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Transmitted Via Federal Express

October 24, 2003

Ms. Karen Lumino
USEPA New England (HBO)
1 Congress Street
Boston, MA 02114

Re: SRSNE Site NAPL Delineation Pilot Study
Southington, Connecticut
Project #: 1041.083.31 #2.04

Dear Ms. Lumino:

This document describes the scope of a pilot study of field methods used to visually identify non-aqueous phase liquids (NAPLs) in soil, which is proposed for the Solvents Recovery Service of New England (SRSNE) Site (the Site) in Southington, Connecticut. Blasland, Bouck & Lee, Inc. (BBL) prepared this letter on behalf of the Potentially Responsible Parties (PRP Group or "the Group") for submittal to the United States Environmental Protection Agency (USEPA) and the Connecticut Department of Environmental Protection (CTDEP). This letter presents the following information:

- Historical NAPL Observations in Overburden;
- Pilot Study Purpose and Objectives;
- Pre-Pilot Assessment of Methods;
- Initial Soil Boring Locations;
- Soil Sample Collection;
- Soil Sample Evaluation for NAPL Presence or Absence;
- Selection of Subsequent Soil Boring Locations;
- Data Presentation;
- Field Team Roles and Responsibilities; and
- Waste Handling.

The NAPL delineation pilot study is currently scheduled for the week of November 3-7, 2003, and will be attended by USEPA's geologist, USEPA's hydrogeologic consultant, Dr. Bernard H. Kueper, and a BBL geologist. The one-week field program will consist of drilling soil borings using two direct-push rigs, visually examining soil samples to identify NAPL, documenting soil types and observations regarding visual NAPL presence/absence, and selecting follow-up boring locations. The necessary information will be obtained by direct visual observation of the soil samples including the use of hydrophobic dye to enhance NAPL visibility, as appropriate. Subsequent drilling locations will be selected based on discussions between the technical representatives listed above.

It is anticipated that 25 to 30 soil borings will be performed in the general area shown on Figure 1. Soil samples will be collected continuously from ground surface to the top of bedrock or equipment refusal.

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Soil sampling activities will be performed in accordance with the existing Health and Safety Plan (BBL, August 1996). A materials safety data sheet (MSDS) for Oil Red O hydrophobic dye is included in Attachment 1. In addition, the collection and evaluation of soil samples and management of pilot-study derived waste will be performed pursuant to the existing Field Sampling Plan (BBL, August 1996), as amended by the information presented herein. In particular, the soil samples will be collected using direct-push sampling equipment following the Standard Operating Procedure presented in Attachment 2, rather than split spoons as described in the existing FSP. This modification will reduce the quantity of soil cuttings requiring management and will likely improve soil sample quality and drilling production. Additional information regarding soil sample evaluation for the presence of NAPL is presented below.

The remainder of this letter presents the purpose and scope of the NAPL delineation pilot study.

Historical NAPL Observations in Overburden

Past investigations at the site have encountered NAPL at 13 locations in the overburden (Figures 1 and 2). These include:

- LNAPL layers and/or sheens in three overburden groundwater monitoring wells in the former SRSNE Operations Area;

- NAPL, sheens, or positive hydrophobic dye tests observed during overdrilling and grouting of 8 former on-site interceptor system wells in the former SRSNE Operations Area;

- Recoverable DNAPL at one downgradient groundwater extraction well (RW-5) – approximately 3 gallons were recovered, but no DNAPL has been observed there since 1995; and

- Observation in a split-spoon during drilling next to well RW-5 and subsequent recovery of DNAPL in the co-located DNAPL monitoring well (DMW-601) – approximately 1 gallon was recovered, but no DNAPL has been observed there since 1995.

Overburden LNAPL and DNAPL samples have similar chemical composition and dark brown color. Figure 3a shows a representative example of the NAPL color, which is DNAPL from well DMW-601. Due to their dark color, the NAPLs are visible in the light to medium, reddish-brown to tan soil (Figure 3b). In addition, NAPL sheens are sometimes observed in soil samples and in soil-water shake tests. The DNAPL from well DMW-601 produced an obvious sheen during a soil-water shake test and a positive reaction with hydrophobic dye (Sudan IV; see Figure 3c); however, it did not produce a noteworthy response under ultraviolet light. The overburden NAPL density and viscosity have been measured, and are similar to those of water.

Pilot Study Purpose and Objectives

The purpose of the NAPL delineation pilot study will be to drill soil borings in and around the zone where NAPL has already been visually observed in soil or monitoring wells and assess the new soil samples for the presence of visible NAPL using a specified procedure described in detail below. Specific objectives will be: 1) identify the horizontal and vertical locations of NAPL; 2) characterize soil strata containing visible NAPL in terms of grain-size, texture, etc.; and 3) interpret the degree of NAPL saturation in soil (pooled versus residual).

The pilot study field approach will be to perform as many soil borings as practicable using two direct-push drilling rigs within the stated one-week period. In addition to providing information regarding the effectiveness and implementability of the field methods described herein, the NAPL delineation pilot study will provide further data to assist in delineating the source zone to be evaluated for potential remedial technologies in the Feasibility Study.

To evaluate proposed field methods for visually identifying NAPL in soil, *de maximis* and BBL performed a pre-pilot assessment, as described below.

Pre-Pilot Assessment of Methods

On October 20, 2003, *de maximis* and BBL performed a pre-pilot assessment of methods to identify NAPL in saturated soil. This work included three sub tasks: 1) preparation of standard soil samples with known NAPL saturation (percent of total porosity); 2) preparation and testing of blind-named samples with specific NAPL saturation, and comparison to standards; and 3) measurement of PID in chilled soil containing a small amount of NAPL. These tasks area described below. Attachment 3 shows a post-testing photograph of materials used to identify NAPL in prepared soil samples on October 20, 2003.

Preparation of NAPL/Soil Standard Samples

A batch of saturated soil was obtained by digging a hole with a post-hole digger, approximately 2 to 3 feet deep on the former Cianci Property, east of the NTCRA 1 sheet-pile wall. The soil consisted of silty, gravelly, fine to medium sand, which is representative of soil samples previously obtained from the site. NAPL/soil standards were prepared by placing a measured mass of saturated soil and measured volume of NAPL into clear, colorless 60 mL glass jars to prepare samples with 0% (no NAPL added), 1%, 3%, 5%, 10%, 20%, and 30% NAPL saturation. The soil mass in each sample was measured using an electronic scale to the nearest 0.1 gram. The volume of NAPL was measured to the nearest 0.02 cc (1%, 3%, 5%, and 10% samples) or 0.1 cc (20% and 30% samples). The NAPL used to create these standards was obtained from well CPZ-8R in June 2003. The NAPL was injected into the soil using a needle and syringe. An attempt was made to stir and "fold" the NAPL into the soil sample within the jar using a stainless steel spatula, but it was found necessary to shake the samples to thoroughly mix the NAPL and soil. After shaking, even the 30% NAPL samples showed no obvious NAPL in the samples.

These standard samples were subjected to the following tests to identify VOCs and/or NAPL:

- Jar headspace PID reading – The blank samples indicated 0 to 5 parts per million (ppm) total detectible organic vapors. The 1% samples indicated 800 to >1,000 ppm, as did the standards with higher levels of NAPL saturation.

- Direct observation of NAPL in soil standards after shaking – As noted above, no NAPL was obvious within the jars after shaking to mix the soil and NAPL. Because the soil obtained from the field was water-saturated, each sample appeared as a "liquifacted" slurry after shaking.

- NAPL FLUTe™ Ribbon – Approximately 10 cc of each soil standard was placed between two pieces of FLUTe™ ribbon impregnated with hydrophobic dye. The soil was massaged between the pieces of ribbon for approximately one minute to promote contact of the soil with the ribbon material. The samples with 0% and 1% NAPL saturation indicated no obvious reaction between the sample and the ribbon. The remaining samples produced visible NAPL imbibation and staining on the ribbon. However, the staining associated with the 3% and 5% samples was very subtle. A factor that complicated the identification of a reaction on the FLUTe™ ribbon was the inconsistency of the coloration of new ribbon material. Some sections of new ribbon material have subtle color patterns that resemble slight NAPL reactions even prior to use. Another factor that complicates this test is that the outside surfaces of ribbon, which do not contact NAPL, tend to become smudged with incidental soil during the manipulation of the sample.

- Soil-water shake tests – Some of the standard samples indicated a sheen, but the results were not systematic as a function of NAPL saturation. The samples with 1%, 5%, and 20% NAPL saturation showed a sheen after shaking; those with 0%, 10% and 30% did not. However, the presence of foaming was found to be a more consistent indicator of NAPL all of the samples containing NAPL indicated foaming after shaking. The 0% sample did not indicate foaming. Thus, foaming and sheens appear to indicate the presence of NAPL. The absence of foaming suggests the absence of NAPL, but the absence of sheen does not indicate the absence of NAPL.

- Oil Red O shake test – The sample with 0% NAPL showed no reaction with Oil Red O hydrophobic dye, which maintained its original dark brown powdery appearance, and produced no indication of a red color anywhere in the vial after shaking. The 1% NAPL sample was tested twice, and only one of these indicated any indication of red coloration, which was a red tint on the inside surface of the vial above the water level. All of the other standards containing NAPL indicated obvious bright red coloration on the inside surface of the vial above the water level after shaking, and those with higher levels of saturation indicated some red droplets within the soil.

- Soil/dye smear test – Approximately 10 cc of soil and 1 cc of Oil Red O powder was placed in a disposable, 2"x2", colorless polyethylene dish. The soil and dye were mixed and smeared together into a paste consistency in the dish using a nitrile-glove-covered hand. This method was found to effectively mix the soil and powder, after which the mixture was removed from the dish and the dish was gently rinsed with distilled water. All of the soil samples containing NAPL, even as little as 1% NAPL saturation, produced a distinct red color which coated the surface of the dish and the portion of the glove used to smear the soil and dye. The sample containing no NAPL produced either no coloration or else a very faint pink coloration on the dish and glove.

The NAPL/soil standard samples, shake-test vials, smear-test dishes, and FLUTe™ ribbons were photographed and retained for later comparison during the actual pilot study (see Attachment 3).

<u>Testing of Blind-Named NAPL/Soil Samples</u>

Nine blind-named NAPL/soil samples were prepared to test our ability to identify NAPL in soil. Five of the samples prepared for this evaluation contained no NAPL, and these served as control samples, or blanks. The other four samples contained 1%, 5%, 10% and 20% NAPL saturation, and were prepared consistent with the procedures described in the previous subsection. The NAPL used to prepare these samples was an approximately equal mixture of the NAPL from wells CPZ-8R and either RW-5 or DMW-601. After preparation as described above, these samples were labeled on the bottom of each jar (e.g., "0", "5", etc.), the jars were "scrambled", and then the top of each jar was labeled for identification during the evaluation process (e.g., "A", "B", etc.). These samples were then subjected to the evaluation methods listed above, compared to the standards described in the previous subsection, and used to interpret the presence or absence of NAPL. Following the assessment of NAPL presence or absence, the actual identity of each sample was determined, and these samples were archived along with the NAPL/soil standard samples discussed above.

The results of these evaluations indicated the following order of reliability of methods (ranked from most reliable to least reliable):

1. Soil/dye smear test. Correct identification of NAPL presence – 4 out of 4 samples containing NAPL. Even the sample with 1% NAPL saturation produced an obvious red stain on the dish and glove used to smear the sample. This method produced no false positives or false negatives in terms of NAPL identification.

2. Oil Red O shake test. Correct identification of NAPL presence – 3 out of 4 samples containing NAPL. No false positives. One false negative (1% NAPL saturation sample had no apparent reaction).

3. Soil-water shake test. Correct identification of NAPL presence – 3 out of 4 samples containing NAPL. One false negative (no sheen was observed with 1% NAPL saturation sample). One false positive (apparent foaming was interpreted as present on one of the five 0% NAPL control blanks).

4. NAPL FLUTe™ ribbon. Correct identification of NAPL presence – 4 out of 4 samples containing NAPL. Three false positives (apparent slight staining with three of five the 0% control blanks, which actually contained no NAPL).

Based on these results, the top three methods will be used to identify NAPL in soil, in addition to direct, unaided visual observation of NAPL in soil. NAPL FLUTe™ ribbon is not considered to be reliable enough to use during the proposed NAPL delineation pilot study because 3 of the 5 blind samples lacking NAPL were falsely interpreted as containing NAPL using the NAPL FLUTe™ ribbon.

The blind-named NAPL/soil standard samples, shake-test vials, smear-test dishes, and FLUTe™ ribbons were photographed and retained for later comparison during the actual pilot study (see Attachment 3).

Measurement of PID Screening Level for Organic Vapors in Chilled Soil Containing NAPL

To measure the PID response to a sample of chilled soil, which may represent the field conditions when the pilot study is performed, a sample of saturated soil (approximately 40 cc) containing 1% saturation of NAPL was prepared as described above, chilled, and screened using a PID. The NAPL used to prepare this sample was an approximately equal mixture of the NAPL from wells CPZ-8R (archived since June 2003) and RW-5 (archived since 1995). After preparation, the sample was placed in a refrigerator at 36 degrees Fahrenheit for approximately one hour. The soil sample was then removed from the refrigerator, poured out of the jar onto a flat surface, and immediately screened using a PID. The maximum PID response was 180 ppm total organic vapors. Based on this information, a conservative PID screening criterion of 100 ppm will be used to identify soil intervals that will undergo detailed evaluation for the presence of visible NAPL.

Initial Soil Boring Locations

The first 10 soil boring locations (PTB-1 through PTB-10) are presented on Figures 1 and 2. These locations were discussed with USEPA/CT DEP during a conference call on October 7, 2003, and are based on:

- locations where NAPL has been visually observed in the overburden;
- historical NAPL storage and processing infrastructure within the Operations Area;
- depressions in the top of the basal till unit; and
- NTCRA 1 and NTCRA 2 pipes and wiring.

Nine of the 10 initial soil borings surround the area with visible NAPL observations or past NAPL handling/storage, which is presumed to be the minimum area that will be evaluated for potential source zone remedial alternatives in the FS. The other initial boring is within this area. The balance of the soil borings that can be practicably completed within the scheduled week of the pilot study will be located based on discussions between USEPA and Group representatives, as described below.

Soil Sample Collection

Dual-tube, direct-push drilling will be conducted using two rigs, which will be brought to the site by BBL and O&M, Inc. Soil samples will be obtained continuously from ground surface to the top of bedrock or refusal, unless a NAPL pool of substantial thickness is observed below the water table. Each soil boring location will be grouted upon completion, staked and labeled in the field.

Each soil sample will be retrieved in a Lexan sleeve, capped at both ends, and taken to a central sample processing area within or near the existing NTCRA 1 treatment system building. The Lexan sleeve will be cut open axially, and the sample will undergo evaluation for the presence or absence of visible NAPL using the process described below. In addition, following the evaluation of the sample for visible NAPL, a BBL geologist will classify the soil sample in terms of: 1) soil type; 2) color; 3) percent recovery; 4) relative moisture content; 5) texture; 6) grain size and shape; 7) consistency; 8) staining, if any; 9) odors, if any; and 10) any other noteworthy observations. The descriptions will be recorded in a field notebook or appropriate Subsurface Log. Non-disposable subsurface sampling devices used to collect analytical soil samples will be decontaminated between boring locations using an Alconox scrub and/or potable water rinse.

Soil Sample Evaluation for NAPL Presence or Absence

Figure 4 presents the process for evaluating soil samples for NAPL presence or absence. After opening the Lexan™ sleeve, the soil sample in the sleeve will be quickly screened for volatile organic vapors using a photoionization detector (PID). During screening, the soil will be split open and the PID probe will be placed in the opening and covered with a gloved hand. Such readings will be obtained along the entire length of the sample. Any specific soil interval that indicates a PID reading >100 parts per million total detectible organic vapors will undergo further detailed evaluation for visible NAPL. The assessment for NAPL will include a combination of the following tests/observations.

- Evaluation for visible NAPL sheen or dark brown NAPL in soil – The NAPL sheen will be a colorful iridescent appearance on the soil sample. NAPL may also appear as droplets or continuous accumulations of dark brown, opaque liquid.

- Soil/dye smear test – A portion of the selected soil interval will be placed in disposable polyethylene dish, along with Oil Red O powder. The soil and dye will be manually mixed and smeared in the dish to create a paste-like consistency using a new nitrile glove-covered hand for approximately 30 to 60 seconds. The dish will be emptied and gently rinse using distilled or potable water. A positive test result will be indicated by bright red (not faint pink) color on the dish and/or glove.

- Soil-water shake test – A small quantity of soil (up to 15 cc) will be placed in a clear, colorless, 40 mL vial containing an equal volume of potable or distilled water. After the soil settles into the water, the surface of the water will be evaluated for a visible sheen. The jar will be closed and gently shaken for approximately 10 to 20 seconds. Again, the surface of the water will be evaluated for a visible sheen or else a temporary layer of foam. A positive test result will be indicated by the presence of a visible sheen or foam on the surface of water.

- Oil Red O Shake Test – Following the soil-water shake test noted above, a small quantity (approximately 0.5 to 1 cc) of Oil Red O powder will be placed in the jar. The sheen layer will be evaluated for reaction with the dye (change to bright red color). The jar will be closed and gently shaken approximately 10 to 20 seconds. The contents in the closed jar will be examined for visible bright red-dyed liquid inside the jar. A positive test result will be indicated by a reaction between the dye and the sheen layer upon first addition of the Oil Red O, a bright red coating the inside of the vial, particularly above the water line, or red-dyed droplets within the soil.

- Estimation of Relative Degree of NAPL Saturation – When NAPL is interpreted as present in a particular portion of soil, the field team will estimate the relative degree of NAPL saturation in the soil. Specifically, an interpretation will be made as to whether the observed NAPL is pooled (continuous section of soil in which the pore spaces are filled with a mixture of NAPL and water) or residual (isolated droplets or blebs of NAPL, surrounded by pore spaces containing only water).

The results of each test or observation will be recorded on a NAPL evaluation log sheet (Table 1). Any evidence of visible NAPL in a sample will be documented in the field book or Subsurface Log by the BBL geologist in terms of the depth and thickness of the interval(s) containing visible NAPL. In addition, any shake tests vial or smear-test glove or dish that produces positive results in terms of NAPL presence will be photographed and placed in ZipLoc™ bags, labeled in terms of soil boring location and depth interval, and archived in the NTCRA 1 treatment system building.

Selection of Subsequent Soil Boring Locations

Following the completion of the first 10 soil borings, additional soil borings will be selected based on collaborative discussion between USEPA's geologist, USEPA's hydrogeologic consultant, Dr. Bernard H. Kueper, and a BBL geologist. Figure 5 presents a general process for selecting subsequent soil boring locations. It is presumed that the soil boring locations will generally be selected by consensus between representatives of the USEPA and the Group, but the procedure shown on Figure 5 also includes a provision for discretionary borings to be selected unilaterally on an alternating basis, when necessary.

Data Presentation

BBL will prepare subsurface logs for the soil borings completed during the NAPL delineation pilot study and produce a technical memorandum summarizing the findings of the study. The new soil boring data will be entered into the existing hydrogeologic database for the site. The technical memorandum, which could be incorporated as a new appendix to the FS Report, will include: a narrative description of the pilot study and relevant findings; soil boring logs; and a map showing the pilot study soil borings, locations where NAPL was visually identified, representative photographs of visual evidence of NAPL in soil, and historical infrastructure potentially associated with NAPL entry points.

Field Team Roles and Responsibilities

The field team roles and responsibilities during the pilot study will be as follows:

- Technical Team (EPA geologist, EPA's hydrogeologic consultant, and Dr. Kueper) – Interpret NAPL presence in samples, interpret relative degree of NAPL saturation (pooled or residual), select subsequent drilling locations. Assist with geologic soil descriptions and detailed visual NAPL evaluations, as time allows.

- *de maximis* coordinator – Collect selected soil intervals and perform detailed visual NAPL evaluation, photograph and archive positive NAPL evidence, and stake boring locations. Assist with opening Lexan™ sleeves and screening soil with PID, as time allows.

- BBL Geologist – Screen soil samples and soil evaluation area breathing zone with PID, identify soil intervals to undergo detailed visual evaluation for NAPL. Participate in interpreting NAPL presence and selecting subsequent drilling locations. Record geologic soil descriptions and detailed visual NAPL evaluation results. Assist in performing detailed visual NAPL evaluation, as time allows.

- Driller – Operate drill rig and PID; collect, cap, and label Lexan™ sleeves (boring number, "up" arrow, and depth interval), decontaminate drilling equipment, grout borings, and stake and label completed borings.

- Driller's Helper – Transport Lexan™ sleeves to central soil processing area, open Lexan™ sleeves, and manage soil cuttings. Assist driller, as time allows.

Waste Handling

Waste materials will be managed as described in the existing Field Sampling Plan. Soils with PID readings above 5 ppm will be containerized for proper disposal. Soils with PID values equal to or below 5 ppm will be spread on the ground surface inside the NTCRA 1 sheetpile wall. Decontamination water will be decanted on the ground surface inside the NTCRA 1 sheetpile wall.

Please call me or Mr. Bruce Thompson of de maximis, inc. should you have any questions.

Sincerely,

BLASLAND, BOUCK & LEE, INC.

Michael J. Gefell, C.P.G.
Vice President

MJG/plf
Enclosures

cc: Mr. Martin Beskind, P.E., Connecticut Department of Environmental Protection
Mr. Liyang Chu, TetraTech NUS
Mr. William Morris, United Industrial Services
Mr. Bruce Thompson, de maximis, inc.
Dr. Bernard Kueper, Ph.D., P.Eng., Queens University

Table

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TABLE 1

NAPL DELINEATION PILOT TEST
SRSNE SUPERFUND SITE – SOUTHINGTON, CONNECTICUT

NAPL EVALUATION LOG SHEET

Location ID	Sample Number	Depth Interval (feet below ground surface)		Observation/Test Results[1]						Participants Involved in Interpreting NAPL Presence[2]										Miscellaneous Comments/Observations
										Mangion		Healey		Kueper		BBL Geologist				
		Top	Bottom	PID (ppm, maximum)	Visible NAPL Sheen	Visible NAPL	Soil-Dye Smear Test	Soil-Water Shake Test	Oil Red-O Shake Test	Residual	Pooed	Residual	Pooed	Residual	Pooed	Residual	Pooed	Residual	Pooed	

Notes:

1. + = Visual test produced positive result.
   - = Visual test produced negative result.
   0 = Visual test not performed.

2. + = Participant present and interprets that NAPL is PRESENT at the stated degree of saturation.
   - = Participant present and interprets that NAPL is NOT PRESENT at the stated degree of saturation.
   0 = Participant not present.

Figures

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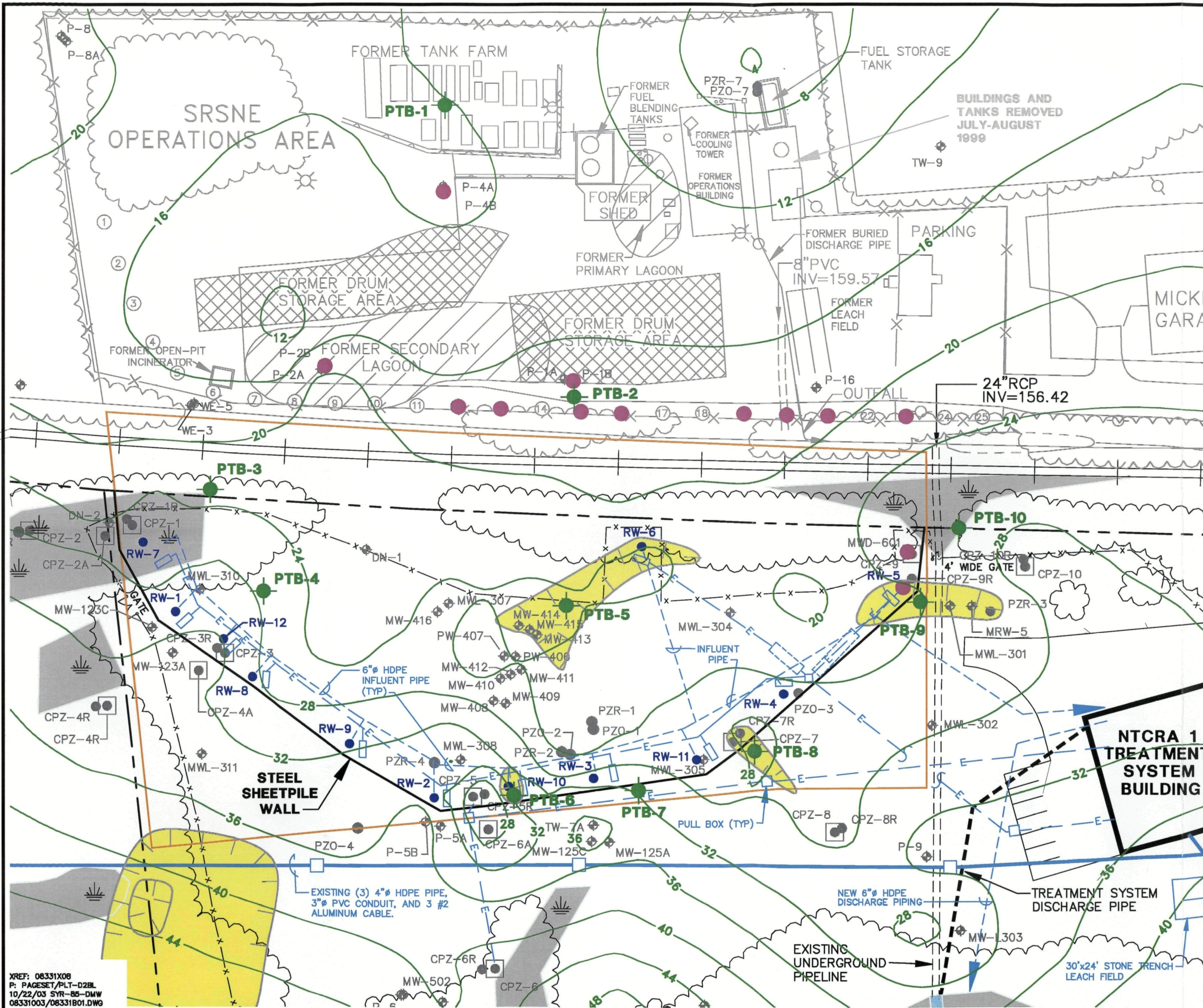

LEGEND

- PROPERTY LINE
- WETLAND
- NTCRA 1 CONTAINMENT AREA
- EXISTING STRUCTURE
- VEGETATION
- X——X FENCE
- P-10 MONITORING WELL
- PZR-3 NTCRA 1 PIEZOMETER
- CPZ-10 NTCRA 1 COMPLIANCE PIEZOMETER
- RW-1 NTRCA 1 OVERBURDEN EXTRACTION WELL
- (12) FORMER ON-SITE INTERCEPTOR INTERCEPTOR SYSTEM EXTRACTION WELL
- LOCATIONS WITH PREVIOUS VISUAL NAPL IDENTIFICATION
- DEPRESSIONS IN TOP OF BASAL TILL
- PROPOSED INITIAL PILOT-TEST BORINGS (APPROXIMATE)
- 40 DEPTH TO BEDROCK CONTOURS (FEET)
- —E— NTCRA 1 AND 2 UTILITIES (APPROXIMATE LOCATION)

NOTES

1. 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 SOUTHINGTON 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 SOUTHINGTON" MAPS 134 & 147, SCALE: 1"=100' BY DIVERSIFIED TECHNOLOGIES CORPORATION.
2. BENCHMARK #1 IS AT ELEVATION 164.03. PK NAIL; S'LY
3. THE LOCATIONS OF EXISTING DRIVE POINTS, WELLS AND PIEZOMETERS ARE APPROXIMATE ONLY.

0 30' 60'
GRAPHIC SCALE

SRSNE PRP GROUP
SOUTHINGTON, CONNECTICUT

FS NAPL-DELINEATION PILOT TEST

INITIAL PILOT-TEST BORING LOCATIONS AND RELEVANT SITE FEATURES

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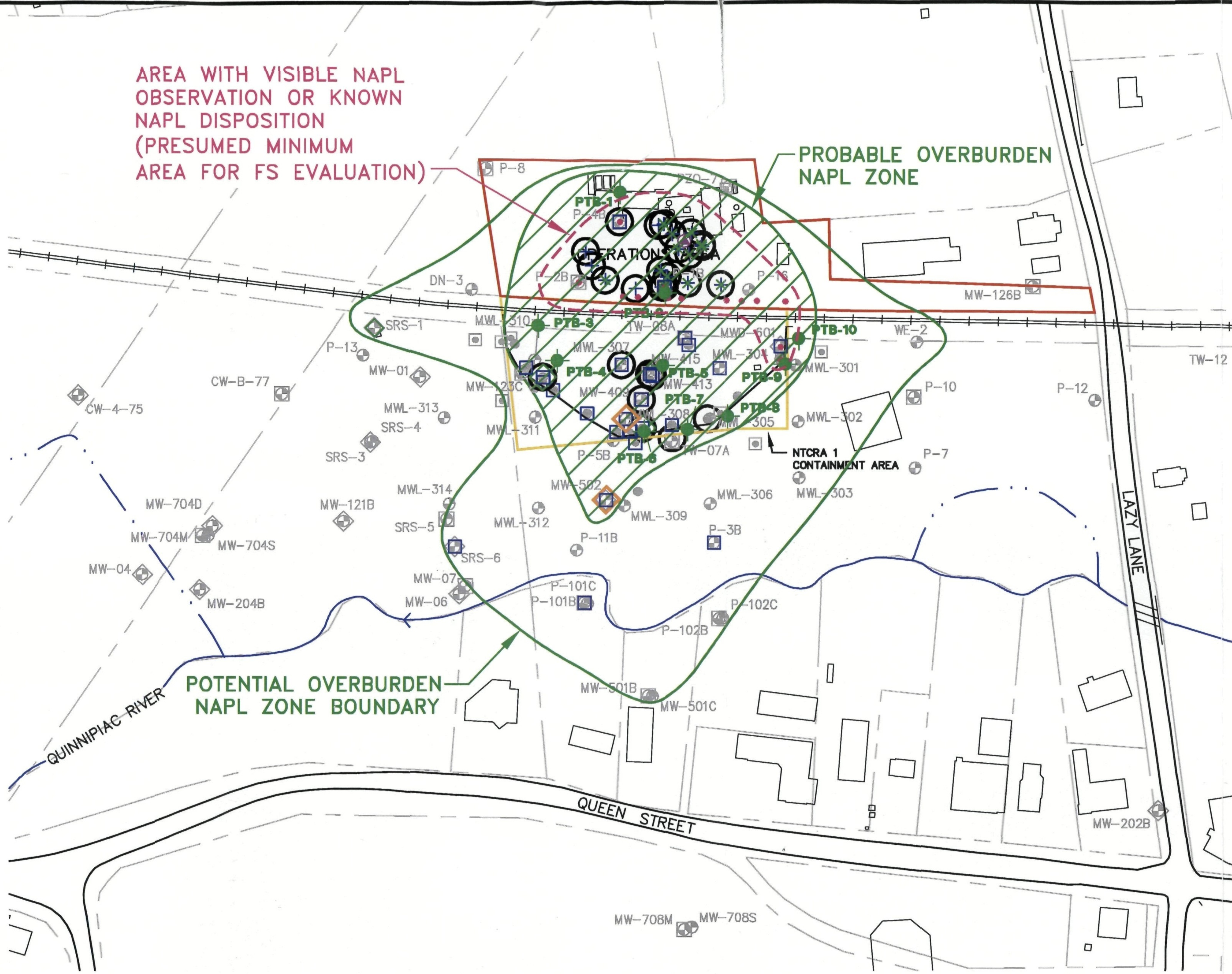
FIGURE 1



LEGEND:

- SATURATED SOIL AND/OR GROUND-WATER SAMPLING LOCATION WITH VOCs DETECTED >10% OF EFFECTIVE SOLUBILITY (MATHEMATICAL AND/OR EMPIRICAL EVALUATION)
- GROUND-WATER SAMPLING LOCATION WITH VOCs DETECTED >1% OF EFFECTIVE SOLUBILITY (MATHEMATICAL EVALUATION)
- GROUND-WATER SAMPLE WITH VOCs DETECTED >1% OF EMPIRICAL SOLUBILITY
- GROUND-WATER SAMPLING LOCATION WITH ALCOHOLS DETECTED
- OTHER LOCATIONS WHERE NAPL VISUALLY OBSERVED, OR IDENTIFIED BY SHEEN OR POSITIVE HYDROPHOBIC DYE TEST
- SOIL SAMPLE WITH VOCs DETECTED >10% OF EFFECTIVE SOLUBILITY CALCULATED IN PORE WATER (MATHEMATICAL EVALUATION)
- SOIL SAMPLE WITH VOCs DETECTED >100% OF EFFECTIVE SOLUBILITY CALCULATED IN PORE WATER (MATHEMATICAL EVALUATION)
- SOIL SAMPLE WITH VOCs DETECTED >10% OF EMPIRICAL SOLUBILITY CALCULATED IN PORE WATER
- SOIL SAMPLE WITH VOCs DETECTED >100% OF EMPIRICAL SOLUBILITY CALCULATED IN PORE WATER
- VADOSE SOIL SAMPLE WITH VOCs DETECTED >100% OF EMPIRICAL SOLUBILITY CALCULATED IN PORE WATER
- MW-704S SHALLOW OVERBURDEN MONITORING WELL
- P-10 MIDDLE OVERBURDEN MONITORING WELL
- MW-121B DEEP OVERBURDEN MONITORING WELL
- NTCRA 1 EXTRACTION WELL
- NTCRA 1 COMPLIANCE PIEZOMETER
- PROPOSED INITIAL PILOT-TEST BORINGS

0 200' 400'

GRAPHIC SCALE

NOTES:

1. MAPPING BASED ON FIGURE "SOLVENT RECOVERY SERVICE OF NEW ENGLAND REMEDIAL INVESTIGATION/FEASIBILITY STUDY, LAZY LANE, SOUTHINGTON, CONNECTICUT" DATED 6-28-93 BY DIVERSIFIED TECHNOLOGIES CORPORATION.
2. BASED ON MOST RECENT ANALYTICAL RESULTS AT EACH SAMPLING LOCATION THROUGH JUNE 2003.

XREF: 08325X01
L: ON=*,(OVB*); OFF=BED*,REF
P:STD-B2DL.PCP ● E-SIZE OR STD-BL.PCP
10/22/03 ROC-85-SLM SYR-54-RLP, PGL, DMW
08331004/08331B06.DWG

SRSNE PRP GROUP
SOUTHINGTON, CONNECTICUT
FS NAPL-DELINEATION PILOT TEST

ESTIMATED NAPL-ZONE BOUNDARY IN OVERBURDEN

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FIGURE 2

(a)

(b)

(c)

Note:
Jars are approximately 4 inches tall.

SRSNE SUPERFUND SITE,
SOUTHINGTON, CONNECTICUT

FS NAPL-DELINEATION PILOT TEST

MWD-601
DNAPL PHOTOGRAPHS

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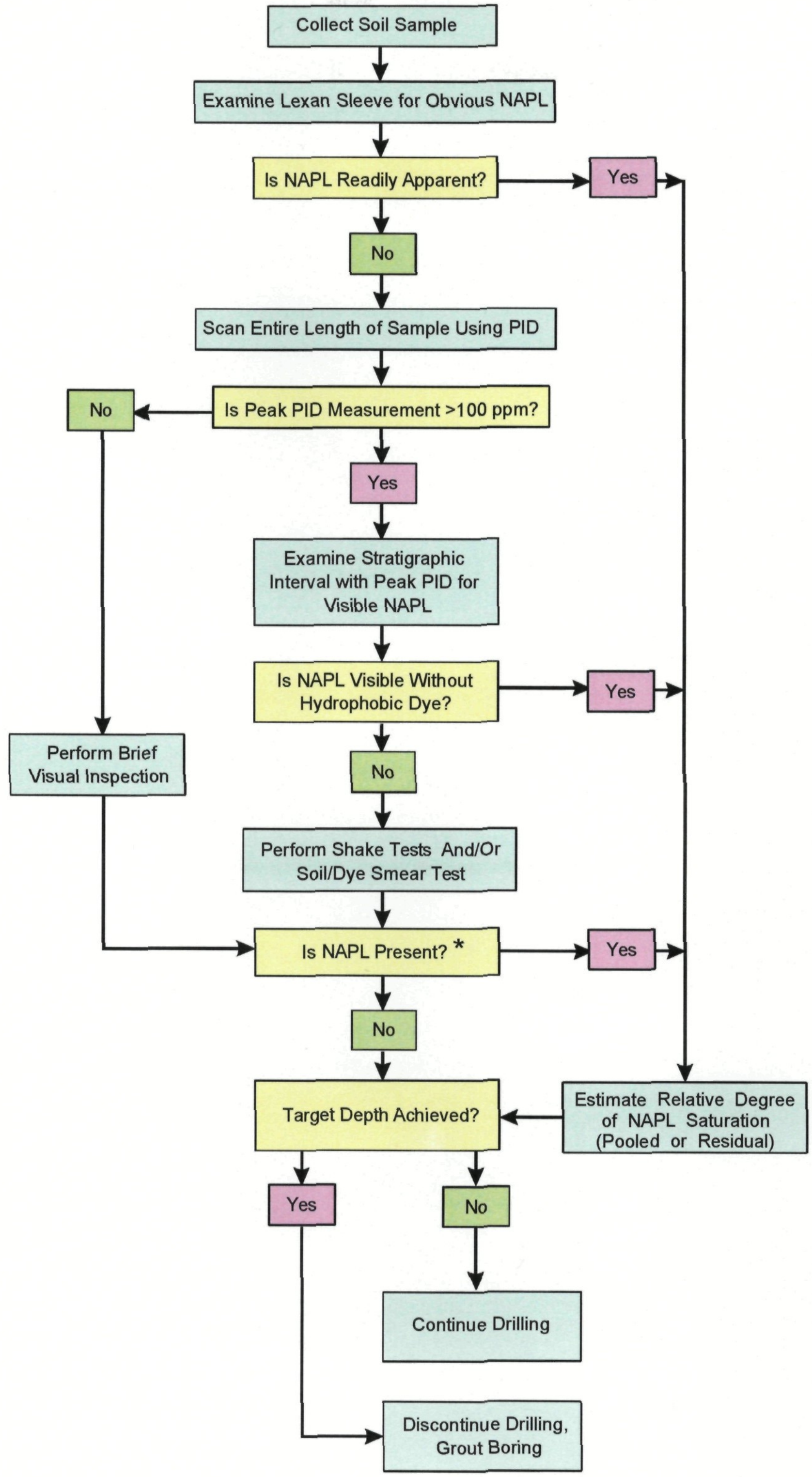
FIGURE
3

10/13/03 SYR-D85-DJH
08331003/08331g02.cdr



Note:

* NAPL indicators include sheen or foam observed on water surface after soil-water shake test, dyed NAPL droplets or red staining on inside surface of vial if Oil Red-O is added (optional), or else red stained glove or dish after soil/dye smear test.

SRSNE SUPERFUND SITE,
SOUTHINGTON, CONNECTICUT

FS NAPL-DELINEATION PILOT TEST

SOIL SAMPLE EVALUATION FLOW CHART

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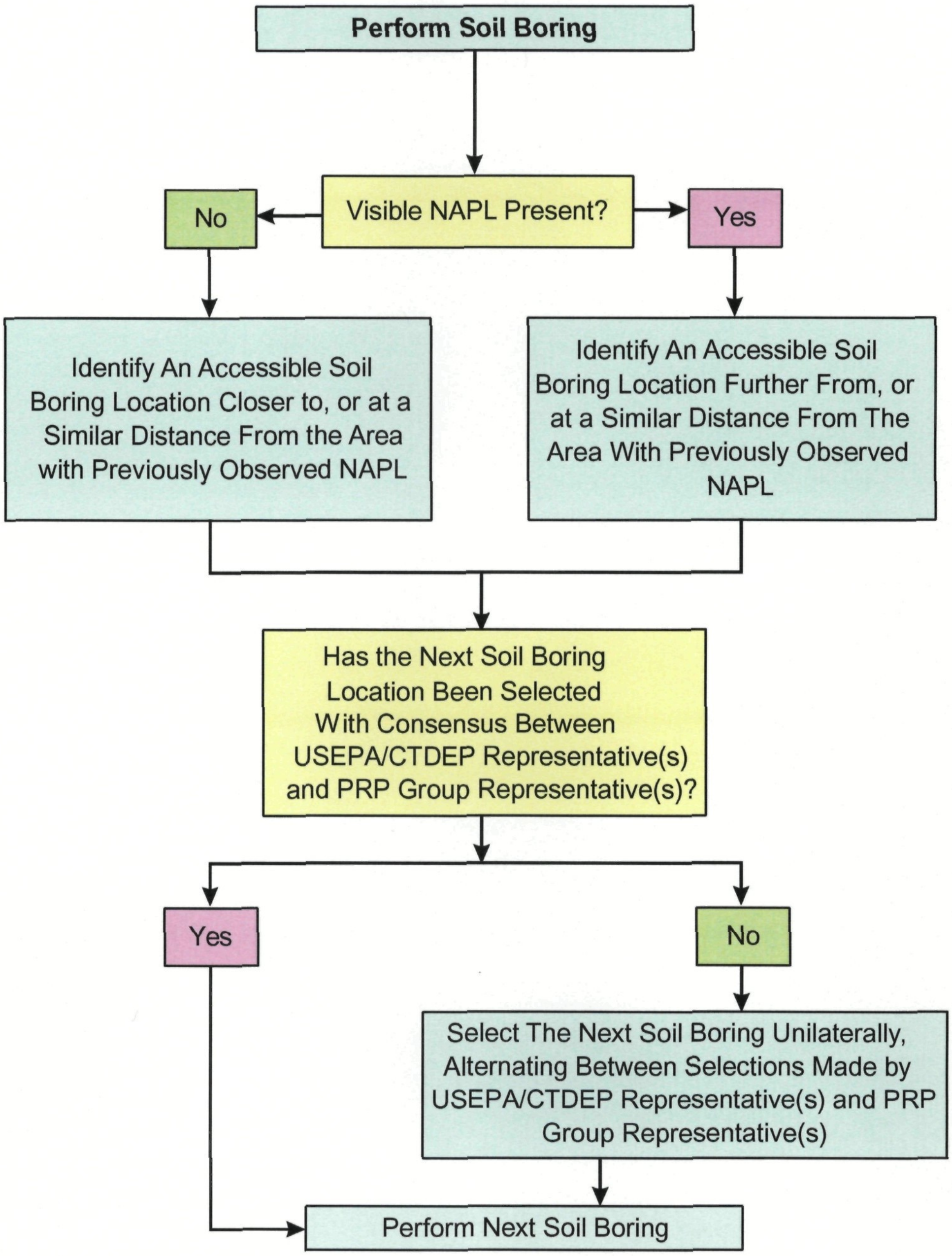
FIGURE 4

10/22/03 SYR-D85-DJH LBR
08331003/08331f02.cdr



SRSNE SUPERFUND SITE,
SOUTHINGTON, CONNECTICUT

FS NAPL-DELINEATION PILOT TEST

BORING LOCATIONS SELECTION FLOW CHART

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FIGURE
5

10/22/03 SYR-D85-DJH LBR
08331003/08331f01.cdr

Attachment 1

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MATERIAL SAFETY DATA SHEET
Oil Red O

Date of Issue: Janurary 1998

STATEMENT OF HAZARDOUS NATURE

Not classified as hazardous according to criteria of Worksafe Australia

COMPANY DETAILS

Company:	**ProSciTech**
Address:	PO Box 111, Thuringowa Central Qld. 4817 Australia
Street Address:	37 Framara Drive, Kelso, Qld, 4815. Australia
Telephone Number:	(07) 4774 0370
Fax Number:	(07) 4789 2313

IDENTIFICATION SECTION

Product Name	Oil Red O
Other Names	Solvent Red 27
Product Code	C150
U.N. Number	None allocated
Dangerous Goods Class and Subsidiary Risk	None allocated
Hazchem Code	None allocated
Poison Schedule	None allocated
Use	Biological Stain

Physical Description and Properties

Appearance	Red Brown Powder
Boiling Point/Melting Point	No data
Vapour Pressure	No data
Specific Gravity	No data
Flash Point	Not applicable
Flammability Limits	No data
Solubility in water	Negligible

Other Properties

Ingredients

Chemical Name	CAS Number	Proportion
$C_{26}H_{24}N_4O$	1320-06-5	

Attachment 2

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Standard Operating Procedure – Direct-Push Soil Sampling

A direct-push rig will be used to conduct the subsurface soil sampling activities. Direct-push sampling devices allow subsurface soil samples to be collected at depth-discrete intervals. The direct push (PowerProbe™ or similar) device may be operated using a dual tube methodology which allows the collection of subsurface soil samples through an outer casing that is set to maintain the integrity of the boring. Using the direct-push rig, borings are advanced by simultaneously driving an outer stainless steel casing and inner Lexan® into the ground. Upon reaching the desired penetration depth, the inner Lexan® tube is extracted to collect the discrete subsurface soil samples, leaving the outer casing in place. To sample the next interval of soil, a new length of Lexan® tubing is then inserted into the outer casing (already in the ground) attached to a length of drive pipe, and another length of outer casing is attached to the top of the outer casing that is already in the ground.

The following materials will be available, as required, during the subsurface soil sampling:

- Health and safety equipment (as required by the HASP);
- Direct push sampling equipment;
- Cleaning equipment;
- Stainless steel trowels;
- Aluminum Foil;
- Paper Towels;
- Measuring device;
- Appropriate sample containers and forms;
- PID;
- Camera; and
- Field notebook.

The following procedures will be employed to collect subsurface soil samples:

1. Put on PPE (as required by the HASP).

2. Identify sample locations from the Work Plan based on pre-surveyed stake-out or else note locations in field notebook by obtaining ties to physical features.

3. Set up an equipment cleaning station, and decontaminate equipment as described in the FSP. Use new, clean materials when decontamination is not appropriate (e.g., disposable gloves and dedicated drive points). Document the decontamination procedure in the field notebook.

4. Assemble the dual probe (outer steel casing and inner Lexan® tube) sampling apparatus.

5. Drive the sampling tools to the appropriate sampling zone.

6. When the desired depth for the collection of a subsurface soil sample is reached, retrieve the inner Lexan® tube and segregate the soil sample, as needed.

7. Note the soil type, color, odor, amount of recovery, and PID reading for each desired depth interval and record in the field notebook.

Standard Operating Procedure – Direct-Push Soil Sampling (Cont'd.)

8. Evaluate the sample for the presence of visible NAPL and determine whether deeper drilling is appropriate at the current location using the applicable decision flow chart. Document samples interpreted to contain visible NAPL with video and/or photograph, and record observations in field notebook.

9. Upon completion of the soil boring, grout the boring to ground surface.

10. Decontaminate non-disposable equipment or tools that may have come into contact with subsurface soil.

11. Identify the next sequential boring location using the other flow chart.

12. Discard all disposable equipment used during sampling activities in a designated location.

13. Record all other appropriate information in the field notebook.

Attachment 3

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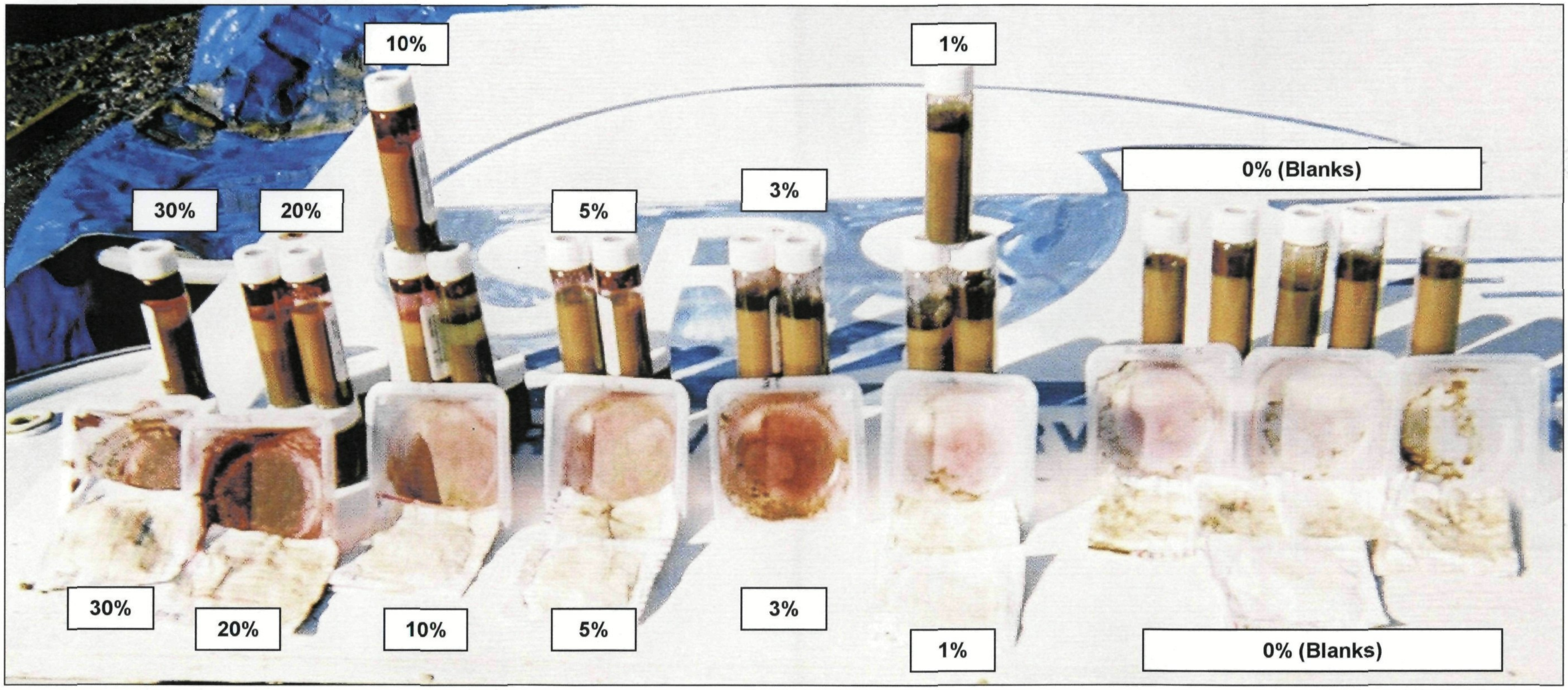
Photograph of Materials Used in Pre-Pilot Assessment of NAPL Identification Methods

SRSNE Site—Southington, Connecticut
October 20, 2003



Note: Percentages indicate approximate fraction of porosity filled with NAPL in prepared soil samples associated with the depicted testing materials. From front to back: NAPL FLUTe™ Ribbon (none for 3% sample), Soil/Dye Smear Test Dish, and Shake Test Vial(s). These test materials include those used with NAPL/soil standard samples and also blind-named samples (following testing for NAPL and identification of actual NAPL saturation).