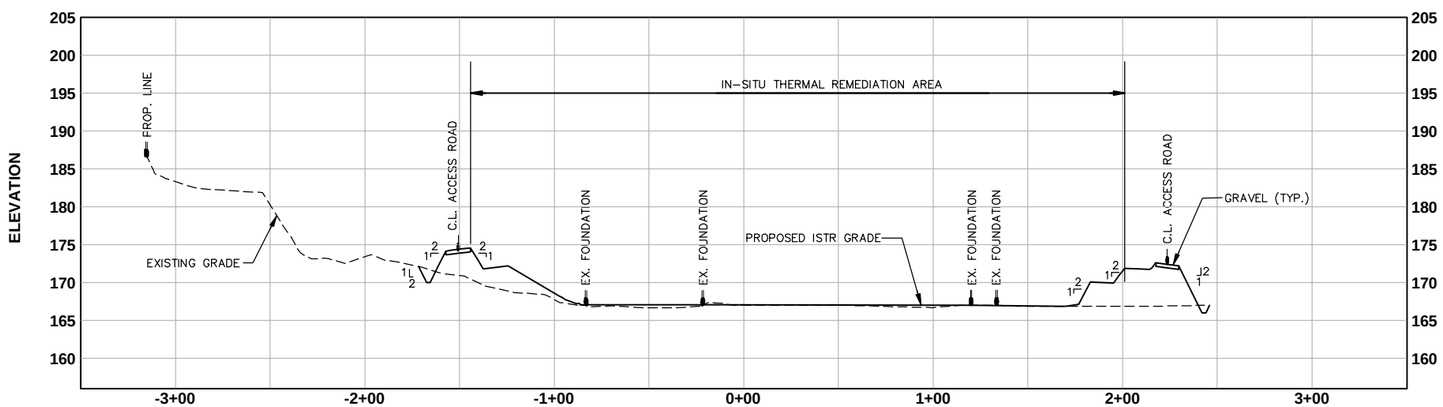

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VERTICAL SCALE: 1"=10'

NOTE:

1. ELEVATIONS SHOWN BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929.

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SCALE(S) AS INDICATED

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Professional Engineer's No.: 0023403
State: CT | Date Signed: | Project Mgr.:
Designed by: JEM | Drawn by: KLS | Checked by: PHB

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REMEDIAL DESIGN WORK PLAN
PRELIMINARY IN-SITU THERMAL REMEDIATION PREPARATION PLAN

CROSS SECTIONS

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ARCADIS Project No.
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Date
APRIL 2009

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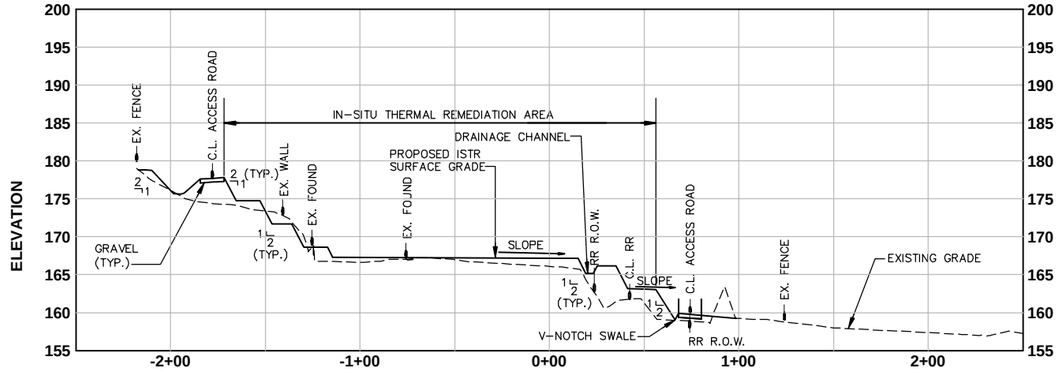
M-5



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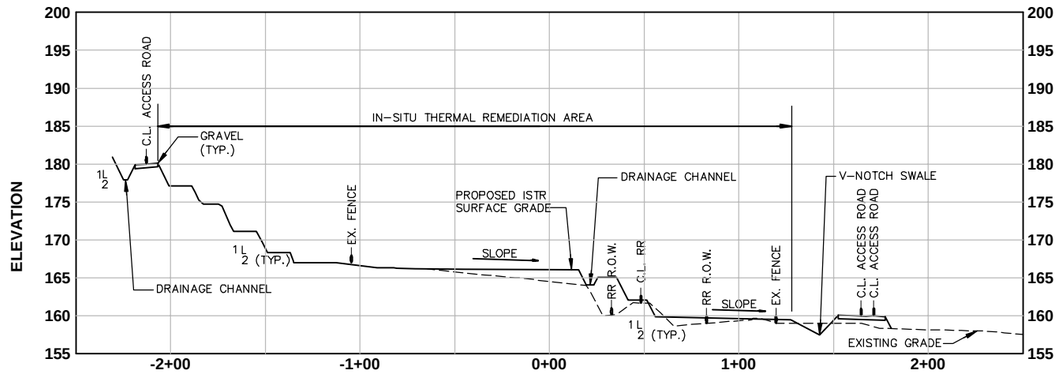

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HORIZONTAL SCALE: 1"=40'
0 10' 20'
VERTICAL SCALE: 1"=10'

NOTE:

1. ELEVATIONS SHOWN BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929.

PRELIMINARY
NOT FOR CONSTRUCTION

CITY: SYRACUSE, NY DIV/GROUP: ENV/141 DB: KLS GMS LD: KLS PIC: PM: K.FABIAN TM: J.MORGAN LYR:ON=*;OFF=*REF; |TEXT
G:\ENVCAD\SYRACUSE\ACTIB\0054634\0000110013\DWG\RDWP\54634G04.dwg LAYOUT: M-6SAVED: 3/31/2009 8:22 AM ACADVER: 17.0S (LMS TECH) PAGESETUP: D2B-PDF.PLOTSTYLETABLE: PLTCONT1.CTB PLOTTED: 3/31/2009 8:22 AM BY: SARTORI, KATHERINE
XREFS: IMAGES: PROJECTNAME: ---
54634X00

SCALE(S) AS INDICATED

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

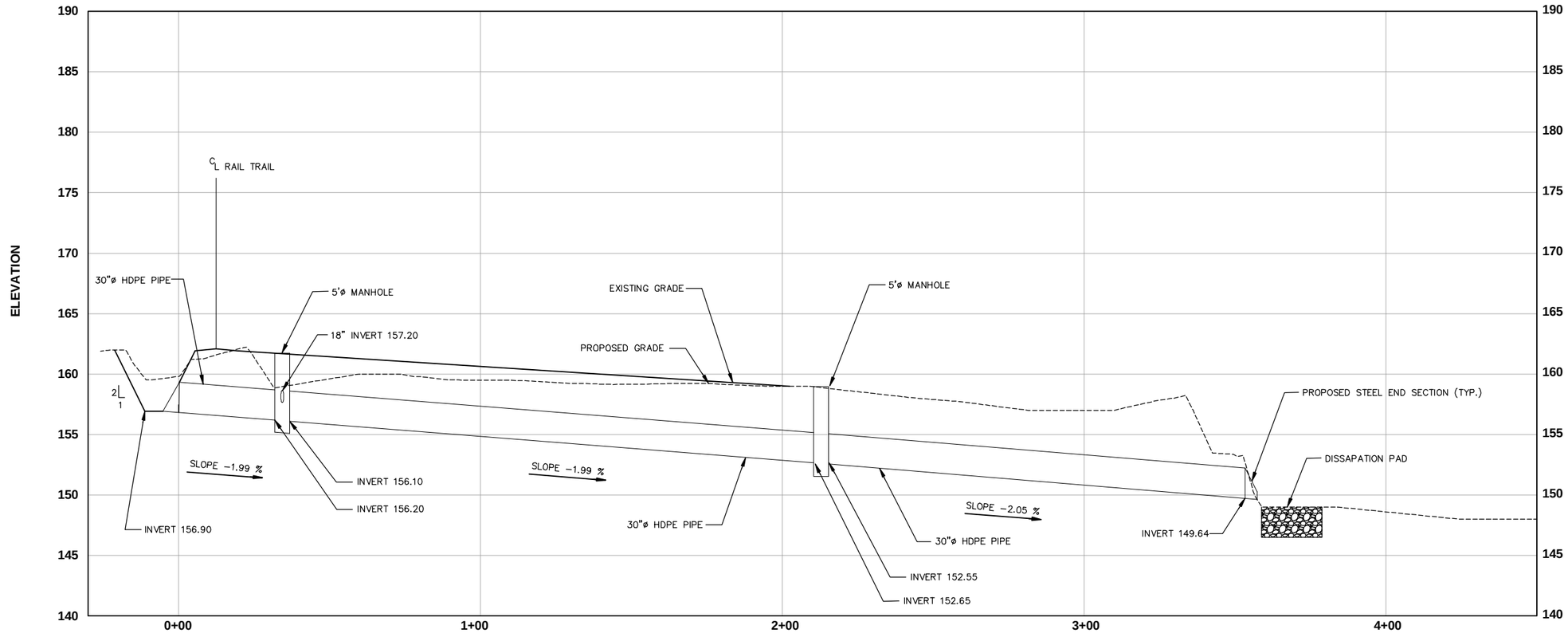
Professional Engineer's Name: **JEFFREY HOLDEN**
Professional Engineer's No.: 0023403
State: CT | Date Signed: | Project Mgr.:
Designed by: JEM | Drawn by: KLS | Checked by: PHB

ARCADIS U.S., INC.

SRSNE SUPERFUND SITE • SOUTHINGTON, CONNECTICUT
REMEDIAL DESIGN WORK PLAN
PRELIMINARY IN-SITU THERMAL REMEDIATION PREPARATION PLAN
CROSS SECTIONS
GENERAL

ARCADIS Project No.
B0054634.0000.10013
Date
APRIL 2009
ARCADIS
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NY 13214-0066
TEL: 315.446.9120

M-6



PROFILE - CULVERT RELOCATION

0 20' 40'
HORIZONTAL SCALE: 1"=20'
0 5' 10'
VERTICAL SCALE: 1"=5'

NOTE:

1. ELEVATIONS SHOWN BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929.

PRELIMINARY
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SCALE(S) AS INDICATED

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No.	Date	Revisions	By	Ckd

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JEFFREY HOLDEN		
Professional Engineer's No.		
0023403		
State	Date Signed	Project Mgr.
CT		
Designed by	Drawn by	Checked by
JEM	KLS	PHB

ARCADIS U.S., INC.

SRSNE SUPERFUND SITE • SOUTHINGTON, CONNECTICUT
REMEDIAL DESIGN WORK PLAN
PRELIMINARY IN-SITU THERMAL REMEDIATION PREPARATION PLAN

CULVERT RELOCATION PROFILE

GENERAL

ARCADIS Project No.
B0054634.0000.10013

Date
APRIL 2009

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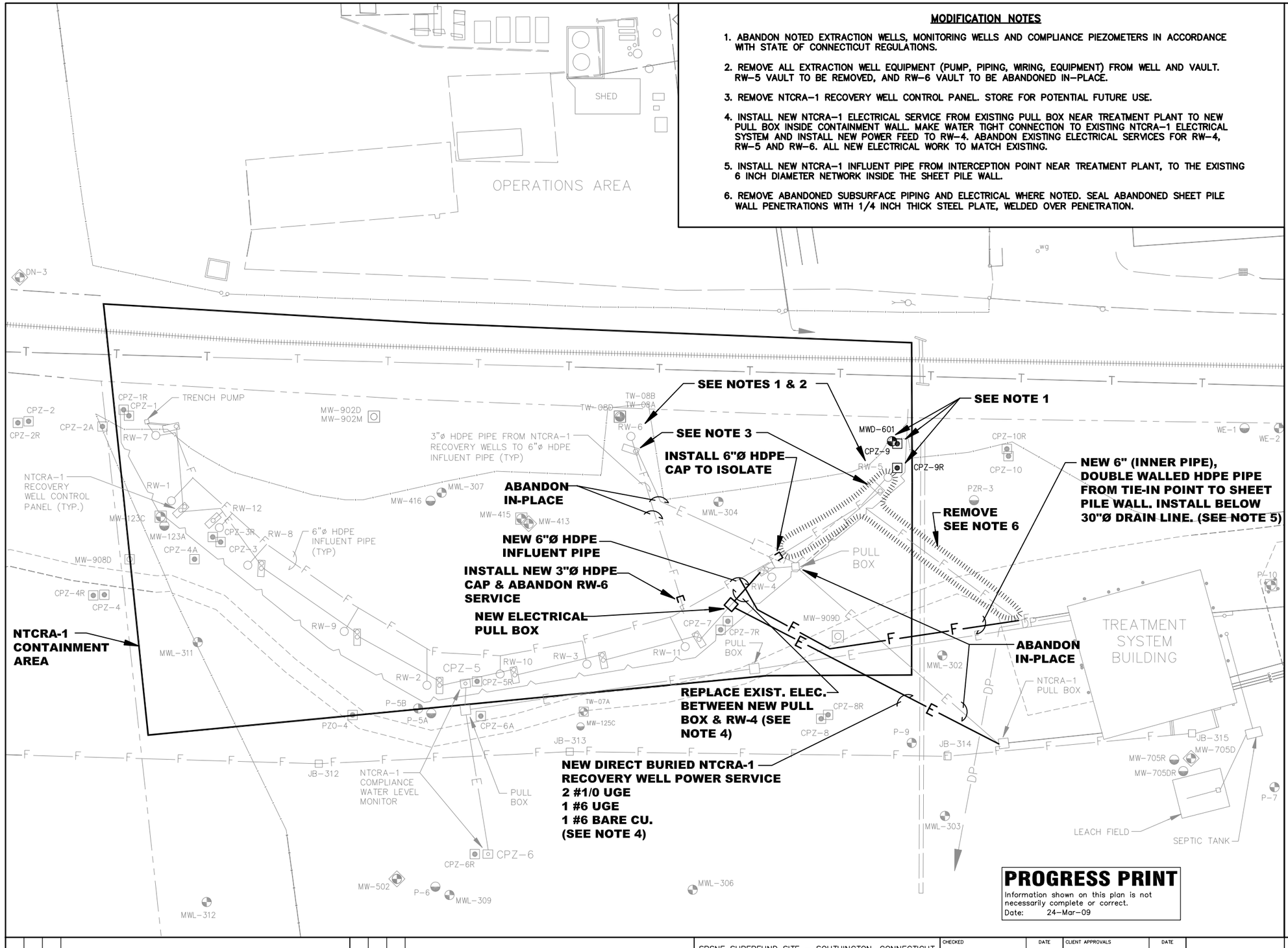
6723 TOWPATH ROAD
P.O. BOX 66
SYRACUSE, NY 13214-0066
TEL. 315.446.9120

M-7

MODIFICATION NOTES

1. ABANDON NOTED EXTRACTION WELLS, MONITORING WELLS AND COMPLIANCE PIEZOMETERS IN ACCORDANCE WITH STATE OF CONNECTICUT REGULATIONS.
2. REMOVE ALL EXTRACTION WELL EQUIPMENT (PUMP, PIPING, WIRING, EQUIPMENT) FROM WELL AND VAULT. RW-5 VAULT TO BE REMOVED, AND RW-6 VAULT TO BE ABANDONED IN-PLACE.
3. REMOVE NTCRA-1 RECOVERY WELL CONTROL PANEL. STORE FOR POTENTIAL FUTURE USE.
4. INSTALL NEW NTCRA-1 ELECTRICAL SERVICE FROM EXISTING PULL BOX NEAR TREATMENT PLANT TO NEW PULL BOX INSIDE CONTAINMENT WALL. MAKE WATER TIGHT CONNECTION TO EXISTING NTCRA-1 ELECTRICAL SYSTEM AND INSTALL NEW POWER FEED TO RW-4. ABANDON EXISTING ELECTRICAL SERVICES FOR RW-4, RW-5 AND RW-6. ALL NEW ELECTRICAL WORK TO MATCH EXISTING.
5. INSTALL NEW NTCRA-1 INFLUENT PIPE FROM INTERCEPTION POINT NEAR TREATMENT PLANT, TO THE EXISTING 6 INCH DIAMETER NETWORK INSIDE THE SHEET PILE WALL.
6. REMOVE ABANDONED SUBSURFACE PIPING AND ELECTRICAL WHERE NOTED. SEAL ABANDONED SHEET PILE WALL PENETRATIONS WITH 1/4 INCH THICK STEEL PLATE, WELDED OVER PENETRATION.



LEGEND:

- PROPERTY LINE
- PROPERTY LINE – ADJOINER
- BUILDING
- BUILDING – ADJOINER
- FORMER BUILDING
- RAILROAD
- ROAD
- GRAVEL ROAD
- CHAINLINK FENCE
- GUARDRAIL
- SHEETPILE
- FORCEMAIN
- PIPE
- UTILITY POLE AND ID (CL&P 9033)
- TELEPHONE SERVICE
- WATER SERVICE
- ELECTRIC SERVICE
- DISCHARGE PIPE
- SANITARY SEWER
- NTCRA 1 CONTAINMENT AREA
- SHALLOW OVERBURDEN MONITORING WELL
- MIDDLE OVERBURDEN MONITORING WELL
- DEEP OVERBURDEN MONITORING WELL
- NTCRA 1 EXTRACTION WELL
- PIEZOMETER
- NTCRA 1 WETLAND DRIVEPOINT
- SHALLOW BEDROCK MONITORING WELL
- DEEP BEDROCK MONITORING WELL

PROGRESS PRINT

Information shown on this plan is not necessarily complete or correct.
Date: 24-Mar-09

NOTES:

1. BASEMAP INFORMATION WAS FURNISHED BY ARCADIS, WHICH WAS OBTAINED FROM A FIGURE CREATED BY CONKLIN-SOROKA, INC., ENTITLED "TOPOGRAPHIC SURVEY" DATED 1/13/09 AT A SCALE OF 1"=50'.
2. ALL LOCATIONS ARE APPROXIMATE.

GRAPHIC SCALE
30 15 0 15 30
APPROXIMATE SCALE IN FEET

NO.	DATE	APPR.	REVISION

SRSNE SUPERFUND SITE – SOUTHINGTON, CONNECTICUT
HYDRAULIC CONTAINMENT AND TREATMENT SYSTEM (HCTS) MODIFICATIONS

WESTON SOLUTIONS
BEDFORD NEW HAMPSHIRE

CHECKED	DATE	CLIENT APPROVALS	DATE
DES. ENG.			
PROJ. ENG.			
PROJ. MGR.			
APPROVED			
APPROVED		ISSUED FOR	DATE

NTCRA-1 CONTAINMENT AREA SITE PLAN

DRAWN	DATE	FIGURE NO.	REV. NO.
A.J.M.	MARCH 2009	M-8	
SCALE	W.O. NO.	SHT. ____ OF ____	
AS SHOWN	13056.001.012		

M:\Design\DWG\SRS\REMEDIAL ACTION\NTCRA-1 MODS 3-24-09.dwg, Layout1, 3/24/2009 11:12:13 AM, MURROT, 1:2

REMAINS OF FOUNDATION WITH SLAB
CONCRETE PAD
REMAINS OF CONCRETE PADS
REMAINS OF DIRT FILLED FOUNDATION
REMAINS OF FOUNDATION WITH SLAB = 168.0
FORMER COOLING TOWER
FORMER OPERATIONS BUILDING
REMAINS OF FOUNDATION WITH SLAB = 168.3
FORMER DRUM STORAGE AREA
BURIED DISCHARGE PIPE
FORMER SRSNE OPERATIONS AREA
FORMER DRUM STORAGE AREA
FORMER PRIMARY LAGOON
SHED
FORMER SECONDARY LAGOON
REMAINS OF DIRT FILLED FOUNDATION
FORMER OPEN-PIT INCINERATOR
CONCRETE RAMP
APPROXIMATE PROPERTY LINE
OUTFALL
24" CMP INV = 156.31
PROPOSED 18"ø CSP
FLARED END INV = 159.41
24" RCP
SS-C1
SS-C3
SS-C5
SS-C7
SS-C9
RAILROAD RIGHT-OF-WAY
24" CMP INV = 155.94
SS-C2
SS-C4
SS-C6
SS-C8
SS-C10
PROPOSED 5'ø MANHOLE
PROPOSED 12"ø HDPE PIPE
30" RCP INV = 155.34
PROPOSED 30"ø HDPE PIPE
EXISTING CULVERT
FORMER CIANCI PROPERTY
LAZY LANE
TREATMENT SYSTEM DISCHARGE PIPE
PROPOSED 5'ø MANHOLE
12" pine
12" pine
CONCRETE PAD WITH TRANSFORMER
hydrant
TREATMENT SYSTEM BUILDING
30" RCP INV.=149.61

LEGEND:

- PROPERTY LINE
- PROPERTY LINE – ADJOINER
- 147-5 PROPERTY ID – ADJOINER
- BUILDING
- BUILDING – ADJOINER
- FORMER BUILDING
- RAILROAD
- ROAD
- GRAVEL ROAD
- DRAINAGE SWALE
- RIVER
- EASEMENT
- CHAINLINK FENCE
- SHEETPILE
- FORCEMAIN
- PIPE
- UTILITY POLE
- TELEPHONE SERVICE
- TREELINE
- TREE
- BOLLARD
- SS-C6 PROPOSED SAMPLE LOCATION

NOTES:

1. BASEMAP INFORMATION OBTAINED FROM A FIGURE CREATED BY CONKLIN-SOROKA, INC., ENTITLED "TOPOGRAPHIC SURVEY" DATED 1/13/09 AT A SCALE OF 1"=50'.
2. ALL LOCATIONS ARE APPROXIMATE.

PRELIMINARY NOT FOR CONSTRUCTION

1"=50' 50' 0 50' 100'

THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING: USE TO VERIFY FIGURE REPRODUCTION SCALE

No.	Date	Revisions	By	Ckd

Professional Engineer's Name: JEFFREY HOLDEN
Professional Engineer's No.: 0023403

State	Date Signed	Project Mgr.
CT		

Designed by	Drawn by	Checked by
JEM	PGL	PHB

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REMEDIAL DESIGN WORK PLAN
PRELIMINARY IN-SITU THERMAL REMEDIATION PREPARATION PLAN

PRE-ISTR SAMPLE LOCATIONS

GENERAL

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M-9