

**Remedial Design Work Plan
Attachment G**

**Post-Excavation
Confirmatory Sampling
Plan**

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

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Post-Excavation Confirmatory Sampling Plan

SRSNE Superfund Site
Southington, Connecticut

I. 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.

This *Post-Excavation Confirmatory Sampling Plan* has been prepared to address requirements of Section V.C.1.g of the RD/RA SOW. It identifies the anticipated approach for performing post-excavation sampling in areas where soil excavation is performed as a component of the remedial approach. As specified in the Record of Decision (ROD) for the Site, this includes removal of soil and wetland soil from the five discrete areas of the Cianci Property where soil concentrations exceed SOW-specified cleanup levels. These areas were depicted on Figure 7 of the ROD and are shown on attached Figure G-1. Note, however, that these areas are subject to modification pending the results of additional soil delineation sampling proposed in the *Soil Investigation Plan* (Attachment I to the *Remedial Design Work Plan* [RDWP]). Similarly, other areas may be targeted for removal and disposal or consolidation beneath the Resource Conservation and Recovery Act Subtitle C (RCRA C) cap based on other pre-excavation sampling proposed in the *Soil Investigation Plan*. This may include, for example, soils located in the former Operations Area beyond the planned cap limits that are excavated and consolidated beneath the cap. While this *Post-Excavation Confirmatory Sampling Plan* has been developed in consideration of the targeted removal areas indicated in the ROD, it is intended to be flexible enough to apply to any areas where soil excavation may be performed to address soils exceeding cleanup levels.

In general, post-excavation confirmatory samples will be collected from the bottom and/or sidewalls of each excavation to confirm that soils impacted above SOW-specified cleanup levels have been removed following excavation to targeted limits. If necessary based on the initial samples, further excavation and confirmatory sampling will be conducted until cleanup levels are achieved. This approach is further discussed below.

In addition to the information provided below, specific details regarding investigation and analytical procedures can be found in the *Field Sampling Plan*, which is provided as Attachments B and C of the *Remedial Design Project Operations Plan* (RD POP).

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II. Technical Approach - General

The approach specified herein is applicable to areas where excavation is performed to remove (for subsequent off-site disposal or consolidation beneath the planned surface cover for the former Operations Area) soils or wetland soils exceeding SOW-specified cleanup levels for one or more constituents. A summary of cleanup goals is presented in Section 2.5.3 of the RDWP.

As indicated above, confirmatory sampling may include sidewall sampling and/or bottom sampling. The need for each type of sampling will depend on the nature of the pre-excavation dataset, the basis for the cleanup level that triggered the excavation, and the depth of removal. These factors, and their implication on the nature of the sidewall and bottom sampling, are further discussed below. The approach for identifying the specific constituents to be analyzed for in post-excavation confirmatory samples is also discussed below.

A. Sidewall Sampling

For each excavation area, sidewall samples will be collected as needed to provide at least one sample per 50 linear feet of excavated perimeter, with a minimum of three perimeter samples for each individual excavation area. To the extent possible, existing samples (including pre-design samples; see Attachment I to the RDWP) will be used to delineate an excavation area if (1) the location of the sample is such that it would serve as an excavation boundary, (2) the analyzed constituents in the sample include the constituents that initially triggered the excavation, and (3) the target constituents are below cleanup levels. In the absence of existing data, sidewall samples will be collected from the perimeter of the excavation at a depth of 0-2 feet or less below the surrounding ground surface. Specifically, post-excavation sidewall samples would be collected from 0-2 feet if the excavation extends to 2 feet or more, but only to the depth of the excavation if less than 2 feet. The perimeter sidewall samples will be located in a manner that encompasses the original sample location that triggered removal in each specific area. Data obtained from bottom verification samples will be used to confirm the vertical extent of removal.

B. Bottom Sampling

The need for post-excavation bottom sampling will be determined based on the type of regulatory exceedance that prompted the excavation. For areas excavated to address an exceedance of a cleanup level that is based on Residential Direct Exposure Criteria (RDEC) of the Connecticut Remediation Standard Regulations (RSRs), bottom verification sampling will not be required if the bottom of the excavation extends to at least four feet beneath the ground surface. This is based on the fact that excavation areas are expected to be backfilled with clean soil to re-establish the original grade, and an Environmental Land Use Restriction (ELUR) is a

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planned component of the final remedy. Under these conditions, soil located below four feet is considered inaccessible per 22a-133k-2(b)(3) of the RSRs, and RDEC standards do not apply to inaccessible soils. For areas excavated to address an exceedance of a cleanup level that is based on the GA Pollutant Mobility Criteria (PMC), bottom sampling is not required if soil is excavated to the depth of the seasonal low water table [per 22a-133k-2(c)(1)(A)].

In the event that bottom verification samples are required, samples will be collected at a frequency of one sample per 1,000 square feet of excavated area. Bottom samples will be collected from a depth of 0- to 1-foot below the bottom of the excavation.

C. Laboratory Analyses

For each area, confirmatory sampling will focus on the specific constituent(s) that triggered the need for excavation in that area. If an area is targeted for soil removal based on an exceedance of lead, then the sidewall and bottom samples will be analyzed for lead only. In areas where removal is based on exceedance of PMC-based standards, and the excavation does not extend below the seasonal low water table, the verification samples will initially be analyzed for total concentrations of the target constituents. If the total concentration (measured in milligrams per kilogram [mg/kg]) exceeds the applicable cleanup level for a PMC-based standard (measured in milligrams per liter [mg/L]), by a factor of more than 20, the verification sample will be analyzed for the target constituent(s) using the Synthetic Precipitation Leaching Procedure (SPLP) method. If the total concentration (mg/kg) is less than 20 times greater than the PMC-based standard (mg/L), the sample will be deemed to meet the PMC-based cleanup level. The “factor of 20 rule” is based on the volume of fluid relative to soil that used to generate leachate in the SPLP method. Unless the total concentration (mg/kg) is at least 20 times greater than the SPLP-based standard (mg/L), it is mathematically not possible to exceed the standard in the leachate extracted from the sample.

In the case of PCBs, if the mass result is less than 1 mg/kg, SPLP analyses are not required to comply with the PMC [RSRs, Fundamental Review, CTLEP-005 (rev.), March 2006].

D. Data Evaluation

If, based on the laboratory results, one or more of the analyzed constituents remain at concentrations above the cleanup goals in bottom and/or sidewall samples, additional removal and sampling will be performed. The extent of additional removal will be determined on a case-by-case basis, but will generally extend halfway to the next clean sample or to the adjacent excavation sidewall. If all sample results are below cleanup goals, or excavation proceeds to a depth below which a standard no longer applies (i.e., below 4 feet for RDEC exceedances and below the seasonal low groundwater table for PMC exceedances), then excavation will be deemed complete.

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III. Site-Specific Approach

Reflective of the approach described above, Table G-1 identifies pertinent details regarding the targeted extent of removal and nature of the confirmatory sampling approach, including type of exceedance (i.e., RDEC vs. PMC), constituents to be analyzed, anticipated number of samples, and other information specific to each removal area. A more detailed approach for each excavation area is presented in Table G-2.

For those areas where excavation is to be performed based on an exceedance of PMC-based cleanup levels, Table G-1 also indicates the estimated depth at which the seasonal low water table is expected to occur. These estimates were made based on previous water level measurements in nearby monitoring wells (i.e., MWD-601 and CPZ-10 for Excavation Area #1 and MWL-309 for Excavation Area #3). Prior to implementing the post-excavation confirmatory sampling, additional groundwater elevation data is anticipated to be available due to implementation of groundwater monitoring events to be performed as indicated in the *Monitoring Well Network Evaluation and Groundwater Monitoring Program* (Attachment N to the RDWP). This will result in availability of additional groundwater level data that may be used to refine the estimated depth of the seasonal low water table, or to estimate its depth in additional areas that may be identified based on sampling described in the *Soil Investigation Plan* (Attachment I to the RDWP). Note also that estimated low water depths are subject to confirmation at the time that the excavations occur. While the depth of the low water table will be estimated based on available data at the time, excavations may proceed to the depth of the water table if not encountered at or above the anticipated depth. Such further excavation would not be necessary if analytical data representative of a shallower excavation depth indicates that further removal is not necessary to achieve PMC-based standards.

Note also that the site-specific approach reflected in Table G-1 is based on the currently anticipated removal limits shown on Figure G-1. Those limits are subject to modification – and additional areas are subject to identification – based on the results of sampling to be performed prior to soil excavation activities, as indicated on Figure I-2 of the *Soil Investigation Plan* (Attachment I to the RDWP).

IV. Reporting

Analytical data will be posted to the Project Portal web site as described in Section 4.4 of the *Site Management Plan* (Attachment A to the RD POP). Results of the post-excavation sampling will also be presented in the Completion Report documenting the associated Remedial Action activities.

ARCADIS

Tables

**Table G-1.
Post-Excavation Confirmatory Sampling Summary
SRSNE Superfund Site, Southington, CT**

Excavation Area	Type of Regulatory Exceedances	Constituents Exceeding Criteria ¹	Estimated Excavation ²			Anticipated # of Samples ³		Seasonal Low Water Table Depth (ft bgs) ⁴	Bottom Samples Not Required Below: ⁴
			Perimeter (ft)	Area (ft ²)	Depth (ft)	Sidewall	Bottom		
1	PMC	Pb (SPLP)	150	1,900	2	3	2	~4'	4' bgs
2	RDEC	SVOCs Mn	150	1,900	1	3	2	NA	4' bgs
3	PMC	SVOCs	150	1,900	1	3	2	~3	3' bgs (PMC) 4' bgs (RDEC)
	RDEC	SVOCs PCBs Cd, Cr							
4	RDEC	SVOCs	150	1,900	4	3	NA	NA	4' bgs
5	RDEC	PCBs Be	450	16,100	2	9	16	NA	4' bgs

Notes:

ft bgs - feet below ground surface

ft² - square feet

Mn - manganese

Cr - chromium

Cd - cadmium

Pb - lead

Be - beryllium

PMC - Pollutant Mobility Criteria

RDEC - Residential Direct Exposure Criteria

SPLP - Synthetic Precipitation Leaching Procedure

SVOCs - semi-volatile organic compounds

PCBs - polychlorinated biphenyls

NA - not applicable

1. Constituents Exceeding Criteria refers to the constituents that exceeded cleanup goals in initial characterization sampling and, therefore, triggered the need for excavation in each specific area. These are also the constituents subject to analysis in post-excavation verification samples.

2. Dimensions of the Estimated Excavation are based on the preliminary limits shown on Figure G-1, and are subject to modification based on the results of pre-excavation sampling proposed in the Soil Investigation Plan (Attachment I to the RDWP).

3. Anticipated number of samples based on estimated excavation limits and the following:

- sidewall samples: one per 50 linear feet of sidewall and minimum of 3 per excavation area

- bottom samples: one per 1,000 square feet of excavated area (no minimum)

In the event that excavation limits are modified (i.e., as a result of pre-excavation sampling or the results of initial verification samples), the number of sidewall and bottom verification samples would be modified accordingly. Also, the availability of pre-removal delineation samples to serve as verification of the extent of removal may affect the need for, or number of, post-excavation samples.

4. As described in the Performance Standards (Section 2.5.3 of the RDWP), PMC-based standards apply to the depth of the seasonal low water table and RDEC-based standards apply to a depth of 4 feet (with expectation that an Environmental Land Use Restriction will be applied). Based on these criteria, these columns indicate the depth below which bottom verification samples will not be required because the associated PMC- or RDEC-based criteria no longer apply.

Table G-2.
Area-Specific Excavation and Confirmatory Sampling Approach
SRSNE Superfund Site, Southington, CT

	Target Constituents ¹	Type of Regulatory Exceedances	Excavation and Confirmatory Sampling Approach ^{2,3}
Excavation Area 1	Pb was detected above cleanup levels in soil boring SB-905 (0-2 and 0-8.5 ft bgs).	Pb - PMC	<ul style="list-style-type: none"> Excavate to 2 ft bgs Collect approximately 3 sidewall samples (one per 50 feet of excavation perimeter) to confirm horizontal removal limits Collect approximately 2 bottom samples (one per 1,000 square feet of excavated area) to verify vertical removal limits Perform additional excavation and sidewall/bottom confirmation sampling pending results of initial samples such that the final number of sidewall and bottom samples meets target frequencies Maximum excavation depth is 4 ft bgs, based on depth to seasonal low water table in the vicinity of this excavation area
Excavation Area 2	SVOCs were detected above cleanup levels in soil boring SS3-B2 (0-0.5 ft bgs).	SVOCs - RDEC	<ul style="list-style-type: none"> Excavate to 1 ft bgs Collect approximately 3 sidewall samples (one per 50 feet of excavation perimeter) to confirm horizontal removal limits Collect approximately 2 bottom samples (one per 1,000 square feet of excavated area) to verify vertical removal limits Perform additional excavation and sidewall/bottom confirmation sampling pending results of initial samples such that the final number of sidewall and bottom samples meets target frequencies Maximum excavation depth is 4 ft bgs, the depth below which the RDEC do not apply
Excavation Area 3	SVOCs, PCBs, Cd and Cr were detected above cleanup levels in soil boring SS3-B4 (0-0.5 ft bgs).	SVOCs - PMC and RDEC PCBs, Cd and Cr - RDEC	<ul style="list-style-type: none"> Excavate to 1 ft bgs Collect approximately 3 sidewall samples (one per 50 feet of excavation perimeter) to confirm horizontal removal limits Collect approximately 2 bottom samples (one per 1,000 square feet of excavated area) to verify vertical removal limits Perform additional excavation and sidewall/bottom confirmation sampling pending results of initial samples such that the final number of sidewall and bottom samples meets target frequencies Maximum excavation depth is 3 ft bgs for PMC exceedances (based on depth to seasonal low water table in the vicinity of this excavation area) and 4 ft bgs for RDEC exceedances
Excavation Area 4	SVOCs were detected above cleanup levels in soil boring SB-907 (2-4 ft bgs).	SVOCs - RDEC	<ul style="list-style-type: none"> Excavate to 4 ft bgs Collect approximately 3 sidewall samples (one per 50 feet of excavation perimeter) to confirm horizontal removal limits Bottom samples are not required due to removal to 4 ft bgs (depth below which RDEC do not apply) Perform additional excavation and sidewall confirmation sampling pending results of initial samples such that the final number of sidewall samples meets target frequencies
Excavation Area 5	PCBs and Be were detected above cleanup levels in multiple soil borings ranging from 0-0.5 ft bgs to 0-2 ft bgs	PCBs and Be - RDEC	<ul style="list-style-type: none"> Excavate to 2 ft bgs Collect approximately 9 sidewall samples (one per 50 feet of excavation perimeter) to confirm horizontal removal limits Collect approximately 16 bottom samples (one per 1,000 square feet of excavated area) to verify vertical removal limits Perform additional excavation and sidewall/bottom confirmation sampling pending results of initial samples such that the final number of sidewall and bottom samples meets target frequencies Maximum excavation depth is 4 ft bgs, the depth below which the RDEC do not apply

Notes:

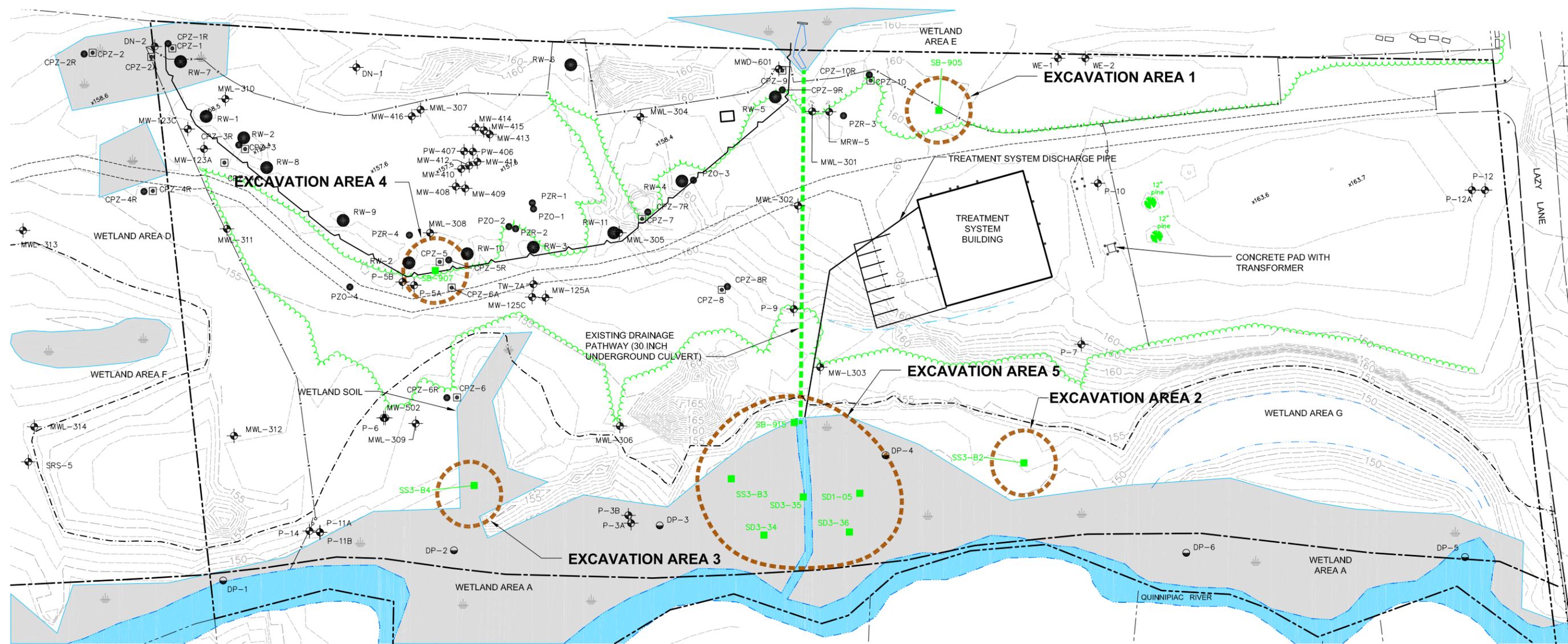
ft bgs - feet below ground surface
 Cr - chromium
 Cd - cadmium
 Pb - lead
 Be - beryllium
 PCBs - polychlorinated biphenyls

PMC - Pollutant Mobility Criteria (of the CTDEP RSRs)
 RDEC - Residential Direct Exposure Criteria (of the CTDEP RSRs)
 SVOCs - semi-volatile organic compounds
 CTDEP - Connecticut Department of Environmental Protection
 RSRs - Remediation Standard Regulations

1. Target Constituents refers to the constituents that exceeded cleanup goals in initial characterization sampling and, therefore, triggered the need for excavation in each specific area. These are also the constituents subject to analysis in post-excavation verification samples.
2. The number of bottom and/or sidewall confirmation samples indicated presumes that the soil excavation limits are generally consistent with preliminary limits shown on Figure G-1. Removal limits may be modified based on pre-removal delineation sampling to be performed in accordance with the Soil Investigation Plan (Attachment I to the Remedial Design Work Plan). As needed, the number of confirmation samples would be modified to reflect the target frequencies indicated.
3. The availability of pre-removal delineation samples to serve as verification of the extent of removal may affect the need for, or number of, post-excavation samples.

Figure

CITY: SYRACUSE DIV\GROUP: ENVCAD DB: PGL LAF LD:\Cpt\ PIC: G CAMERON PM: J HOLDEN TM: J HOLDEN LXR: ONE-OFF-REF
 G:\ENVCAD\SYRACUSE\ACT\B0054634\000\010009\DWG\ID\XIN\54634\G04.DWG LAYOUT: G-1. SAVED: 3/3/2009 4:47 PM ACADVER: 17.05 (LMS TECH) PAGES: 17.05 (LMS TECH)
 XREFS: 54634X01 54634X02
 IMAGES: PROJECTNAME:



LEGEND:

---	PROPERTY LINE	---	SHEETPILE
---	PROPERTY LINE - ADJOINER	---	TREELINE
---	BUILDING	●	TREE
---	ROAD	●	BOLLARD
---	GRAVEL ROAD	■	WETLAND
---	DRAINAGE SWALE	■	SB-915 SOIL SAMPLING LOCATION
---	RIVER	⊕	P-10 MONITORING WELL
---	FLOODPLAIN - 100 YEAR	⊕	PZR-3 NTCRA 1 PIEZOMETER
---	INDEX CONTOUR	⊕	CPZ-10 NTCRA 1 COMPLIANCE PIEZOMETER
---	INTERMEDIATE CONTOUR	⊕	RW-1 NTCRA OVERBURDEN EXTRACTION WELL
---	CHAINLINK FENCE	⊕	DP-5 WETLAND DRIVE POINT
---	ESTIMATED REMOVAL LIMITS PER FIGURE 7 OF THE RECORD OF DECISION		

- NOTES:**
- SITE PLAN TAKEN FROM DIVERSIFIED TECHNOLOGIES CORP., 556 WASHINGTON AVE., NORTH HAVEN, CT, DATED 6/93. TOPOGRAPHY REPORTED TO HAVE BEEN DIGITIZED FROM TOWN OF SOUTHWINGTON TOPOGRAPH MAPS G-7, G-8, G-9; PHOTOGRAPHY DATED NOV. 1978, SCALE: 1"=100'. PROPERTY LINES REPORTED TO HAVE BEEN DIGITIZED AND LOT NUMBERS TAKEN FROM "PROPERTY MAP, TOWN OF SOUTHWINGTON" MAPS 134 & 147, SCALE: 1"=100' BY DIVERSIFIED TECHNOLOGIES CORPORATION.
 - BENCHMARK #1 IS AT ELEVATION 164.03. PK NAIL; S'LY SIDE; POLE #9049.
 - THE 100-YEAR FLOOD LIMIT AND WETLAND AREAS WERE TAKEN FROM THE FINAL REMEDIAL INVESTIGATION REPORT (HNUS, MAY 1994).
 - THE LOCATIONS OF EXISTING DRIVE POINTS, WELLS AND PIEZOMETERS ARE APPROXIMATE ONLY.



SRNE SUPERFUND SITE
 SOUTHWINGTON, CONNECTICUT
**POST-EXCAVATION CONFIRMATORY
 SAMPLING PLAN**

**CIANCI PROPERTY SOIL
 REMEDIATION AREAS**

FIGURE
G-1