U.S. and State of Connecticut v. American Hoechst, Corp., et al. (D. Conn.)

SRSNE Superfund Site RD/RA Settlement

Appendix A

Record of Decision

Part 1 of 3

EPA/ROD/R01-05/008
2005

EPA Superfund
Record of Decision:

SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
EPA ID: CTD009717604
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SOUTHINGTON, CT
09/30/2005

EPA NEW ENGLAND

RECORD OF DECISION SUMMARY

SOLVENTS RECOVERY SERVICE OF NEW ENGLAND, INC (SRSNE) SITE
SOUTHINGTON, CONNECTICUT

SEPTEMBER 2005

Record of Decision
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DECLARATION FOR THE RECORD OF DECISION

A. SITE NAME AND LOCATION

Solvents Recovery Service of New England, Inc.
Lazy Lane, Town of Southington
Hartford County, Connecticut
CTD 009717604

B. STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Solvents Recovery Service of New England, Inc. Superfund Site (the Site or the SRSNE Site), in Southington, Connecticut, which was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 USC § 9601 et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300 et seq., as amended. The Deputy Director of the Office of Site Remediation and Restoration (OSRR) has been delegated the authority to approve this Record of Decision (ROD).

This decision was based on the Administrative Record, which has been developed in accordance with Section 113 (k) of CERCLA, and which is available for review at the Southington Public Library, 255 Main Street, Southington, and at the United States Environmental Protection Agency (EPA or the Agency) New England OSRR Records Center in Boston, Massachusetts. The Administrative Record Index (Appendix G to the ROD) identifies each of the items comprising the Administrative Record upon which the Agency relied in making the selection of this remedial action.

The State of Connecticut concurs with the principal components of the selected remedy. However, Connecticut Department of Environmental Protection (CT DEP) has decided not to concur on the component of the selected remedy that requires institutional controls to prevent exposure to vapor emissions.

C. ASSESSMENT OF THE SITE

The response action selected in this ROD is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

D. DESCRIPTION OF THE SELECTED REMEDY

This ROD sets forth the selected remedy for the SRSNE Site, which requires the in-situ treatment of subsurface source material (non-aqueous phase liquid or NAPL) in the overburden aquifer; capping surface source material (contaminated soil and wetland soil); capturing groundwater that exceeds federal drinking water standards and other risk-based cleanup levels; institutional controls; and monitored natural attenuation of NAPL in the deep subsurface (bedrock) and contaminated groundwater throughout the plume including outside the capture zone, until cleanup levels are achieved across the entire Site.

Within approximately one year of implementation of in-situ treatment, this technology is expected to remove 95% - 99% of the NAPL mass located in the overburden where the greatest concentration of NAPL is found at the Site. Federal drinking water standards are expected to be achieved throughout the entire groundwater plume in an estimated 225 years.

The selected remedy is a comprehensive approach for the SRSNE Site that addresses all current and potential future risks caused by soil, wetland soil, NAPL in the subsurface, and contaminated groundwater. These remedial measures will prevent contaminant migration, and will allow for the restoration of the Site to beneficial uses including eventual use of the aquifer underlying the Site for drinking and other domestic uses.

The major components of this remedy are:

- In-situ thermal treatment of contaminants in the overburden NAPL area until site-specific NAPL performance standards to be developed during Remedial Design are achieved;

- Excavate, consolidate and cap soil and wetland soil that exceeds soil/wetland soil cleanup levels;

- Capture and on-site treatment of contaminated groundwater in both the overburden and bedrock aquifers, until federal safe drinking water standards and other risk-based levels are achieved;

- Over time, modification of the configuration of the on-site groundwater extraction and treatment system, as appropriate, based on expected reductions in contamination;

- Monitored natural attenuation of the groundwater plume, including: 1) groundwater outside the capture zone of the groundwater extraction and treatment system until groundwater cleanup levels are achieved, and 2) contaminants in the NAPL area of the bedrock aquifer, until groundwater cleanup levels are achieved;

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

- Maintain the cap in the long term; and
- Perform reviews at least every five years to ensure that the remedy remains protective of human health and the environment.

Contingent component of this remedy:

- In the event that the Town of Southington decides to activate municipal production wells located near the Site prior to attainment of federal drinking water standards and risk based levels throughout the Site, this ROD includes a contingent action for additional groundwater containment.

The principal threat waste identified at the SRSNE Site is NAPL in the overburden and bedrock aquifers. The selected response action addresses principal threat waste at this Site by treating NAPL in the overburden aquifer with an in-situ thermal technology and treating NAPL in the bedrock aquifer with monitored natural attenuation. In addition, this response action contains contaminated groundwater in the overburden and bedrock aquifers and addresses the threats presented by soil/wetland soil by consolidation and capping.

E. STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate to the remedial action, is cost-effective, and utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable.

This remedy also satisfies the statutory preference for treatment as a principal element of the remedy (i.e., reduce the toxicity, mobility, or volume of materials comprising principal threats through treatment). Because this remedy will result in hazardous substances remaining on-site above levels that allow for unlimited use and unrestricted exposure (and groundwater and land use restrictions are necessary), a review will be conducted within five years after initiation of remedial action, and every five years after that, to ensure that the remedy continues to provide adequate protection of human health and the environment over time.

F. SPECIAL FINDINGS

This ROD includes specific determinations made by EPA.

Section 404 of the Clean Water Act and Executive Order Determinations

Under Section 404 of the Clean Water Act, Executive Order 11990 (Protection Wetlands) and Executive Order 11988 (Floodplain Management), EPA finds that the selected remedy, which involves excavating highly contaminated materials from a small area of wetlands and floodplains, is appropriate as there is no practicable alternative to conducting work in the wetlands and floodplains. The remedial action minimizes potential harm and avoids adverse effects, to the extent practicable. Best management practices will be used throughout the Site to minimize adverse impacts on the wetlands, floodplains, wildlife and its habitat. Damage to wetlands during excavation will be mitigated through erosion control measures. Wetlands restoration with indigenous species will be conducted consistent with the requirements of Federal and State wetlands protection laws. The floodplains will be returned to their natural levels so as to prevent the loss of storage capacity.

TSCA Determination for Contingent Measures

Under the Toxic Substances Control Act (TSCA), the Regional Administrator finds that the possible excavation and off-site disposal of polychlorinated biphenyl (PCB) contaminated soil set out in this Record of Decision meets the standards of 40 CFR 761.50 for remediation, and will not pose an unreasonable risk to human health or the environment pursuant to 40 CFR 761.61(c).

G. ROD DATA CERTIFICATION CHECKLIST

The following information is included in the Decision Summary section of this ROD. Additional information can be found in the Administrative Record file for this Site.

1. Chemicals of concern (COCs) and their respective concentrations;
2. Baseline risk represented by COCs;
3. Cleanup levels established for COCs and the basis for the levels;
4. How source materials constituting principal treats were addressed;
5. Current and future land and groundwater use assumptions used in the baseline risk assessment and ROD;
6. Land and groundwater use that will be available at the Site as a result of the selected remedy;
7. Estimated capital, operation and maintenance (O&M), and total present worth costs; discount rate; and the number of years over which the remedy cost estimates are projected; and
8. Decisive factor(s) that led to the selection of this remedy.

H. AUTHORIZING SIGNATURES

This ROD documents the selected remedy for soil, wetland soil, NAPL areas and groundwater at the SRSNE Site. This remedy was selected by EPA with concurrence of the Connecticut Department of Environmental Protection on all components with the exception of the institutional controls to prevent exposure to vapor emissions.

Approval of the TSCA findings only:

By: ______________________ ACTING FOR Date: 9/30/05
Robert W. Varney
Regional Administrator
EPA-New England

Approval of the Record of Decision:

By: ______________________ Date: 9-30-05
Richard Cavagnero
Deputy Director
Office of Site Remediation and Restoration
EPA-New England

A. SITE NAME, LOCATION AND BRIEF DESCRIPTION

The Solvents Recovery Service of New England, Inc. Superfund Site (the Site or the SRSNE Site) is located in the Town of Southington, Connecticut, in Hartford County, approximately 15 miles southwest of the City of Hartford. It is located on Lazy Lane, just off Route 10 (Queen Street), and adjacent to the Quinnipiac River. The SRSNE Site, generally depicted on Figure 1 consists of the SRSNE Operations Area (4 acres), the Cianci property (10 acres), a railroad easement (the Railroad Right-of-Way), and those areas where groundwater contamination has come to be located, including Southington's Curtiss Street Well Field (the Town Well Field). The Town Well Field is a 28-acre parcel of undeveloped land containing two municipal drinking water wells (Production Wells No. 4 and No. 6). The wells were closed in 1979 when they were found to be contaminated with volatile organic compounds (VOCs). The Site was listed on the National Priorities List (NPL) in September 1983.

From 1955 to 1991, Solvents Recovery Service, that later became Solvents Recovery Service of New England, Inc. (SRSNE), operated as a spent solvent processing and reclamation facility at the Site. Millions of gallons of waste solvents and oils were handled, stored and processed in the Operations Area. Spent solvents were processed in a distillation column. Contaminant-laden distillation process water was channeled into a drainage ditch along the Railroad Right-of-Way and into a buried culvert that discharged to the Quinnipiac River. Samples of solvents appear to have been discarded in a leach field. The still bottoms and liquid waste by-products were first disposed of in at least two unlined lagoons in the Operations Area, and later burned in an open pit. Overflow from the lagoons drained onto the neighboring Cianci property. Ash from the burn pit was used as fill in the Operations Area. After 1976, the solvents were blended to create a fuel product for use in rotary kilns. There are numerous documented instances of leaks and spills to bare ground. None of the original facility structures remain.

Since 1994, investigations, studies and two interim groundwater response measures have been implemented by a group of over 250 potentially responsible parties (PRPs or the PRP Group). The first interim groundwater measure, constructed in 1995, captures contaminated groundwater in the unconsolidated deposits of boulders cobbles, gravel, sand and silt that constitute the overburden aquifer. The second interim groundwater measure, constructed in 1999, captures contaminated groundwater in the bedrock aquifer.

A more complete description of the Site can be found in Section 1 of Remedial Investigation Report, Vol 1 of 4 (Halliburton NUS, May 1994) and Section 2 of Remedial Investigation Report, Vol 1 of 2 (Blasland, Bouck & Lee, June 1998).

B. SITE HISTORY AND ENFORCEMENT ACTIVITIES

1. History of Site Activities

SRSNE began spent solvent recycling operations at the Site in 1955 (Figure 2). The solvents and chemicals handled, stored and processed at the facility in the Operations Area included chlorinated solvents, ketones, alcohols, aromatic compounds and waste oils. Aerial photographs of the facility from 1965 and 1980 can be found in the May 2005 Feasibility Study (FS) as Figures 1-4 and 1-5, respectively

From 1955 to the 1980's, SRSNE processed the spent solvents in an on-site distillation column, which separated the solvents from the impurities. The recovered solvents were shipped back to the customer for reuse, or sold. Contaminant-laden distillation process water was channeled into a drainage ditch along the eastern edge of the facility, and flowed through a buried culvert to the Quinnipiac River. Also located along the eastern edge of the facility was a leach field which appeared to have received samples of solvents that were discarded by the small on-site laboratory where the solvents were checked for their chemical and thermal properties.

The distillation process also resulted in the generation of sludges and still bottoms that contained impurities and unrecoverable solvents. These distillation by-products were disposed of in two unlined lagoons in the Operations Area. An estimated 1,000 to 2,000 gallons of waste per week were managed in the lagoons. Periodically, the lagoons would be dredged and the sludge removed. Overflow from these lagoons drained from the SRSNE facility onto the neighboring Cianci property. Use of the lagoons was discontinued in 1967 when they were emptied of visible residues of paint and lacquer and filled with dirt.

After the lagoons were closed in 1967, the sludges and still bottoms were primarily either disposed off site at several locations, including Old Southington Landfill or were burned, along with other flammable liquid wastes, in an on-site open burn pit. As many as 1,000 gallons of waste material per day were burned in the open pit until it was decommissioned in 1974. Ash from the burn pit was used as fill material in the Operations Area.

After 1976, operations at SRSNE focused on blending the sludge and still bottoms with flammable liquid wastes for use as a waste-fuel product for rotary kilns. In 1988, the batch stills used in the distillation process were removed, and fuel blending became the primary enterprise of the facility until it closed in 1991.

Past operating practices, such as the use of lagoons and a leach field, contributed to contamination on the SRSNE Operations Area and surrounding properties. Poor housekeeping from a variety of practices, including the unloading and loading of tank trucks, the transfer of spent solvents to storage tanks, as well as the improper handling and storage of drums, resulted in numerous leaks and spills to the bare ground and into the underlying aquifer.

Facility records from pre-1967 were destroyed in a fire, but between 1967 and 1991, in excess of 41 million gallons of waste solvents, fuels, paints and similar liquids were handled by SRSNE.

A more detailed description of the Site history can be found in Section 2 of the Remedial Investigation Report (Blasland, Bouck & Lee, Inc., June 1998), and, Sections 1 and 3 of the of the Remedial Investigation Report (Halliburton NUS, May 1994).

2. <u>History of Federal and State Investigations and Removal and Remedial Actions</u>

The presence of volatile organic compounds (VOCs) in drinking water forced the closing of the Town of Southington's Production Well No. 4 in 1976, and Production Well No. 6 in 1979 (see Figure 1). Subsequent environmental investigations revealed that SRSNE was a major source of VOC contamination to the groundwater in this area. Significant investigations and actions taken to date are summarized below. A more complete description of these and other environmental studies can be found in Section 2.5 of the Remedial Investigation Report (Blasland, Bouck & Lee, Inc., June 1998).

- In the late 1970's, EPA conducted field investigations to delineate the source(s) of contamination in Production Wells No. 4 and No. 6. Groundwater was found to contain a variety of organic solvents (chlorinated and aromatic). The SRSNE facility was identified as a primary source of VOCs in groundwater, and as a result, the wells were shutdown. (*Warzyn Engineering, Inc. Hydrogeologic Investigation, Southington, CT, 1980*)

- In 1979, EPA filed suit against SRSNE under the Resource Conservation and Recovery Act (RCRA) for contaminating Production Wells No. 4 and No. 6, and, under the Clean Water Act for the unpermitted discharge of pollutants to the Quinnipiac River. The Southington Board of Water Commissioners and the Connecticut Fund for the Environment later joined EPA in that action. The suit was amended in 1982 to include claims under CERCLA.

- Further EPA investigations of the Town Well Field during the early 1980's determined that the unlined lagoons at SRSNE were a major historical source of contamination that, under both pumping and non-pumping conditions, would negatively impact the two municipal supply wells. (*Ecology & Environment, Inc. Update on Contamination of Curtiss Street Well Field, Southington, CT, 1982*)

- In 1982, SRSNE commissioned a study to evaluate EPA's findings and to conduct additional investigations. The study confirmed that under pumping conditions, contaminated groundwater from the SRSNE facility could reach Production Well No. 6. The report identified other nearby VOC sources that also may have contaminated the well field. (*Wehran Engineering Corporation. Hydrogeologic Assessment Report, 1982*)

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

- In 1983, EPA's lawsuit against SRSNE (filed in 1979, and amended in 1982) was settled. Under the settlement, embodied in a Consent Decree between SRNE, EPA and others, SRSNE was required to make improvements to its solvents handling procedures, construct a network of wells (the on-site interceptor system or OIS) at the facility to reduce the migration of contaminated groundwater, construct a cooling tower/air stripper to remove contaminants from the groundwater captured by the OIS, and, to install an off-site interceptor system to capture contaminated groundwater beyond the facility boundaries.

- Between 1983 and its closing in 1991, SRSNE implemented some of the improvements required under the Consent Decree. It installed 25 interceptor wells for the OIS in 1985, and began operating the OIS and the cooling tower/air stripper in 1986. SRSNE also installed the off-site interceptor system, though this system never became operational because SRSNE was never issued a state discharge permit. SRSNE also paved the Operations Area with asphalt, installed berms to contain spills, improved fire protection and suppression measures by extending the public water line to the facility, and improved general housekeeping measures to some degree. Despite these efforts, numerous deficiencies remained.

- From 1983 through 1988, the federal and state governments took steps to ensure SRSNE's full compliance with the 1983 Consent Decree. In 1986, EPA issued SRSNE a permit under the Hazardous and Solid Waste Amendments to RCRA (HSWA permit) which required the submittal of a plan to clean up the contaminated soils around the facility. Despite several submissions of such a plan, none were approved by EPA due to deficiencies. CT DEP issued a RCRA operating permit to SRSNE in 1986 with provisions requiring major improvements in the way hazardous waste was handled, and, establishing emergency procedures and financial responsibility requirements. SRSNE failed to come into full compliance with these requirements.

- In the spring of 1988, EPA and CT DEP established a schedule for SRSNE's implementation of short-term operations improvements, safety improvements, and long-term activities. Due to insufficient progress by SRSNE, the Agencies terminated further negotiations with SRSNE in August 1988, and EPA obligated Superfund monies to conduct its own work on the Site.

- In 1990, EPA filed suit against SRSNE seeking injunctive relief and civil penalties for violations of the 1983 Consent Decree and SRSNE's RCRA and HWSA permits. The suit also included claims against SRSNE, its president, and its parent company, for recovery of response costs and the issuance of a declaratory judgment under CERCLA.

- In a separate action in January of 1991, the State of Connecticut sought a temporary injunction against SRSNE for its failure to meet the terms of the existing RCRA permit. When a temporary injunction was granted, SRSNE was required to meet specific legal requirements within a specified period of time, or face permanent closure. One of these requirements was that SRSNE obtain adequate liability insurance for sudden accidental occurrences by May 28, 1991. On May 29, 1991, the Attorney General for the State of Connecticut confirmed that SRSNE had not obtained the necessary insurance, and the facility was closed permanently.

- EPA initiated a Remedial Investigation/Feasibility Study (RI/FS) in 1990. Between 1990 and 1992, EPA funded three phases of remedial investigations at the SRSNE Site to determine the nature and extent of contamination at the Site, and to assess human-health and ecological risks. Sampling results obtained during these investigations revealed that the soils at the Site contain extensive VOCs (chlorinated hydrocarbons, ketones, alcohols, and aromatics), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), dioxins and metals. High concentrations of VOCs (exceeding federal maximum contaminant levels or MCLs) were also detected in both overburden and bedrock groundwater underlying the Operations Area and the Cianci property. Highly-contaminated groundwater was also found to extend southward from the Cianci property into the Town Well Field, and eastward beyond the Quinnipiac River. (*Halliburton NUS Environmental Corporation. Final Remedial Investigation Report: Remedial Investigation/Feasibility Study. SRSNE Site, Southington, Connecticut. May 1994*)

- Several rounds of residential well sampling were conducted during the 1990's by both EPA and CT DEP. Only one location, immediately north and adjacent to the SRSNE facility, has been found to have elevated levels of VOCs (the chlorinated solvent trichloroethene) associated with operations at SRSNE. CT DEP supplied bottled water to this location, until it was connected to the municipal water supply by the PRP Group.

- In 1990, the Connecticut Department of Public Health (CT DPH) initiated a public health assessment for the SRSNE Site under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). CT DPH concluded that people living within one mile of the contaminated municipal wells had a slightly higher rate of bladder cancer. This effort culminated in a 1997 study of cancer incidence in Southington, in response to the observations of a local resident who believed that there was a higher than usual occurrence of cancer in the area. CT DPH reported that while Southington as a whole had lower rates of cancers studied[1] in comparison to Connecticut statewide rates, those areas that were likely exposed to air emissions from SRSNE had slightly higher rates of all cancers studied in comparison to the areas of Southington that were not exposed. The results from the study also suggested that female non-Hodgkin's lymphoma may be associated with exposure to air pollution. The report concluded that environmental exposures caused by SRSNE had stopped and there is currently no risk to public health.

- After the SRSNE facility closed in 1991, CT DEP took over the operation of the On-Site Interceptor System installed by SRSNE in 1985. In July 1992, CT DEP modified the OIS to include an ultra-violet/oxidation system to treat air emissions. CT DEP operated the modified OIS until 1995.

- During August and September of 1992, EPA conducted a time-critical removal action to address potential health threats associated with PCB contamination in soil and sediment in the drainage ditch on the eastern edge of the Operations Area. During that effort, approximately 19 drums of contaminated material containing up to 100 parts per million (ppm) total VOCs and 350 parts per million (ppm) PCBs were removed.

- Also in 1992, EPA initiated an Engineering Evaluation/Cost Analysis (EE/CA) to evaluate alternatives that could be implemented as a non-time critical removal action ("NTCRA 1"). After a public comment period, EPA issued a First Action Memorandum for Non-Time Critical Removal Action (NTCRA 1) at the Site on April 1, 1993, which required (a) the implementation of a groundwater containment and treatment system to prevent the migration of contaminated groundwater in the overburden aquifer; and (b) the performance of certain soil studies to provide EPA with information for its use in planning and directing future responses at the Site. This work was performed by the SRSNE PRP Group pursuant to a 1994 Administrative Order on Consent (CERCLA Docket No. I-94-1045). (*ENSR Consulting and Engineering. Groundwater Technical Memorandum, Soils Study Report, and Additional Studies Report for the SRSNE Superfund Site. June 1994; Blasland, Bouck & Lee, Inc. Non-Time-Critical Removal Action, 100% Groundwater Containment and Treatment System Design Report. December 1994*)

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

1 Southington residents who were diagnosed with bladder, kidney, liver, testicular cancer; Hodgkin's disease, leukemia, or non-Hodgkin's lymphoma between 1968 to 1991 were included in the study.

- Also in 1994, EPA initiated a second EE/CA to evaluate further alternatives that could be implemented as a non-time critical removal action (NTCRA 2). After a public comment period, EPA issued a second Action Memorandum for Non-Time Critical Removal Action at the Site on June 1, 1995, which required among other things, the implementation of a groundwater containment and treatment system to minimize the migration of contaminated groundwater in the bedrock aquifer. This work was performed by the SRSNE PRP Group pursuant to a 1997 Administrative Order on Consent (CERCLA Docket No. I-97-1000). Under the 1997 Administrative Order on Consent, the PRP Group also agreed to perform of the remainder of the RI/FS for the Site. *(Blasland, Bouck & Lee, Inc. Non-Time-Critical Removal Action 2, 100% Groundwater System Design Report. November 1999; Blasland, Bouck & Lee, Inc. Remedial Investigation Report. June 1998; Draft Feasibility Study. May 2005)*

- In 1994, after several years of litigation, the United States reached a cash settlement of its 1990 lawsuit against SRSNE, its president, and its parent company.

- In 1994 and 1995, the SRSNE PPR Group conducted additional groundwater monitoring. Their results were consistent with studies performed by EPA in 1990 through 1992, with one notable exception. Concentrations in the bedrock underlying the Operations Area appeared to have declined by three orders of magnitude from tens to hundreds of ppm, to tens to hundreds of parts per billion (ppb). *(ENSR Consulting and Engineering. Memorandum to Mr. Bruce Thompson (de maximis, inc.), Subject: Results of Comprehensive Groundwater Sampling SRSNE, Southington, CT, March-April 1995. June 19, 1995)*

- In 1995, the SRSNE PRP Group implemented a private well monitoring program to assess the potential impact to private wells as the result of operating NTCRA 1 groundwater extraction system. The results indicated that the NTCRA 1 system had little or no hydraulic impact on the residential supply wells. *(Blasland, Bouck & Lee, Inc. Private Well Monitoring Report. October 1995)*

- In 1996, the SRSNE PRP Group constructed an oxbow-shaped wetland in the northeast corner of the Cianci property, in the floodplain of the Quinnipiac River, to mitigate potential impacts to small, isolated wetlands within and adjacent to the NTCRA 1 containment area.

- In 1998, the SRSNE PRP Group concluded a Remedial Investigation (RI) to supplement the RI conducted by EPA in 1994. The 1998 RI report presents the results of calculations regarding the mass of VOCs at the Site and presents an overview of the appropriateness of a technical impracticability waiver for the Site.

- During 1998, a full-scale phytoremediation[2] pilot was implemented at the Site to evaluate the potential for that technology to supplement NTCRA 1. The SRSNE PRP Group planted approximately 1000 young trees within the NTCRA 1 Area of Containment. The trees have since matured and the study is on-going. (*Phytokinetics, Inc. Phytoremediation Pilot Study at the Solvents Recovery Service of New England Superfund Site. November 1998)*

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

- In November 2003, the SRSNE PRP Group conducted a field-based investigation to delineate the occurrence of non-aqueous phase liquid (NAPL) in the overburden aquifer at the SRSNE Site. The results of this study were used to define an area that is being targeted for source reduction with this Record of Decision. (*Blasland, Bouck & Lee, Inc. NAPL Delineation Pilot Study. December 2003*)

- In May 2005, the SRSNE PRP Group completed the Feasibility Study.

- The SRSNE PRP Group has been operating the NTCRA 1 (overburden) and NTCRA 2 (bedrock) groundwater containment and treatment system (hereafter, where appropriate, jointly referred to as the NTCRA 1 and NTCRA 2 Groundwater Extraction and Treatment System or the NTCRA1/2 Groundwater System) continuously since July 1995 and June 1999, respectively. The combined system has extracted over 85,000,000 gallons of contaminated groundwater to date, and removed an estimated 12,500 pounds of VOCs.

3. <u>History of CERCLA Enforcement Activities</u>

The SRSNE Site was an EPA fund-lead site until the SRSNE PRP Group agreed to perform the remainder of the RI/FS, and implement the NTCRA 1 and NTCRA 2 Groundwater Extraction and Treatment System, pursuant to two Administrative Orders on Consent. A brief summary of the CERCLA enforcement actions taken to date is provided below.

- A description of EPA's enforcement actions against the owner/operators of the Site is provided in the previous section of this ROD (History of Federal and State Investigations and Removal and Remedial Actions).

- Since June 1992, EPA has notified approximately 1700 parties who either owned or operated the facility, generated wastes that were shipped to the facility, arranged for

2 Phytoremediation is the biological remediation of contamination using plants.

the disposal of wastes at the facility, or transported wastes to the facility of their potential liability with respect to the Site.

- In October 1993, EPA invited all PRPs to perform or finance a non-time critical removal action, as set forth in the April 1993 Action Memorandum (NTCRA 1). Negotiations culminated in an Administrative Order on Consent (AOC) with over 250 PRPs, which became effective on October 4, 1994.

- In April 1994, EPA offered an early de minimis settlement offer to 1250 PRPs that shipped no more than 10,000 gallons of hazardous substances to the SRSNE facility. Of those 1250 parties, approximately 882 joined the de minimis settlement.

- Due to a variety of circumstances, a number of the PRPs who were otherwise eligible to participate in the original de minimis settlement did not participate. On May 31, 1995, EPA offered a supplemental de minimis settlement offer to 58 PRPs. On September 18, 2005, 43 additional de minimis PRPs joined a supplemental de minimis settlement that contained terms identical to the original de minimis settlement.

- On June 16, 1995, EPA notified all of the PRPs that had not settled their liability in the prior de minimis settlements of their continuing liability at the SRSNE Site, and invited them to perform or finance an RI/FS and a second non-time critical removal action, as set forth in the June 1995 Action Memorandum (NTCRA 2). Negotiations culminated in a second AOC with over 250 PRPs, which became effective on February 11, 1997.

- The PRPs that are performing response work under the 1994 and 1997 AOCs have been active in the remedy selection process for this Site. They offered verbal comments at the public hearing on June 30, 2005, and submitted written comments during the 60-day comment period. The PRPs' comments are included in the Administrative Record.

C. COMMUNITY PARTICIPATION

Prior to the PRP Group undertaking actions under the direction of EPA and CT DEP to contain and treat contaminated groundwater, community concern and involvement was high. As successful response actions have been taken over the years to address soil and groundwater at the Site, the level of interest in the community has decreased. At this time, community participation can be characterized as moderate to low. EPA, CT DEP and the SRSNE PRP Group have kept the community and other interested parties apprised of Site activities through informational meetings, fact sheets, press releases, open houses, and public meetings. Below is a brief chronology of Superfund public outreach efforts since the Site was listed on the National Priorities List.

- On July 26, 1990, EPA held an informational meeting at Southington High School to describe the field activities set to begin for the Remedial Investigation (RI).

- On August 23, 1990, EPA announced it had received a letter of intent from the Southington Association for the Environment (SAFE) to apply for a Technical Assistance Grant (TAG). EPA invited all citizens' groups interested in applying for a TAG for the SRSNE Site to consolidate with SAFE and to file a joint application because under CERCLA, only one TAG at a time can be awarded for a site.

- In June 1991, EPA released a community relations plan that outlined a program to address community concerns and keep citizens informed about and involved in remedial activities at the SRSNE site.

- On July 3, 1991, SAFE was awarded a TAG in the amount of $49,600. On September 28, 1998, that grant was extended, and SAFE received an additional $25,000.

- On July 18, 1991, EPA held a public informational meeting at the DePaolo Junior High School to present the findings of the first phase of the RI.

- On May 12, 1992, EPA held an informational meeting at the DePaolo Junior High School to present the results of the second phase of the RI, and to describe plans for additional RI work and the Feasibility Study (FS).

- In the early 1990s, EPA made an administrative record file for the SRSNE Site available for public review at EPA's offices in Boston and at the Southington Public Library, 255 Main Street, Southington, CT.

- On December 16, 1992, EPA held a public meeting to announce its intent to take an interim action (a non-time critical removal action) to minimize the migration of contaminated groundwater and to reduce soils contamination at the SRSNE site. The public was invited to comment on this proposal during a 45-day comment ending February 1, 1993. EPA adjusted its planned action following consideration of public comments, and issued a First Action Memorandum for Non-Time Critical Removal Action for the Site (NTCRA 1) along with a Responsiveness Summary on April 3, 1993.

- Throughout 1994 and 1995, EPA held a series of meetings with SAFE and other members of the public to discuss the results of remedial investigations, and plans for future actions at the site.

- In 1994, the Unites States held a public comment period concerning its proposed Consent Decree with SRSNE, its president and its parent corporation.

- In 1994, the United States held a public comment period concerning its proposed Consent Decree with approximately 882 de minimis PRPs.

- On December 6, 1994, EPA held a public meeting in Southington at the Red Carpet Inn to seek comments on a second interim cleanup action (a non-time critical removal action) proposed for the SRSNE Site. A 30-day comment period was held from December 7, 1994 to January 21, 1995. EPA conducted a public hearing to accept written and oral comments on the recommended alternative on January 5, 1995 at the DePaolo Junior High School. EPA issued a Second Action Memorandum for Non-Time Critical Removal Action for the Site (NTCRA 2) on June 1, 1995.

- On June 12, 1995, local residents were invited to walk through the on-site NTCRA 1 treatment facility prior to its coming on line. EPA, CT DEP and the PRP Group commemorated the startup of the system with a ribbon-cutting ceremony on August 23, 1995.

- In the fall of 1995, the United States held a public comment period concerning its proposed Consent Decree with 42 de minimis PRPs. The terms of this Consent Decree were identical to the terms contained in the earlier Consent Decree reached with 882 de minimis PRPs.

- On July 18, 1996, representatives of EPA, CT DEP and the PRP Group held an informational meeting in Southington at the Comfort Inn to discuss plans for additional field work.

- On March 18, 1998, the CT DPH held a public meeting at the Southington Public Library to describe the findings of their recently completed cancer incidence study.

- On June 23, 1998, EPA and the PRP Group held an informational meeting in Southington at the Holiday Inn to provide an update on the on-going field investigations. Representatives of the CT DEP and CT DPH also attended.

- On August 14, 1999, the PRP Group held an "open house" at the SRSNE Site. The public was invited to tour the groundwater treatment plant, the mitigation wetlands, the phytoremediation study area, and the Operations Area. EPA and CT DEP also attended.

- In October 1999, EPA distributed a neighborhood notice advising local residents and town officials of work at the SRSNE Site.

- In September 2003, EPA completed a preliminary reuse assessment of the Site. EPA solicited input from town officials and the community on the reasonably-anticipated future land use and groundwater uses for the reuse assessment.

- In May 2005, EPA mailed the Proposed Plan to 271 residents, local media and town and elected officials on EPA's Site mailing list. The Proposed Plan was also mailed to 454 individuals associated with the SRSNE PRP Group.

- On June 10, 2005, EPA published a notice of the Proposed Plan in the Southington Citizen and announced dates of the comment period and public hearing to accept verbal comments.

- On June 8, 2005, EPA held an informational meeting at the Southington Public Library to present the Agency's Proposed Plan. At this meeting, representatives from EPA, CT DEP and the SRSNE PRP Group answered questions from the public.

- From June 9 to July 8, 2005, EPA held a 30-day comment period to accept public comment on the alternatives presented in the Feasibility Study and the Proposed Plan and on any other documents previously released to the public. An extension to the public comment period was requested and on June 29, 2005, EPA issued a press release to announce that the comment period had been extended to August 8, 2005.

- On June 30, 2005, EPA held a public hearing at the Southington Town Hall to accept verbal comments on the Proposed Plan. A transcript of this meeting and all written comments received during the comment period are in the Administrative Record. EPA's responses to the comments received during the comment period are included in the Responsiveness Summary, which is Part 3 of this Record of Decision.

D. SCOPE AND ROLE OF OPERABLE UNIT OR RESPONSE ACTION

The selected remedy was developed by combining components of different source control and management of migration alternatives to obtain a comprehensive approach for Site remediation. In summary, the final remedy for the SRSNE Site will:

- Trcat waste oil and solvents (NAPL) located in the subsurface in the overburden aquifer by heating them in place. The approximately1.5-acre NAPL treatment zone is primarily in the Operations Area, but extends across the Railroad Right-of-Way and into the Cianci property near the western (upgradient) end of the culvert (see Figure 5).

- After the subsurface has been treated, the Operations Area/Railroad soil will be capped. Prior to capping, soil on the Cianci property that exceeds CT remediation standards, and, wetland soil that exceeds CT remediation standards and poses an ecological risk will be excavated and moved into the Operations Area/Railroad area to also be capped.

- Capture and treat on site the contaminated groundwater in both the overburden and bedrock aquifers that exceeds federal drinking water standards and risk-based levels.

- Monitored natural attenuation of the groundwater plume outside the capture zone that exceeds cleanup levels.

- Monitor natural degradation of contaminants in the NAPL area of the bedrock aquifer.

- Over time, modification of the configuration of the on-site groundwater extraction and treatment system, as appropriate, based on expected reductions in contamination.

- Implement restrictions on uses of the site property in perpetuity to prevent human exposure to contaminants in the subsurface soils and to prohibit activities that might harm the cap. Implement institutional controls to prevent human exposure to contaminated groundwater and NAPL areas until federal drinking water standards, risk-based levels, and CT Groundwater Criteria (Appendix C of the RSRs) are met. These restrictions will also prohibit construction above groundwater plume that exceeds the State's volatilization criteria, if remedial design studies confirm the need for such restrictions.

- Monitor groundwater and maintain the cap in the long term. Monitor land use and groundwater use restrictions to ensure compliance. Perform reviews at least every five years to ensure that the remedy remains protective of human health and the environment.

The selected remedy also includes the following contingency:

- In the event that the Town of Southington decides to activate municipal production wells located near the Site prior to attainment of federal drinking water standards and other risk-based levels throughout the Site, the selected remedy includes a contingent action for additional groundwater containment.

Principal threat wastes are those source materials considered to be highly toxic or highly mobile which generally cannot be contained in a reliable manner or would present a significant risk to human health or the environment should exposure occur. Wastes generally considered to be principal threats are liquid, mobile and/or highly-toxic source material. The principal threats at the SRSNE Site that are addressed with this ROD are summarized in the following table:

Medium	**Principal Threats**	**Contaminant(s)**	**Remedial Action**
NAPL in Overburden Aquifer	√ Highly mobile √ Source material that will result in highly toxic groundwater	Separate-phase VOCs and other organic compounds dissolved in NAPL (e.g., PCBs)	Treat in place ("in-situ") with thermal technology.
NAPL in Bedrock Aquifer	√ Highly mobile √ Source material that will result in highly toxic groundwater	Separate-phase VOCs and other organic compounds dissolved in NAPL (e.g., PCBs)	Monitor natural degradation processes.

Although groundwater is not considered a "principal threat" as this term is defined in EPA's guidance (EPA, November 1991), the selected remedy also addresses the contamination in groundwater because it poses a human-health hazard that exceeds EPA's acceptable risk range.

E. SITE CHARACTERISTICS

This section presents an overview of the Site. A remedial investigation of the Site was done in three phases. The findings of the first phase that was conducted by EPA are documented in *Remedial Investigation Report, Volumes 1-4*, Halliburton NUS, May 1994 ("1994 RI"). The findings of the second phase, which was conducted by the PRP Group, can be found in *Remedial Investigation Report, Volumes 1-2*, Blasland, Bouck & Lee, June 1998 ("1998 RI"). A third phase was limited to sampling soil on the Cianci property and sediment in the Quinnipiac River. The results of this additional sampling are summarized in Appendix x of the Feasibility Study, Volumes 1-4, May 2005. Groundwater at the SRSNE Site has been monitored extensively. Groundwater was sampled for the 1994 RI, 1998 RI, design and construction of the NTCRA 1 and NTCRA 2 Groundwater Extraction and Treatment System, and twice a year since 1998 as part of the PRPs obligations under the NTCRA 2 AOC.

The information summarized below can be found in sections 3-5 in the 1994 RI, and Section 3 in the 1998 RI. Refer also to CT DEP's Groundwater Use and Value Determination (May 2005) for a more detailed discussion of groundwater use.

1. Physical Setting

Site Geology

The SRSNE Site is located within the Connecticut Valley Lowland section of the New England physiographic province. The Connecticut Valley Lowland occupies a regional, structural rift basin, which is characterized by block-faulted and tilted bedrock strata. The geology of the region, in general, consists of the Upper Triassic New Haven Arkose, overlain by Wisconsin-age unconsolidated deposits formed when glaciers eroded and smoothed the bedrock hills.

Directly beneath the SRSNE Site, depth to bedrock varies, from approximately 15 to 40 feet below grade at the Operations Area, to approximately 25 to 45 feet below grade on the Cianci property, to approximately 80 to 100 feet below grade at the Town Well Field. Core samples and drilling observations indicate that the upper five feet of the bedrock in the Operations Area and Cianci property is severely weathered and partially decomposed. The degree of weathering generally decreases with depth. In the interval between five and 30 feet below the top of bedrock, the bedrock is less weathered but is still highly fractured and permeable. The fracture spacing generally increases with depth. At depths of 30 feet or more the rock is characterized by relatively few fractures and may exhibit slightly lower hydraulic conductivity. The deep bedrock can transmit groundwater flow, however, and is the primary zone tapped by private water supply wells north and east of the Site.

The overburden geology beneath the Operations Area and Cianci property consists of two main unconsolidated layers. The shallow, upper layer, called outwash, extends from ground surface to approximately 10 to 25 feet below grade and consists of reddish-brown silty sand and gravel deposits, interbedded with discontinuous layers of silt and relatively well-sorted sand and gravel. The lower layer consists of glacial till, a generally unstratified unit consisting of reddish-brown clay, silt, sand, gravel, cobbles and boulders, but also including isolated, discontinuous sandy seams. Fill materials are present above the outwash in portions of the Operations Area and Cianci property, where grading operations have reworked the upper few feet of soil and filled low areas. Fill materials are also observed along the Railroad Right-of-Way which separates the Operations Area from the Cianci property. The overburden in the Town Well Field grades to a coarser overall grain size distribution, lacking fines.

Site Hydrogeology

Depth to the water table ranges from 0 to 10 feet throughout the Site. Groundwater in the unconfined overburden aquifer flows east and southeast from the Operations Area toward the Quinnipiac River. Groundwater in the semi-confined bedrock aquifer is primarily transmitted in the upper fractured zone, but may also travel in deeper portions of the rock. Flow in the bedrock is also east and southeast towards the Quinnipiac River.

The overburden aquifer is primarily recharged by precipitation. Recharge to the bedrock aquifer is also primarily by precipitation. Immediately west and upgradient of the Operations Area the water table lies within the bedrock. However, some flow between the aquifers occurs in portions of the Site where the till is especially thin or absent. The direction of flow and the rate of recharge vary in response to seasonal fluctuations.

Groundwater Classification and Use

Groundwater within the Site is currently classified by CT DEP as GA, GA-Degraded or GAA (see Figure 3).

Much of the Site is Class GA. Per the CT DEP Groundwater Quality Standards (CT DEP, April 1996), Class GA is:

> "Groundwater within the area of existing private water supply wells or in an area with the potential to provide water to public or private water supply wells. The Department presumes that groundwater in [a Class GA] area is, at a minimum, suitable for drinking or other domestic uses without treatment."

The GA classification means that the state's goal is to maintain or restore groundwater to its natural quality. The GA-Degraded classification applies to the Operations Area, Cianci property and the northern portion of the Town Well Field. Groundwater quality in these areas is not currently suitable for drinking, but the state's goal is to restore the groundwater to its natural quality (CT DEP, August 1997).

A small area surrounding municipal Production Well No. 4 and No. 6 is Class GAA. Class GAA groundwater is "...used or which may be used for public supplies of water suitable for drinking without treatment; groundwater within the area that contributes to a public water supply well; and groundwater in areas that have been designated as a future water supply in an individual utility supply plan." CT DEP notes, however, in its Preliminary Groundwater Use and Value Determination that the portion of the GAA area near Curtiss Street does not currently meet Class GA/GAA Groundwater Protection Criteria (CT DEP, October 1997).

Based on a review of the 1990 CT DEP private well sampling results, the majority of private wells near the Site are drilled, open-bedrock wells ranging from 90 to more than 200 feet deep. The only known current domestic use of groundwater near the Site occurs in homes along Lazy Lane to the west of and hydraulically upgradient of the Operations Area. The private wells historically situated nearest the Site were at the Maiellaro (Mickey's Garage) property, located approximately 400 feet north of the Operations Area, and the former Onofrio residence (now the location of the Southington Police Department building), located across Lazy Lane from the Cianci property. The Onofrio and Maiellaro wells have been abandoned and the properties have been connected to the municipal water supply. State public health code prohibits the drilling of new private water supply wells on properties that are within 200 feet of a municipal water supply line (CT DPH Public Health Code 2000, 19-13-B 51m). Municipal water supply lines run along both Lazy Lane and Route 10.

Surface Features

Much of the Operations Area (the 4-acre parcel where spent solvents and waste oil were stored, managed and processed), is paved with asphalt and/or concrete and is completely enclosed with security fencing. All the original above-ground structures – buildings, processing equipment, storage tanks and drums – have been removed. All underground features – septic tanks, storage tanks, utilities – have also been excavated and removed from the Site. The Operations Area is located approximately 600 feet west of the Quinnipiac River.

The Cianci property, is a 10-acre parcel immediately east of the Operations Area across the Railroad Right-of-Way. It is bordered on the eastern edge by the Quinnipiac River, and fenced on the other three sides. Prior to NTCRA 1, this property did not contain any permanent features. A gravel access road and the NTCRA 1 groundwater containment system (including a 700 foot x 30 foot sheet-pile wall installed into bedrock) and treatment building were constructed on the Cianci property (Figure 2).

The Town Well Field is 28 acres of undeveloped land directly south of the Cianci property. A Connecticut Light and Power (CL&P) electrical transmission line easement cuts across the northern portion of the well field.

A network of monitoring and recovery wells is distributed across the Site.

The terrain at the SRSNE Site is generally flat with a gentle downslope toward the Quinnipiac River. The Site comprises riverine, wetland and upland habitats. The majority of the wetland communities are associated along the eastern border of the Site along the floodplain of the Quinnipiac River. A constructed wetland was built in the northeastern corner of the Cianci property as mitigation for any losses to wetlands associated with NTCRA 1 activities. The vegetation along the river is dominated by mature deciduous trees with a fairly dense understory of deciduous shrubs. The river banks have moderate to dense vegetation of saplings and shrubs. Wetland types include forested-scrub/shrub and scrub/shrub emergent palustrine wetlands. Upland habitat types consist of old fields and small deciduous woodlots, including a stand of trees associated with the phytoremediation pilot. The powerline right-of-way is characterized by low shrubs and grasses.

There are no areas of architectural or historical importance.

2. Conceptual Site Model

The sources of contamination, release mechanisms, and exposure pathways to receptors for the soil, wetland soil, groundwater, surface water, sediment and air, as well as other site-specific factors, are considered while developing a Conceptual Site Model (CSM). The CSM is a three-dimensional "picture" of site conditions that identifies contaminant sources, release mechanisms, exposure pathways, migration routes, and potential human and ecological receptors. It documents current and potential future site conditions and shows what is known about human and environmental exposure through contaminant release and migration to potential receptors. The risk assessment and response action for all environmental media at the SRSNE Site are based on this CSM.

The mechanisms governing fate and transport of contaminants from the source areas to other parts of the Site are numerous and complex. The chemical and physical properties of the various contaminants present and the complicated geologic and hydrogeologic conditions at the Site influence the migration of contaminants within and between the soils, groundwater, and surface water. The CSM identified several pathways for contaminant transport from the point of release to environmental media throughout the study area. These are summarized below. A more complete discussion of contaminant fate and transport at the SRSNE Site can be found in Section 5 of the 1994 RI (Halliburton NUS) and Section 4.4 of the 1998 RI (BBL).

Waste oils, solvents and other liquids containing contaminants seeped into the soils in the Operations Area through the unlined lagoons and leaks and spills onto bare ground, and migrated downward under the influence of gravity. Some of the contaminants adsorbed to the soils or partitioned into the soil pore spaces while others continued downward to the water table. Contaminants remaining in the soil could later be mobilized through contact with precipitation or rising groundwater. The highly contaminated soils in the Operations Area, therefore, act as continuing sources of contamination to the overburden and bedrock aquifers, and to downgradient soils.

Contaminants that migrate into the overburden aquifer have several available migration pathways. Contaminants may migrate vertically downward into the bedrock aquifer or horizontally through the unconsolidated overburden units. The vertical transport of contaminants can also be reversed as upward hydraulic gradients can move contaminated groundwater from the bedrock to the overburden in areas where there are till windows. The lateral migration of contaminants in both the overburden and bedrock aquifers is predominantly east and southeast, toward and beneath the Quinnipiac River. East of the Quinnipiac River, in the vicinity of Route 10, contaminated overburden and bedrock groundwater converge with groundwater traveling westward; the converged flow then travels to the south and southwest. Groundwater in the upper portion of the overburden aquifer flows into the Quinnipiac River. Groundwater in the lower portion of the overburden aquifer and in the bedrock aquifer flows under the Quinnipiac River. The current extent of the groundwater plumes can be found in Figures 4 and 5.

Prior to 1980, direct discharge pathways for contaminated transport to surface water, sediment, and soil included overflow from the SRSNE facility lagoons, runoff of spilled contaminants and the discharge of the partially treated effluent from the SRSNE cooling tower/air stripper to the drainage ditch and ultimately onto the surface of the Cianci property. After 1980, the flow was channeled from the drainage ditch, through the underground culvert beneath the Cianci property, and into a wetland adjoining the Quinnipiac River. Today, cracks in that culvert allow contaminated groundwater to flow directly into the wetland and eventually the river itself.

3. <u>Nature and Extent of Contamination</u>

As stated in the introduction to Section E, the remedial investigation was conducted in three phases. The information provided below is a compilation of data from all three.

<u>Overview of Chemical Compounds Detected</u>

- *Volatile Organic Compounds (VOCs).* The VOCs identified in soil and groundwater at the SRSNE Site, as shown in Table E-1, can be separated into three major groups: chlorinated hydrocarbons, aromatic hydrocarbons, and ketones.

- *Semi-Volatile Organic Compounds (SVOCs).* The SVOCs identified in soil and groundwater at the SRSNE Site, as shown in Table E-1, can also be separated into three major groups: polynuclear aromatic hydrocarbons (PAHs), phthalates, and phenolic compounds. Other SVOCs constitute only a few compounds.

- *Pesticides and Polychlorinated Biphenyls (PCBs).*

- *Metals.* The analytes of interest are heavy metals that may have potential health effects or may affect environmental receptors. These metals include arsenic, cadmium, chromium, cobalt, lead, nickel and zinc.

Although VOCs are not the only contaminants of concern at the Site, they present a major long-term threat to the quality of groundwater in both the dissolved phase and undissolved (i.e., NAPL) phase. The total mass of VOCs at the Site is thought to be distributed approximately as follows:

Soil and Wetland Soil: < 1%
NAPL in Overburden Aquifer: 84%
NAPL in Bedrock Aquifer: present, but extent not defined
Dissolved in Overburden Groundwater: 2%
Dissolved in Bedrock Groundwater: 13%

Soil and Wetland Soil

During the 1994 RI, soil samples were taken from the Operations Area, Cianci property, the drainage ditch between the Operations Area and Cianci property, the Quinnipiac River floodplain and associated wetlands, the Town Well Field and upgradient (background) locations. A broad range of VOCs, SVOCs, metals, pesticides and PCBs were found in soil across the Site. Some of the more frequently detected compounds are listed below, with their maximum concentrations.

- 2-butanone (38,000 ppb)
- 1,2-dichloroetetrachloroethene (440,000 ppb)
- 1,1,1-trichloroethane (690,000 ppb)
- trichlorothene (800,000 ppb)
- toluene (1,700,000 ppb)
- total xylenes (760,000 ppb)
- benzo(a)anthracene (490 ppb)
- benzo(b)fluoranthene (1,800 ppb)
- benzo(k)fluoranthene (1,800 ppb)

- bis(2-ethylhexyl)phthalate (120,000 ppb)
- chrysene (600 ppb)
- fluoranthene (1,100 ppb)
- phenanthrene (1,500 ppb)
- benzo(a)pyrene (740 ppb)
- pyrene (800 ppb)
- aroclors (13,000 ppb)
- 4,4'-DDE (27 ppb)
- 4,4'-DDT (28 ppb)
- Arsenic (9.7 ppm)
- Cadmium (389 ppm)
- Chromium (183 ppm)
- Cobalt (13.7 ppm)
- Lead (1,750 ppm)
- Nickel (67.8 ppm)
- Zinc (204 ppm)

Surficial soils (0 to 6 inches) at the Site were essentially free of VOC contamination. PAHs were the predominant SVOCs detected in surficial Site soils and they were found in the drainage ditch, on the Cianci property and in areas adjacent to the Quinnipiac River. Phthalates were also detected in significant numbers and concentrations in the drainage ditch and in wetland soils near the culvert outfall to the Quinnipiac River. Relatively low concentrations of a few other SVOCs were detected in samples from the Cianci property and the Town Well Field. Pesticides were found in surficial soil throughout the Site with no apparent distribution of type or concentration. PCBs were detected at the culvert outfall location. Elevated concentrations of metals were detected primarily in the drainage ditch and wetlands at the culvert outfall. Metals present at elevated concentrations include barium, cadmium, chromium, lead and silver. Metal concentrations from surficial soils from the western side of the Cianci property and the Town Well Field were generally comparable in variety and concentration to those detected in upgradient samples. The samples taken in the Operations Area are primarily subsurface samples, as the majority of the area is paved.

Elevated levels of numerous VOCs were detected in subsurface soils throughout the Operations Area, the southern half of the Cianci property, and the northern portion of the Town Well Field. In general, the highest VOC concentrations and greatest number of VOC compounds were detected in subsurface soils in the Operations Area. Chlorinated and aromatic hydrocarbons comprised the majority of the VOC contamination in the subsurface soils in the Operations Area. Fewer VOCs and generally lower concentrations were detected in the Cianci property and the Town Well Field. Ketones were the predominant VOCs detected in these two areas, and tended to be greater in deeper soils (>16 feet) than in shallow soils. SVOCs and PCBs in subsurface soils seem to be fairly limited to the Operations Area. The SVOCs consist of primarily several PAHs and phthalates; a few phenolic compounds and other SVOCs were also detected. Subsurface soils appear to be generally free of pesticide contamination.

Elevated concentrations of metals in subsurface soils were detected primarily in the Operations Area, near the locations of the former SRSNE facility lagoons and open-pit incinerator. Cadmium was detected at elevated concentrations at greater frequency and over a wider area than any other metal and was found in subsurface soils in the Operations Area, Cianci property and the Town Well Field.

Subsurface soil from eight locations in the Operations Area was collected for dioxin/furan analysis. Relatively low concentrations (0.002 – 0.30 ppb) were detected in four samples.

A supplemental round of soil sampling was conducted on the Cianci property in 1999 to provide additional data for the risk assessment and to obtain leaching-based inorganics analytical data to compare to CT DEP's pollutant mobility criteria (PMC). The data collected was consistent with earlier rounds.

<u>Non-aqueous Phase Liquid (NAPL)</u>

Dense non-aqueous phase liquid (DNAPL) has been found in the subsurface at the SRSNE Site. Light NAPL (LNAPL) has also been detected but in relatively minor amounts. DNAPL is by far the more significant source of continued degradation of groundwater. The 1998 RI Report (BBL, section 4.2.1) delineated two levels of relative NAPL likelihood for both the overburden and bedrock aquifers for purposes of a Technical Impracticability evaluation:

- *Probable* NAPL zone is that region of the subsurface where NAPL is either confirmed to be present, or very likely to be present. This delineation was based on site history, direct observation, presence of alcohols, and a greater than 10% effective solubility of chemicals in groundwater (or calculated pore-water concentrations in saturated soil samples >100%).

- *Potential* NAPL zone is that region of the subsurface where NAPL may be present, but site data do not yield conclusive evidence that it is present. This delineation was based on effective solubility greater than 1% but less than 10% in groundwater (or calculated pore-water concentrations in saturates soil samples between 10% and 100%), the presence of VOCs in hydraulically anomalous locations, and areas where an abrupt change in contaminant chemistry was observed.

Figure 6a shows the lateral extent of these two NAPL zones in the bedrock. The probable bedrock NAPL zone covers an area of approximately 260,000 square feet (~ 6 acres) and the potential bedrock NAPL zone extends 618,000 square feet (~ 14 acres). The depth of NAPL in the bedrock was not delineated during the RI.

Additional field work was performed to further refine the presence and distribution of pooled and residual NAPL in the overburden, based on visual observations of NAPL in soil borings as well as field screening techniques (PID, Oil Red O dye, etc). The purpose of this work was to delineate an area and volume of greatest NAPL concentration in the overburden for evaluating source control technologies in the FS. The end result was the area called the Overburden NAPL Area that is approximately 1.5 acres and 47,000 cubic yards and is shown in Figure 6b.

The physical properties and chemical composition of DNAPL were quantified based on samples obtained from groundwater monitoring wells during the RI and a June 2003 compliance monitoring event. The density of the DNAPL in those samples is relatively close to that of water (ranging from 1.068 to 1.23 g/cm^3) which suggests that DNAPL at those locations would be relatively easy to mobilize, where present in pools. Total VOC concentrations ranged from 899,000 ppm to 99,800 ppm.

<u>Groundwater</u>

The data summarized below comes largely from the 1994 RI, which reflects conditions at the Site prior to implementation of groundwater pumping as part of the NTCRA 1 and NTCRA 2 Groundwater Extraction and Treatment System. Groundwater from the overburden and bedrock aquifers was sampled, from locations in the Operations Area, Cianci property, and the Town Well Field, as well as upgradient and cross-gradient locations. A broad range of VOCs, SVOCs, metals, pesticides and PCBs were found in groundwater across the Site. Some of the more frequently detected compounds are listed below, with their maximum concentrations from the 1994 RI.

- Benzene (610 ppb)
- Carbon tetrachloride (9,100 ppb)
- Chlorobenzene (39 ppb)
- Chloroethane (1,100 ppb)
- 1,2-dichloroethane (940 ppb)
- 1,1-dichloroethene (15,000 ppb)
- cis-1,2-dichloroethene (110,000 ppb)
- trans-1,2-dichloroethene (3,700 ppb)
- ethylbenzene (60,000 ppb)
- 4-methyl-2-pentanone (22,000 ppb)
- Styrene (49,000 ppb)
- Tetrachloroethene (6,400 ppb)
- Toluene (150,000 ppb)
- total xylenes (6,800 ppb)
- trichloroethene (41,000 ppb)
- 1,1,1-trichloroethane (320,000 ppb)

- Vinyl chloride (7,300 ppb)
- bis(2-ethylhexyl)phthalate (11,100 ppb)
- di-n-butylphthalate (52 ppb)
- 2,4-dimethylphenol (66 ppb)
- 2-methylphenol (92 ppb)
- Phenol (4,200 ppb)
- 4-methylphenol (760 ppb)
- Naphthalene (47 ppb)
- Aroclors (85 ppb)
- Arsenic (49 ppb)
- Barium (20,400 ppb)
- Cadmium (76.9 ppb)
- Chromium (764 ppb)
- Cobalt (390 ppb)
- Copper (1570 ppb)
- Manganese (43,330 ppb)
- Nickel (792 ppb)
- Vanadium (1,260 ppb)
- Zinc (11,700 ppb)

Overburden Groundwater. The highest VOC and SVOC concentrations found in the overburden aquifer during the 1994 RI were in the Operations Area, particularly in the area of the SRSNE facility lagoons. The plume of elevated VOCs extends from the Operations Area, through the southern portion of the Cianci property and into the northern portion of the Town Well Field. In the southern portion of the Town Well Field, VOCs are detected at low concentrations which are below federal drinking water standards. The plume of elevated SVOCs also extends from the Operations Area into the southern Cianci property but only trace amounts of SVOCs are detected in the northern Town Well Field. Groundwater in the northern portion of the Cianci property - upgradient of the Operations Area - appears to be free of VOCs and SVOCs.

All metals in the upgradient well were also present in samples taken from the overburden aquifer in the Operations Area. Several metals that were detected at higher concentrations in the area of the lagoons include arsenic, barium, calcium, cadmium, cobalt, lead, manganese, potassium, and sodium. PCBs were found at one location in the Operations Area, again near the lagoons, and no pesticides were detected. As was the case with the VOCs and SVOCs, elevated levels of metals were found on the Cianci property directly downgradient of the Operations Area and in the Town Well Field. The metals and their concentrations were similar to those found on the Operations Area. No pesticides or PCBs were detected in the overburden aquifer on the Cianci property or the Town Well Field.

The data from the 1994 RI suggest that in the overburden aquifer, contamination migrated away from the Operations Area to the east and southeast across the southern portion of the Cianci property, into the Town Well Field, towards the Quinnipiac River. During the 1998 RI, elevated levels of some VOCs and SVOCs similar to those found in the plume extending from the Operations Area to the Cianci property were detected in the middle stratum of the overburden aquifer east of the Quinnipiac River. This suggests that some contaminants are migrating under the Quinnipiac River. VOCs have also historically been detected in the deep overburden aquifer and shallow bedrock aquifer northeast of the Site near the corner of Lazy Lane and Queen Street.

Bedrock Groundwater. Unlike in the overburden aquifer, data from the 1994 RI showed significant differences in VOC concentrations at individual locations in the bedrock aquifer. This condition may be the result of the nature of the bedrock fractures in combination with how contaminants are transferred into the bedrock aquifer. The individual bedrock fractures are likely to have higher hydraulic conductivities than the overlying stratified soils, and would allow faster passage of groundwater and contaminants than in the overburden aquifer. Till windows in the unconsolidated unit provide a preferential pathway for the migration of contaminants between the overburden and bedrock aquifers. Contaminant concentrations are less likely to experience reductions since there is less dilution from mixing with cleaner groundwater and less adsorption to soil.

Generally speaking, the data collected during the 1994 RI suggest that highly chlorinated (tri- or tetra-) VOCs have migrated farther in the bedrock aquifer than in the overburden aquifer. The highest VOC concentrations found in the bedrock aquifer were in the central portion of the Operations Area, downgradient of the former tank farm and near the location of the former lagoons. Around the periphery of the Operations Area, significantly lower VOCs were detected. Contaminants likely entered the bedrock aquifer directly through a till window in the Operations Area. Two major components of flow influenced the migration of VOCs in bedrock. First, contamination migrated from the Operations Area east and southeast across the southern Cianci towards the Quinnipiac River. Second, a gradient with a strong southerly component resulted in a narrow plume of elevated VOCs extending from the Cianci property deep into the Town Well Field. Unlike the overburden, VOCs in low concentrations were detected in bedrock wells in the northern Cianci property as well. It is thought that a deep pumping well on the Cianci property near Lazy Lane influenced the migration of the plume in bedrock. VOC concentrations in the bedrock in the Operations Area and Cianci property are higher than in the overburden; shallow portions of the bedrock aquifer are generally more contaminated than deeper portions. Low concentrations of VOCs are present throughout the shallow bedrock aquifer in the Town Well Field. The only area of significant SVOC contamination is the southern Cianci property; here, concentrations are comparable or higher to those found in the overburden aquifer, and, the shallow bedrock is generally more contaminated than the deeper bedrock.

As with SVOCs, the Cianci property bedrock has significant concentrations of PCBs and pesticides, whereas the rest of the Site is relatively free of these contaminants. The PCBs were found in the bedrock aquifer in one location, likely due to high VOC solvents and possibly surfactants causing PCBs to be soluble in groundwater.

Metals concentrations in the bedrock aquifer are elevated in the Operations Area, Cianci property and northern Town Well Field. In general, more metals and in higher concentrations were detected in the Operations Area bedrock wells than in upgradient and cross-gradient wells, and these were in the area of the lagoons and open pit incinerator. Metals in the Operations Area bedrock tended to be at comparable or lower concentrations to metals found in Operations Area overburden groundwater. In the southern portion of the Cianci property, immediately downgradient of the Operations Area, fewer metals at comparable or lower concentrations were detected, however, closer to the river, metals were at comparable or higher concentrations to those found in the bedrock in the Operations Area. More metals at higher concentrations were detected in the northeast portion of the Town Well Field than in upgradient wells, and were comparable or a bit higher in concentration than the Operations Area bedrock.

Mercury and cadmium were not detected in the background wells but were in the Operations Area. Other metals detected in background locations include arsenic, barium, calcium, chromium, copper, manganese, nickel, potassium, sodium, vanadium and zinc were also detected in the Operations Area and locations downgradient from the SRSNE facility. Lead was found in both Site wells and background wells though in higher concentrations in Site wells.

NTCRA 1 and NTCRA 2 Groundwater Extraction and Treatment System. As discussed earlier, groundwater in both the overburden and bedrock aquifers is currently being contained by the NTCRA 1 and NTCRA 2 Groundwater Extraction and Treatment System.

Figure 4 shows the extent of the groundwater plume in the overburden aquifer. Figure 5 shows the extent of the groundwater plume in the bedrock aquifer.

Since 1995, the NTCRA 1/2 Groundwater System has extracted over 85,000,000 gallons of contaminated groundwater, and removed an estimated 12,500 pounds of VOCs. Influent concentrations average 16.1 ppm (range <1 to 77.9 ppm) of total combined VOCs, including primarily 1,2-DCE, toluene, 1,1,1-TCA, ethylbenzene, xylenes and vinyl chloride. Alcohols, ketones and tetrahydrofuran have also been detected in the influent during operation of only the NTCRA 1 wells. Since the NTCRA 2 wells have come on line, these compounds are typically below detectable levels

Surface Water and Sediment

During the 1994 RI, surface water samples were collected from the eastern drainage ditch along the Railroad Right-of-Way between the Operations Area and Cianci property, at the culvert outfall, the Quinnipiac River, and wetlands adjacent to the Site. Samples in the river were taken from locations both upstream and downstream of the Site. Sediment samples were also taken from the Quinnipiac River.

Surface water in the Quinnipiac River does not seem to have been impacted significantly by activities at the SRSNE Site. No VOCs were detected either upstream or downstream of the Site. Bis(2-ethylhexyl)phthalate was detected at the upstream and one downstream sampling location; no other SVOCs were detected. Neither pesticides nor PCBs were detected downstream of the Site. Metals detected in downstream locations were similar to those found in the upstream sampling location and generally were in the same range of analyte concentrations. Sediment collected from the Quinnipiac River does not appear to be significantly impacted by activities on the Site. The riverine sediments have low concentrations of a few VOCs; and the concentration and distribution of SVOCs, pesticides, PCBs and metals were similar among upstream and downstream sampling locations.

Surface water collected from the drainage ditch and the culvert outfall does appear to have been impacted significantly by activities on the Site. The greatest number of VOCs in surface water was detected in the drainage ditch, as were the highest concentrations of metals. Also present in surface water at the drainage ditch and the culvert outfall were pesticides, PCBs, and low concentrations of SVOCs.

Since 1998, three surface water points along the Quinnipiac River, adjacent to the Site have been sampled twice a year by the PRP Group. The data is consistent with that collected for the 1994 RI. The PRP Group also conducted supplemental sediment investigations in the Quinnipiac River to support the interpretation of the 1994 ecological risk assessment. That data too supported earlier conclusions regarding the minimal impacts of the Site on riverine sediments.

Soil Gas

A soil gas survey was conducted as part of the 1994 RI. The results indicated that VOCs of varying types and concentrations were detected throughout the Site. The highest concentrations were detected along the eastern perimeter of the Operations Area. Relatively high concentrations of VOCs were present in soil gas in the northern portion of the Town Well Field and throughout the southern half of the Cianci property. Low concentrations of VOCs were detected in the northern portion of the Cianci property and throughout the remainder of the well field. Among the VOCs detected were trans-1,2 dichloroethene; 1,1,1-trichloroethane; 1,1,2,2,-tetrachloroethane; tetrachloroethene; toluene; and ethylbenzene. The presence of specific VOCs in soil gas correlated with VOCs detected in groundwater and soil samples from the same geographic locations.

4. Principal Threat Waste

Principal threat wastes are those source materials considered to be highly toxic or highly mobile which generally cannot be contained in a reliable manner or would present a significant risk to human health or the environment should exposure occur. The manner in which principal threats are addressed generally will determine whether the statutory preference for treatment as a principal element is satisfied. Wastes generally considered to be principal threats are liquid, mobile and/or highly-toxic source material. Source material is defined as material that includes or contains hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to groundwater, surface water, air or acts as a source for direct exposure.

The principal threat waste at the SRSNE Site is:

- *Overburden and Bedrock NAPL.* Waste oil and solvents in the form of non-aqueous phase liquid (NAPL) in the unconsolidated deposits in the overburden aquifer and in the fractured arkosic sandstone in the bedrock aquifer are principal threats due to toxicity and mobility. The NAPL presents a potential human-health hazard through direct contact. The NAPL also presents a significant on-going source of contamination to groundwater, a potential future source of drinking water.

Although groundwater is not considered a "principal threat" as this term is defined in EPA guidance (EPA, November 1991), the selected remedy also addresses the contamination in groundwater because it poses a human-health hazard that exceeds EPA's acceptable risk range.

F. CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

The current and anticipated future uses of the Site form the basis for the exposure assumptions that are used for the risk assessment; are considered in the development of remedial objectives and remedial alternatives; and are considered in the selection of the appropriate remedial action.

The future land use assumptions are based on interviews EPA conducted with stakeholders, including local residents and town officials, as well as review of Town of Southington Zoning Regulations, the Enterprise Zone designation, and current deed restrictions for a preliminary reuse assessment (EPA, September 2003).

The future groundwater use assumptions are based on the State's groundwater classification, for purposes of the exposure assumptions used for the risk assessment. For purposes of the development of remedial objectives and selection of the remedial action, EPA considered the State's groundwater classification, the State's Groundwater Use and Value Determination (which is an evaluation prepared by the State to support EPA's RI/FS and remedy selection), as well as interviews EPA conducted with town officials as part of the preliminary reuse assessment, in order to evaluate the relative value of the aquifer and the time frame needed for restoration

The future surface water use assumptions are based on the State's surface water classification.

Information on the current and potential future uses of land, groundwater and surface water is summarized below.

1. Land Use

Currently, use of the Site is limited to activities that support on-going groundwater remediation[3]. The Operations Area, Cianci property, and Railroad Right-of-Way (i.e., the parcels where contaminated soils are found) are vacant with the exception of infrastructure associated with the two NTCRAs. A groundwater treatment building and 700-foot long by 30-foot deep sheet-pile wall installed to the top of bedrock are located on the Cianci property. A network of groundwater monitoring and recovery wells is located on the Operations Area and Cianci property (as well as the Town Well Field).

With respect to the Railroad Right-of-Way, the reasonably anticipated future use of the Railroad Right-of-Way is for recreational purposes. Specifically, there is a strong interest in redeveloping the Railroad Right-of-Way to create a multi-purpose public path, known as a "rails-to-trails" greenway. CT DEP has worked on over 100 miles of rails-to-trails projects in the State of Connecticut. The State's goal, along with other governmental and non-governmental agencies, is to extend the current trail along the rail corridor in Connecticut, known as the Farmington Canal Heritage Trail, from New Haven, CT, to the Massachusetts border. Within the Town of Southington, the Town has received a $1.5 million grant to complete the rails-to-trails section that runs from the Plantsville section of Southington, north through the downtown area, and ends in a residential area at the southern end of the Town Well Field. Town officials in Southington expressed strong commitment to a plan for reuse of the Railroad Right-of-Way that runs through the Site as a component of the existing rails-to-trails project.

With respect to the Operations Area (four acres) and Cianci property (ten acres), the reasonably anticipated future use of these parcels is uncertain. In short, local officials and community members did not provide any clear or consistent plans for the reuse of these parcels. These parcels (along with the Railroad Right-of-Way) are currently zoned for

[3] Pursuant to the 1994 Consent Decree between EPA and SRSNE, its president and its parent company, all uses of much of the site property are currently prohibited until EPA issues its Certification of Completion of the cleanup of the Site. However, EPA's ROD is written as if these restrictions did not exist. EPA has not included a discussion of these restrictions in order to: (1) simplify the issues to be addressed; and (2) analyze the nature of the restrictions that will be needed over the long-term. It should also be noted that the Institutional Controls described in the selected remedy portion of this ROD (Section L) will require modifications to the restrictions required by the 1994 Consent Decree.

commercial/industrial use. Land use within the immediate vicinity of the SRSNE Site is mixed residential, commercial and light industrial, and is expected to remain so.

As explained in below in Section G of this ROD (risk assessment section), EPA's baseline risk assessment estimates potential future risks at the Site based on assumptions that the Site is reused for residential, recreational/trespasser, and industrial/commercial future land use scenarios. In developing remedial objectives, remedial alternatives, and selecting the remedial action, EPA has developed a remedial approach that will facilitate the use of the Railroad Right-of-Way for recreational purposes.

Given the clear desire to reuse the Railroad Right-of-Way for recreational purposes, with an uncertain plan for the reuse of the Operations Area and the Cianci property, EPA concluded that these three parcels all should be cleaned up to facilitate recreational use. This approach was selected because the Railroad Right-of-Way crosses the Site; because recreational use would be protective; and because selection of multiple uses resulting in multiple soil cleanup standards would be overly complicated given the relatively small size of these parcels.

Finally, in selecting a cleanup that will facilitate land reuse for recreational purposes, it should be noted that Connecticut requires cleanup to residential standards where land use has been identified as recreational. For this reason, in discussing land reuse in the remainder of this ROD, EPA uses the term "recreational/residential reuse."

2. Groundwater

Groundwater at the Site is currently not being used for drinking water. Approximately 85 residences on Lazy Lane, Melcon Street, Curtiss Street, Juniper Road, Little Fawn Road and Carrier Court are on domestic supply wells, however, all these properties are to the west of and hydraulically upgradient of the SRSNE Site. The commercial/residential property closest to the Operations Area, the Southington Police Department building located across Lazy Lane, the treatment building on the Cianci property, and the commercial/light industrial properties along Route 10 are all on public water. The Town of Southington's 50-year water supply plan states that additional sources of water are not expected to be needed until 2020 or later (Lenard, April 1996). The Town Well Field is located downgradient of the SRSNE Site.

The potential beneficial use of the groundwater at the Site and surrounding areas is for drinking water. The groundwater at the Site has been classified by CT DEP as GA, GA-Degraded or GAA (Figure 3). The State's goal for this aquifer is to maintain or restore the groundwater to its natural quality, suitable for drinking or other domestic uses without treatment (CT DEP, 1997). Former Production Wells No. 4 and No. 6 are located within this aquifer but were shut down a number of years ago after contamination was discovered.

In its Groundwater Use and Value Determination (which is an evaluation prepared by CT DEP to support the RI/FS and remedy selection), CT DEP concluded that the aquifer underlying the Site and the surrounding areas are of high use and value. The primary factors which led the State to assign a high use and value to this aquifer were based on quantity and the likelihood and identification of future water use. In particular, CT DEP's evaluation indicates that the "quantity" was of high value due to the productivity and yield of the aquifer. In addition, CT DEP's evaluation indicates that the "likelihood and identification of future drinking water use" was high due to the fact that the Town of Southington continues to identify Production Wells No. 4 and No. 6 as inactive sources of water supply and that the Town has not currently secured any additional water supply sources for future use. Finally, CT DEP determined that immediate restoration of the aquifer is not required as long as adequate protection is provided to contain the contaminated groundwater plume.

In connection with EPA's preliminary reuse assessment, EPA met with the Town to discuss future potential uses of the groundwater. The Town reported that although Production Wells No. 4 and No. 6 are closed, the Town has not abandoned these wells and it considers its diversion right (i.e., its right to use the wells) to be a valuable asset. The Town continues to evaluate its options for future residential and industrial water supply needs.

Based on the State's classification of the groundwater and its use and value determination for the groundwater, together with the fact that the Town has not currently secured other sources for future drinking water supply, EPA considers the potential beneficial reuse of the groundwater at the Site and in the surrounding area (i.e., Production Wells No. 4 and No. 6) to be drinking water. As explained in Section G of this ROD (risk assessment section), EPA's baseline risk assessment estimates potential future risks at the Site based on assumptions that the beneficial use of the groundwater is for drinking water (consistent with the State's classification of the groundwater). This goal is carried through in the development of remedial objectives, remedial alternatives, and in the selection of the remedial action, with particular emphasis on the high value of the aquifer as a potential public drinking water supply for which immediate restoration is not required as long as the contaminated groundwater plume is contained.

3. <u>Surface Water</u>

The Quinnipiac River is not used as a drinking water supply. Adjacent to and south of the SRSNE Site there is limited access to the Quinnipiac River as it is a narrow, shallow meander bordered by steep banks along Queen Street to the east and the Town Well Field and fenced Cianci property to the west. Seasonally low water and lack of access leads to little to no recreational use of the river in the vicinity of the Site. Downstream of the Site, the Quinnipiac River is used for recreation from Southington to its mouth in New Haven Harbor. Two recreational areas within the Town of Southington, but at least two miles downriver of the SRSNE Site, provide public access to the river, including canoe access points. A fish consumption advisory was placed on the Eight Mile River and the stretch of the Quinnipiac River north of the Cheshire Gorge after the discovery of a PCB release site in Plantsville. It was advised that all species of fish not be eaten due to unacceptably high levels of PCBs in the fish tissue (CT DEP, 1998).

Surface water along the Quinnipiac River adjacent to the Site is currently classified by CT DEP as Class C/B (CT DEP, 1992). This means that the state's goal for this surface water body is Class B, though it is currently degraded to Class C. Class B surface waters are designated for recreational use, fish and wildlife habitat, agricultural and industrial supply, and other legitimate uses including navigation. Conditions that result in a Class C designation are usually correctable, and commonly relate to combined sewer overflows, urban runoff, inadequate municipal or industrial waste-water treatment, and community-wide septic system failures (CT DEP, 1992)

Based on the State's classification, EPA considers the potential beneficial reuse of the surface water to be for recreational use, fish and wildlife habitat, agricultural and industrial supply, and other legitimates uses including navigation. As explained in Section G of this ROD, EPA's baseline risk assessment estimates potential future risks at the Site based on assumptions that the beneficial use of the surface water is consistent with this goal, including recreational use. This goal is carried through in the development of remedial objectives, remedial alternatives, and in the selection of the remedial action.

* * *

Based on current and anticipated future land and groundwater use discussed above, the following exposure scenarios were considered for the human-health risk assessment (Section G):

<u>*Groundwater*</u>

- Future human consumption of groundwater.

<u>*Soil and Wetland Soil*</u>

- Incidental ingestion, inhalation and dermal contact with soil.
- Incidental ingestion and dermal contact with wetland soil.
- Residential, recreational, and industrial/commercial future land use scenarios were evaluated.

<u>*Surface Water*</u>

- Incidental ingestion and dermal contact with surface water while swimming in the Quinnipiac River or wading in its associated wetlands.

Sediment

- Incidental ingestion and dermal contact with sediments while swimming in the Quinnipiac River.

Biota

- Ingestion of fish from the Quinnipiac.

For the ecological risk assessment, the ecological receptors were identified as common aquatic and terrestrial species of flora and fauna. Exposure to soil in the Operations Area and Cianci property was evaluated, although the presence of pavement and/or scarce vegetation in these areas provide marginal habitat. Exposure to surface water and soil in wetlands, and surface water and sediment in the river were considered extensively.

G. SUMMARY OF SITE RISKS

A baseline risk assessment was performed to estimate the probability and magnitude of potential adverse human health and environmental effects from exposure to contaminants associated with the Site assuming no remedial action was taken. It provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial action. The public health risk assessment followed a four step process: 1) hazard identification, which identified those hazardous substances which, given the specifics of the Site were of significant concern; 2) exposure assessment, which identified actual or potential exposure pathways, characterized the potentially exposed populations, and determined the extent of possible exposure; 3) toxicity assessment, which considered the types and magnitude of adverse health effects associated with exposure to hazardous substances, and 4) risk characterization and uncertainty analysis, which integrated the three earlier steps to summarize the potential and actual risks posed by hazardous substances at the Site, including carcinogenic and non-carcinogenic risks and a discussion of the uncertainty in the risk estimates. A summary of those aspects of the human health risk assessment which support the need for remedial action are discussed below followed by a summary of the environmental risk assessment.

1. Human Health Risk Assessment

Approximately 40 of the more than 80 chemicals detected in groundwater and approximately 30 of the more than 65 chemicals detected in soils at the Site were selected for evaluation in the human health risk assessment as chemicals of potential concern. The chemicals of potential concern were selected to represent potential site related hazards based on toxicity, concentration, frequency of detection, and mobility and persistence in the environment and can be found in Appendix J of the 2005 FS, Tables 2.1 thru 2.9, and Tables 6-2 thru 6-5 of the 1994 RI. From this, a subset of the chemicals was identified in the feasibility study as presenting a significant current or future risk and is summarized in Tables G-1 thru G-3. These tables contain the exposure point concentrations used to evaluate the reasonable maximum exposure (RME) scenario in the baseline risk assessment for the chemicals of concern. The reasonable maximum exposure point concentrations for chemicals in groundwater represent the highest average concentration in any single well (when detections were averaged over the period of time in which the well was sampled). In keeping with EPA risk assessment guidance, the RME concentrations for soils were generally based on the maximum detected concentrations rather than the 95% upper confidence limit (UCL) on the arithmetic mean concentration as the latter was generally greater than the maximum detected value. In instances in which the 95% UCL on the mean concentration was less than the maximum concentration, then the 95% UCL on the mean was used as the RME point concentration for soils.

Potential human health effects associated with exposure to the chemicals of potential concern were estimated quantitatively or qualitatively through the development of several hypothetical exposure pathways. These pathways were developed to reflect the potential for exposure to hazardous substances based on the present uses, potential future uses, and location of the Site. At present the Site is vacant, with the exception of a network of groundwater recovery wells, a sheet-pile wall, and a treatment building for the on-going groundwater remediation. Access to most of the Site is restricted by fencing or the Quinnipiac River which, along this stretch, has steep banks and is heavily vegetated. The Railroad Right-of-Way is not fenced, but exposure to contaminated soil is reduced by the presence of railroad ties and gravel bedding. The Operations Area and Cianci property only support activities related to the NTCRA 1 and NTCRA 2 Extraction and Treatment System.

A baseline public health risk assessment (RA) was performed by EPA in 1994 (HNUS, May 1994). The 1994 RA evaluated a future potential residential use scenario for groundwater and potential residential, recreational and trespasser exposure scenarios were considered for contact with soil, sediment, and surface water. In 1999, the PRP Group updated portions of the risk assessment for soils and groundwater to incorporate newly collected monitoring data and to reflect newly issued risk assessment guidance. Additionally, by 1999, two separate non-time critical removal actions for groundwater had been implemented which altered groundwater conditions at the site from conditions which formed the basis of the 1994 RA. The RA Update as it will be referred to henceforth, re-evaluated the potential risks and hazards associated with incidental ingestion and dermal contact with soils for residential, recreational, and commercial/industrial land use scenarios and re-evaluated the potential risks and hazards associated with hypothetical ingestion of groundwater. Risks resulting from other exposure pathways (e.g. surface water and sediment) were not re-evaluated in the RA Update because no new data had been collected and risks resulting from exposure to these media (1994 RA) had been found to be below EPA's benchmarks for remedial actions. EPA's benchmarks for remedial action include either a cancer risk in excess of $10^{-4} - 10^{-6}$ or a non-cancer Hazard Index (HI) greater than one.

For the purposes of this ROD, potential human exposures4 to contaminants that present an unacceptable risk in soil, sediments, surface water and groundwater are summarized as follows:

- Risks from potential residential ingestion of overburden or bedrock groundwater from the Operations Area/Railroad Property.

- Risks to potential residential or worker from exposures to subsurface soils at the Operations Area/Railroad Property.

Risk posed by the potential consumption of fish obtained from the Quinnipiac River was not quantified due to the relatively low levels of sediment contamination in the river and the fact that the Site was not found to have a considerable impact on contaminant levels in the river (1994 RA). A more thorough description of all risks evaluated in the 1994 RA and the RA Update can be found in Section 6.0 of the 1994 RI or in Appendix J of the 2005 FS (for the RA Update).

Excess lifetime cancer risks were determined for each exposure pathway by multiplying a daily intake level with the chemical specific cancer potency factor. Cancer potency factors have been developed by EPA from epidemiological or animal studies to reflect a conservative "upper bound" of the risk posed by potentially carcinogenic compounds. That is, the true risk is unlikely

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4 Reasonable maximum exposures (RME) were characterized for each scenario. In assessing potential exposures to contaminated groundwater in the 1999 RA Update, a future potential residential consumer was assumed to ingest 2 liters/day, 350 days/yr for 30 yrs. Current and future potential residential exposure to soils was evaluated assuming incidental ingestion and dermal contact were possible. A 30-yr exposure duration comprised of 6 years as a young child and 24 years as an adult served as the basis for the residential soils exposure evaluations in the 1999 RA Update. Both an adult and a child were assumed to be exposed 350 days/yr for the residential scenario, and the adult was assumed to ingest 100 mg soil/day whereas a young child was assumed to ingest 200 mg soil/day. For dermal contact with soils, a soil adherence rate of 0.07 mg soil/cm^2 of exposed body surface area was assumed over 5,700 cm^2 of body surface area for an adult whereas for the young child, a soil adherence rate of 0.2 mg soil/cm^2 of body surface area was assumed with contact assumed to occur over 2,900 cm^2. Chemical specific dermal absorption values were as noted in Table G-5.

The RME evaluation for an adult worker's exposure to soil as contained in the 1999 RA Update included the assumption that exposure would occur for 25 years. During this time, it was assumed a worker might ingest 100 mg/day of soil for 250 days/yr and contact soil at a rate of 0.2 mg soil/cm^2 of body surface area, with 2,500 cm^2 of body surface area potentially exposed. Chemical specific dermal absorption values were as noted in Table G-5.

to be greater than the risk predicted. The resulting risk estimates are expressed in scientific notation as a probability (e.g., 1 x 10^{-6} for 1/1,000,000) and indicate (using this example), that an average individual is not likely to have greater that a one in a million chance of developing cancer over 70 years as a result of site-related exposure (as defined) to the compound at the stated concentration. All risks estimated represent an "excess lifetime cancer risk" – or the additional cancer risk on top of that which we all face from other causes such as cigarette smoke, dental x-rays, or exposure to ultraviolet radiation from the sun. The chance of an individual developing cancer from all other (non-site related) causes has been estimated to be as high as one in three. EPA's generally acceptable risk range for site related exposure is one in ten thousand (10^{-4}) to one in a million (10^{-6}). Current EPA practice considers carcinogenic risks to be additive when assessing exposure to a mixture of hazardous substances. A summary of the cancer toxicity data relevant to the chemicals of concern is presented in Table G-4.

In assessing the potential for adverse effects other than cancer, a hazard quotient (HQ) is calculated by dividing the daily intake level by the reference dose (RfD) or other suitable benchmark. Reference doses have been developed by EPA and they represent a level to which an individual may be exposed that is not expected to result in any deleterious effect. RfDs are derived from epidemiological or animal studies and incorporate uncertainty factors to help ensure that adverse health effects will not occur. A HQ $\leq$ 1 indicates that a receptor's dose of a single contaminant is less than the RfD, and that toxic non-carcinogenic effects from that chemical are unlikely. The Hazard Index (HI) is generated by adding the HQs for all chemical(s) of concern that affect the same target organ (e.g., liver) within or across those media to which the same individual may reasonably be exposed. A HI $\leq$ 1 indicates that toxic non-carcinogenic effects are unlikely. A summary of the non-carcinogenic toxicity data relevant to the chemicals of concern at the SRSNE Site is presented in Table G-5.

Excess cancer risk projections for a future potential residential receptor who may consume untreated groundwater from either the overburden or the bedrock aquifers in the Operations Area are presented in Tables G-6 and G-7. For a future potential consumer of untreated groundwater from this area, cancer risks were projected to greatly exceeded EPA's benchmark for remedial actions of 10^{-4} to 10^{-6} and even approached unity. Potential exposures to trichloroethylene and vinyl chloride were the principal contributors to the excess cancer risk projections. The potential for adverse non-cancer effects is also possible should groundwater from either the overburden or the bedrock aquifer in the Operations Area to be used for potable purposes as the Hazard Indices exceeded unity for potential adverse effects on the liver, kidney, blood, immune system, CNS/neurotoxicity, body weight, and skin and other various effects. Several of the risk drivers for non-cancer endpoints include 1,2-dichloroethene, Aroclor 1254, carbon tetrachloride, tetrachloroethylene, and vinyl chloride While not a component of either the cancer or non-cancer risk estimation, lead was noted in both the overburden and the bedrock aquifers from the Operations Area groundwater in excess of the federal MCL of 15 ug/l and numerous other constituents in Operations Area groundwater were noted well in excess of their corresponding federal or Connecticut standards for potable water. Risks and hazards attributed to potential consumption of groundwater from the Queen St Plume did not exceed EPA's benchmarks for remedial actions and while risks evaluated in the risk assessment for the potential consumption of groundwater from the Upgradient Area were in excess of EPA's benchmarks for remedial action, EPA concluded that the contamination was due to upgradient sources and/or naturally occurring levels of contamination.

Risks and hazards to potential residential receptors and workers via incidental ingestion and dermal contact with subsurface soils at the Operations Area/Railroad Property are summarized in Tables G-8 thru G-10. Potential excess cancer risk resulting from either residential exposure or occupational exposure to subsurface soils at the Operations Area/Railroad Property via dermal contact and incidental ingestion were found to exceed EPA's benchmark for remedial actions of 10^{-4} to 10^{-6} whereas risks to a trespasser in this area were found to be below EPA's benchmark for remedial action. Excess cancer risks were projected to be 1×10^{-3} for a future resident's potential exposure to subsurface soils and were dominated by the risk posed to a young child via soil ingestion. Excess cancer risk projected for a worker potentially exposed to subsurface soils from the Operations Area/Railroad Property were slightly less than for a resident (3×10^{-4}) and again, incidental ingestion dominated the risk estimates. Tetrachloroethylene, trichloroethylene, 2,3,7,8-TCDD equivalents, and PCBs were the compounds contributing most significantly to these potential excess cancer risks.

The potential for adverse non-carcinogenic effects as a result of potential exposure to subsurface soils at the Operations Area/Railroad Property is greatest for a child residential receptor as Hazard Indices exceeded unity for effects on the immune system, kidney, and liver. Adverse non-cancer effects for an adult resident or a worker potentially exposed to subsurface soils from this area are not likely as the Hazard Indices did not exceed unity for these receptors. Several soil constituents in the Operations Area/Railroad Property and Cianci property exceeded the Connecticut remediation standards for soils (i.e., pollutant mobility criteria and/or direct exposure concentrations).

While lead was detected in subsurface soils at the Operations Area/Railroad Property, a formal evaluation of the potential hazards resulting to exposure to lead in soils was not performed as the average lead concentration for this area (315 mg/kg) was below EPA's screening benchmark of 400 mg/kg for residential land use (OSWER Directive #9355.4-12 July 14, 1994). Because access to much of the Operations Area/Railroad Property surface soil is restricted due to pavement and railroad bedding material, risks posed by surface contamination were not quantified for the Operation Area/Railroad Property. Potential risks to residents, recreational users/trespassers, and workers from exposure to surface soils at the Cianci Area property were not found to exceed EPA's benchmarks for remedial action (RA Update).

There are numerous sources of uncertainty and limitations in the risk estimations as calculated for this Site. The net impact of these uncertainties and limitations to the overall risk estimates is difficult to discern as some of these factors may lead to an overestimation of risk whereas others may lead to an underestimate of risk. Examples of uncertainties in the hazard identification stem from EPA's limited ability to characterize the full range of potential adverse effects from the available research. Often, data on specific effects (i.e., developmental effects) are lacking or are not adequate for inclusion in the hazard assessment. Thus, the risk estimates projected are limited by our ability to adequately characterize the full range of potential adverse effects on all potentially susceptible populations that may result from exposure to compounds detected in the environment.

Risk estimates are also based on the assumption that each of the contaminants persist in the environment at the concentrations noted historically when dilution, degradation, and transformation processes may lead to lesser or greater concentrations in the future, or result in the creation of new compounds having greater or lesser toxicity than those characterized in this assessment. The exposure assessment also assumes that an individual may be exposed to all compounds simultaneously which may lead to an overestimation of actual risks if this is not the case.

A limitation of the exposure assessment is that it did not include potential inhalation exposures to VOCs that may result from either volatilization of contaminants as a result of domestic water use or via vapor intrusion should a home be constructed atop a contaminated groundwater plume. Failure to include consideration of these potential exposure pathways would tend to underestimate potential risks. A comparison of groundwater concentrations from the overburden aquifer at the Operations Area Plume to EPA's generic screening levels for vapor intrusion (OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils, Nov. 2002) reveals that several compounds such as vinyl chloride, TCE, benzene, chloroform, and PCE may present a significant risk to human health. As EPA's guidance is merely a screening tool, the potential for vapor intrusion will be evaluated further as part of remedial design.

Risks projected for exposure to dioxins and furans were assessed using a cancer slope factor of 1.5×10^5 $(mg/kg/day)^{-1}$ based on a formerly published value from EPA's HEAST database. Had risks to dioxins and furans been assessed using a recently proposed draft slope factor of 1×10^6 $(mg/kg/day)^{-1}$, about a seven-fold increase in the cancer risk estimate for this group of chemicals would have resulted. As dioxins and furans were only detected in the Operations Area soils, the uncertainty in the dioxin and furan toxicity estimate is not apt to alter the conclusions of the risk assessment for the Site.

Risks associated with exposure to trichloroethylene (TCE) were quantified using a draft slope factor for TCE of 0.4 $(mg/kg/day)^{-1}$ representing the higher end of the range of slope factors recently proposed [the full range of proposed slope factors is 0.02 – 0.4 $(mg/kg/day)^{-1}$]. Historically EPA had used a slope factor of 0.011 $(mg/kg/day)^{-1}$ for evaluating the carcinogenic potential of TCE. Reliance on the lower end of the proposed range of slope factors or the older slope factor for TCE would lessen the cancer risks attributed to exposure to TCE by approximately 20 fold but would not change the conclusions regarding the significance of the risks estimated for exposure to contaminants in groundwater or soil at the Operations Area.

Uncertainty is also inherent in EPA's evaluation of cumulative risk and hazard assessments. In the absence of specific information on the effects of a mixture, EPA assumes dose additivity and an absence of either synergistic or antagonistic behaviors of the chemicals. To the extent that these assumptions are incorrect, over or underestimation of risk could result.

2. Ecological Risk Assessment

Procedures for addressing ecological risks are not as standardized as they are for human health risk assessment. Specific procedures and level of effort for an ecological risk assessment (ERA) vary significantly depending on site-specific factors. EPA conducted an ecological risk assessment (ERA) in 1994 (HNUS, 1994). The results of the ERA are summarized below. A more thorough discussion of the ERA can be found in Section 7 of the 1994 RI Report.

The terrain at the SRSNE Site is generally flat with a gentle downslope towards the Quinnipiac River. Riverine, wetland and upland habitats are present. The majority of the wetland communities are associated with the Quinnipiac River. The vegetation along the river is dominated by mature deciduous trees with a fairly dense understory of deciduous shrubs. The river banks have moderate to dense vegetation of saplings and shrubs. Wetland types include forested-scrub/shrub and scrub/shrub emergent palustrine wetlands. Upland habitat types consist of old fields, stands of deciduous trees, and a powerline right-of-way characterized by low shrubs and grasses. No known federal or state endangered, threatened, or special concern species have been identified at the Site.

Surface water, sediment, and soil and wetland soil to depths of 10 feet were considered for the ERA. Soil deeper than 10 feet and groundwater were not considered during the ERA because ecological receptors are not expected to be directly exposed to contaminants in those media. Table 7-3 (surface water), Table 7-4 (sediment) and Table 7-5 (soil) of the 1994 RI provide summaries of the toxicity data used to screen for COCs including the occurrence, distribution and background concentrations. Persistence, toxicity and bioaccumulation potential were also used as criteria for screening COCs, based on the factors provided in the Superfund Chemical Data Matrix (SCDM), which is a database generated by EPA (EPA, 1993). The selected ecological COCs by media are shown in Table G-11.

The predominant COCs at the SRSNE Site are known to persist, undergo bioaccumulation and biomagnify through food webs. Whereas plants and invertebrates are also at potential risk from the contaminants present at the Site, species at higher levels received special emphasis. The selection of indicator species to assess the potential effects of contaminant exposure on wildlife was based on such factors as observations in the field, feeding habits, food webs, and routes of exposure[5]. The indicator species used for the ERA were:

- Raccoon (*Procyon lotor*) – omnivore and opportunistic; inhabits wooded areas interrupted by open fields and water courses.

- Red-tailed hawk (*Buteo jamaicensis*) – carnivore; inhabits woodlands interspersed with grassy and brushy fields; uses large trees for nesting and perching.

- Mallard duck (*Anas platyrhynchos*) - primarily herbivore, but may also eat snails and insects; prefers shallow water habitats (< 16 inches deep) that enable bottom feeding by tipping up.

- Eastern garter snake (*Thamnophis s. sirtalis*) – carnivore, with earthworms accounting for 80 percent of food items; terrestrial, found in moist areas.

- Green frog (*Rana clamitans melanota*) – herbivore as tadpole; carnivore as adult, feeding mostly on terrestrial invertebrates (insects and their larvae, worms, spiders), but also on small fish and aquatic invertebrates; riparian, found along the banks in or at the edge of water.

Of the COCs identified for this Site, the following were considered in the exposure assessment:

- Benzene
- Xylenes
- Phthalate esters
- PAHs
- 1,2,4-trichlorobenzene
- PCBs or Aroclors
- Dioxin
- Several pesticides
- Metals – including cadmium, copper, lead, mercury, nickel, selenium and zinc

The quotient method was used to estimate risk in this ERA. The quotient method consists of dividing the exposure concentration by an appropriate benchmark toxicity value to produce a risk estimate. If the quotient is one or more, adverse effects are considered likely to occur; if the quotient is less than one, no adverse effects are likely to occur and the risks are considered

5 With respect to aquatic organisms, it was assumed that the majority of the species may be of potential concern. Although invertebrates, in general, represent a significant contribution to the diets of vertebrates, not enough is known about the types of invertebrates that are present at the Site. Plant species were not included among indicator species because toxicological information regarding vegetation is generally scarce in the literature.

minimal. Maximum and mean risk estimates were generated using the quotient method for each medium-specific COC by using maximum and mean exposure concentrations. If the maximum risk estimate for a specific COC was greater than one, but the mean risk estimate was below one, adverse effects due to that contaminant were qualified as possible. If both the mean and the maximum risk estimates for a given COC were greater than one, then adverse effects due to the COC were qualified as probable, to reflect the greater likelihood of occurrence. In addition, a maximum risk estimate greater than one along with a mean risk estimate below one, may indicate that adverse effects due to the COC may be of a somewhat localized nature, while values greater than one for both the maximum and the mean risk estimates may indicate that the adverse effects are more widespread.

Benchmark toxicity values were obtained from a diverse set of information sources and represent contaminant concentrations that are not expected to cause adverse effects on most ecological receptors (Table G-15). The risk estimates and characterization of the adverse effects (no, possible, probable) for each medium are shown on Tables G-12 (surface water), G-13 (sediment) and G-14 (soil and wetland soil).

The conclusions of the ERA are discussed in detail in sections 7.5 and 7.6 of the 1994 RI and section 1.5.2 of the 2005 FS. They can be summarized as follows:

- With respect to surface water in the Quinnipiac River and associated wetlands, an unacceptable ecological risk from PCBs exists in the area of the culvert outfall.

- With respect to riverine sediment and wetland soil, which in the 1994 RI was treated as sediment, an unacceptable ecological risk from PCBs (Aroclor 1254) and PAHs (bis(2-ethylhexyl)phthalate and 2-methylnaphthalene) exists in the wetland soils at the culvert outfall.

3. Basis for Response Action

Because the baseline human-health and ecological risk assessments revealed that future potential residential and worker exposure to compounds of concern in the subsurface soil at the Operations/Railroad Property area and that potential exposure to contaminants in groundwater from this same general area may present an unacceptable human health risk (with excess cancer risks calculated to be as high as unity (every person who drinks the water would potentially get cancer over the course of his or her lifetime), and potential exposures estimated at 700 times greater than benchmarks for the protections of non-cancer effects and due to unacceptable ecological risks from exposure to contaminants in wetland soil and surface water at the culvert outfall, actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

H. REMEDIATION OBJECTIVES

Based on preliminary information relating to types of contaminants, environmental media of concern, and potential exposure pathways, response action objectives (RAOs) were developed to aid in the development and screening of alternatives. These RAOs were developed to mitigate, restore and/or prevent existing and future potential threats to human health and/or the environment from soil and wetland soil, overburden and bedrock groundwater, and NAPL in the overburden and bedrock aquifers; and to attain applicable or relevant and appropriate requirements (ARARs). Although surface water at the culvert outfall on the Cianci property also presented an unacceptable risk due to PCBs, that risk will be addressed by the action taken to address PCBs in wetland soil at the same location. As a result, no cleanup objectives were developed for surface water. The RAOs selected for the SRSNE Site are:

- Operations Area/Railroad Soil

  Human Health Prevent potential human exposure (dermal contact, ingestion and inhalation) to soil with contaminants that exceed an excess carcinogenic risk of 10^{-4} to 10^{-6}, that pose a non-carcinogenic Hazard Index greater than 1, or that exceed ARARs. Prevent migration of contaminants from soils to groundwater that would result in groundwater concentrations in excess of ARARs or which otherwise present an unacceptable risk in groundwater.

  Protection of the Environment Prevent migration of contaminants from soils to groundwater that would result in groundwater concentrations in excess of ARARs.

- Cianci Property Soil

  Human Health Prevent human exposure (dermal contact, ingestion and inhalation) to soil with contaminants that exceed an excess carcinogenic risk of 10^{-4} to 10^{-6}, that pose a non-carcinogenic Hazard Index greater than 1, or that exceed ARARs. Prevent migration of contaminants from soils to groundwater that would result in groundwater concentrations in excess of ARARs or which otherwise present an unacceptable risk in groundwater.

  Protection of the Environment Prevent ecological risks associated with SRSNE-related contaminants.

- Overburden NAPL Area

  Human Health Reduce or stabilize contaminants in the NAPL area that would otherwise result in groundwater concentrations that pose a carcinogenic risk in excess of 10^{-4} to 10^{-6}, non-carcinogenic Hazard Index greater than 1, or that exceed ARARs.

Protection of the Environment Reduce contaminants in the NAPL area to achieve one or more of the following:

- Shorten the time frame that groundwater standards are exceeded;
- Shrink the size of the groundwater contaminant plume;
- Reduce groundwater contaminant concentrations; and
- Prevent the migration of NAPL.

- Overburden Groundwater

Human Health Prevent potential human exposure (dermal contact, ingestion and inhalation) to groundwater in the overburden aquifer with contaminants that pose an excess carcinogenic risk of 10^{-4} to 10^{-6}, non-carcinogenic Hazard Index greater than 1, or that exceed ARARs.

Protection of the Environment Restore groundwater quality to meet ARARs.

- Bedrock NAPL Area

Human Health Minimize expansion of the extent of contaminated bedrock groundwater due to further NAPL migration.

Protection of the Environment Minimize expansion of the extent of contaminated bedrock groundwater due to further NAPL migration.

- Bedrock Groundwater

Human Health Prevent potential human exposure (dermal contact, ingestion and inhalation) to groundwater in the bedrock aquifer with contaminants that pose an excess carcinogenic risk of 10^{-4} to 10^{-6}, non-carcinogenic Hazard Index greater than 1, or that exceed ARARs.

Protection of the Environment Prevent continuing migration of contaminants that exceed ARARs, and, restore bedrock groundwater to meet ARARs once VOC residuals are depleted.

I. DEVELOPMENT AND SCREENING OF ALTERNATIVES

1. Statutory Requirements/Response Objectives

Under its legal authorities, EPA's primary responsibility at Superfund sites is to undertake remedial actions that are protective of human health and the environment. In addition, Section 121 of CERCLA establishes several other statutory requirements and preferences, including: a requirement that EPA's remedial action, when complete, must comply with all federal and more stringent state environmental and facility siting standards, requirements, criteria or limitations, unless a waiver is invoked; a requirement that EPA select a remedial action that is cost-effective and that utilizes permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and a preference for remedies in which treatment which permanently and significantly reduces the volume, toxicity or mobility of the hazardous substances is a principal element over remedies not involving such treatment. Response alternatives were developed to be consistent with these Congressional mandates.

2. Technology and Alternative Development and Screening

CERCLA and National Contingency Plan (NCP) set forth the process by which remedial actions are evaluated and selected. In accordance with these requirements, a range of alternatives was developed for the Site.

With respect to source control, the RI/FS developed a range of alternatives in which treatment that reduces the toxicity, mobility, or volume of the hazardous substances is a principal element. This range included an alternative that removes or destroys hazardous substances to the maximum extent feasible, eliminating or minimizing to the degree possible the need for long term management. This range also included alternatives that treat the principal threats posed by the Site but vary in the degree of treatment employed and the quantities and characteristics of the treatment residuals and untreated waste that must be managed; alternative(s) that involve little or no treatment but provide protection through engineering or institutional controls; and a no action alternative.

With respect to contaminated groundwater, the RI/FS developed a limited number of remedial alternatives that attain site-specific remediation levels within different time frames using different technologies; and a no action alternative.

As discussed in Section 2 of the FS, soil, NAPL and groundwater treatment technology options were identified, assessed and screened based on implementability, effectiveness, and cost (see FS Tables 2-13 thru 2-18). The technologies for soil and NAPL constitute the source control (SC) component of the remedy. The technologies for groundwater constitute the management of migration (MM) component of the remedy. The purpose of the initial screening was to narrow the number of potential remedial actions for further detailed analysis while preserving a range of options. Typically, SC and MM technologies that survive the screening will, in the FS, be assembled into remedial alternatives. Due to the large number of possible alternatives that would have resulted from combining the options retained for the six discrete areas of the Site, alternatives were developed for each area separately in Section 3 of the FS. The area-specific alternatives were also evaluated in detail separately in Section 4 of the FS. One alternative for each of the six areas was selected and, in combination, comprises the final remedy for the Site.

J. DESCRIPTION OF ALTERNATIVES

This section provides a narrative summary of the source control alternatives (soil/wetland soil and NAPL) and management of migration alternatives (groundwater) that were evaluated.

1. Source Control Alternatives

The source control (SC) alternatives evaluated at the SRSNE Site are as follows:

Operations Area/Railroad Soil

- No action
- Capping and institutional controls
- Excavation, off-site disposal and institutional controls

Cianci Property Soil

- No action
- Culvert removal and excavation with on-site disposal
- Culvert removal and excavation with off-site disposal

Overburden NAPL Area

- No action
- Hydraulic displacement and monitored natural attenuation
- Hydraulic displacement and enhanced bioremediation
- Hydraulic displacement, chemical oxidation and monitored natural attenuation
- Thermal treatment and monitored natural attenuation
- Excavation and off-site disposal

Bedrock NAPL Area

- No action
- Institutional controls and monitored natural attenuation

Each of the source control alternatives is summarized below. A more complete, detailed presentation of each alternative is found in Section 4 of the FS. A comparative analysis of alternatives is found in Section K of this ROD.

Operations Area/Railroad Soil (OAR) Alternatives

a. Operations Area/Railroad Soil: Alternative OAR-1 – No Action

Under this alternative, no active remediation would be conducted to address the toxicity or mobility of contaminants in the soil. Exposure to the site soils would continue to be limited by the asphalt pavement and fencing currently present at the Site, and the contaminant concentrations would be expected to diminish through natural attenuation processes. Soil would continue to be a source of contaminants to groundwater. Because waste is left in place, periodic reviews would be conducted at five year intervals to assess the long-term appropriateness of continued No Action.

This alternative is not protective, and does not meet applicable or relevant and appropriate requirements (ARARs) and advisories, criteria and guidance that are "to be considered" (TBCs). It would not allow for routine monitoring and maintenance of the existing controls (i.e., the pavement and fencing). It is not consistent with the expected future recreational/residential land use because over time recreational/residential users will be exposed to unacceptable levels of contaminants in soil. There are no capital costs associated with this alternative. See FS Tables 4-1 thru 4-3 for a more information about this alternative including an evaluation of ARARs/TBCs and estimated costs.

b. Operations Area/Railroad Soil: Alternative OAR-2 – Capping and Institutional Controls

Under this alternative, a low-permeable, composite RCRA Subtitle C cap would be placed over the contaminated soil. It would be effective at reducing the potential exposure to soil, and limiting the mobility of contaminants to groundwater by reducing infiltration. Institutional controls, such as deed restrictions, would be put in place to ensure that the property would not be used in a manner that could disturb the cap. This alternative would include long-term maintenance and monitoring. Because waste is left in place, periodic reviews would be conducted at five-year intervals to assess the continued protectiveness of this remedy.

This alternative is protective and meets all ARARs/TBCs, including RCRA Subtitle C and the CT RSRs requirements for an "engineered control". It would also be designed and built in a manner consistent with the expected future recreational/residential land use. Design and construction is expected to take 3 - 4 years during which time the institutional controls would be put in place. The estimated present worth cost of this alternative is $1,060,000 based on a 30-year operation and maintenance period. See FS Tables 4-4 thru 4-6 for a more information about this alternative including an evaluation of ARARs/TBCs and estimated costs.

c. Operations Area/Railroad Soil: Alternative OAR-3 – Excavation, Off-Site Disposal and Institutional Controls

Under this alternative, 17,000 cubic yards of contaminated soil would be excavated and transported off site for treatment (incineration) and disposal at an existing commercial treatment facility. The excavated area would be backfilled with clean soil from an off-site source. Due to the presence of shallow groundwater, excavation would be conducted during seasonal low groundwater and a groundwater dewatering system may be needed; any collected groundwater would be treated in the existing on-site treatment system, modified to accept construction dewatering flows. High levels of respiratory protection would likely be required to protect workers involved with excavation and soil handling. Site-perimeter monitoring, and maybe a temporary enclosure over the excavation, would be needed to protect the near-by residents during implementation of this alternative.

Institutional controls, such as deed restrictions, would be needed to ensure that the property would not be used in a manner that could disturb soil below the seasonal high groundwater level, which is the lower limit of the soils excavation, as some degree of recontamination is possible from contact with contaminated groundwater in the overburden. This alternative is consistent with the expected future recreational/residential land use.

This alternative is protective and meets all ARARs/TBCs, including CT emission standards to control VOCs and fugitive dust emissions during excavation activities. Design and construction is expected to take 4-5 years during which time the institutional controls would be put in place. No long-term maintenance or monitoring is required with this alternative. The capital cost is $13,230,000. See FS Tables 4-7 thru 4-9 for a more information about this alternative including an evaluation of ARARs/TBCs and estimated costs.

Cianci Property Soil (CP) Alternatives

a. Cianci Property Soil: Alternative CP-1 – No Action

Under this alternative, no active remediation would be conducted to address the toxicity or mobility of contaminants in the soil and wetland soil. Furthermore, no action would be taken to eliminate the potential for contaminated groundwater to be transported via the existing porous concrete culvert to the Quinnipiac River where it has the potential to impact surface water and sediments. Unacceptable ecological risk would remain. Soil would continue to be a source of contaminants to groundwater. Because waste is left in place, periodic reviews would be conducted at five year intervals to assess the long-term appropriateness of continued No Action.

This alternative is not protective and does not meet ARARs/TBCs, including CT RSRs for direct exposure and pollutant mobility. It is not consistent with the expected future recreational/residential land use. There are no capital costs associated with this alternative. See FS Tables 4-10 thru 4-12 for a more information about this alternative including an evaluation of ARARs/TBCs and estimated costs.

b. Cianci Property Soil: Alternative CP-2 – Culvert Removal and Excavation with On-Site Disposal

Under this alternative, the existing 30-inch diameter concrete culvert that transports contaminated groundwater to the Quinnipiac River by virtue of its poor condition would be removed and the trench backfilled. Drainage would be rerouted to the Quinnipiac River via a new, non-permeable pipe. Isolated hot-spots of contaminated soil and wetland soil that exceed CT remediation standards for direct exposure or pollutant mobility would be excavated. Excavation of wetland soil at the culvert outfall would also address ecological risk. With this alternative, the approximately 900 cubic yards of excavated material would be consolidated on the Operations Area, prior to that area being capped. Should the soil capping alternative (OAR-2) not be selected, this alternative cannot be implemented.

This alternative is protective and meets all ARARs/TBCs, including CT RSRs for soil and wetland soil that exceeds PMC and DEC, federal and state wetland protection regulations, and CT emission standards to control VOCs and fugitive dust emissions during excavation activities. Because some of the material to be excavated is located in a wetland, actions would be taken to minimize the impacts to this resource in accordance with federal and state law. These impacts would be temporary in nature (probably less than one to two months in duration) and would be mitigated by restoration of the wetland. No long-term maintenance or monitoring on the Cianci property would be required. This alternative is consistent with the expected recreational/residential land use. The estimated present worth cost of this alternative is $310,000. See FS Tables 4-13 thru 4-15 for a more information about this alternative including an evaluation of ARARs/TBCs and estimated costs.

c. Cianci Property Soil: Alternative CP-3 – Culvert Removal and Excavation with Off-Site Disposal

This alternative is identical to the previous alternative (CP-2) with the exception that the 900 cubic yards of excavated material would be transported off site and disposed at a commercial disposal facility.

This alternative is protective and meets all ARARs/TBCs, including all those identified in CP-2. As with CP-2, there will be temporary impacts to wetlands on-site, and wetland restoration. No long-term maintenance or monitoring on the Cianci property would be required. This alternative is consistent with the expected recreational/recreational land use. The estimated present worth cost of this alternative is $730,000. See FS Tables 4-16 thru 4-18 for a more information about this alternative including an evaluation of ARARs/TBCs and estimated costs.

<u>Overburden NAPL Area (ONOGU) Alternatives</u>

Four of the six alternatives assembled for the Overburden NAPL Area have as a first step some form of in-situ physical treatment (hydraulic displacement or thermal treatment). Three of those four employ the same technology (hydraulic displacement) as the first step; they differ by what follows in the treatment train. One of the key objectives for this area is to reduce the mobility of the NAPL source material in the overburden to increase the reliability and efficacy of the management of migration component of the remedy. Some further mobilization of NAPL into bedrock may be unavoidable with the in-situ treatment alternatives, as well as with the excavation alternative. Proper engineering controls will be used to minimize the potential for inadvertent mobilization of NAPL into the bedrock. All the technologies where waste is treated in place are expected to achieve the reduction in mobility objective. However, each will leave behind some amount of source material (i.e., NAPL or VOC mass) that will degrade over time. The effectiveness of each technology will determine how much residual VOC mass remains after treatment.

The Overburden NAPL Area is shown in Figure 6. It is approximately 1.5 acres. It extends from the water table to the top of bedrock (approximately 47,000 cubic yards) and contains an estimated 120,000 gallons (1 million pounds) of NAPL. Approximately 84% of the mass of VOC contamination at the SRSNE Site is believed to be in the form of NAPL in the overburden, primarily concentrated in the 1.5 acre Overburden NAPL Area.

a. Overburden NAPL Area: Alternative ONOGU-1 – No Action

Under this alternative, no active remedial measures would be taken to address NAPL in the overburden aquifer. Although contaminant levels will continue to decline as a result of on-going natural attenuation processes, there would be no monitoring to evaluate the effectiveness of this alternative over time. Modeling suggests that it would take an estimated 400 to 500 years to remove virtually all (99%) of the NAPL in the overburden at current assumed degradation rates. Periodic reviews would be conducted at five year intervals to assess the long-term appropriateness of continued No Action.

This alternative is not protective and does not meet ARARs/TBCs. It would not put in place institutional controls to limit future exposure to contaminated material in this area of the Site. It would not further progress towards the State's goal for this aquifer which is to restore the groundwater to its natural quality, suitable for drinking or other domestic uses without treatment. There are no capital costs associated with this alternative. See FS Tables 4-19 thru 4-21 for a more information about this alternative including an evaluation of ARARs/TBCs and estimated costs.

b. Overburden NAPL Area: Alternative ONOGU-2 – Hydraulic Displacement and Monitored Natural Attenuation

This is the first of three alternatives to treat NAPL in the overburden that would begin with hydraulic displacement. Hydraulic displacement uses injection and extraction of water at locations within the treatment zone to increase the horizontal hydraulic gradient. Increasing the hydraulic displacement will cause the "pooled" or potentially mobile NAPL to move towards extraction wells or trenches where up to 44% can be recovered for treatment leaving more than half of the mass to be addressed through monitored natural attenuation. The existing NTCRA 1 treatment system that contains migration of overburden contamination would be supplemented with a temporary system to address the higher flows and greater influent constituent concentrations that would be generated during the hydraulic displacement period. Any separate phase NAPL that is collected would be transported off site for safe disposal. See Appendix I of the FS for a more detailed discussion of hydraulic displacement.

NAPL that remains in the subsurface after the hydraulic displacement step will either be in small pools or in the "residual" form of NAPL. Hydraulic displacement increases the surface area of the NAPL left in the subsurface, enhancing the effectiveness of subsequent treatment. Under this alternative, hydraulic displacement would be followed by monitored natural attenuation (MNA). MNA is long-term monitoring of the on-going natural degradation processes to assess the effectiveness over time. Appendix G of the FS presents an evaluation of site conditions through June 2003 that suggests that biological degradation has destroyed some of the VOC mass at the Site, a trend that is expected to continue. Increasing the surface area of remaining NAPL would be expected to enhance the rate at which contaminant levels in the Overburden NAPL Area will decline as a result of on-going degradation processes.

This alternative is protective and would eventually meet all ARARs/TBCs, including federal and state regulations for drinking water, state discharge requirements, and state proposed volatilization criteria. This alternative is consistent with the state's goal to restore the groundwater in this aquifer to its natural quality, suitable for drinking or other domestic uses without treatment. Hydraulic displacement would reduce the mobility of NAPL in the overburden. MNA would shorten the time frame that groundwater standards are exceeded, shrink the size of the overburden groundwater plume, and reduce the contaminant concentrations. It would take an estimated 300 to 400 years to remove virtually all (99%) of the NAPL in the overburden at current assumed degradation rates. Until safe levels are achieved, institutional controls, such as deed restrictions, would be required under this alternative to prevent exposure to untreated wastes. Periodic reviews would be conducted at five year intervals to assess the continued protectiveness of this remedy.

Design and implementation of the hydraulic displacement step is expected to take less than one year. The estimated present worth of this alternative is $6,190,000. See FS Tables 4-22 thru 4-24 for a more information about this alternative including an evaluation of ARARs/TBCs and estimated costs.

c. Overburden NAPL Area: Alternative ONOGU-3 – Hydraulic Displacement and Enhanced Bioremediation

This alternative is identical to the previous alternative (ONOGU-2) with the exception that the MNA component would be replaced by enhanced bioremediation. As stated in the description of ONOGU-2, hydraulic displacement would be expected to remove up to 44% of the NAPL mass (with implementation of hydraulic displacement expected to be completed in less than a year).

The hydraulic displacement would then be followed by enhanced bioremediation. Enhanced bioremediation adds nutrients (in this case, emulsified soybean oil) and/or bacteriological cultures to more rapidly reduce natural degradation of the mass of contaminants left in the subsurface after hydraulic displacement. It would take an estimated 130 years with enhanced bioremediation achieving three times the current rate of degradation to remove virtually all (99%) of the NAPL in the Overburden NAPL Area, and an estimated 40 years if enhanced bioremediation is more aggressive and is able to achieve ten times the current degradation rate.

As with ONOGU-2, this alternative is protective and meets all ARARs/TBCs, including federal and state regulations for drinking water, state discharge requirements, and state proposed volatilization criteria. It meets the State's goal for aquifer restoration; would require institutional controls to prevent exposure to untreated waste; and would require 5-year reviews. Design and implementation of the hydraulic displacement step is expected to take less than one year. The addition of nutrients and/or bacteria would be spread out over a 20-year time period. The estimated present worth of this alternative is $9,640,000. See FS Tables 4-25 thru 4-27 for a more information about this alternative including an evaluation of ARARs/TBCs and estimated costs.

d. Overburden NAPL Area: Alternative ONOGU-4 – Hydraulic Displacement, Chemical Oxidation and Monitored Natural Attenuation

This alternative is similar to ONOGU-2 with the addition of an in-situ chemical oxidation step between hydraulic displacement and MNA. As stated in the description of ONOGU-2, hydraulic displacement would be expected to remove up to 44% of the NAPL mass (with implementation of hydraulic displacement expected to be completed in less than a year).

The hydraulic displacement would then be followed by chemical oxidation and MNA. Chemical oxidation relies on an oxidant to chemically break down the constituents in the NAPL. Under this alternative, permanganate or persulfate solution would be injected into the subsurface and recovered using the system installed for hydraulic displacement. As much as 95% of the NAPL is expected to be removed after the completion of both the hydraulic displacement and chemical oxidation phases. Further reductions in NAPL mass would be accomplished through MNA. It would take an estimated 50 to 150 years to remove virtually all (99%) of the NAPL in the Overburden NAPL Area, assuming current degradation rates.

Of the technologies being considered for this Site, chemical oxidation is the most sensitive to the amount of NAPL mass in the subsurface. The amount of oxidant (and therefore cost) and the time required to inject that oxidant is directly proportional to the amount of NAPL that needs to be treated. Based on current estimates which put the amount of NAPL in the Overburden NAPL Area at 1,000,000 pounds, approximately 3,190,000 pounds of oxidant would be required. The transport, delivery, mixing and injection of this much oxidant presents significant short-term risks to workers and the community that would be addressed using standard construction, transportation and industry safety measures.

As with the two previous alternatives, this alternative is protective and meets all ARARs/TBCs, including federal and state regulations for drinking water, state discharge requirements, state proposed volatilization criteria and hazardous waste management requirements. It meets the State's goal for aquifer restoration; would require institutional controls to prevent exposure to untreated waste; and would require 5-year reviews. The hydraulic displacement step would be implemented in less than one year. The oxidant would be injected during several injection events over a period of 12 to 15 months. The estimated present worth of this alternative is $20,130,000. See FS Tables 4-28 thru 4-30 for a more information about this alternative including an evaluation of ARARs/TBCs and estimated costs.

e. Overburden NAPL Area: Alternative ONOGU-5 – Thermal Treatment and Monitored Natural Attenuation

Under this alternative, the first component of the treatment train would be in-situ thermal treatment. Heat delivered to the subsurface would convert the NAPL from liquid to a vapor phase which would be collected and treated on site. There are a number of methods for delivering heat to the subsurface; thermal conductive heating (TCH) was selected as the representative technology for purposes of evaluation in the FS. An elaborate infrastructure is required to implement TCH – a series of heat and vapor extraction wells; a network of above-ground piping and electrical distribution lines; and a vapor treatment system that can manage large amounts of contaminants as well as meet CT air emission regulations. In addition, the entire treatment area would be covered with a temporary cap to minimize the potential for vapor releases.

Thermal treatment would remove between 95% and 99% of the NAPL mass in the Overburden NAPL Area. Further reductions in NAPL mass would be accomplished over the long term through the implementation of an MNA component, as described above in ONOGU-2. If the thermal technology removes 95% initially, it will take 50 to 150 years before virtually all (99%) NAPL in the Overburden NAPL Area is removed. If 97% is removed initially, it will take 40 to 100 years before virtually all NAPL in the Overburden NAPL Area is removed. If maximum removal rates are attained, virtually all the NAPL mass in the Overburden NAPL Area would be removed after treatment.

As with previous ONOGU alternatives, this alternative is protective and meets all ARARs/TBCs including federal and state regulations for drinking water, state discharge requirements, and state proposed volatilization criteria. It would be designed and constructed to meet air emission standards, as well as state noise pollution control requirements. It meets the State's goal for aquifer restoration; would require institutional controls to prevent exposure to untreated waste; and would require 5-year reviews. Thermal treatment presents significant potential short-term risks to workers from on-site operations, and workers and neighboring residents should vapors be released untreated. These would be addressed through standard construction, health-and-safety, and operating safety measures. Equipment monitoring and perimeter monitoring of the Site will also minimize potential short-term risks. The total estimated duration of field operations of the thermal component is about one year to install and decommission the infrastructure, and about one year of actual running time. The estimated present worth of this alternative is $17,660,000. See FS Tables 4-31 thru 4-33 for a more information about this alternative including an evaluation of ARARs/TBCs and estimated costs.

f. Overburden NAPL Area: Alternative ONOGU-6 – Excavation and Off-Site Disposal

Under this alternative, all the material in the Overburden NAPL Area from the ground surface to bedrock would be excavated, staged on site and transported to a licensed RCRA and/or TSCA hazardous waste treatment and disposal facility. The volume of material that would be removed would be approximately 50,000 cubic yards, with an additional 10,000 cubic yards removed to maintain stable side slopes during the excavation. Significant de-watering would have to occur prior to the excavation to lower the water table by as much as 20 feet. De-watering would continue during construction to manage the contaminated groundwater and pooled NAPL that is expected to enter the excavation. The groundwater-NAPL mixture would be treated on site in the existing treatment system, with the addition of a pre-treatment step to remove NAPL and silt. The excavation would be backfilled with clean soils. Upward flow of impacted groundwater from the bedrock aquifer would be expected to recontaminate the backfilled soil, although likely at levels far lower than before excavation.

Exposure to pooled NAPL is a significant potential short-term risk to on-site workers. The potential for the release of volatile and particulate emissions during the excavation would also present a significant short-term risk to on-site workers and the neighboring community. A temporary enclosure over the excavated area during construction would control emissions, and personal respiratory protection would likely be required to ensure that on-site workers are protected.

As with previous ONOGU alternatives, this alternative is protective and meets all ARARs/TBCs including state discharge regulations and emission standards to control fugitive dust and excess noise. It meets the state's goal for aquifer restoration. This alternative would result in the complete removal of NAPL in the Overburden NAPL Area at the end of construction (3 to 4 years, including design) so institutional controls would not be needed to prevent exposure to untreated source material. Soil in the Operations Area would be part of the excavation if this alternative were to be implemented, however, the Railroad Right-of-Way soils would still need to be addressed. The estimated present worth of this alternative is $39,970,000. See FS Tables 4-34 thru 4-36 for a more information about this alternative including an evaluation of ARARs/TBCs and estimated costs.

Bedrock NAPL Area (NBGU) Alternatives

Unlike technologies available to address the overburden, technologies for recovering NAPL from fractured bedrock (such as is present at SRSNE) have shown lower rates of success. As such, no active remedial measures for the Bedrock NAPL Area, other than monitored natural attenuation, were carried through for detailed analysis following the initial screening of possible technologies.

a. Bedrock NAPL Area: Alternative NBGU-1 – No Action

Under this alternative, no active remedial measures would be taken to address NAPL in the bedrock aquifer. Although contaminant levels will continue to decline as a result of on-going natural attenuation processes, there would be no monitoring to assess the progress of these processes. Assuming modest future rates of on-going natural processes at the Site, modeling[6] on the bedrock alone suggests that the bedrock plume will begin to recede in 125 years and reach cleanup goals in 225 years (see FS Appendix F). Periodic reviews would be conducted at five year intervals to assess the long-term appropriateness of continued No Action.

This alternative is not protective and does not meet ARARs/TBCs. There would be no monitoring and therefore no means to assess whether or not cleanup levels were attained. It would not put in place institutional controls to limit future exposure to contaminated material in this area of the Site. Without monitoring, this alternative would not further progress towards the state's goal for this aquifer which is to restore the groundwater to its natural quality, suitable for drinking or other domestic uses without treatment. There are no capital costs associated with this alternative. See FS Tables 4-49 thru 4-51 for a more information about this alternative including an evaluation of ARARs/TBCs and estimated costs.

b. Bedrock NAPL Area: Alternative NBGU-2 – Institutional Controls and Monitored Natural Attenuation

Under this alternative, institutional controls would be placed on a number of properties that could be affected by contaminants in this area of the Site to prevent exposure to this contamination. The second component of this alternative would be MNA - long-term monitoring of natural attenuation processes – as described above in ONOGU-2.

6 All time frame analysis in this ROD is based on mathematical modeling. Some degree of uncertainty is inherent in such analysis. However, such modeling provides a basis for a relative comparison of remedial alternatives in order to select the most appropriate cleanup strategy.

This alternative is protective and meets all ARARs/TBCs, including CT RSRs for groundwater. In the short term, protection would be achieved when institutional controls have been put in place. As discussed in NGBU-1, the bedrock plume is expected to begin to recede in 125 years and reach cleanup goals in 225 years. Costs associated with the implementation of the institutional controls measures are included with the Overburden Groundwater alternatives listed below. Operation and maintenance costs including semi-annual monitoring for the MNA component of the alternative are included in the Bedrock Groundwater alternatives, also listed below. Therefore, there are no costs associated with this alternative. See FS Tables 4-52 thru 4-54 for a more information about this alternative including an evaluation of ARARs/TBCs and estimated costs.

2. Management of Migration Alternatives

Management of migration (MM) alternatives address contaminants that have migrated into and with the groundwater from the original source of contamination. At the SRSNE Site, contaminants have migrated from the soil and NAPL in the Operations Area, and the soil along the Railroad Right-of-Way and Cianci property. The MM alternatives analyzed for this Site are as follows:

Overburden Groundwater

- No action
- Institutional controls and monitored natural attenuation
- Hydraulic containment and monitored natural attenuation
- Supplemental containment (contingent)

Bedrock Groundwater

- No action
- Institutional controls and monitored natural attenuation
- Hydraulic containment and monitored natural attenuation

Each of the management of migration alternatives is summarized below. A more complete, detailed presentation of each alternative is found in Section 4 of the FS.

Overburden Groundwater (OGW) Alternatives

a. Overburden Groundwater: Alternative OGW-1 – No Action

Under this alternative, no active remedial measures would be taken to address contamination in this portion of the Site. Currently, no one is drinking the contaminated groundwater so there are no current risks associated with human exposure. However, overburden groundwater presents a future unacceptable risk should it be used for drinking in the future. This alternative does not reduce toxicity, mobility, or volume of contamination through treatment. Over time, natural attenuation processes will very slowly degrade the contaminants. Absent any monitoring or other activities to assess the progress of these processes, this reduction could not be documented.

This alternative is not protective and does not meet ARARs/TBCs. It is not consistent with the State's goal for this aquifer that is to restore the groundwater to its natural quality. Under this alternative, no institutional controls would be put in place to prevent exposure to contaminated groundwater, or to vapor emissions in buildings that may be constructed at the Site in the future. In addition, under this alternative, reductions in contamination through natural attenuation would not be monitored or documented. Time to meet cleanup goals is on the order of 225 years, due to the upwelling of contaminated groundwater from the bedrock into the overburden aquifer. This estimate is based on the assumption that virtually all (99%) of the NAPL source material in the overburden has been removed from the Overburden NAPL Area. Periodic reviews would be conducted at five-year intervals to assess the long-term effectiveness of continued No Action. There are no capital costs associated with this alternative. See FS Tables 4-37 thru 4-39 for a more information about this alternative including an evaluation of ARARs/TBCs and estimated costs.

b. Overburden Groundwater: Alternative OGW-2 – Institutional Controls and Monitored Natural Attenuation

Under this alternative, institutional controls would be put in place on all affected properties to prevent exposure to contaminated groundwater and to require compliance with State requirements designed to prevent inhalation exposure to volatile compounds. This alternative also includes an MNA component, as described in several previous Source Control alternatives such as ONOGU-2. Appendix G of the FS presents an evaluation of site conditions through June 2003 that suggests that biological degradation has destroyed some of the VOC mass at the Site, a trend that is expected to continue.

This alternative is protective and meets all ARARs/TBCs, including federal and state drinking water standards and State's proposed volatilization criteria. This alternative is consistent with the State's goal for this aquifer that is to restore the groundwater to its natural quality. Protection would be achieved in a few years when institutional controls are put in place. As described in OGW-1, upwelling of contaminated groundwater from the bedrock is the controlling factor on the timeframe (~225 years) for achieving cleanup levels in the overburden aquifer (assuming a technology has been put in place in remove virtually all NAPL from the Overburden NAPL Area). Five-year reviews would be conducted. The estimated present worth of this alternative is $2,590,000. See FS Tables

4-40 thru 4-42 for a more information about this alternative including an evaluation of ARARs/TBCs and estimated costs.

c. Overburden Groundwater: Alternative OGW-3 – Hydraulic Containment and Monitored Natural Attenuation

Like OGW-2, this alternative would use institutional controls to prevent human exposure to contaminated groundwater until safe levels are reached. Groundwater would be hydraulically contained and treated on site. This would create a plume of residual groundwater contamination outside the containment area that may exceed background levels (a State of CT ARAR). The groundwater outside the containment area is frequently referred to in the FS and this ROD as the "severed plume". Under this alternative, the severed plume would be addressed through MNA.

Unlike OGW-2, hydraulic containment and treatment will continue even after implementation of the Overburden NAPL Area alternative. The precise configuration of hydraulic containment may change over time. Specifically, the existing NTCRA 1 and NTCRA 2 Extraction and Treatment System in its current configuration would continue to operate under this alternative, at least initially. Groundwater is currently being contained from migrating further into the Town Well Field by the NTCRA 2 extraction wells. Groundwater that is downgradient of the influence of the NTCRA 2 extraction wells meets federal standards but is above background. It is expected that after treatment of the NAPL in the overburden, the extraction component of NTCRA 1 would no longer be necessary, and, the sheet-pile wall, or portions thereof, would be removed to facilitate natural degradation, if it can be demonstrated that doing so will not have a negative impact on surface water and/or sediment in the Quinnipiac River.

The extracted groundwater would be treated using the existing NTCRA 1 and NTCRA 2 ultra-violet/oxidation (UvOx) system, modified as necessary following completion of the Overburden NAPL Area alternative to account for changes in contaminants, concentrations and/or flow. The size of the plume is expected to decrease over time. Optimization studies would be conducted periodically to assess how the hydraulic extraction and treatment system might be modified to meet changing conditions. If an equally effective, protective and ARAR-compliant treatment technology (e.g., Fenton's Reagent, constructed treatment wetlands, phytoremediation) is identified, it may augment or even replace the existing UvOx system. The placement of the extraction wells may also change as the plume changes.

This alternative is protective and meets all ARARs/TBCs, including those specified in OGW-2 as well as action-specific ARARs for hazardous waste management and discharge regulations. It is consistent with the state's goal for this aquifer that is to restore the groundwater to its natural quality. Hydraulic containment will prevent high levels of groundwater contamination from spreading further away from the SRSNE property. Protection would be achieved in a few years when institutional controls are put in place. As described in OGW-1, upwelling of contaminated groundwater from the bedrock is the controlling factor on the timeframe (~225 years) for achieving cleanup levels in the overburden aquifer (assuming a technology has been put in place in remove virtually all NAPL from the Overburden NAPL Area). Five-year reviews would be conducted. The estimated present worth of this alternative is $9,570,000. See FS Tables 4-43 thru 4-45 for a more information about this alternative including an evaluation of ARARs/TBCs and estimated costs.

d. Overburden Groundwater: Alternative OGW-4 – Supplemental Containment (Contingent)

This alternative will be implemented contingent upon notification of the planned reactivation of Production Wells No. 4 and 6, or any new production well in the Town Well Field regardless of the alternative selected for the overburden groundwater. To prevent the migration of contaminants in the groundwater plume from reaching the wells, extraction wells – modeling suggests it could be as many as five – will be installed and the extracted groundwater would be treated on site in the NTCRA 1 and NTCRA 2 treatment system. This alternative meets all the ARARs/TBCs specified with OGW-3. The estimated present worth of this alternative is $1,380,000. See FS Tables 4-46 thru 4-48 for a more information about this alternative including an evaluation of ARARs/TBCs and estimated costs.

<u>Bedrock Groundwater (BGW) Alternatives</u>

a. Bedrock Groundwater: Alternative BGW-1 – No Action

This alternative is the same as OGW-1 except it is implemented in the bedrock aquifer. NAPL in the bedrock would continue to impact the quality of groundwater in the bedrock for an estimated 225 years. There are no capital costs associated with this alternative. See FS Tables 4-55 thru 4-57 for a more information about this alternative including an evaluation of ARARs/TBCs and estimated costs.

b. Bedrock Groundwater: Alternative BGW-2 – Institutional Controls and Monitored Natural Attenuation

This alternative is the same as OGW-2 except it is implemented in the bedrock aquifer. NAPL in the bedrock would continue to impact the quality of groundwater in the bedrock for an estimated 225 years. Costs associated with the implementation of the institutional controls are included with the OGW-2 and OGW-3 alternatives. Operation and maintenance would include semi-annual monitoring for the MNA component of this alternative. The estimated cost is $660,000. See FS Tables 4-58 thru 4-60 for a more information about this alternative including an evaluation of ARARs/TBCs and estimated costs.

c. Bedrock Groundwater: Alternative BGW-3 – Hydraulic Containment and Monitored Natural Attenuation

This alternative is the same as OGW-3 except it is implemented in the bedrock aquifer. NAPL in the bedrock would continue to impact the quality of groundwater in the bedrock for an estimated 225 years. Capital costs of this alternative would be included in the costs for OGW-3 alternatives. Operation and maintenance would include semi-annual monitoring for the MNA component of this alternative. The estimated cost is $660,000. See FS Tables 4-61 thru 4-63 for a more information about this alternative including an evaluation of ARARs/TBCs and estimated costs.

K. SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES

Section 121(b)(1) of CERCLA presents several factors that at a minimum EPA is required to consider in its assessment of alternatives. Building upon these specific statutory mandates, the NCP articulates nine evaluation criteria to be used in assessing the individual remedial alternatives.

A detailed analysis was performed on the alternatives using the nine evaluation criteria in order to select a site remedy. The following is a summary of the comparison of each alternative's strength and weakness with respect to the nine evaluation criteria. These criteria are summarized as follows:

Threshold Criteria

The two threshold criteria described below must be met in order for the alternatives to be eligible for selection in accordance with the NCP:

1. **Overall protection of human health and the environment** addresses whether or not a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced or controlled through treatment, engineering controls, or institutional controls.

2. **Compliance with applicable or relevant and appropriate requirements (ARARs)** addresses whether or not a remedy will meet all Federal environmental and more stringent State environmental and facility siting standards, requirements, criteria or limitations, unless a waiver is invoked. This assessment also addresses other information from advisories, criteria, and guidance that is "to be considered."

Primary Balancing Criteria

The following five criteria are utilized to compare and evaluate the elements of one alternative to another that meet the threshold criteria:

3. **Long-term effectiveness and permanence** addresses the criteria that are utilized to assess alternatives for the long-term effectiveness and permanence they afford, along with the degree of certainty that they will prove successful.

4. **Reduction of toxicity, mobility, or volume through treatment** addresses the degree to which alternatives employ recycling or treatment that reduces toxicity, mobility, or volume, including how treatment is used to address the principal threats posed by the site.

5. **Short term effectiveness** addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period, until cleanup goals are achieved.

6. **Implementability** addresses the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

7. **Cost** includes estimated capital and Operation Maintenance (O&M) costs, as well as present-worth costs.

Modifying Criteria

The modifying criteria are used as the final evaluation of remedial alternatives, generally after EPA has received public comment on the RI/FS and Proposed Plan:

8. **State acceptance** addresses the State's position and key concerns related to the preferred alternative and other alternatives, and the State's comments on ARARs or the proposed use of waivers.

9. **Community acceptance** addresses the public's general response to the alternatives described in the Proposed Plan and RI/FS report.

Following the detailed analysis of each individual alternative, a comparative analysis, focusing on the relative performance of each alternative against the nine criteria, was conducted. This comparative analysis can be found Section 5 of the FS.

The section below presents a brief narrative summary of the alternatives and the strengths and weaknesses according to the detailed and comparative analysis. Only those alternatives which satisfied the first two threshold criteria were balanced and modified using the remaining seven criteria.

Comparative Analysis of Remedial Alternatives for Source Control:

<u>Comparative Analysis of Remedial Alternatives for Operations Area/Railroad Soil (OAR Alternatives)</u>

Overall Protection of Human Health and the Environment

The No Action alternative (OAR-1) will not protect human health and the environment because no action would be taken to address the risks posed by contaminated soil.

Alternatives OAR-2 (Capping/ICs) and OAR-3 (Excavation/Off-site Disposal/ICs) will protect human health and the environment. These alternatives will eliminate exposure to contaminated soil exceeding cleanup levels. Alternatives OAR-2 will prevent exposure by placing the contaminated material under a multi-layer cap on site, and using institutional controls such as deed restrictions to prevent future disturbance of the cap/contaminated material. Institutional controls are only adequate and reliable if they are monitored for compliance and enforced in the long term. Alternative OAR-3 which removes soil that poses an unacceptable risk provides the greatest degree of overall protection by permanently removing this material from the Site.

Compliance with Applicable or Relevant and Appropriate Environmental Requirements (ARARs)

The No Action alternative OAR-1 does not meet ARARs, or other advisories, criteria and guidance that are "to be considered" (TBCs). The remaining alternatives can be designed and constructed to meet ARARs/TBCs.

ARARs/TBCs for these alternatives are associated with direct exposure to and pollutant mobility from contaminants in the soil, air pollution control and noise control. Alternative OAR-2 (Capping/ICs) would be required to meet hazardous waste landfill capping requirements as well as other hazardous waste handling and storage regulations. Tables 4-2, 4-5 and 4-8 in the FS show all of the ARARs/TBCs for these alternatives.

Long-Term Effectiveness and Permanence

The No Action alternative OAR-1 does not provide any long-term effectiveness or permanence.

Alternatives OAR-2 (Cap/ICS) and OAR-3 (Excavation/Off-site Disposal/ICs) will provide both long-term effectiveness and permanence. Regular inspections and cap maintenance would be required under Alternative OAR-2 in order to remain effective in the long term, as would

periodic reviews of the effectiveness of the remedy since hazardous materials would be left on site.

Alternative OAR-3 provides the greatest degree of long-term effectiveness and permanence because the contaminated material is excavated and permanently removed from the Site.

Reduction of Toxicity, Mobility, or Volume Through Treatment

There is no reduction in toxicity, mobility or volume under the No Action alternative OAR-1.

Alternative OAR-2 (Cap/ICS) will reduce mobility, although not by treatment, of the chemical compounds that are placed beneath the cap by preventing water from coming into contact with the contaminated material and leaching into the groundwater. Alternative OAR-3 (Excavation/Off-site Disposal) will reduce toxicity, mobility and volume, although not by treatment, by removing the contaminated soil from the Site.

Short-Term Effectiveness

The No Action alternative OAR-1 has no short-term impacts since there would be no short-term risks posed to the community or on-site workers during implementation of the alternative, nor impacts to the environment. However, the No Action alternative would not achieve protection at any time.

Alternative OAR-2 (Cap/ICS) has moderate potential short-term impacts to on-site workers and the community that would have to be addressed. Particulate and VOC emissions may increase during construction of the cap. This can be addressed with proper health and safety procedures, standard dust control techniques, and air monitoring around the perimeter of the Site. Alternative OAR-3 (Excavation/Off-site Disposal) has the greatest potential for short-term impacts due to the magnitude of risk posed to on-site workers and the community during the excavation and transport of highly-contaminated soil.

Alternatives OAR-2 and OAR-3 would both be protective immediately after implementation.

Implementability

Alternative OAR-1 (No Action) is the easiest to implement because no remedial actions are required.

The remaining OAR alternatives involve the use of capping and/or excavation that are both proven technologies and are both technically and administratively implementable. The excavation of the Operations Area (OAR-3) will pose the most challenge to implement as it will require dewatering of a highly-contaminated volume of material.

Cost

Alternative OAR-1 (No Action) has no capital costs associated with it and the costs associated with required five-year reviews are low. Alternative OAR-2 (Capping/ICs) at $1,060,000 has relatively moderate costs. Alternative OAR-3 (Excavation/Off-site Disposal) has a relatively high cost at $13,230,000.

State Acceptance

CT DEP has expressed its support for alternative OAR-2 (Capping and Institutional Controls).

Community Acceptance

The community has not expressed support or disapproval of any components of the remedial action, but has raised some questions that EPA responded to in the Responsiveness Summary. The PRP Group has expressed support for capping the Operations Area/Railroad soil.

Comparative Analysis of Remedial Alternatives for Cianci Property Soil (CP Alternatives)

Overall Protection of Human Health and the Environment

The No Action alternative (CP-1) will not protect human health and the environment because no action would be taken to address the risks posed by contaminated soil and wetland soil.

Alternatives CP-2 (Excavation/On-site Disposal) and CP-2 (Excavation/Off-site Disposal) will protect human health and the environment. These alternatives will eliminate exposure to contaminated soil and wetland soil exceeding cleanup levels. Alternative CP-2 will prevent exposure by placing the contaminated material under a multi-layer cap on site. Alternative CP-3 which removes soil and wetland soil that poses an unacceptable risk provides the greatest degree of overall protection by permanently removing this material from the Site.

Compliance with Applicable or Relevant and Appropriate Environmental Requirements (ARARs)

The No Action alternative CP-1 does not meet ARARs/TBCs. The remaining alternatives can be designed and constructed to meet ARARs/TBCs.

ARARs/TBCs for CP-2 (Excavation/On-site Disposal) and CP-3 (Excavation/Off-site Disposal) are associated with direct exposure to and pollutant mobility from contaminants in the soil and wetland soil, air pollution control and noise control. Alternative CP-2 would be required to meet hazardous waste landfill capping requirements as well as other hazardous waste handling and storage regulations. Alternative CP-2 and CP-3 have wetland and floodplain considerations due to the removal of contaminated soil from wetlands and floodplains. Tables 4-11, 4-14 and 4-17 in the FS show all of the ARARs/TBCs for these alternatives.

Long-Term Effectiveness and Permanence

The No Action alternative CP-1 does not provide any long-term effectiveness or permanence.

Alternatives CP-2 (Excavation/On-site Disposal) and CP-3 (Excavation/Off-site Disposal) will provide both long-term effectiveness and permanence. Regular inspections and cap maintenance would be required under Alternative CP-2 in order for this alternative to remain effective in the long term, as would periodic reviews of the effectiveness of the remedy since hazardous materials would be left on site.

Alternative CP-3 provides the greatest degree of long-term effectiveness and permanence because the contaminated material is excavated and permanently removed from the Site.

Reduction of Toxicity, Mobility, or Volume Through Treatment

There is no reduction in toxicity, mobility or volume under the No Action alternative CP-1.

Alternative CP-2 (Excavation/On-site Disposal) will reduce mobility, although not by treatment, of the chemical compounds that are placed beneath the cap by preventing water from coming into contact with the contaminated material and leaching into the groundwater. Alternative CP-3 (Excavation/Off-site Disposal) will reduce toxicity, mobility and volume, although not by treatment, by removing the contaminated soil and wetland soil from the Site. In addition, by replacing the existing porous culvert, both CP-2 and CP-3 will eliminate this pathway for contaminated groundwater to reach surface water.

Short-Term Effectiveness

The No Action alternative CP-1 has no short-term impacts since there would be no short-term risks posed to the community or on-site workers during implementation of the alternative, nor impacts to the environment. However, the No Action alternative would not achieve protection at any time.

Alternative CP-2 (Excavation/On-site Disposal) and CP-3 (Excavation/Off-site Disposal) have moderate potential short-term impacts to on-site workers and the community that would have to be addressed. Particulate and VOC emissions may increase during excavation of the hot spots on the Cianci property. This can be addressed with proper health and safety procedures, standard dust control techniques, and air monitoring around the perimeter of the Site.

The excavation of wetland soils under alternatives CP-2 and CP-3 will result in short-term impacts to the environment. However, both alternatives include actions to minimize impacts, restore habitat and prevent the loss of flood storage capacity, so the impacts will be temporary.

Alternatives CP-2 and CP-3 would both be protective immediately after implementation.

Implementability

Alternative CP-1 (No Action) is the easiest to implement because no remedial actions are required.

The remaining CP alternatives involve the use of excavation that is a proven technology and is both technically and administratively implementable. Alternatives CP-2 (Excavation/On-site

Disposal) and CP-3 (Excavation/Off-site Disposal) would also require compliance with federal and state wetland and floodplain requirements, but this is not expected to limit the implementability of these alternatives.

Cost

Alternative CP-1 (No Action) has no capital costs associated with it and the costs associated with required five-year reviews are low. Alternative CP-2 (Excavation/On-site Disposal) at $310,000 and CP-3 (Excavation/Off-site Disposal) at $730,000 have relatively modest costs.

State Acceptance

CT DEP has expressed its support for alternative CP-2 (Excavation/On-site Disposal).

Community Acceptance

The community has not expressed support or disapproval of any components of the remedial action, but has raised some questions that EPA has responded to it the Responsiveness Summary. The PRP Group has expressed its support of the following activities: "the isolated areas of soil on the Cianci property contaminated with polyaromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and metals should be placed under [the cap that would be installed over Operations Area/Railroad soils]; the culvert crossing the Cianci property should be replaced, and the wetlands soils at the culvert outfall should be placed under that cap."

<u>Comparative Analysis of Remedial Alternatives for the Overburden NAPL Area (ONOGU Alternatives)</u>

Overall Protection of Human Health and the Environment

The No Action alternative (ONOGU-1) will not protect human health and the environment because no action would be taken to address risks posed by the contaminants in the overburden NAPL area.

Alternative ONOGU-6 (Excavation/Off-site Disposal) provides the greatest overall protection of human health and the environment from exposure to NAPL in the Overburden NAPL Area by removing it and taking it off site. The remaining alternatives for the Overburden NAPL Area (ONOGU-2 thru ONOGU-5) all will achieve cleanup objectives and will be equally protective of human health and the environment in the long term. They differ from each other in the amount of NAPL mass that remains after implementation of the initial phase(s) of treatment.

Alternatives ONOGU-5 (Thermal Treatment/MNA) and ONOGU-4 (Hydraulic Displacement/Chemical Oxidation/MNA) will remove upwards of 95% of the NAPL mass prior to MNA. The hydraulic displacement component of ONOGU-3 and ONOGU-2 will remove up to 44% of NAPL mass, leaving more than half to be addressed by enhanced bioremediation (ONOGU-3) or MNA (ONOGU-2).

Following the initial phase of treatment, Alternative ONOGU-2 (Hydraulic Displacement/MNA) has the longest duration to achieve further reductions in contamination in comparison to all of the other alternatives, aside from no action. The time frame for achievement of further reductions following the initial phase of treatment is comparable for ONOGU-3 (Hydraulic Displacement/Enhanced Bioremediation), ONOGU-4 (Hydraulic Displacement/Chemical Oxidation/MNA), and ONOGU-5 (In-Situ Thermal Treatment/MNA). However, there is greater uncertainty in the effectiveness of enhanced bioremediation (ONOGU-3), and thus greater uncertainty with respect to the time frame for achieving further reductions in contamination.

All of the Overburden NAPL Area alternatives (except No Action) include provisions for institutional controls to prevent human exposure to NAPL. All these alternatives (including No Action) include five-year reviews to ensure that the remedy remains protective.

Compliance with Applicable or Relevant and Appropriate Environmental Requirements (ARARs)

The No Action alternative ONOGU-1 does not meet ARARs. The remaining alternatives can be designed and constructed to meet ARARs/TBCs.

ARARs/TBCs that are common to all NAPL source control alternatives in the overburden aquifer are associated with federal safe drinking water, state hazardous waste management regulations, state remediation standards for groundwater, state air pollution control, and control of noise requirements. The alternatives with a hydraulic displacement component (ONOGU-2 thru ONOGU-4) have additional state water quality standards and substantive discharge permit requirements to meet. Alternative ONOGU-5 (Thermal Treatment/MNA) will also have to meet additional air emission standards. Tables 4-20, 4-23, 4-26, 4-29, 4-32 and 4-35 in the FS show all of the ARARs/TBCs for these alternatives.

Long-Term Effectiveness and Permanence

The No Action alternative ONOGU-1 does not provide any long-term effectiveness or permanence that can be assessed.

Alternative ONOGU-6 (Excavation/Off-site Disposal) would have the highest long-term effectiveness and permanence in the Overburden NAPL Area in that it would result in the permanent removal of all the NAPL and contaminated soil from the treatment area. Alternatives ONOGU-2 thru ONOGU-5 would have comparable long-term permanence, although alternatives ONOGU-4 (Hydraulic Displacement/Chemical Oxidation/MNA) and ONOGU-5 (Thermal Treatment/MNA) would have greater long-term effectiveness than ONOGU-2 (Hydraulic Displacement/MNA) and ONOGU-3 (Hydraulic Displacement/Enhanced Bioremediation) because ONOGU-4 and ONOGU-5 are expected to remove at least 95% of the NAPL mass during the initial phase(s) of active treatment. The hydraulic displacement component of ONOGU-2 and ONOGU-3 is expected to remove only 44% of NAPL mass, leaving more than half to be addressed by enhanced bioremediation (ONOGU-3) or MNA (ONOGU-2).

The deposition of manganese oxides during the chemical oxidation step of ONOGU-4 (Hydraulic Displacement/Chemical Oxidation/MNA) could affect its long-term efficiency. The ability for enhanced bioremediation (ONOGU-3) to achieve a rate three times to ten times the current rate of on-going natural degradation cannot be assured; in fact, there may be no increase over current rates (see Appendix G of the FS).

Alternatives ONOGU-2 thru ONOGU-5 would also include post-treatment monitoring to support either the MNA or enhanced bioremediation component and would require five-year reviews to determine protectiveness and effectiveness over time.

Reduction of Toxicity, Mobility, or Volume Through Treatment

The No Action alternative, ONOGU-1, will not reduce contaminant toxicity, mobility or volume through removal and/or active treatment.

Alternatives ONOGU-2 (Hydraulic Displacement/MNA), ONOGU-3 (Hydraulic Displacement/Enhanced Bioremediation), ONOGU-4 (Hydraulic Displacement/Chemical Oxidation/MNA) and ONOGU-5 (Thermal Treatment/MNA) would ultimately achieve a similar level of reduction in contaminant toxicity, mobility and volume through treatment in the long term. However, more contaminants would be removed in a shorter period of time under ONOGU-4 and ONOGU-5 than under ONOGU-2 and ONOGU-3. This would result in more immediate reductions in contaminant toxicity, mobility and volume under ONOGU-4 and ONOGU-5. The mobility of contaminants in the Overburden NAPL Area would be reduced at the completion of the hydraulic displacement phase of ONOGU-2 thru ONOGU-4, and at the completion of the thermal phase of ONOGU-5. The toxicity and volume would be further reduced upon completion of the subsequent treatment steps (i.e., MNA, chemical oxidation or enhanced bioremediation). In the short-term, PCBs, metals or other contaminants may remain at concentrations above groundwater cleanup levels after treatment under ONOGU-2 thru ONOGU-5. However, their concentrations are expected to meet groundwater cleanup levels in the long term as solubility of PCBs (which are co-located with the NAPL) decreases, and, metals stabilize with the removal of solvents from the subsurface. Alternative ONOGU-6 (Excavation/Off-site Disposal) would have the greatest reduction in contaminant toxicity, mobility and volume by removing contaminants from the Site.

Short-Term Effectiveness

Alternative ONOGU-1 (No Action) has no short-term impacts since there would be no short-term risks posed to on-site workers or the community during implementation, nor impacts to the environment. With no action taken to reduce risk, natural degradation processes would remove virtually all (99%) of the NAPL mass in the overburden aquifer in 400 to 500 years.

Alternatives ONOGU-2 (Hydraulic Displacement/MNA), and ONOGU-3 (Hydraulic Displacement/Enhanced Bioremediation) would have some potential short-term impacts to on-site workers and the community that would have to be addressed and no environmental impacts that would have to be addressed. Alternative ONOGU-4 (Hydraulic Displacement/Chemical Oxidation/MNA) would have additional potential short-term impacts associated with the transportation, handling and injection of large volumes of oxidant chemicals. Alternatives ONOGU-5 (Thermal Treatment/MNA) and ONOGU-6 (Excavation/Off-site Disposal) have potentially greater impacts resulting from the complexity of the alternatives, the potential for escape of emissions during construction and operation and/or transporting large quantities of contaminated material over public roadways. Approximately 2,400 truckloads of excavated material would be sent, under ONOGU-6, to a hazardous waste treatment and disposal facility, such as Model City, NY, over existing public roads and highways. A similar number of truckloads of clean backfill materials would be brought to the Site. These potential impacts would be addressed by following standard health, safety and transportation practices, and monitoring.

In terms of time until the groundwater is protected from the impacts of NAPL in the Overburden NAPL Area, ONOGU-6 ranks the highest as NAPL is removed from the system in three to four years. The hydraulic displacement component of ONOGU-2 thru ONOGU-4 is expected to remove up to 44% of the NAPL mass in less than a year. With MNA (ONOGU-2), virtually all (99%) of the remaining NAPL mass would be removed in 300 to 400 years. With enhanced bioremediation (ONOGU-3), virtually all of the remaining NAPL mass would be removed in 40 to 130 years, depending on how aggressive a degradation rate can be achieved. With chemical oxidation and MNA (ONOGU-4), virtually all of the remaining NAPL mass would be removed in 50 to 150 years. The thermal treatment technology (ONOGU-5) will remove between 95%

and 99% of the NAPL mass in less than a year. With MNA following thermal treatment, virtually all mass would be removed in 50 to 150 years if the thermal treatment technology is able to remove 95% of the mass; 40 to 100 years if thermal treatment removes 97% of the mass; and in about one year if thermal treatment attains a removal efficiency rate of 99%.

Implementability

The no-action alternative ONOGU-1 is technically and administratively implementable.

Other than ONOGU-1, ONOGU-2 (Hydraulic Displacement/MNA) and ONOGU-3 (Hydraulic Displacement/Enhanced Bioremediation) would be the simplest to construct and operate. The initial construction requirements for alternative ONOGU-4 (Hydraulic Displacement/Chemical Oxidation/MNA) would be similar, although the chemical oxidation component would require additional infrastructure for mixing and injecting oxidant into the subsurface. Alternative ONOGU-6 (Excavation/Off-site Disposal) would be significantly more complex because of the need to dewater the aquifer and control particulate and volatile emissions during the excavation. Alternative ONOGU-5 (Thermal Treatment/MNA) requires a complex infrastructure and engineering to ensure the successful control of groundwater migration, and, the capture and on-site treatment of recovered solvent vapors making this alternative the most challenging to implement.

The potential for downward mobilization of NAPL during the implementation of any of the ONOGU alternatives could increase the amount of time to achieve cleanup levels. The risk for downward mobilization is greatest for ONOGU-5 and ONOGU-6. However, this risk can be minimized or eliminated using engineering controls.

Cost

There are no capital costs associated with the No Action alternative ONOGU-1. The cost of the five-year reviews has been included in the OGW alternatives.

The cost of treatment in the Overburden NAPL Area with hydraulic displacement and either MNA (ONOGU-2) or enhanced bioremediation (ONOGU-3) are at the lower end of the range in comparison to the remaining alternatives at $6,190,000 and $9,640,000, respectively. Alternatives ONOGU-4 (Hydraulic Displacement/Chemical Oxidation/MNA) and ONOGU-5 (Thermal Treatment/MNA) are in the middle of the range at $20,130,000 and $17,660,000, respectively. The most expensive alternative to implement is ONOGU-6 (Excavation/Off-site Disposal) at $39,970,000. Because chemical oxidation is sensitive to mass estimates (i.e., more

NAPL requires more oxidant), the cost of implementation of ONOGU-4 has the greatest potential to be an underestimate.

State Acceptance

CT DEP has expressed its support for the selection of in-situ thermal treatment technology with MNA (ONOGU-5) to address the Overburden NAPL Area. However, CT DEP has decided not to concur on the component of the selected remedy that requires institutional controls to prevent exposure to vapor emissions.

Community Acceptance

The community has not expressed support or disapproval of any components of the remedial action, but has raised some questions that EPA has responded to in the Responsiveness Summary. The PRP Group opposes the use of in-situ thermal treatment technology at the Site, for numerous reasons as summarized in the Responsiveness Summary. The PRP Group also opposes the use of any active treatment technologies to address the Overburden NAPL Area, but in comparing these alternatives has expressed a preference for hydraulic displacement and enhanced bioremediation (ONOGU-3).

<u>Comparative Analysis of Remedial Alternatives for Bedrock NAPL Area (NGBU Alternatives)</u>

<u>Overall Protection of Human Health and the Environment</u>

The No Action alternative (NBGU-1) will not protect human health and the environment because no action would be taken to address risks posed by the contaminants in the bedrock NAPL area.

Alternative NBGU-2 (ICs/MNA) will provide protection of human health and the environment through the use of institutional controls to prevent exposure to contaminants that exist as NAPL in fractures in the bedrock, and, MNA to monitor the attainment of groundwater cleanup levels over the long term. The bedrock plume is expected to begin to recede in 125 years and achieve cleanup goals in 225 years, assuming that a treatment technology has been implemented that removes virtually all the NAPL in the Overburden NAPL Area.

Compliance with Applicable or Relevant and Appropriate Environmental Requirements (ARARs)

The No Action alternative, NGBU-1, does not meet ARARs/TBCs. The remaining alternative (NGBU-2) (ICs/MNA) can be designed and constructed to meet ARARs. The ARARs/TBCs for NBGU-2 include federal safe drinking water levels and state remediation standards for groundwater. Tables 4-50 and 4-53 in the FS show all of the ARARs/TBCs for these alternatives.

Long-Term Effectiveness and Permanence

The No Action alternative NGBU-1 does not provide any long-term effectiveness or permanence that can be assessed. Alternative NBGU-2 (ICs/MNA) will provide long-term effectiveness and permanence by restricting exposure to contaminants in the bedrock NAPL area through institutional controls, and MNA to achieve cleanup levels.

Reduction of Toxicity, Mobility, or Volume Through Treatment

The No Action alternative NGBU-1 will not reduce contaminant toxicity, mobility or volume through removal and/or active treatment. Alternative NBGU-2 (ICs/MNA) has a monitoring component that would document the natural degradation processes that will reduce the toxicity, mobility and volume of NAPL in the fractured bedrock over time.

Short-Term Effectiveness

Alternatives NBGU-1 (No Action) and NBGU-2 (ICs/MNA) have no short-term impacts on the community or on-site workers during implementation, nor do they present short-term environmental impacts. In the short term, NBGU-2 would provide protectiveness with the implementation of institutional controls, which NBGU-1 would not do. With MNA, NBGU-2 would effectively monitor reductions in contamination over time due to natural attenuation.

Implementability

The no-action alternative NBGU-1 is technically and administratively implementable. Alternative NBGU-2 (ICs/MNA) is technically implementable, although the institutional controls may present minor administrative implementability issues.

Cost

There are no capital costs associated with the No Action alternative NBGU-1. The cost of the five-year reviews has been included in the OGW alternatives.

There are no additional costs associated with NBGU-2 (ICs/MNA). The costs associated with implementation of the institutional controls are included in the Overburden Groundwater (OGW) alternatives. MNA costs are included in the Bedrock Groundwater (BGW) alternatives.

State Acceptance

CT DEP has expressed its support for MNA (NGBU-2). However, CT DEP has decided not to concur on the component of the selected remedy that requires institutional controls to prevent exposure to vapor emissions.

Community Acceptance

The community has not expressed support or disapproval of any components of the remedial action, but has raised some questions that EPA has responded to in the Responsiveness Summary. The PRP Group has expressed support for restricting the future use of Site groundwater.

Comparative Analysis of Remedial Alternatives for Management of Migration:

Comparative Analysis of Remedial Alternatives for Overburden Groundwater (OGW Alternatives)

Overall Protection of Human Health and the Environment

The No Action alternative (OGW-1) will not protect human health and the environment because no action would be taken to address risks posed by the dissolved contaminants in the overburden aquifer.

The alternatives for Overburden Groundwater, OGW-2 (ICs/MNA) and OGW-3 (Hydraulic Containment/MNA) rely on institutional controls to prevent human exposure to the dissolved contaminants in the groundwater as well as any NAPL that is outside the area targeted for treatment under the ONOGU alternatives. Alternative OGW-3 is more protective than OGW-2 because the hydraulic containment component prevents the highly contaminated groundwater plume from spreading. Due to the upwelling of contaminated groundwater from the bedrock, both OGW-3 and OGW-2 have the same time frame for achieving cleanup goals in the overburden aquifer (~ 225 years) assuming a technology has been implemented that removes virtually all (99%) of the NAPL in the Overburden NAPL Area.

The contingent remedy OGW-4 is protective because it would ensure that additional containment measures are taken if municipal supply wells in the Town Well Field are activated in the future.

Compliance with Applicable or Relevant and Appropriate Environmental Requirements (ARARs)

The No Action alternative OGW-1 does not meet ARARs/TBCs. The remaining alternatives can be designed and constructed to meet ARARs/TBCs.

Alternatives OGW-2 (ICs/MNA) and OGW-3 (Hydraulic Containment/MNA) and contingent action OGW-4 have common ARARs/TBCs including federal safe drinking water levels and state remediation standards for groundwater. Alternative OGW-3 has additional state ARARs/TBCs for hazardous waste management, discharge to surface water, air pollution control and control of noise. ARARs/TBCs for contingent alternative OGW-4 are the same as OGW-3. Tables 4-38, 4-41, 4-44 and 4-47 in the FS show all of the ARARs/TBCs for these alternatives.

Long-Term Effectiveness and Permanence

The No Action alternative OGW-1 does not provide any long-term effectiveness or permanence that can be assessed.

The Overburden Groundwater alternatives, OGW-2 (ICs/MNA) and OGW-3 (Hydraulic Containment/MNA), both will provide long-term effectiveness and permanence by restricting the use of groundwater through institutional controls, and MNA to achieve cleanup levels. However, OGW-3 will provide a higher level of long-term effectiveness and permanence than OGW-2 because the hydraulic containment component will prevent the spread of the contaminated groundwater plume that greatly exceeds federal drinking water standards.

The contingent action (OGW-4) provides long-term effectiveness and permanence by ensuring that additional containment measures are taken in the event that municipal wells are activated in the future.

Reduction of Toxicity, Mobility, or Volume Through Treatment

The No Action alternative OGW-1 will not reduce contaminant toxicity, mobility or volume through removal and/or active treatment.

The MNA component of the Overburden Groundwater alternatives OGW-2 (ICs/MNA) and OGW-3 (Hydraulic Containment/MNA) would both result in the permanent and irreversible reduction in contaminant toxicity, mobility and volume through treatment, by the natural degradation processes that occur in the subsurface. The hydraulic containment component of OGW-3 would provide greater reduction in mobility of the plume, and the groundwater treatment system would permanently reduce the toxicity and volume of dissolved contaminants in the extracted groundwater. Alternative OGW-3 (and contingent action OGW-4) would also prevent contamination from migrating further into the Town Well Field.

Short-Term Effectiveness

Alternatives OGW-1 (No Action) and OGW-2 (ICs/MNA) have no short-term impacts since there would be no short-term risks posed to on-site workers or the community during implementation, nor impacts to the environment. There is somewhat higher risk to on-site workers under OGW-3 (Hydraulic Containment/MNA) and the contingent action OGW-4, as these alternatives require the handling of contaminated groundwater and treatment residuals. However, these risks would be addressed by following standard health and safety practices.

In the short term, both OGW-2 and OGW-3 would provide protectiveness with the implementation of institutional controls, which OGW-1 would not do.

Implementability

The No Action alternative OGW-1 is technically and administratively implementable.

Alternatives OGW-2 (ICs/MNA) and OGW-3 (Hydraulic Containment/MNA) and the contingent action OGW-4, are all easily implementable, and, technically and administratively feasible. The institutional controls required for these alternatives may present minor administrative implementability issues. The groundwater extraction and treatment system required by Alternatives OGW-3 make it slightly more difficult to implement than OGW-2.

Cost

The cost of the five-year reviews has been included in the OGW alternatives, so although there are no capital costs associated with the No Action alternative, OGW-1 carries a cost of $80,000. The cost of implementing institutional controls across the extent of the groundwater plume and monitoring the natural degradation (OGW-2) in the overburden is $2,590,000. Adding hydraulic containment (OGW-3) increases the cost to $9,570,000. The cost of additional containment under OGW-4 is $1,380,000.

State Acceptance

CT DEP has expressed its support for pumping, treating and monitoring groundwater, and restricting the use of contaminated groundwater combined with monitored natural attenuation, (OGW-3) as well as supplemental groundwater containment (OGW-4) if municipal wells are activated by the Town of Southington in future. However, CT DEP has decided not to concur on the component of the selected remedy that requires institutional controls to prevent exposure to vapor emissions.

Community Acceptance

The community has not expressed support or disapproval of any components of the remedial action, but has raised some questions which EPA has responded to in the Responsiveness Summary. The PRP Group states in its comments that it supports the containment and treatment of contaminated groundwater until it is demonstrated that natural degradation processes balance the on-going dissolution of contaminants.

<u>Comparative Analysis of Remedial Alternatives for Bedrock Groundwater (BGW Alternatives)</u>

Overall Protection of Human Health and the Environment

The No Action alternative (BGW-1) will not protect human health and the environment because no action would be taken to address risks posed by the dissolved contaminants in the bedrock aquifer.

The alternatives for Bedrock Groundwater, BGW-2 (ICs/MNA) and BGW-3 (Hydraulic Containment/MNA) rely on institutional controls to prevent human exposure to the dissolved contaminants in the groundwater as well as any NAPL that exists in the fractures. Alternative BGW-3 affords greater protection than BGW-2 because the hydraulic containment component prevents highly contaminated groundwater from spreading. Under both BGW-3 and BGW-2, NAPL in the bedrock would continue to impact the quality of groundwater in the bedrock for an estimated 225 years.

Compliance with Applicable or Relevant and Appropriate Environmental Requirements (ARARs)

The No Action alternative BGW-1 does not meet ARARs/TBCs. The remaining alternatives can be designed and constructed to meet ARARs/TBCs.

Alternatives BGW-2 (ICs/MNA) and BGW-3 (Hydraulic Containment/MNA) have common ARARs/TBCs including federal safe drinking water levels and state remediation standards for groundwater. Alternative BGW-3 has additional state ARARs/TBCs for hazardous waste management, discharge to surface water, air pollution control and control of noise. Tables 4-56, 4-59 and 4-62 in the FS show all of the ARARs/TBCs for these alternatives.

Long-Term Effectiveness and Permanence

The No Action alternative BGW-1 does not provide any long-term effectiveness or permanence that can be assessed.

The Bedrock Groundwater alternatives, BGW-2 (ICs/MNA) and BGW-3 (Hydraulic Containment/MNA), will both provide long-term effectiveness and permanence by restricting the use of groundwater through institutional controls, and MNA to achieve cleanup levels. However, BGW-3 will provide a higher level of long-term effectiveness and permanence than OGW-2 because the hydraulic containment component will prevent the spread of highly contaminated groundwater that greatly exceeds safe drinking water standards.

Reduction of Toxicity, Mobility, or Volume Through Treatment

The No Action alternative BGW-1 will not reduce contaminant toxicity, mobility or volume through removal and/or active treatment.

Bedrock Groundwater alternatives BGW-2 (ICs/MNA) and BGW-3 (Hydraulic Containment/MNA) have a monitoring component that would document the natural degradation processes that will reduce the toxicity, mobility and volume of NAPL in the fractured bedrock over time. Alternative BGW-3 would provide greater reduction in mobility of contaminants through the use of hydraulic containment, and, toxicity and volume of contaminants through treatment of the extracted groundwater. Alternative BGW-3 would also prevent contamination from migration further into the Town Well Field.

Short-Term Effectiveness

Alternatives BGW-1 (No Action) and BGW-2 (ICs/MNA) have no short-term impacts on the community or on-site workers during implementation, nor do they present short-term environmental impacts. Alternative BGW-3 (Hydraulic Containment/MNA) has somewhat higher risks to on-site workers as it requires the handling of contaminated groundwater and treatment residuals. However, these risks would be addressed by following standard health and safety practices.

In the short term, BGW-2 and BGW-3 would provide protectiveness with the implementation of institutional controls, which BGW-1 would not do. In the long term, all the BGW alternatives would likely achieve protection in an estimated 225 years due to natural degradation processes, assuming that a treatment technology has been implemented that removes virtually all the NAPL in the Overburden NAPL Area.

Implementability

The No Action alternative BGW-1 is technically and administratively implementable.

Alternatives BGW-2 (ICs/MNA) and BGW-3 (Hydraulic Containment/MNA) are both easily implementable, and, technically and administratively feasible. The institutional controls required for all these alternatives may present minor administrative implementability issues. The groundwater containment and treatment system required by Alternatives OGW-3 and BGW-3 make them slightly slightly more difficult to implement than OGW-2 and BGW-2.

Cost

The cost of the five-year reviews has been included in the OGW alternatives, so there are no capital costs associated with the BGW No Action alternatives. Because the contaminated bedrock aquifer sits below the contaminated overburden aquifer, there is some overlap in costs. The costs associated with implementation of the institutional controls and hydraulic containment of the bedrock aquifer are included in the OGW alternatives. The incremental cost of conducting MNA in the portion of the bedrock plume that extends farther than the overburden plume under alternatives BGW-2 (ICs/MNA) and BGW-3 (Hydraulic Containment/MNA) is $660,000.

State Acceptance

CT DEP has expressed its support for pumping, treating and monitoring groundwater, and restricting the use of contaminated groundwater combined with natural attenuation (BGW-3). However, CT DEP has decided not to concur on the component of the selected remedy that requires institutional controls to prevent exposure to air emissions.

Community Acceptance

The community has not expressed support or disapproval of any components of the remedial action, but has raised some questions which EPA has responded to in the Responsiveness Summary. The PRP Group states in its comments that it supports containment and treatment of contaminated groundwater until it is demonstrated that natural degradation processes balance the on-going dissolution of contaminants.

L. THE SELECTED REMEDY

1. Summary of the Rationale for the Selected Remedy

The remedy selected for the SRSNE Superfund Site is a comprehensive remedy that utilizes source control and management of migration components to address all the contamination at the Site. Source controls measures are required to address soil and wetland soil in the Operations Area, Railroad Right-of-Way, and Cianci property and NAPL in the overburden and bedrock that present unacceptable risks to human health or to environmental receptors and/or exceed ARARs. The management of migration components address contaminants in groundwater in the overburden and bedrock that present unacceptable risks to human health and/or exceed ARARs. Of all the alternatives, the selected remedy best satisfies the statutory criteria for remedy selection.

The selected remedy calls for contaminants in the Overburden NAPL Area beneath the Operations Area to be treated by heating them in place to reduce the toxicity, mobility and mass of this reservoir of contaminants that impacts groundwater quality. Contaminated soil and wetlands soils at the Site will be consolidated and capped to eliminate the potential for contaminants to leach to groundwater, and, to protect human health and ecological receptors from direct exposure to contamination. Groundwater in the overburden and bedrock that exceeds appropriate levels will be captured and treated on site. Contaminated groundwater outside the capture zone will be treated through monitored natural attenuation, as will the contaminants that have come to reside in the bedrock NAPL area.

The State's goal for the aquifer at the Site is to return it to its natural quality. This remedy is consistent with that goal.

Approximately 84% of the mass of VOC contamination at the Site is in the form of NAPL and the greatest concentration is found in the 1.5-acre Overburden NAPL area. Within approximately one year of implementation of in-situ thermal treatment of the overburden, the selected remedy is expected to remove 95% to 99% of the NAPL in this area. Eventual restoration of the contaminated groundwater plume in both overburden and bedrock to cleanup levels is expected to take longer than 225 years, which is the estimated time frame for the entire plume at the Site to achieve safe drinking water standards.

This remedy includes institutional controls such as CT Environmental Land Use Restrictions (ELURs) to prevent exposure to contaminated groundwater, contaminants in subsurface soils, and contaminants in NAPL areas, and to prohibit activities that might harm the cap. These restrictions will also prohibit construction above any portion of the groundwater plume that exceeds the State's proposed volatilization criteria, if remedial design studies confirm the need for these restrictions. The cap will require long-term monitoring. Reviews of the effectiveness of the remedy will be conducted at least every five years to ensure that it remains protective over time.

Finally, the remedy includes a contingent action for additional groundwater containment, if needed.

The remedy set forth in this ROD addresses the following unacceptable risks:

- Potential future exposure to soils and wetlands soils contaminated with organic solvents, PCBs, and metals that present an unacceptable risk to human health and ecological receptors;

- Potential future exposure to contaminants in the overburden and bedrock NAPL areas that present an unacceptable risk to human health;

- Potential future exposure to contaminated groundwater that could be used as a drinking water source and present an unacceptable risk to human health; and

- Potential future exposure to volatile chemicals emanating to the air from the subsurface that presents an unacceptable risk to human health (assuming that remedial design studies confirm the presence of this unacceptable risk).

2. Description of Remedial Components

The alternatives that comprise this remedy are as follows:

- Operations Area/Railroad Soil: OAR-2 – Capping and Institutional Controls
- Cianci Property Soil: CP-2 – Culvert Removal and Excavation with On-Site Disposal
- Overburden NAPL Area: ONOGU-5 – Thermal Treatment and Monitored Natural Attenuation
- Bedrock NAPL Area: NBGU-2 – Institutional Controls and Monitored Natural Attenuation
- Overburden Groundwater: OGW-3 – Hydraulic Containment and Monitored Natural Attenuation
- Overburden Groundwater (Contingent Remedy): OGW-4 – Supplemental Containment

- Bedrock Groundwater: BGW-3 – Hydraulic Containment and Monitored Natural Attenuation

A detailed description of each component of the selected remedy is presented below. This comprehensive description incorporates each of the remedial alternatives that comprise the remedy, describes the sequencing of remedial activities to be performed at the Site, and describes the remedial activities that will be performed concurrently and over the long-term.

a. In-Situ Thermal Treatment

The first step in the remedial action will be in-situ thermal treatment of the Overburden NAPL Area.

The selected remedy calls for the design and construction of a system to deliver heat to the subsurface for the purpose of removing NAPL in the Overburden NAPL Area primarily by converting it from a liquid to vapor phase. The Overburden NAPL Area is generally shown on Figure 6 and extends to the top of bedrock. The thermal technology (or technologies) will be determined during design. VOC contamination in the treatment zone will be reduced to levels that are not indicative of the presence of pooled or residual NAPL (as further explained in the discussion entitled NAPL Performance Standards, below). EPA estimates that the attainment of such levels would be comparable to a VOC mass reduction within the treatment zone of 95 to 99%.

Construction and implementation of this technology will be executed in a manner that minimizes the risk of mobilizing pools of NAPL, particularly to the bedrock. If dewatering is necessary to facilitate the effectiveness of this technology, the extracted groundwater or NAPL/groundwater mixture will be treated to meet ARARs/Connecticut discharge requirements prior to discharge to the Quinnipiac River.

Vapors generated in the subsurface will be captured with a vapor extraction system and treated on site. The vapor treatment system will be specified during design but will likely consist of condensation and recovery as liquids, and thermal oxidation and scrubbing of residual vapors, likely with carbon polishing. The system will be designed to manage the large amounts of contaminants that are expected to be removed from the subsurface, and, meet federal and state air emission regulations. It is expected that the entire treatment area will be covered with a temporary cap to minimize the potential for vapor releases. Treatment residues from the vapor treatment system will be stored and handled in accordance with state and federal hazardous waste management regulations.

The Site will be monitored continuously during implementation of thermal treatment. The monitoring program will include redundant safe-guards and monitoring at the Site's perimeter to minimize the potential impacts to on-site workers and the community in the unlikely event that unacceptable levels of emissions are released during treatment. The monitoring program will also include a community outreach component that provides residents with the information they need to recognize and respond to a release.

Pre-Design Studies Prior to design of the in-situ thermal treatment system, the following activities will be performed:

- A boring program to delineate the extent of the Overburden NAPL Area beyond the northwestern corner of the SRSNE facility.

- An evaluation to determine the contaminant concentrations that are not indicative of the presence of pooled or residual NAPL. Site-specific conditions, including the types of compounds found in SRSNE NAPL, heterogeneities in the unconsolidated unit in the overburden aquifer and groundwater cleanup times, will be considered during this evaluation.

- A comprehensive set of criteria will be developed to evaluate the performance of the thermal technology during and after implementation.

- Bench-scale tests to evaluate vapor treatment needs and options.

- An evaluation may be conducted to confirm design specifications to achieve performance standards described below (see NAPL Performance Standards), evaluate methods to control groundwater migration into the treatment zone, confirm vapor treatment equipment sizing, and evaluate the potential for equipment corrosion.

- A plan shall be prepared that identifies measures to be taken to address potential downward mobilization of DNAPL, minimize the potential for vapor releases, and identify safety measures to be put in place during implementation of in-situ thermal treatment.

EPA will establish performance standards for the in-situ thermal treatment during remedial design. These standards will be equivalent to a 95% to 99% reduction of the NAPL mass within the treatment zone.

Design, construction, and implementation of in-situ thermal treatment is expected to be completed in approximately one to two years, from installation to equipment decommissioning and removal from the Site, not including the pre-design studies.

In order to evaluate the performance of the in-situ thermal treatment technology, a sampling program will be established as part of the implementation of this technology.

b. Excavation

Following in-site thermal treatment, contaminated soil and wetland soil will be excavated and consolidated.

The selected remedy calls for the excavation of approximately 900 cubic yards (total) of soil and wetland soil from the Cianci property and culvert outfall as shown on Figure 7. Contaminated soils/wetlands soils in excess of the soil cleanup standards, described below (see Soil and Wetland Soils Cleanup Levels), will be excavated.

If dewatering is necessary to facilitate the removal of contaminated material, the extracted groundwater or NAPL/groundwater mix will be treated to meet ARARs/Connecticut discharge requirements prior to discharge to the Quinnipiac River. Erosion and sediment control devices will be used during excavation to prevent contaminated materials from impacting wetlands and the Quinnipiac River.

The excavated material will be temporarily stored on site prior to consolidation beneath the Operations Area cap. The material will be stored and handled in accordance with state and federal hazardous waste management regulations. Should PCBs in concentrations greater than 50 ppm be encountered during excavation/consolidation, they will be disposed off site in accordance with the requirements of the Toxic Substances Control Act (TSCA) and Connecticut's regulations for disposition of PCBs.

The selected remedy also calls for the removal of a 30-inch concrete culvert. Drainage to the Quinnipiac River will be re-routed through a new impermeable pipe expected to be 36-inches in diameter. The location of the new pipe will be determined during design. Any sediment that has accumulated in the culvert will be handled, stored and consolidated beneath the cap in the same manner as the excavated materials from the Cianci property and culvert outfall.

Because excavation in floodplains and wetlands is unavoidable, measures will be taken to minimize impacts of and during construction, to the extent practicable. Best management practices will be used throughout the Site to minimize adverse impacts on the wetlands, floodplains, wildlife and its habitat. Damage to wetlands during excavation will be mitigated through erosion control measures. These impacts will be temporary in nature and will be mitigated by restoration of the areas upon completion. The disturbed areas will be restored to their pre-excavation habitat type. The excavated areas will be back-filled with clean materials that provide a suitable substrate for flora typical of the habitat type. The culvert trench will be back-filled with a low permeability soil or clay to prevent it from becoming an infiltration pathway, topped with soil to allow for re-vegetation. Wetlands restoration with indigenous species will be conducted consistent with the requirements of Federal and State wetlands protection laws. The floodplains will be returned to their natural levels so as to prevent the loss of storage capacity.

During design, a sampling plan will be developed for testing the walls of the excavation to ensure that all material exceeding cleanup levels has been removed. A habitat restoration plan, including reporting requirements to demonstrate compliance with the plan, will also be developed during design.

c. Multi-layer Cap

The consolidated contaminated soil and wetland soil will then be capped (Figure 8).

The selected remedy calls for construction of a low-permeability, multi-layer ("composite") RCRA Subtitle C cap over the existing asphalt cover in the Operations Area and along the Railroad Right-of-Way. Material removed from the Cianci property, culvert outfall and concrete culvert will be consolidated in the Operations Area prior to capping. Portions of the Operations Area and Railroad Right-of-Way will be filled with sub-base material and graded to provide positive drainage of surface water runoff from the new cap toward the new drainage pipe that will be installed to replace the concrete culvert. No side slope will be graded more steeply than three horizontal to one vertical (3:1).

The cap will cover all soil/wetland soil that exceeds soil/wetland soil cleanup standards, as described below (see Soil and Wetland Soil Cleanup Levels).

The cap will be designed, constructed and maintained to meet the requirements the CT RSRs for an "engineered control" and will have a permeability of less than 1×10^{-6} cm/sec. The cap will also be designed to meet the requirements of the following EPA guidance document and Region 1 technical memorandum: *Final Covers on Hazardous Waste Landfills and Surface Impoundments* (EPA/530-SW-89-047) and *Technical*

Memorandum: Revised Landfill Cap Design Guidance Proposed for Unlined Hazardous Waste Landfills in EPA Region 1, dated February 5, 2001. Cap design will be consistent with the expected future land use of the Railroad Right-of-Way as a bike path. Stormwater runoff from capped areas that is discharged to the Quinnipiac River will be managed in a manner consistent with ARARs.

Because the Overburden NAPL Area lies beneath the area to be capped, it is anticipated that the in-situ thermal technology may reduce the concentration of contaminants in the overlying soils. EPA maintains the flexibility to modify the capping component of the remedy if treatment has reduced the amount of contaminated soil that exceeds cleanup levels. The modifications may include reducing the size of the cap, and/or excavating isolated "hot spots" of contaminated soil in lieu of capping assuming these response actions can be conducted in a protective, ARARs compliant, effective, and cost-effective manner.

Based on current data, EPA does not believe that a vapor control system will be a necessary component of the multi-layer cap. However, further analysis of this issue will be performed during pre-design.

<u>Pre-Design Studies</u> Prior to the design of the cap, the following pre-design studies will be completed:

- A soil investigation to be conducted after implementation of the in-situ thermal component to re-assess the size of the area to be capped. This will include sampling to determine the background concentrations for dioxin. This investigation may be done in conjunction with the post-thermal treatment sampling program to determine whether NAPL Performance Standards have been achieved. To be considered during this re-assessment are any changes to cleanup levels or guidance documents for the contaminants detected (e.g., dioxin, PCBs). See discussion entitled Updated Assessments, below.

- An evaluation to confirm that, post-thermal treatment, a vapor control system is an unnecessary component of the multi-layer cap. If a vapor control system is found to be needed, the selected remedy will include a vapor control system as a component of the multi-layer cap.

d. Hydraulic Containment and Treatment of Overburden and Bedrock Groundwater Contamination (Including Contingency for Supplemental Containment)

The selected remedy calls for the extraction and treatment of groundwater in the overburden and bedrock aquifers that exceeds acceptable levels. Initially, the containment and treatment system will be the system of recovery wells, sheet piling, and on-site ultraviolet oxidation (UvOx) treatment with discharge to the Quinnipiac River that currently operates at the Site pursuant to two AOCs. In short, the selected remedy requires the continued operation of the NTCRA 1 and NTCRA 2 Groundwater Extraction and Treatment System that is currently operating at the Site.

The plume of groundwater that exceeds federal drinking water standards or risk based levels is expected to change over time with implementation of the source control components of this remedy, natural attenuation and changes in hydrogeologic conditions. In addition, notification from the Town of Southington that it plans to reactivate Production Wells No. 4 and/or No. 6, or install or use additional wells in the Town Well Field that could cause the plume that exceeds federal drinking water standards or risk based levels to move, triggers the need for supplemental containment (contingent alternative OGW-4).

As such, the selected remedy includes modifications or enhancements to the extraction and/or treatment system to increase effectiveness and/or decrease the costs or time of operation. All modifications and enhancements must be conducted in a protective, ARARs-compliant, effective, and cost-effective manner. These future modifications/enhancements include as appropriate (but are not limited to):

- Discontinuation of pumping at individual wells where cleanup goals have been attained and maintained;

- Installation of additional extraction wells, horizontal extraction wells, collection trenches, or subsurface barriers to facilitate or accelerate cleanup of the contaminant plume;

- Removal of the NTCRA 1 sheet-pile wall in part or in whole;

- Replacement of the UvOx treatment system in part or in whole with a more effective or efficient method of treatment (e.g., Fenton's reagent, constructed treatment wetlands, phytoremediation) of lower flows or concentrations;

- Modifications to the groundwater monitoring program; and

- Installation of additional containment measures, such as extraction wells, horizontal extraction wells, collection trenches, or subsurface barriers, that are sufficient to prevent the migration of groundwater that presents unacceptable risk and/or exceeds federal drinking water standards and risk based levels in the event that the Town of Southington notifies EPA that is plans to reactivate Production Well No. 4 or No. 6, or install or use additional wells in the Town Well Field.

As part of the selected remedy, EPA expects to enter into a written agreement with the Town of Southington which will establish a procedure through which the Town would notify EPA of its plans to reactivate Production Well No. 4 and/or No. 6, or to install or use other wells in the Town Well Field.

Any modification/enhancements to the NTCRA 1/2 Groundwater System will be implemented in a manner consistent with ARARs/state water quality standards and discharge requirements.

Hydraulic containment and treatment will continue until federal drinking water standards and risk based levels are attained in the overburden and bedrock groundwater within the capture zone of the current NTCRA 1/2 Groundwater System.

Pre-Design Studies As soon as practicable, the following study will be performed:

- A study will be performed to evaluated the current capture zone of the NTCRA 1/2 Groundwater System to ensure that all contaminants that exceed federal drinking water standards and risk based levels will be contained.

e. Monitored Natural Attenuation of Overburden and Bedrock Plume Until Groundwater Cleanup Levels are Attained

The goal of this remedial action is to restore groundwater throughout the Site to its natural quality. Aquifer restoration of the entire plume is expected to take longer than 225 years which is the estimated time frame for the entire plume to meet federal drinking water standards and risk based levels. Restoration of groundwater to natural quality will be achieved by reliance on naturally-occurring biological, physical and chemical attenuation processes in the subsurface and groundwater (which is expected to be enhanced by all of the other components of the remedial action, including in-situ thermal treatment of the Overburden NAPL Area). These naturally-occurring processes are collectively referred to as "natural attenuation". Monitoring the result of these processes throughout the plume(s) is an integral part of this remedial technology, known as monitored natural attenuation (MNA).

Monitoring will be used to:

- Delineate the plume(s) in three dimensions;
- Evaluate the effectiveness of institutional controls (e.g., evaluate whether any activities at or near the Site are adversely affecting the plume);
- Assess temporal and special variations in plume chemistry and geometry; and
- Assess progress in meeting the long-term remedial objective(s).

The adequacy of the existing monitoring well network will be assessed throughout the life of the remedy, including an assessment at the following times: (1) during pre-design; (2) immediately after the active remediation phase is completed; and (3) during long-term monitoring of the MNA component of the remedy. The selected remedy includes future modifications to the existing monitoring well network as determined to be necessary during pre-design and throughout the performance of the remedial action. The location of wells, well screens, monitoring parameters, and frequency will be specified during design and will be updated as conditions at the Site change. Performance monitoring reports, including a summary of the data and any recommended actions, will be submitted yearly. The report will include:

- Background and site description;
- Evaluation of new data;
- Summary of data interpretation;
- Evaluation of MNA conceptual model (to be developed during pre-design);
- Evaluation of institutional controls (e.g., evaluation of whether any activities at the Site are adversely affecting the groundwater plume); and
- Recommendations.

MNA will be performed until the final groundwater cleanup levels have been met, as provided below (see discussion of final cleanup levels in section entitled Interim Groundwater Cleanup Levels).

<u>Pre-Design Studies</u> Prior to implementation of MNA in the "severed plume" (that portion of the plume in the overburden and bedrock aquifers that is outside the hydraulic containment system) and the Bedrock NAPL Area, an evaluation of the existing network of monitoring wells will be completed. The purpose of the evaluation is to assess the ability of the current monitoring scheme to meet the four stated uses of data collected

during monitoring (outlined above) and provide recommendations for modifications if it does not. This evaluation will be updated periodically. The first re-evaluation of the monitoring scheme will be conducted no later than upon completion of in-situ thermal treatment in the Overburden NAPL Area.

f. Vapor Intrusion

The selected remedy is designed to prevent exposure to volatile chemicals emanating from the subsurface into overlying buildings that may be constructed in the future, through the implementation of institutional controls.

Pre-Design Studies Prior to implementation of the institutional controls, a study will be performed: (1) to confirm vapor intrusion risks (10^{-4} to 10^{-6}) at the Site consistent with current screening analysis, and (2) to more precisely define the eastern extent of the plume in the overburden aquifer. Based on interpolated data from the remedial investigation, the plume is underlying portions of several parcels along Queen Street (but is not currently underlying any currently-existing buildings). One of the purposes of this study will be to determine which parcels and locations exceed federal risk levels and therefore require these institutional controls.

g. Institutional Controls

The remedy includes implementation and enforcement of institutional controls, which will be in the form of Environmental Land Use Restrictions (ELURs) consistent with State requirements. These ELURs will be recorded in the appropriate local land records office, and they will run with the land. Among other things, these restrictions will prohibit the following activities:

- Prohibit activities that could harm the capped areas of the Site.
- Prohibit groundwater use or extraction of all groundwater that exceeds federal drinking water standards, risk based levels or CT Groundwater Protection Criteria (Appendix C in the CT RSRs).
- Prohibit soil excavation and other activities that might result in exposure to contaminated subsurface soils and untreated NAPL and NAPL-contaminated materials in the overburden and bedrock aquifers.

- Prohibit construction above groundwater plume that exceeds the State's proposed volatilization criteria, unless construction is designed to prevent vapor intrusion consistent with State requirements.

- Otherwise impose such restrictions necessary to protect human health and the environment and maintain the integrity of the remedy.

In implementing the institutional controls, EPA may decide that other forms of institutional controls are preferable to, or should be implemented along with, ELURs. Such institutional controls might include local ordinances and/or other state regulations that are enforceable and reliable for long-term protection.

The restrictions on the use of groundwater will extend from the Operations Area and Cianci property to all downgradient areas where the contaminated plume that exceeds federal drinking water standards, risk based levels or Appendix C of the CT RSRs have come to be located. The restrictions will also include a buffer zone around the contaminated area adequate to insure that new private or public water supply wells in the vicinity would not induce movement of the contaminants into uncontaminated areas or interfere with any remedial action at the Site. Groundwater use restrictions will remain in effect until federal drinking water standards, risk based levels or Appendix C of the CT RSRs are achieved.

Once the institutional controls have been implemented, compliance with the restrictions will be monitored and enforced to ensure that the institutional controls are effective. Over time, EPA will also evaluate whether restrictions can be removed or modified because acceptable levels have been met at the Site.

h. Wetlands and Floodplain Restoration

Much of the excavation on the Cianci property will be conducted within the 100-year floodplain of the Quinnipiac River (Figure 7). At the culvert outfall, excavation will take place within wetlands. As such, this work will be conducted consistent with federal and state wetland and floodplain requirements, including habitat restoration. Access areas and roads, staging/handling areas, etc., that have been constructed during implementation of the remedy will also undergo habitat restoration. The goal of restoration is to restore the functions and values of the various habitats affected by the remediation.

<u>Pre-Design Studies</u> Prior to construction of the remedial action, a study will be performed (1) to determine the current functions and values of the areas to be affected by

the remediation; and (2) to evaluate actions to minimize impacts to the wetlands and floodplains, to the extent practicable.

i. Long-term Monitoring

An environmental monitoring program will be implemented to evaluate the performance of the groundwater containment and treatment system and the overall effectiveness of the remedy including the MNA component. Performance monitoring will be conducted to insure the proper operation of the remedy and satisfy CT RSR monitoring requirements. Performance monitoring will include periodic monitoring, and necessary maintenance, of the capped areas, groundwater treatment system influent and effluent, compliance with the institutional controls and the entity responsible for maintaining, implementing and enforcing the institutional controls. It is expected that groundwater performance monitoring will be more frequent (e.g., 3-4 times a year) after implementation of the active components of the remedy until the groundwater conditions have reached equilibrium.

j. Five-year Reviews

To the extent required by law, EPA will review the Site at least once every five years after the initiation of remedial action at the Site if any hazardous substances, pollutants or contaminants remain at the Site to assure that the remedial action continues to protect human health and the environment.

k. Changes to the Remedy

The selected remedy may be modified as a result of the remedial design and construction processes. Changes to the remedy described in this Record of Decision will be documented in a technical memorandum in the Administrative Record for the Site, an Explanation of Significant Differences or a Record of Decision Amendment, as appropriate.

3. Summary of the Estimated Remedy Costs

The estimated costs for each component of the remedy are summarized in the table below. A more detailed break down of the costs can be found in Tables L-3 thru L-8.

The costs for operation and maintenance have been projected over 30 years, using the 7% discount rate per EPA guidance (*A Guide to Developing and Documenting Cost Estimates*

During the Feasibility Study, July 2000). The cost of replacing equipment has been included as a recurring cost. The cost estimates also include contingencies to cover unknowns, unforeseen circumstances, or unanticipated conditions that were not possible to evaluate from the data on hand at the time the estimate was prepared. Contingencies are typically applied as a percentage of the total cost of construction or operation and maintenance activities cost, rather than applied to individual cost elements. Contingencies were factored into each component of the remedy, consistent with the ranges provided in EPA's aforementioned guidance.

The plumes in the overburden and bedrock aquifers that require hydraulic containment and treatment are generally located in the same portion of the Site. The Bedrock NAPL Area is located within the bedrock plume. For this reason, it was convenient to assign certain costs to one component, rather than try to allocate between them all. The cost of implementing institutional controls for groundwater and exposure to NAPL in the subsurface in both the overburden and bedrock aquifers is included with OGW-3. The cost of hydraulic containment and treatment for groundwater in both the overburden and bedrock aquifers is also included in OGW-3. The cost for implementing MNA in the Bedrock NAPL Area is included in BGW-3.

Summary Table of Estimated Costs of Selected Remedy						
Component	Initial and Recurring Capital Costs	Thermal Treatment Operating Cost [1]	Annual O&M [2]	Site Closure Capital Costs [3]	Contin-gencies [4]	Total
OAR-2	570,000	-	120,000	-	370,000	1,060,000
CP-2	160,000	-	0	-	130,000	290,000
ONOGU-5 [5]	8,710,000 [6]	2,710,000	120,000 [7]	-	6,580,000	17,660,000 [8]
NBGU-2	0 [9]	-	0 [10]	-	0	0
OGW-3 [11]	1,240,000	-	5,960,000	220,000	2,150,000	9,570,000
BGW-3	0 [12]	-	500,000	-	160,000	660,000
Totals	10,680,000	2,710,000	6,700,000	220,000	9,390,000	29,240,000
OGW-4 [13]	280,000	-	620,000	4,000	477,000	1,380,000

Note: Costs in table are rounded to nearest $10,000.
[1] Applies to ONOGU-5 component only.
[2] Total present worth for 30 years with 7% discount rate.
[3] Total present worth with single future payment factor equal to 0.356.
[4] Includes contingencies for remedial design; project administration/management cost; construction management; scope and bid/construction.
[5] VOC mass estimated at 1,000,000 pounds.
[6] Includes $1,500,000 for pre-design study

[7] Total present worth for 5 years with no discount rate.
[8] Reflects $460,000 "savings" from implementation of pilot study.
[9] Institutional controls included with OGW-3.
[10] MNA sampling included with BGW-3 O&M.
[11] Includes cost of 5-year reviews for entire remedy.
[12] Hydraulic containment included with OGW-3.
[13] Cost of contingent remedy not included in overall cost of remedy.

There are two major sources of uncertainty that could have an affect on the estimated costs. The first affects the cost of implementing the thermal treatment component. The cost of thermal is based on interpretations of the results of the NAPL delineation study which estimates that 1,000,000 pounds of VOC mass are present in the subsurface in the treatment zone. While this estimate is believed to be a conservative one, there exists the possibility that the VOC mass is an underestimate. Assuming twice the NAPL is present (i.e., 2,000,000 pounds) the cost of implementing thermal treatment would increase by an estimated $1.3 million.

The second source of uncertainty affects the cost of implementing hydraulic containment and treatment until acceptable levels are attained. The costs presented in the FS are based on nearly ten years of operating the existing NTCRA 1/2 Groundwater System at current concentrations and volumes. With implementation of the source control components of this remedy, in addition to on-going natural degradation, the size of and the contaminant concentrations contained within the groundwater plumes are expected to decrease over time. These changes should make it possible to re-design a containment/treatment system that will require less robust treatment and/or a smaller containment area, resulting in significant savings not reflected in the FS. Based on estimates from the parties currently conducting the work, the yearly cost of operation of the NTCRA 1 and NTCRA 2 Groundwater Excavation and Treatment System is $500,000 per year.

The information in the cost tables is based on the best available information regarding the anticipated scope of the remedial alternative. Changes in the cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedial alternative. Changes to the remedy, including but not limited to the cost of the remedy, may be documented in the form of a memorandum in the Administrative Record file, as an Explanation of Significant Differences, or ROD amendment. The order-of-magnitude engineering cost estimates provided in this ROD are expected to be within +50 to -30 percent of the actual project costs.

4. Expected Outcomes of the Selected Remedy

An expected outcome of the selected remedy is that the SRSNE Site will no longer present a future unacceptable risk to human health from direct exposure (ingestion, dermal contact, inhalation of dust) to contaminated soils and wetland soils, and will be suitable for future recreational or residential use. The soils at the SRSNE Site will no longer be a source of contaminants leaching to groundwater from precipitation and surface runoff. The SRSNE Site will no longer present an unacceptable risk to ecological receptors from contact with contaminated soil in the wetlands, and habitat in the impacts areas will be restored to support a healthy ecosystem. The porous concrete culvert will no longer act as a preferential pathway for contaminated groundwater to reach the Quinnipiac River.

Another expected outcome of the selected remedy is that groundwater at the SRSNE Site will not present a future unacceptable health hazard to human health through direct exposure (ingestion, dermal contact, inhalation) and will meet Connecticut's goal of aquifer restoration to its natural quality. Hydraulic containment will prevent further migration of contamination. Groundwater is expected to be restored to federal drinking water standards or risk based levels in approximately 225 years. Thermal treatment of 95% to 99% of the mass of contaminants in the Overburden NAPL area enhances the effectiveness and reliability of the hydraulic containment system protecting the public water supply. Institutional controls will prevent unacceptable health hazards to humans from direct exposure (ingestion, dermal contact) to contaminated materials in the subsurface.

It is also expected that the cap which will be placed over contaminated soil along the Railroad Right-of-Way will not restrict anticipated recreational land use. The Railroad Right-of-Way runs across the Site between the Operations Area and the Cianci property and is a segment of the planned Farmington Canal Heritage Trail which will run for 60 miles along abandoned rail corridors from New Haven, CT to the Massachusetts border. Cleanup to the soil standards included in this ROD on the Cianci property should allow for unrestricted access to this parcel. The Operations Area could also be used for activities that wouldn't impede proper maintenance of the cap and which were consistent with institutional controls necessary to protect the integrity of the cap.

Cleanup to the soil cleanup levels included in this ROD on the Cianci property allows this parcel to be used for residential/recreational/commercial/industrial use, provided the institutional controls are met (e.g., no excavation for a foundation or utilities that would result in exposure to contaminated materials in the deep subsurface in the Cianci property).

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SRSNE Superfund Site RD/RA Settlement

Appendix A

Record of Decision

Part 2 of 3

Interim groundwater cleanup levels, and soil and wetland soil cleanup levels have been established, and are presented below. NAPL Performance Standards have also been established and are presented below. Although there was a potential ecological risk in surface water from PCBs at the culvert outfall, a surface water cleanup level has not been established. This is because the cleanup level established for soil will result in the removal of wetland soil contaminated with PCBs in the same location that is affecting surface water quality. As a result, cleanup of the wetland soils should diminish surface water impacts.

a. Interim Groundwater Cleanup Levels

Because the aquifer under the Site is a Class GA aquifer, which is a potential source of drinking water, interim cleanup levels have been set based on the most stringent of the following ARARs: MCLs and non-zero MCLGs established by EPA and RSRs established by CT DEP. Generally the CT RSRs will control as CT RSRs are more restrictive than the federal MCLs and non-zero MCLGs. Table L-1 summarizes the interim groundwater cleanup levels for substances pursuant to CT RSRs. This list also includes all compounds in groundwater which exceed a federal MCL or a non-zero MCLG or were found to pose a cancer risk in excess of 10^{-6} or a non-cancer HI>1.

Periodic assessment of the protection afforded by remedial actions will be made as the remedy is being implemented and at the completion of the remedial action. At the time that interim groundwater cleanup levels identified in this ROD, ARARs, and newly promulgated ARARs and modified ARARs which call into question the protectiveness of the remedy have been achieved and have not been exceeded for a period of three consecutive years, a risk assessment shall be performed on all residual groundwater contamination to determine whether the remedial action is protective. This risk assessment of the residual groundwater contamination shall follow EPA procedures and will assess the cumulative carcinogenic and non-carcinogenic risks posed by all chemicals of concern (including but not limited to the chemicals of concern in Table L-1) via relevant exposure pathways. If, after review of the risk assessment, the remedial action is not determined to be protective by EPA, the remedial action shall continue until either protective levels are achieved, and are not exceeded for a period of three consecutive years, or until the remedy is otherwise deemed protective or is modified. These protective residual levels shall constitute the final cleanup levels for this ROD and shall be considered performance standards for this remedial action.

All interim groundwater cleanup levels identified in this ROD, ARARs, and newly promulgated ARARs and modified ARARs which call into question the protectiveness of the remedy and the protective levels determined as a consequence of the risk assessment of residual contamination, must be met at the completion of the remedial action at the points of compliance. Because waste has been left in place, the point of compliance for groundwater cleanup levels is to the edge of the waste management unit(s). At this Site, interim cleanup levels must be met throughout the contaminated groundwater plume (except for under the cap) including throughout the severed plume.

b. Soil and Wetland Soil Cleanup Levels

As indicated in the discussion of land use is Section F of this ROD, EPA is selecting a remedial action that will allow for the reuse of the Site for recreational purposes. Because CT DEP cleanup requirements for recreational site use are the same as its cleanup requirements for residential use, a residential exposure scenario and associated CT DEP residential cleanup standards for soils were considered for this remedy. (This ROD has sometimes used the phrase "recreational/residential" in referring to reuse of the Site and the related soil and wetland cleanup levels.)

Because CT remediation standards are ARARs, promulgated direct exposure criteria (DEC) for residential soils and pollutant mobility criteria (PMC) for a GA aquifer were identified as the cleanup levels for soils and wetland soils as shown in Table L-2. DEC are designed to protect the health of individuals who may come in contact with the soil whereas PMC address soil leaching concerns and protection of the underlying aquifer for use as a potable water supply. Some PMCs are expressed as a soil leachate concentration (in units of mg/l) whereas other PMCs are expressed as a soil concentration (mg/kg). There are substances found in soil and wetland soil at SRSNE that are within EPA's acceptable risk range but which exceed the more stringent CT standards for remediation of soils. Because there is not a DEC or PMC for 2,3,7,8-TCDD-TEQs, EPA's policy governing the cleanup of dioxins (OSWER Directive #9200.4-26 April 1998) in soils was also considered in the selection of soil cleanup levels. In the case of lead, EPA's Integrated Exposure Uptake Biokinetic (IEUBK) model for lead was used to develop a concentration in soil that would protect 95% of a potentially exposed population from blood lead levels in excess of 10 μg/dl (micrograms per deciliter of blood). This approach is consistent with EPA's 1994 OSWER Directive 9355.4-12 for lead and because the resulting value of 400 mg/kg is more stringent than the DEC (500 mg/kg) the EPA policy number for lead was identified in Table L-2. The soil and wetland soil cleanup levels will also be protective of ecological receptors in the area of the culvert outfall as the cleanup levels identified for human-health protection are more restrictive than levels needed for protection of ecological health.

These cleanup levels in soil and wetland soil are consistent with ARARs and attain EPA's risk management goal for remedial actions, and have been determined by EPA to be protective of human health, ecological health and the aquifer. Risk and hazard posed by compounds in Table L-2 for which background concentrations have yet to be determined and thus cleanup levels have not been specified will not result in any additional site-related risk or hazard. These cleanup levels must be met at the completion of the remedial action for soil beyond the extent of the cap in the Operations Area and along the Railroad Right-of-Way, and, in soil and wetland soil on the Cianci property, after excavation of hotspots. The soil depths to which these cleanup levels apply will be in accordance with CT regulations which specify that DEC apply from the ground surface down to a depth of 15 feet below the surface unless the soil is inaccessible as defined in the CT RSRs. PMC apply down to the low water table with exceptions that restrict PMCs down to the high water table as noted in the CT RSRs.

c. Updated Assessments

EPA's new Cancer Guidelines and Supplemental Guidance (March 2005) will be used as the basis for EPA's analysis of all new carcinogenicity risk assessments. If updated carcinogenicity risk assessments become available, EPA will determine whether an evaluation should be conducted as part of the remedial design to assess whether adjustments to the target cleanup levels for this remedial action are needed in order for this remedy to remain protective of human health.

d. NAPL Performance Standards (to be developed during Remedial Design)

VOC contamination will be reduced to levels that are not indicative of the presence of pooled or residual NAPL. This is expected to result in a VOC mass reduction in the treatment zone of 95 to 99%. Average and maximum concentrations for VOCs in the subsurface will be determined during pre-design. Site-specific conditions, including the types of compounds found in SRSNE NAPL, heterogeneities in the unconsolidated unit in the overburden aquifer and groundwater cleanup times, will be considered during this evaluation.

These interim performance standards must be met throughout the thermal treatment zone. Because these performance standards are expected to result in a VOC mass reduction of 95-99%, they attain EPA's risk management goals for remedial action and are protective of human health. These interim performance standards will be applied to the overburden in the treatment zone shown generally in Figure 6b, from the ground surface to the top of bedrock. A pre-design boring program beyond the northwest corner of the Operations Area may result in an expansion of the treatment zone.

At the time these performance standards are attained in the field, EPA will evaluate whether to continue to operate the in-situ thermal treatment system where EPA determines that appreciable amounts of DNAPL continue to be recovered from the Overburden NAPL Area. These will become the final NAPL performance standards.

M. STATUTORY DETERMINATIONS

The remedial action selected for implementation at the SRSNE Site is consistent with CERCLA and, to the extent practicable, the NCP. The selected remedy is protective of human health and the environment and will comply with ARARs while at the same time being cost effective. In addition, the selected remedy utilizes permanent solutions and alternate treatment technologies or resource recovery technologies to the maximum extent practicable, and satisfies the statutory preference for treatment that permanently and significantly reduces the mobility, toxicity or volume of hazardous substances as a principal element.

1. *The Selected Remedy is Protective of Human Health and the Environment.*

The SRSNE Site is a highly-contaminated piece of property adjacent to both residential and commercial areas, upgradient of a municipal well field. The contaminants of most concern to EPA at this Site are chlorinated and non-chlorinated VOCs, SVOCs, PCBs, dioxin and metals. These are present in soil and wetland soil, and in overburden and bedrock aquifers, at levels that present a risk or potential risk to human health and/or the environment. The dissolved VOCs are at particularly high levels, at tens, hundreds, or in some cases thousands of times their regulatory limits. The volume of contaminated soils is approximately 18,000 cubic yards. Groundwater contaminants and contaminants in the NAPL area of the site are highly mobile.

The selected remedy will protect human health and the environment through the treatment of contaminants in the overburden NAPL area by in-situ thermal treatment, and by capping contaminated soil and wetland soil on site. By containing, pumping and treating groundwater, the selected remedy will prevent existing high concentrations of contaminants in groundwater from migrating towards a potential public water supply. By monitoring the progress of natural degradation of contaminated groundwater outside the capture zone, the selected remedy will restore both the overburden and bedrock aquifers to meet Connecticut cleanup goal which is natural quality sometime after 225 years. Until safe levels are achieved, human health will be protected by preventing exposure to contaminated groundwater through the use of institutional controls. This remedy also relies on institutional controls to prevent exposure to volatile compounds that may emanate from the subsurface.

The cap will eliminate the threat of exposure to human health via direct contact with or ingestion of contaminated soil and wetland soil. The selected remedy will reduce potential human health risk levels within or below EPA's acceptable risk range of 10^{-4} to 10^{-6} and will reduce the potential for adverse non-cancer health effects. It will reduce potential human health risk levels to protective ARARs levels, i.e., the remedy will comply with ARARs and To Be Considered criteria, including newly-proposed Connecticut volatilization criteria. The selected remedy will eliminate risks posed to environmental receptors from contaminated wetland soils. Short-term risks can be effectively controlled using standard engineering and health and safety practices, and monitoring. In addition, no significant adverse cross-media impacts are expected from the selected remedy.

At this Site, where EPA expects to reduce the NAPL mass in the overburden area of the Site by 95% to 99% within approximately one year of implementation of thermal treatment, it is technically practicable to restore the groundwater at the Site even though cleanup levels are not expected to be attained throughout the plume for a long time (225 years). To do otherwise, would require continued operation of the NTCRA 1/2 Groundwater System for approximately 400 to 500 years. The selection of a remedy that may cut the time frame for containment in half, based on modeling, is reasonable. By addressing the significant contamination at this Site, the remedial action will eliminate the threat that site-contaminants pose to the public drinking water supply in the Town Well Field.

At the time that interim groundwater cleanup levels identified in this ROD, ARARs, and newly promulgated ARARs and modified ARARs that call into question the protectiveness of the remedy have been achieved and have not been exceeded for a period of three consecutive years, a risk assessment shall be performed on the residual ground water contamination to determine whether the remedy is protective. This risk assessment of the residual ground water contamination shall follow EPA procedures and will assess the cumulative carcinogenic and non-carcinogenic risks posed by ingestion of groundwater, inhalation of VOCs from domestic water use, and exposure to volatile chemicals emanating from the subsurface. If, after review of the risk assessment, the remedy is not determined to be protective by EPA, the remedial action shall continue until protective levels are achieved and have not been exceeded for a period of three consecutive years, or until the remedy is otherwise deemed protective. These protective residual levels shall constitute the final cleanup levels for this ROD and shall be considered performance standards for any remedial action.

2. *The Selected Remedy Complies with ARARs.*

The selected remedy will comply with all federal and any more stringent state ARARs that pertain to the Site. In particular, this remedy will comply with the following federal ARARs:

- Resource Conservation and Recovery Act (RCRA)
- Toxic Substances Control Act (TSCA)
- Clean Water Act
- Safe Drinking Water Act
- Clean Air Act
- Fish and Wildlife Coordination Act
- Executive Order 11988 (Floodplain Management)
- Executive Order 11990 (Protection of Wetlands)

In addition, the selected remedy will comply with the following, in some cases more stringent, State of Connecticut ARARs:

- Remediation Standard Regulations (RSR)
- Hazardous Waste Management Regulations
- Air Pollution Control
- Control of Noise
- Surface Water and Wetlands, Inland Wetlands and Watercourses Act
- Disposition of PCBs
- Water Quality Standards
- Water Discharge Permit Regulations

The following policies, advisories, criteria, and guidances will also be considered during the implementation of the remedial action:

- EPA Guidance for Final Covers on Hazardous Waste Landfills and Surface Impoundments

- Revised Landfill Cap Design Guidance Proposed for Unlined Hazardous Waste Landfills in EPA Region 1
- Connecticut Guidance for Soil Erosion and Sediment Control
- Proposed Revisions (March 2003) Volatilization Criteria (will be an ARAR as part of Connecticut's RSR, if adopted)
- EPA Reference Doses and EPA Carcinogen Assessment Group Potency Factors
- EPA Health Advisories

A thorough discussion of these requirements as well as all other ARARs for this Site is found in the FS Tables 4-5, 4-14, 4-32, 4-44, 4-47, 4-53, and 4-62 which have been included in this ROD as Appendix D.

3. *The Selected Remedy is Cost-Effective.*

In EPA's judgment, the selected remedy is cost-effective because the remedy's costs are proportional to its overall effectiveness (see 40 CFR 300.430(f)(1)(ii)(D)). This determination was made by evaluating the overall effectiveness of those alternatives that satisfied the threshold criteria (i.e., that are protective of human health and the environment and comply with all federal and any more stringent ARARs, or as appropriate, waive ARARs). Overall effectiveness was evaluated by assessing three of the five balancing criteria in combination – long-term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; and short-term effectiveness. The overall effectiveness of each alternative then was compared to the alternative's costs to determine cost-effectiveness. The relationship of the overall effectiveness of this remedial alternative was determined to be proportional to its costs and hence represents a reasonable value for the money to be spent.

The estimated present worth cost of the six components that comprise the selected remedy is $29,240,000. Capping and institutional controls for the soil in the Operations Area and along the Railroad Right-of-Way at $1,060,000 is significantly less expensive than excavation and off-site shipment of the contaminated soil ($13,230,000) and, provided the cap is properly maintained and institutional controls remain in place and are adequately monitored and enforced, offer similar overall protection and can be designed in a manner consistent with the anticipated future recreational/residential land use. With the cap going in on the Operations Area, it is more cost-efficient to consolidate the material excavated from the Cianci property under the cap which costs $310,000, than to ship it off site for disposal which costs $730,000. The cost of institutional controls and MNA of the plumes in the overburden and bedrock aquifers is $3,250,000. To add hydraulic containment, which is a component of the selected remedy, increases the cost to $10,230,000. Hydraulic containment will reduce toxicity and volume of contaminated groundwater at the Site by treatment. In comparison to the other alternative, hydraulic containment is the only option that will prevent contaminated groundwater from migrating further into the Town Well Field, which is a potential public water supply.

After an assessment of the proportionality of cost to overall effectiveness, EPA determined that in-situ thermal treatment which costs $17,660,000 is the most cost-effective of the alternatives evaluated for the Overburden NAPL Area because it has the potential to remove the greatest amount of NAPL mass in the shortest period of time, and by doing so, shrink the size of the groundwater containment plume, reduce groundwater contaminant concentrations and shorten the timeframe that groundwater standards are exceeded. Of all the treatment technologies considered, chemical oxidation, while it can be very effective, is the most sensitive to mass estimates (i.e., more NAPL requires more oxidant). The alternative with chemical oxidation which is estimated to cost $20,130,000 has the greatest potential to be an underestimate. The cost of excavation is $39,970,000 and is just too costly considering that even with excavation of the overburden NAPL area, the NAPL in the bedrock and in the overburden outside the treatment zone will continue to impact groundwater quality for a long time. The remaining alternatives, with the exception of the no-action alternative, will all eventually attain cleanup levels. Where they differ is the amount of contamination that is permanently removed during the initial phase of treatment train. Hydraulic displacement is expected to remove up to 44% of NAPL mass in a relatively short period of time (approximately one year). Hydraulic displacement and MNA ($6,190,000) is expected to remove virtually all (99%) of the NAPL mass in the Overburden NAPL Area in 300 to 400 years, assuming the current rate of natural attenuation. Hydraulic displacement and enhanced bioremediation ($9,640,000) would remove virtually all the NAPL mass in 130 years if enhanced bioremediation can achieve a rate three times the current rate, and 40 years if enhanced bioremediation can achieve a rate ten times the current rate. In-situ thermal treatment is expected to remove between 95 and 99% of the NAPL mass in the Overburden NAPL Area in a relatively short period of time (one year for installation and equipment decommissioning and approximately one year of actual heating). If the technology removes 95% of the NAPL mass initially, it will take 50 to 150 years before virtually all (99%) is removed with MNA. If 97% is removed initially, it will take 40 to 100 years before virtually all is removed. If maximum removal rates are attained, virtually all the NAPL mass would be removed at the end of implementation of the thermal component.

Moreover, in comparing the ONOGU alternatives, the estimated time frames for achievement of reductions in the initial phases for hydraulic displacement and enhanced bioremediation is uncertain. The actual rate of remediation as estimated above may, in fact, be as low as zero based on uncertainties presented in Appendix G to the FS. This factor adds uncertainty to the cost-effectiveness of ONOGU-3.

Finally, it should be noted that the current estimated yearly cost of operation of the NTCRA 1 and NTCRA 2 Groundwater Extraction and Treatment System is $500,000 per year. With the implementation of the source control components of this remedy, in addition to on-going natural attenuation, the size of and the contaminant concentrations contained within the groundwater plumes are expected to decrease over time. These changes should make it possible to re-design a containment/treatment system that will require less robust treatment and/or a smaller containment area, resulting in significant savings not reflected in the present worth cost estimate for hydraulic containment ($10,293,000).

4. *The Selected Remedy Utilizes Permanent Solutions and Alternative Treatment or Resource Recovery Technologies to the Maximum Extent Practicable.*

From those alternatives that attain ARARs and are protective of human health and the environment, EPA identified the alternative for each of the six components that utilizes permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. This determination was made by deciding which provides the best balance of trade-offs in terms of 1) long-term effectiveness and permanence; 2) reduction of toxicity, mobility or volume through treatment; 3) short-term effectiveness; 4) implementability; and 5) cost. The balancing test emphasized long-term effectiveness and permanence and the reduction of toxicity, mobility and volume through treatment; and considered the preference for treatment as a principal element, the bias against off-site land disposal of untreated waste, and community and state acceptance. In EPA's judgment, the selected remedy provides the best balance of trade-offs, for the reasons discussed below.

Capping the contaminated soil in the Operations Area and along the Railroad Right-of-Way, in conjunction with institutional controls and long-term maintenance, offers the same overall protection of human health and environmental as excavation, at a fraction of the cost, and with fewer short-term impacts to on-site workers and the community. It can be designed to be consistent with future use as a recreational/residential area. The volume of contaminated soil and wetland soil to be excavated from the Cianci property and culvert sediment is relatively small, and placing it under the cap is less than half the cost of shipping it off site for disposal.

In-situ thermal treatment with MNA was selected for treating the overburden aquifer because it has the potential to remove the greatest amount of contaminants in the Overburden NAPL Area in the shortest period of time, at a comparatively moderate cost. This may translate to the most savings in containment and/or treatment of the dissolved phase plume over the long term. Based on expected reductions in contamination due to in-situ thermal treatment and MNA, modification of the configuration of the containment and/or treatment system, as appropriate, is anticipated, which may result in savings below the current estimated $500,000 yearly cost for operations of the NTCRA 1/2 Groundwater System. In-situ thermal is a complex technology to design, construct and operate, and will require careful planning, engineering and monitoring to minimize any short-term impacts to on-site workers and the community during implementation.

In-site thermal treatment was also selected to address the overburden NAPL area because it will be more effective in the long-term than hydraulic displacement with MNA or hydraulic displacement with enhanced bioremediation. Hydraulic displacement will remove up to 44% of the mobile NAPL in the Overburden NAPL Area, which leaves more than half to be addressed by MNA or enhanced bioremediation. Degradation rates three or ten times the current rate may not be realistic or attainable, which would impact the effectiveness of enhanced bioremediation. Hydraulic displacement with chemical oxidation would be effective, assuming the large amount of oxidant that would be required is commercially available, although its effectiveness may be impacted by the deposition of manganese oxides during the chemical oxidation step.

Institutional controls and MNA were selected for the Bedrock NAPL Area because it offers more overall protection of human health and the environment than the no-action alternative.

The hydraulic containment component offers greater long-term effectiveness for the overburden and bedrock groundwater than institutional controls and MNA along because it prevents the spread of groundwater with contaminants that greatly exceed cleanup levels.

Finally, CT DEP expressed its support for each of the components of the remedial action, with the exception of the institutional controls to prevent exposure to vapor emissions.

The community did not express support or disapproval of any components of the remedial action, but raised some questions that EPA has responded to in the Responsiveness Summary. The PRP Group was generally supportive of the selected remedy with the following exceptions. First, the PRP Group opposes the use of any active treatment technologies to address the Overburden NAPL Area, but in comparing these alternatives, has expressed a preference for hydraulic displacement and enhanced bioremediation. Second, the PRP Group supports the containment and treatment of contaminated groundwater until it is demonstrated that natural degradation balances the on-going dissolution of contaminants.

5. *The Selected Remedy Satisfies the Preference for Treatment Which Permanently and Significantly Reduces the Toxicity, Mobility or Volume of the Hazardous Substances as a Principal Element.*

By treating the Overburden NAPL Area with in-situ thermal treatment, the selected remedy reduces permanently and significantly the toxicity, mobility and volume of the contaminants in this area, which are the principal and on-going threat to groundwater quality at and adjacent to the Site.

By consolidating contaminated soil and wetland soil under a cap in the Operations Area, and capping the Railroad Right-of-Way, further reductions in mobility of an on-going threat to groundwater quality is achieved, although not through treatment.

By treating contaminated groundwater through hydraulic containment and treatment, as well as monitored natural attenuation, the selected remedy permanently and significantly reduces the toxicity, mobility and volume of contaminants in the groundwater. The NTCRA 1 and NTCRA 2 Groundwater Extraction and Treatment System has already reduced an estimated 12,500 pounds of VOCs at the Site.

By utilizing treatment as a significant portion of the remedy, the statutory preference for remedies that employ treatment as a principal element is satisfied.

6. *Five-Year Reviews of the Selected Remedy are Required.*

Because this remedy will result in hazardous substances remaining on-site above levels that allow for unlimited use and unrestricted exposure, a review will be conducted within five years after initiation of the remedial action, and every five years after that, to ensure that the remedy continues to provide adequate protection of human health and the environment.

N. DOCUMENTATION OF NO SIGNIFICANT CHANGES

EPA presented a proposed plan for a comprehensive site-wide remedy for the SRSNE Site on June 9, 2005. The source control portion of the preferred alternative included in-situ thermal treatment of NAPL in the overburden aquifer, monitored natural attenuation of the NAPL in the bedrock aquifer, and excavation, consolidation and capping of soil and wetland soils that pose human-health and ecological risks. The management of migration portion of the preferred alternative included containment and treatment of groundwater in the overburden and bedrock aquifers that exceeds cleanup levels, and monitored natural attenuation of a residual plume outside the capture zone until the groundwater is cleaned up to natural quality. The remedy also called for institutional controls to prevent human exposure to contaminated groundwater, and soil/wetland soil/vapor emissions, as well as NAPL in the subsurface, and, to prevent activities that are inconsistent with the proper maintenance of the cap. The remedy includes a monitoring program and, because waste is being left in place, reviews every five years to ensure the remedy remains protective.

Although no significant changes were made to the proposed plan, this ROD has specified certain measures to be taken in performance of the selected remedy, and provided for additional flexibility in performance, including, but not limited to: possible future adjustments to the NTCRA 1/2 Groundwater System, possible soil excavation, if appropriate, following performance of in-situ thermal treatment, and further delineation of the NAPL performance standards.

EPA reviewed all written and verbal comments submitted during the public comment period. It was determined that no significant changes to the remedy, as originally identified in the proposed plan, were necessary.

O. STATE ROLE

The Connecticut Department of Environmental Protection has reviewed the various alternatives and has indicated its support for the selected remedy. The State has also reviewed the Remedial Investigation, Risk Assessment and Feasibility Study to determine if the selected remedy is in compliance with applicable or relevant and appropriate state environmental and facility siting laws and regulations. The State of Connecticut concurs with all components of the remedy for the SRSNE Site with the exception of the institutional controls to prevent exposure to vapor emissions. A copy of the State's letter is attached as Appendix E.

PART 3
RESPONSIVENESS SUMMARY

Solvents Recovery Service of New England, Inc
Responsiveness Summary

SOLVENTS SERVICE OF NEW ENGLAND RESPONSIVIENESS SUMMARY

PREFACE

The U. S. Environmental Protection Agency (EPA) held a 60-day public comment period from June 9, 2005 through August 8, 2005 to provide an opportunity for public comment on the Proposed Plan to address contamination at the Solvents Recovery Service of New England Superfund Site (SRSNE) in Southington, CT. EPA prepared the Proposed Plan based on the results of the Remedial Investigation (RI) and Feasibility Study (FS). The RI was conducted to determine the nature and extent of contamination and to identify potential risks to human health and the environment. The FS examined and evaluated various options, or alternatives to address the contamination. The Proposed Plan presented EPA's preferred alternative for the Site, before the start of the comment period. All documents which were used in EPA's selection of the preferred alternative were placed in the site Administrative Record, which is available for public review at EPA Records Center, One Congress St, Boston, Massachusetts, and at the Southington Public Library, 255 Main Street, Southington, CT.

The purpose of this Responsiveness Summary is to document EPA's responses to the questions and comments raised during the public comment period. EPA considered all of the comments summarized in this document before selecting the final remedial alternative to address contamination at the Site.

The Responsiveness Summary is organized into the following sections:

A. **Overview of the Remedial Alternatives Considered in the FS and the Proposed Plan, including the Preferred Alternatives**—This section briefly outlines the remedial alternatives evaluated in the FS and the Proposed Plan, including EPA's preferred alternative.

B. **Site History and Background on Community Involvement and Concerns** This section provides a brief history of the site and an overview of community interests and concerns regarding the site.

C. **Summary of Comments Received During the Public Comment Period**—This section summarizes and provides EPA's responses to the oral and written comments received from the public during the comment period.

A OVERVIEW OF THE REMEDIAL ALTERNATIVES CONSIDERED IN THE FS AND THE PROPOSED PLAN

Using information gathered during the RI and the risk assessments, EPA identified several cleanup objectives for the SRSNE site.

The primary cleanup objectives are to mitigate, restore and/or prevent existing and future potential threats to human health and/or the environment from soil and wetland soil, overburden and bedrock groundwater, and non-aqueous phase liquid or NAPL. Cleanup levels for soil and groundwater are set at levels that EPA and Connecticut Department of Environmental Protection (CT DEP) consider protective of human health and the environment.

After identifying the cleanup objectives, EPA developed and evaluated potential cleanup alternatives to address site contamination. The FS describes the cleanup alternatives and the criteria EPA used to narrow the potential alternatives to control sources of contamination and address migration of contaminants.

EPA's Selected Remedy includes the following features:

- In-situ thermal treatment of contaminants in the overburden NAPL area until site-specific NAPL performance standards are achieved;
- Excavate, consolidate and cap soil and wetland soil that exceed soil cleanup levels;
- Capture and treat contaminated groundwater in both the overburden and bedrock aquifers;
- Over time, modification of the configuration of the on-site groundwater extraction and treatment system, as appropriate;
- Monitored natural attenuation;
- Institutional controls;
- Long term operation and maintenance;
- Five year reviews.

In the Feasibility Study Report, the estimated net present worth of the remedy is $29,260,000. This alternative was selected because it achieved the best balance among the criteria which EPA is required by law to evaluate cleanup options. The selected remedy provides an effective reduction in human health risk through a combination of source control, management of migration and treatment technologies. The remedy will attain Federal and State cleanup standards, reduce the volume and toxicity of contaminated material and utilize permanent solutions to the extent possible.

All of the remedial alternatives considered for implementation at the site are described in the Record of Decision and are discussed in detail in the FS.

A. BACKGROUND AND COMMUNITY INVOLVEMENT AND CONCERNS.

Site History

The SRSNE Site is located in the Town of Southington, Connecticut, in Hartford County, approximately 15 miles southwest of the City of Hartford. It is located on Lazy Lane, just off Route 10 (Queen Street), and adjacent to the Quinnipiac River.

From 1955 to 1991, Solvents Recovery Service, which later became Solvents Recovery Service of New England, Inc. (SRSNE), operated as a spent solvent processing and reclamation facility at the site. Millions of gallons of waste solvents and oils were handled, stored and processed in the Operations Area. Spent solvents were processed in a distillation column. Contaminant-laden distillation process water was channeled into a drainage ditch along the Railroad Right-of-Way and into a buried culvert that discharged to the Quinnipiac River. Samples of solvents appear to have been discarded in a leach field. The still bottoms and liquid waste by-products were first disposed of in at least two unlined lagoons in the Operations Area, and later burned in an open pit. Overflow from the lagoons drained onto the neighboring Cianci property. Ash from the burn pit was used as fill in the Operations Area. After 1976, the solvents were blended to create a fuel product for use in rotary kilns. There are numerous documented instances of leaks and spills to bare ground. None of the original facility structures remain.

After 1976, operations at SRSNE focused on blending the sludge and still bottoms with flammable liquid wastes for use as a waste-fuel product for rotary kilns. In 1988, the batch stills used in the distillation process were removed, and fuel blending became the primary enterprise of the facility until it closed in 1991.

Past operating practices, such as the use of lagoons and a leach field, contributed to contamination on the SRSNE Operations Area and surrounding properties. Poor housekeeping from a variety of practices, including the unloading and loading of tank trucks, the transfer of spent solvents to storage tanks, as well as the improper handling and storage of drums, resulted in numerous leaks and spills to the bare ground and into the underlying aquifer.

The presence of volatile organic compounds (VOCs) in drinking water forced the closing of the Town of Southington's Production Well No. 4 in 1976, and Production Well No. 6 in 1979. Subsequent environmental investigations revealed that SRSNE was a major source of VOC contamination to the groundwater in this area.

From 1983 to 1988, EPA and the State of Connecticut took enforcement actions to compel SRSNE to cleanup the facility and its operations. SRSNE failed to comply with these enforcement efforts. In 1992, EPA removed soil contaminated with volatile organic compounds (VOCs) and polychlorinated biphenyls (PCBs) from a drainage ditch along the eastern side of the Operations Area. Chemicals stored on site were also removed.

From 1995 to 2005, the Potentially Responsible Parties' Group (PRP Group-businesses and individuals that sent waste material to SRSNE) installed and operated a groundwater and containment system for the overburden and bedrock aquifers. In addition, they completed various remedial investigations and feasibility studies.

History of Community Involvement

Prior to the PRP Group undertaking actions under the direction of EPA and CT DEP to contain and treat contaminated groundwater, community concern and involvement was high. At this time, community participation can be characterized as moderate to low. EPA, CT DEP and the SRSNE PRP Group have kept the community and other interested parties apprised of site activities through informational meetings, fact sheets, press releases, open houses, and public meetings.

C. SUMMARY OF PUBLIC COMMENTS AND AGENCY RESPONSES

This Responsiveness Summary addresses comments pertaining to the Proposed Plan that were received by EPA during the 60-day public comment period (June 9 to August 8, 2005). The Proposed Plan was mailed to 271 members of the general public, elected officials and local media, and 454 individuals with some association to the SRSNE PRP Group. Nine sets of written comments were received – five from the general public, one from Elsie Patton on behalf of CT DEP, and three on behalf of the 250-300 members of the SRSNE PRP Group, one of which was a request to extend the comment period from 30 days to 60 days. Four individuals submitted verbal comments at the public hearing on June 30, 2005, including Gus Moody on behalf of the SRSNE PRP Group.

What follows are EPA's responses to significant comments that pertain to the remedial action. Where possible, EPA has grouped similar comments, and prepared a single response. A copy of the transcript of the public hearing and copies of all written comments received during the 60-day comment period can be found in the Administrative Record.

1. Request for Extension to the Comment Period

One request was made to extend the comment period by 30 days. This request was made by the PRP Group.

EPA Response to Comment 1

On June 29, 2005, EPA issued a press release to announce that the comment period had been extended by 30 days. The 60-day comment period ran from June 9 thru August 8, 2005.

2. State Support for EPA's Preferred Remedy

Elsie Patton, Director of Planning and Standards, Bureau of Waste Management, on behalf of the CT DEP, submitted comments in support of the following components of EPA's proposed remedy:

- In-situ thermal treatment of the overburden aquifer;
- Excavation, consolidation and capping of contaminated soils and wetland soils on site;
- Pumping, treating and monitoring groundwater, and restricting use of contaminated groundwater combined with monitored natural attenuation; and
- Supplemental groundwater containment if municipal wells in the Curtiss Street Town Well Field are activated by the Town of Southington in the future.

CT DEP also states that it is their belief that in-situ thermal treatment of the overburden aquifer will result in the greatest removal of non-aqueous phase liquid (NAPL) from the groundwater in the shortest time frame.

EPA Response to Comment 2

After review of all the comments received, EPA agrees that the above components of the proposed remedy should be selected for the SRSNE Site. Like the State of Connecticut, EPA believes that in-situ thermal treatment of the overburden aquifer will result in the greatest removal of NAPL, which is the primary threat to groundwater quality at this site, in the shortest time frame.

The State's comments did not include a specific discussion of EPA's proposed institutional controls that, among other things, would prevent human exposure to vapors emanating from the subsurface. Following receipt of the State's comments, and further discussions with the State, the State decided not to concur in this component of the remedy. EPA expects to engage in further discussion with the State regarding the planned institutional controls following issuance of the Record of Decision.

3. Comments Offering Alternative Remedies

Three commenters offered different remedies to address the contamination at the SRSNE Site. These include:

- Continuation of the existing groundwater containment and treatment system only;
- Excavation of the contaminated materials;
- Capping without in-situ thermal treatment of the overburden;
- Sealing the bedrock and reclassifying the groundwater; and
- Hydraulic displacement and enhanced bioremediation of the NAPL in the overburden aquifer instead of in-situ thermal treatment.

EPA Response to Comment 3

With the exception of sealing the bedrock and reclassifying the groundwater, all of the alternatives suggested were evaluated and carefully considered during the Feasibility Study (FS). EPA feels that the selected remedy, which is the remedy that was proposed in May 2005, provides both short-term and long-term protection of human health and the environment; attains all federal and state applicable or relevant and appropriate environmental requirements; reduces the toxicity, mobility and volume of contamination at the site; is cost effective and utilizes permanent solutions to the maximum extent practicable. Reclassification of the groundwater is discussed further in EPA's response to comments 8 and 17.

4. "Strategic Vision" of the PRP Group

The PRP Group submitted as a comment their "strategic vision" for the SRSNE Site which states "in relevant part as follows: 'The ultimate outcome of the PRPs' involvement at the SRSNE Site is that the site is remediated in a cost-effective manner to pose no unacceptable risk to human health or the environment, future use of the site is controlled to prevent future risks, and the public understands the issues involved and trusts the actions of the PRPs and the government.

EPA Response to Comment 4

EPA acknowledges that the PRP Group has done a considerable amount of work at the Site pursuant to two Administrative Orders on Consent (AOCs) including performance of response actions to contain and treat contaminated groundwater at the Site, completion of the remedial investigation and preparation of a feasibility study. However, in making a remedy decision, EPA is trusted with the authority to make decisions regarding the SRSNE Site on behalf of the United States. As such, EPA is required to meet the requirements of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA, or "Superfund") and the

National Contingency Plan (NCP) and is not bound by the strategic vision of the SRSNE PRP Group.

5. Comment that The Site Poses No Current Risk to Public Health

The PRP Group states that their remedial actions and investigation over the last decade have resulted in a stable, fully-contained and well-characterized site that poses no current risk to public health. They also identify as a "key issue" what, if any, remedial measures in addition to those already implemented at the site are appropriate.

EPA Response to Comment 5

EPA also believes that the SRSNE Site poses no current risk to human health, as a result of early response actions taken at the Site by both the PRP Group and EPA. Prior to the PRP Group's involvement with the Site beginning in 1994, EPA conducted emergency removals of PCB-contaminated soil and hazardous chemicals in the on-site laboratory. The PRP Group has implemented two non-time critical removal actions to contain highly-contaminated groundwater in the overburden and bedrock aquifers. For the vast majority of Superfund sites listed on the NPL, there is no current human health risk, and if one is identified during site characterization activities, than it is typically addressed by EPA's removal program. The main goal of Superfund's remedial program is to prevent future risk in the long term to human health as well as ecological receptors. This approach of phasing actions – early response to address more immediate threats and long-term remediation to address future risks – is consistent with the NCP. The contaminant concentrations at the SRSNE site are tens, hundreds and in some cases thousands of times their regulatory limits resulting in an unacceptable human health risk (with excess cancer risks calculated to be as high as unity (every person who drinks the water would potentially get cancer over the course of his or her lifetime), and potential exposures estimated at 700 times greater than benchmarks for the protections of non-cancer). There are few Sites in New England, and possibly the United States, that if left unaddressed, would pose a greater risk to human health and the environment. At least 120,000 gallons of highly-mobile NAPL (1,000,000 pounds) are estimated to reside in the overburden aquifer, upgradient of a potential public drinking supply. The current response actions at the site (i.e., NTCRA 1 and NTCRA 2) are preventing the groundwater plume from getting larger, but are not treating the soil and NAPL in the subsurface.

6. PRPs Express Support for Many Components of the Proposed Remedy

The PRP Group comments indicate that they agree with many of the components of EPA's proposed remedy, including the following: the Operations Area and adjacent railroad grade soils should be capped; soil contaminated with PAHs, PCBs, and metals on the Cianci property should be placed under the cap; the culvert crossing the Cianci property should be replaced, and the wetland soils at the culvert outfall should be placed under the cap; the future use of the groundwater should be restricted; and contaminated groundwater should be contained and treated until it is demonstrated that natural degradation processes balance the ongoing dissolution of contaminants.

EPA Response to Comment 6

After review of all the comments received, EPA agrees that these components of the remedy in the Proposed Plan should be selected for the SRSNE Site. With respect to groundwater containment, EPA's ROD specifies that containment will continue in order to ensure that contaminated groundwater does not migrate until acceptable levels as defined in the ROD are attained. EPA's selected remedy, of course, also includes other components. To the extent that the PRP Group has commented on other components of the remedy, such as, thermal treatment of the overburden NAPL area, EPA's responses to such comments are addressed below (see, e.g., EPA's response to comments 9, 11, and 12).

7. PRP Concern that EPA Has Not Complied with Public Participation Requirements of CERCLA and the NCP

The PRP Group expressed concern that public participation requirements of CERCLA and the NCP were not met for a number of reasons:

a) Key documents were not included in the administrative record;

b) Documents were not placed in record contemporaneously (i.e., at the time they were written);

c) Lack of communication with public regarding on-going technical discussions with the PRP Group; and

d) PRP Group was negatively impacted by having to research and locate many materials EPA should have placed in the administrative record.

EPA Response to Comment 7

a) As part of their comments, the PRP Group provided a computer disk (CD) containing 36 documents that they believe should have been included in the administrative record. Because EPA adds all comments received during the public comment period to the administrative record, these documents that were submitted along with the PRP Group's comments have now been added to the administrative record.

EPA also reviewed the record that was available to the public at the time of issuance of the Proposed Plan in order to evaluate the PRP Group's concern that the Agency failed to comply with public participation requirements of CERCLA and the NCP because these documents were not previously included in the record. We conclude that the Agency's record as available at the time of the public comment period contained all of the proper documents.

Most of the "key" documents included on the PRP Group's computer disk consist of PRP drafts of the FS, or, correspondence between EPA and the PRP Group regarding PRP drafts of the FS. EPA never approved these draft versions of the FS, in part because they were incomplete with respect to source reduction, contained inaccuracies, unsupportable technical information, unsupportable cost estimates, and were not written in plain English. EPA did not use these drafts of the FS as they were supplied by the PRP Group for remedy selection purposes, so, under the NCP, EPA is not required to include these draft documents in the administrative record. Moreover, the public could not have provided meaningful comment based on a review of these draft documents or correspondence regarding draft documents. The final FS was included in the administrative record.

Similarly, several documents on the PRP Group's CD consist of draft RI deliverables, and correspondence between EPA and the PRP Group regarding PRP drafts of RI deliverables. These documents were not relevant to remedy selection because the draft documents were incomplete or contained inaccuracies, nor could the public have provided meaningful comment based on a review of these drafts or correspondence regarding these drafts. The final RI deliverables were included in the administrative record.

Other documents included letters from EPA counsel and PRP Group counsel. These are enforcement related in that they dealt with the RI/FS process, for example, responding to the PRP Group's concerns about EPA's use of redline-strikeout format in reviewing PRP deliverables (see EPA's response to comment 10). None of the documents concerning the RI/FS process were relevant to remedy selection.

Another document identified by the PRP Group as belonging in the administrative record, which was mistakenly attributed to EPA, presents a number of "analysis factors" that the PRP Group was suggesting that EPA use in place of or in addition to the NCP-mandated nine criteria for remedy selection. Because EPA neither considered nor relied on these analysis factors in selecting a remedy, it is not appropriate for inclusion in the administrative record.

Still other documents are studies performed by the PRP Group in 1994 under the administrative consent order for completion of the first non-time critical removal action (or NTCRA) at the SRSNE Site. Again, these documents are irrelevant to remedy selection. The results of monitoring that has been done to show compliance of the NTCRA 1 (containment of contaminated overburden groundwater) and NTCRA 2 (containment of contaminated bedrock groundwater) extraction and treatment systems and how the groundwater plumes have been changing in terms of concentrations, shape and areal extent, over time, are relevant and were included in the administrative record. These reports are Demonstration of Compliance Reports No. 1 thru No. 56 (except Nos. 38, 39 and 40) which cover the time period 1995 to

2004, and, Interim Monitoring Reports No. 1 thru No. 13 (except Nos. 6, 8, 9 and 10) which cover the time period 1999 to the first half of 2005.

Another document that EPA did not consider or rely on for the remedy selection is a letter from CT DEP to the PRP Group's consultant, BBL, regarding the PRP Group's proposed use of a specific monitoring well, TW-12, as a background well for the purpose of establishing groundwater cleanup levels. During discussions between EPA, CT DEP and the PRP Group in the early months of 2005, the Agencies were informed that well TW-12 was no longer a viable monitoring well. Groundwater cleanup levels in the ROD are based on EPA risk numbers, CT RSRs, and in the case of inorganics, a background study to be conducted during design. In short, this document was also not relevant to remedy selection.

The PRP Group also expressed concern that a 2002 document that outlines a process for distinguishing outwash, ablation till and basal till within the potential overburden NAPL zone should be in the administrative record but is not. The outcome of this evaluation to distinguish outwash, ablation till and basal till is reflected in the report of the NAPL Delineation Pilot Study conducted in November 2003 and the May 2005 FS, both of which are in the administrative record. As a result, EPA believes the appropriate information was included in the administrative record file.

EPA does not appear to have in its files three documents included on the PRP Group's CD as they were not authored by or addressed to EPA, nor was EPA copied. One of these is a PRP Group internal memorandum.

The PRP Group misidentified two other documents as missing from the administrative record when in fact they are in the administrative record with the document identification numbers 4875 and 5624.

Of the 36 documents included on the PRP Group's CD, there is a three-page document that arguably could have been included in the 14,000 page administrative record. This is EPA's approval in 1996 of the PRP Group's RI workplan. Because the 1998 RI report is included in the administrative record, EPA believes that this oversight was not substantive (i.e., it was clear from the record including the proposed plan that the 1998 RI was a final EPA-approved document).

At the time of issuance of the proposed plan, EPA's administrative record included nearly 400 documents (approximately 14,000 pages). Among these were numerous documents that EPA added in response to the PRP Group's request that they be included in the administrative record. The two most notable ones are the 1999 Environ report entitled Remedy Implementation Risk Evaluation, and Risks of Vertical Mobilization of DNAPL during Thermal Remediation (Appendix W of the May 2005 FS). EPA believes that that PRP Group requested that these documents be placed in the administrative record specifically because they concern risks associated with various remedial alternatives, including, but not limited to, the risks of vapor release and contaminant migration associated with certain thermal remedies.

Although EPA did not agree with all the conclusions presented in these documents, EPA did consider each during remedy selection, and EPA properly added these documents to the administrative record.

EPA's administrative record as a whole, including the final FS and Proposed Plan, makes plain that in-situ thermal treatment of the Overburden NAPL Area contains a short-term risk from the potential escape of emissions during construction and operation, as well as a risk of downward mobilization of contaminants into the bedrock. (See, e.g., Proposed Plan at 17, 20, 21, and 22). Thus, the public had a fair opportunity to consider the issues that the PRP Group claims were somehow excluded from the record.

Finally, EPA guidance states where PRPs are performing the RI/FS, the PRPs must submit all technical information to EPA, but EPA is responsible for decisions on what documents comprise the administrative record. PRPs cannot be responsible for decisions on what documents comprise the administrative record, because of, "among other things, the potential for a conflict of interest." See Final Guidance on Administrative Records for Selecting CERCLA Response Actions (1990), page 32. EPA reviewed the voluminous documentation that was generated during the course of the RI/FS and included in the record those documents that it considered or relied on, including those documents that it considered but ultimately rejected. Draft PRP documents that contained inaccuracies, unsupportable technical information, were irrelevant or repetitious of information contained elsewhere were properly excluded from the record.

b) The PRP Group also comments that EPA did not place documents into the record contemporaneously, i.e., at the time that these documents were written. Since the early 1990's, EPA has placed numerous documents into the administrative record, including EPA's remedial investigation (RI) report and the PRP Group's remedial investigation report, prepared after the PRP Group agreed to perform the remainder of the remedial investigation in 1997. EPA's RI report (Volumes 1-4, TetraTech NUS) was placed in both repositories shortly after it was published in 1994 and the PRP Group's RI report (Volumes 1-2, BBL) was similarly placed in both repositories shortly after it was published in June 1998. These were the most comprehensive final technical documents available concerning the Site prior to issuance of the final FS in 2005. The baseline human-health and ecological risk assessments are included in 1994 RI Report.

   The Agency acknowledges that for several years after issuance of the PRP Group's RI report in 1998, it did not add a significant number of records to the administrative record file. During this period, EPA and the PRP Group were working on the FS, which was not finalized until May 2005, shortly before issuance of the Proposed Plan. As soon as the FS was final, EPA made it available to the public. It is not unusual for the number of additions to the administrative record file to decrease during the time EPA is working on a draft document, particularly after issuance of the RI. This is due, in part, to the fact that EPA does not generally include draft documents in the administrative record.

Even if it would have been advisable for EPA to have prepared an update or a fact sheet for the public during the time before the final FS was issued, or if there were some deliverables that were finalized during this time period that could have been made available (such as quarterly sampling results that demonstrated that NTCRA 1/2 Groundwater System continued to perform successfully, update to the human-health risk assessment, or results of follow-up soil sampling on the Cianci property), EPA does not believe that failure to take these actions violated the public participation requirements of CERCLA or the NCP, or in any way harmed the public participation process at this Site.

In general, not all communities desire or request regular input in the Superfund process. See 55 Fed. Reg. 8767 (1990) ("the degree of appropriate [public] involvement will vary with the characteristics of the site and the nature of the response."). After the SRSNE facility closed and the NTCRA 1/2 system was up and operational, the degree of public inquiries to EPA about the Site greatly diminished. During the time that EPA and PRP Group were working on the FS, neither the Town nor members of the community requested that EPA produce a written update or fact sheets or provide any other information concerning developments at the Site. EPA nevertheless provided outreach to the community during this period, as explained in response 7.c.

As the first step in the remedy selection process, EPA identifies its preferred remedy and presents it to the public in a Proposed Plan. See 40 C.F.R. § 300.430(f)(2). The purpose of the Proposed Plan is to supplement the RI/FS and provide the public with a reasonable opportunity to comment. See 40 C.F.R. § 300.430(f)(2). EPA's Proposed Plan for this Site is written in plain English, and provides a relatively easy to understand description of EPA's preferred alternative, including in-situ thermal treatment, as well as the other alternatives under consideration, in comparison to the comprehensive more technical evaluation provided in the FS itself. See, e.g., Proposed Plan at 22 (for a three paragraph description on: "What are in situ thermal treatment methods? How do they work? Why use in situ thermal treatment?") The Proposed Plan makes plain that in-situ thermal treatment technology includes a risk of vapor emissions during construction and operation of this technology, and a risk of downward mobilization of NAPL contaminants. See Proposed Plan at 17, 20, 21, and 22. EPA mailed a copy of the Proposed Plan to 271 members of the community including the general public, elected officials and local media. EPA discussed these risks at an informational meeting on June 8, 2005, including a discussion of how these risks will be addressed. Other than the PRP Group, no one requested an extension of the thirty-day public comment period. Other than the PRP Group, no one submitted comments in which they expressed a concern about the risks of vapor emissions or downward migration of contaminants; no one indicated that they were confused about the proposed remedy because it was too complicated or complex; and no one expressed concern about the public participation provided by EPA into the remedy selection process.

For these reasons, EPA concludes (1) that the Agency complied with CERCLA and NCP requirements to add documents to the record contemporaneously, including but not limited to the EPA RI Report which contain the baseline human-health and ecological risk assessment and the PRP Group RI Report that were placed in the record file in Boston and Southington in 1994 and 1998, respectively; (2) that few documents were finalized and ready to be placed in the administrative record file during the time period of concern to the PRP Group; (3) that those documents that were finalized during the period of concern were placed in the administrative record in advance of the public comment period, but to the extent that they were not placed in the administrative record contemporaneously, these documents were generally supplemental in nature (i.e., they generally supplemented the large amount of data that had already been placed in the administrative record file and was available to the public); and (4) that the community had a meaningful opportunity to comment on EPA's preferred alternative and the other alternatives considered in the FS, including but not limited to the risk of vapor emissions and the potential for downward migration during performance of EPA's preferred alternative.

c) In the view of the PRP Group, there has been a lack of public participation at the SRSNE Site. EPA has addressed general concerns about public participation in the Agency's responses to comments, as provided in parts 7.a. and 7.b., above. However, EPA adds the following:

    EPA has conducted public participation outreach activities in the Town of Southington throughout EPA's involvement at the SRSNE Site. In the early years when the SRSNE facility was in operation, community concern was high. However, since the SRSNE facility closed in 1991, and groundwater containment was implemented in 1995, the concerns expressed by the community and the Town about the Site have diminished significantly.

    The PRP Group focuses their comments on the time period since 1998. Since 1997, Jim Murphy has served as EPA's Community Involvement Coordinator for the SRSNE Site and the Old Southington Landfill Site, both of which are located in the Town of Southington (a community of about 40,000 people). On a regular basis since 1997, Jim Murphy has visited the Town, spoken with the Town Manager and other representatives of the Town, visited or viewed the SRSNE Site and the surrounding area, visited the library in the Town of Southington which is the local repository for the administrative record for both SRSNE and Old Southington, spoken with the Town librarians to determine whether the library has seen a lot of interest in viewing the SRSNE and Old Southington administrative record files, and visited the homes of community members that live near both Sites.

Notwithstanding these continuing efforts, community participation has been moderate to low since the start-up of the NTCRA 1 groundwater containment and treatment system in 1995 as shown by the following examples. In July 1991, EPA awarded the community group SAFE (Southington Association for the Environment) a technical assistance grant to help them with their review of Site documents which can be highly-technical in nature. The initial amount of the award was $49,600. In September 1998, SAFE received an additional $25,000. EPA did not receive comments from SAFE on any major documents, including the PRP Group's 1998 remedial investigation report. In October 2003, EPA closed out the grant, which had a remaining balance of close to $34,000 that the community group had not spent, due to inactivity. This is indicative of the trend EPA has observed at the Site - a high level of interest while SRSNE was an operating facility which began to diminish with the implementation of groundwater containment and treatment in 1995.

In June, 1998, EPA sent out a mailing to approximately 950 residents of Southington and other interested parties to invite them to a public meeting concerning the SRSNE Site. A notice regarding this meeting was also placed in the local newspaper, hand delivered to residents in the immediate vicinity of the Site, and posted in the town hall and public library. Only a small number of community members attended the meeting (two residents and one local reporter signed the sign-in sheet). A 10-page fact sheet was prepared for the meeting and was mailed to those on the Site mailing list following the meeting.

During the first 6 months of 1999, Jim Murphy made at least 4 trips to Southington to introduce a new Remedial Project Manager to town officials and local residents.

In August 1999, the PRP Group held an "open house" at the SRSNE Site. EPA sent an invitation to the open house to approximately 550 persons. Less than 10 residents and members of the media attended the event. A 19-page fact sheet was also made available at the open house. Later that year in October, EPA mailed and hand delivered a flyer announcing the beginning of environmental field work activities at the SRSNE Site.

During 2000-2001, EPA held numerous meetings with town officials and two public meetings concerning remedial action activity at the Old Southington Landfill. Notice of all public meetings was sent to residents in the vicinity of SRSNE. While making approximately 12 trips to Southington during 2000-2001, Jim Murphy routinely drove by the SRSNE site and occasionally stopped to speak to local residents at both Southington Superfund sites.

In 2003, Jim Murphy and others interviewed the Town Manager and four other Town officials, as well as three members of the community, in connection with EPA's Preliminary Reuse Assessment. At that time, the only concern expressed by either the Town or members of the community was that they were anxious to have the cleanup decision finalized.

EPA provided notice to the community concerning the public information meeting on June 8, 2005, and the public hearing on June 30, 2005, by mailing 271 copies of the Proposed Plan to local residents, officials, and media, and to 454 individuals with some association with the PRP Group. Copies of the plan were also distributed door-to-door along Lazy Lane and made available to the general public at the Southington Library and Southington Town Hall. EPA staff contacted local print media and were interviewed by reporters from the Meriden Record-Journal and the Waterbury Republican-American newspapers. Several articles about EPA's preferred alternative and both public meetings appeared in the local press. In addition to representatives of the PRP Group and the regulatory agencies, approximately eight citizens, town officials, and media members attended the June 8 meeting; approximately 15 citizens, town officials, and media members attended the public hearing on June 30.

Jim Murphy has been involved with the SRSNE Site for the last eight years, and Karen Lumino, the Remedial Project Manager, for the last seven years. At no point during their involvement with the SRSNE Site has either one received any written or verbal requests for additional public participation from the Town or the community (e.g., requests for meetings with EPA, additional documentation, or greater public input) nor have they received complaints from the Town or the community that they are dissatisfied with EPA's public participation efforts.

For the many reasons stated above, EPA believes that its effort is commensurate with the public's interest in the SRSNE Site and as such, has satisfied its public participation responsibilities.

d) Finally, the PRP Group states that it was negatively impacted by having to research and locate many materials that EPA should have placed in the administrative record. Because EPA does not agree that any of the documents on the PRP Group's CD should have been placed in the administrative record, EPA does not believe that its actions negatively impacted the PRP Group.

8. Comments Regarding Potential Future Use of the Site and EPA's Response to Public Concerns and Desires as Expressed in the Preliminary Reuse Assessment

Two sets of comments were received that pertain to the future reuse of the SRSNE Site.

The first commenter, the PRP Group, is uncomfortable with the selected remedy because in its opinion, it may not address public concerns and desires concerning reuse of the Site as expressed during interviews with EPA for the *Preliminary Reuse*

Assessment (EPA, September 2003). In particular, they feel that in-situ thermal treatment is akin to a "reuse that would ... result in air emissions" which neighboring residents oppose, and, would result in a significant delay in returning the site to a beneficial reuse. The PRP Group further opines that either of the remedies that they prefer, immediate capping with TI determination and groundwater reclassification with no active NAPL remediation, or, hydraulic displacement of the NAPL zone, would return the Site to the expected future reuse sooner than EPA's selected remedy.

The second commenter asked when the conversion of the railroad easement to a bike path will be completed.

EPA Response to Comment 8

EPA's selected remedy addresses the concerns and is fully consistent with the desires raised by the community. The first commenter (the PRP Group) appears to misunderstand the purpose of EPA's reuse assessment. The purpose of the reuse assessment is to assess the likely long-term use and reuse scenarios for the property, not to assess the use of the property during the relatively short period of time that cleanup activities will be on-going.

Based upon the community's reuse plans, EPA has decided to clean up the Site so that it would be acceptable for recreational use in the future. EPA's decision to clean up the property to recreational standards is consistent with the Site's potential use as a component of the rails-to-trails project endorsed by the community, town officials, and the State of Connecticut, which owns the railroad easement. It is the understanding of the Agency that the PRP Group also supports the reuse of the Site for the rails-to-trails project.

The PRPs also state that the selected remedy would adversely impact the time to complete the proposed rails-to-trails project, a key concern of the community. The selection of in-situ thermal technology over other treatment technologies has little impact on the time frame to complete the project. With the exception of complete excavation which would allow the Site to be reused in the shortest amount of time, the remaining treatment technologies could be implemented in about the same amount of time (6 months to two years). The remedy proposed by the commenter as being the "fastest route" to rails-to-trails conversion is wholly dependent on reclassification of the groundwater at the SRSNE site. Connecticut however has not reclassified the groundwater at the Site and has expressed support for EPA's decision to cleanup the Site to drinking water standards at this Site. While it is true that a request for reclassification of the groundwater in the vicinity of the SRSNE site to Class GB could be prepared and submitted, EPA believes it is unlikely that such a request would be approved by CT DEP, as explained in EPA's response to comment 17.

In response to the second commenter, EPA expects to have the site ready for construction of the bike path in approximately four to six years from implementation of the remedy. The actual construction of the bike path is not a component of this remedy, nor could it be a component of any remedial action taken under the Superfund program as it is viewed as an enhancement and is not necessary for the protection of human health and the environment. However, EPA does attempt to leave Superfund sites in a condition that supports the anticipated future use of the site. The remedy selected for the SRSNE site supports the bike path in two ways. First, the cleanup levels selected for soil are protective of adults and children who may come in direct contact with soils at the Site under a recreational reuse scenario. Second, the cap that will be constructed along the railroad easement will be designed, built and maintained in a manner to allow for reuse as a bike path.

9. Comments Regarding EPA's Response to Community Concerns Regarding Air Emissions Associated with the Selected Remedy

The PRP Group states that the opposition of the residents living near the SRSNE Site to any remedial alternative that results in air emissions cannot be overstated, and, that EPA dismissed these concerns without providing the residents with sufficient information regarding the emissions issues. The PRP Group also states that community concern about the risks associated with air emissions from the selected remedy will be even greater when they learn that EPA screened out similar thermal options in the June 2005 feasibility study for the Durham Meadows site, also in Connecticut, due to "volatilization concerns to nearby inhalation receptors."

The commenter also asked EPA to provide the basis upon which it draws the conclusion that in-situ thermal treatment can be operated safely at SRSNE and questions why EPA did not discuss the experiences at the Silresim Site and conclusions of the Durham Meadows FS.

A second commenter asked if in-situ thermal technology had been used elsewhere in the USA, and if so, where and how often.

EPA Response to Comment 9

EPA disagrees with the PRP Group's comment that EPA dismissed the public's concerns about air emissions. EPA fully recognizes the seriousness of the public's concern about the potential for air emissions, despite the fact that the only comment received on this issue came from PRP Group. EPA shares these concerns. As a condition of remedy selection, EPA considered only remedial alternatives that would comply with Connecticut's standards for regulating air emissions, which are ARARs for the selected remedy. Our understanding is that the PRP Group has already received a preliminary determination from at least one thermal vendor that Connecticut discharge criteria for volatile organic compounds can be met for this Site. The specific components of the in-situ thermal technology designed to reduce/eliminate emissions, and the potential risk to neighboring residents include the following:

a) A thermal oxidizer, potentially with vapor phase carbon adsorption canisters on the effluent end, will be used to destroy or trap the contaminants that are recovered from the ground in the vapor phase. Emissions from the thermal oxidizer will be monitored to ensure that they meet Connecticut discharge requirements.

b) Fugitive emissions will be controlled by maintaining a vacuum on the subsurface throughout the heating, and for a period after heating to ensure that vapors are not emitted that are above Connecticut emissions standards. A vapor barrier will be installed on the surface of the treatment area and it will extend approximately 10 feet beyond the limits of the area to be treated. Backup blowers and generators will be used to ensure that vapors are captured in case of a failure of the primary blower or a general power failure.

c) Monitoring will be conducted during installation and operation of the thermal remediation system. At a minimum, the monitoring program will include monitoring of breathing space of on-site workers during all invasive activities such as drilling; perimeter air monitoring throughout construction, heating and system cool-down; and monitoring of the effluent from the thermal oxidizer as required by state law.

The methods described above for reducing/eliminating the potential risk from air emissions are standard operating procedures for in-situ thermal projects. In-situ thermal desorption was used to recover contaminants similar to those at the SRSNE Site (PCE) from an area immediately adjacent to a residential area. (A picture of this installation was shown at the June 8, 2005, public meeting.) The system operated for approximately eight months, and air monitoring was performed at least once a day during construction and operation. Air concentrations at the perimeter of the treatment area never exceeded acceptable levels. At Air Force Plant 4, Fort Worth, Texas, electrical resistance heating was used to remediate contaminants similar to those at the SRSNE Site (TCE) from underneath an occupied building. Continuous air monitoring was performed within the building during operation of the remediation system and no air emissions of concern were recorded.

EPA does not agree that that insufficient information was given to the public regarding emission issues. Prior to mailing the proposed plan, EPA went door-to-door in the immediate neighborhood of the site to inform residents of EPA's preferred alternative and to notify them of the upcoming public comment period. EPA's proposed plan clearly states that in-situ thermal technology has potentially greater short-term impacts resulting from the complexity of the technology and the potential for escape of emissions during implementation. At the public information meeting on June 8, 2005, the day before the comment period began, EPA's expert on in-situ thermal technologies, Dr. Eva Davis, of the Robert S. Kerr Environmental Research Center, was brought in from Ada, Oklahoma, to discuss the potential risks from use of this technology and the engineering and monitoring that has been successfully employed at other sites – including those immediately adjacent to residential properties, main transportation arteries or even under occupied buildings – to safeguard the public.

In addition, although EPA did not agree with the report, EPA included in the Administrative Record a report authored by Environ Corporation for the SRSNE PRP Group entitled *Remedy Implementation Risk Evaluation* (November 1999). This report laid out the PRP Group's concerns regarding emissions from the site. As a result, the community has access to "both sides" of the discussion regarding this issue. As stated earlier, no comments were received from the general public expressing concern about the risks associated with vapors from the use of in-situ thermal treatment at the SRSNE site.

As to the matter of similar in-situ thermal technologies being screened out from the feasibility study for the Durham Meadows site due to "volatilization concerns to nearby inhalation receptors," this is a true statement although presented as it was by the commenter as a stand-alone conclusion without the benefit of the specifics of the site is misleading. In-situ thermal technologies were considered for treatment of the contamination at Merriam Manufacturing (not Durham Manufacturing). However, unlike at SRSNE where the contamination targeted for treatment with in-situ thermal is at tens of feet below the ground surface, most of the contamination at Merriam Manufacturing is at a depth of 0 – 1 foot, essentially at the soil surface, and thermal remediation is not applicable. Generally speaking, the further from the ground surface the contamination is, the easier it is to run an in-situ thermal system without releases of volatilized organics into the atmosphere. Thus, EPA's decision to screen out in-situ thermal technologies at Merriam is not relevant to the SRSNE Site. It is however interesting to note that at one location at the Merriam Manufacturing facility where contamination exists at depth, EPA's proposed remedy calls for soil vapor extraction, a technology that like in-situ thermal, facilitates the removal of contaminants by drawing them up as a vapor phase to be collected/treated on the surface.

Contrary to the statement made by the PRP Group, in-situ thermal treatment is not an untested technology. EPA bases its conclusion that in-situ thermal treatment can be operated safely on the fact that is has been operated safely at approximately 100 sites, either as small-scale demonstration projects or full-scale implementation, across the country over the last 12 years. With every application, something new is learned that can be applied to future applications. In the case of the Silresim site, which the commenter mentioned specifically, the venting problems were due to a clogged fitting that did not allow vapors to be extracted, and prolonged contact of condensed vapors with CPVC pipe, which caused the pipe to deteriorate. The pipe failed and vapors that were below harmful levels were released into the atmosphere. These problems will be avoided at SRSNE by the use of different above-ground piping materials.

Finally, EPA did include in its presentation to the public on June 8, 2005, some of the engineering concerns and challenges associated with in-situ thermal treatment, but did not discuss the technical issues presented by other sites, including Silresim and Merriam Manufacturing, because it was more important to discuss how site-specific issues would be addressed at SRSNE than to detail experiences at other sites that have employed this technology.

10. PRP Comment that EPA "Violated" the RI/FS Administrative Order on Consent

The PRP Group stated their concern that "EPA did not provide coherent and comprehensive comments on the Group's June 25, 2004 draft FS" and as such, "violated" the administrative order under which the FS was conducted.

EPA Response to Comment 10

This is a comment on an enforcement issue, not a comment on remedy selection and does not necessitate a response. However, EPA does not agree with the assertion that EPA did not provide "coherent and comprehensive comments on the PRP Group's June 25, 2004 draft FS" and as such, violated the administrative order for the RI/FS. As stated by the commenter, one of the options available to the Agency under the administrative order is "disapprove the deliverable and modify the deliverable itself to cure any deficiencies". Consistent with that option, EPA provided the PRP Group with comments on the first three chapters of the FS on January 28, 2005, and continued to provide such comments until May when the PRP Group printed the FS for the Administrative Record.

In an effort to move our NPL sites into the remedy selection phase, in the last couple of years, EPA has taken advantage of technological advances in word processing to provide the majority of its comments on draft documents such as feasibility studies in redline-strikeout format. This is consistent with the administrative order and saves significant time in both our preparing detailed comments on a line-by-line basis and also assists the PRP Group in interpreting our comments and in making the appropriate edits. The redline-strikeout format has been successfully used in the past by the government and private parties in negotiating legal settlements in the Superfund program and EPA sees no reason why it cannot be used in drafting technical documents.

11. PRP Comment that EPA Violated CERCLA and the NCP by Failing to Specify Measurable and Achievable Remedial Action Objectives for the NAPL Zone Alternatives

The PRP Group has expressed concern that EPA selected a remedy for the Overburden NAPL Zone based on remedial action objectives included in the FS that do not meet the requirements of CERCLA and the NCP because they are not measurable and not achievable. They also claim that absent a quantitative remedial action objective, it is not possible to say which risks, if any, have been reduced and to what extent the remedial goal is achieved.

EPA Response to Comment 11

The remedial action objectives were developed based upon numerous meetings and discussions with the PRP Group, as well as technical personnel in EPA Headquarters, EPA Regional Offices, and EPA's Robert S. Kerr Environmental Research Center and are fully consistent with CERCLA and the NCP[1].

The commenter is correct in that rather than leave considerable quantities of hazardous substances unaddressed at the SRSNE site, EPA has selected a remedy that will actively treat the contamination that remains at the Site. This is consistent with the mandate in the NCP to protect human health and the environment and the preference in CERCLA for remedial actions that reduce the toxicity, mobility or volume of materials comprising principal threats through treatment. In this case, cleanup objectives were identified that specified the contaminant (NAPL), the media of concern (Overburden NAPL Area), the potential pathway (principal threat to potential drinking water supply) and remedial goals (each alternative evaluated for the NAPL zone had an identified performance standard (see Tables 4-22, 4-25, 4-28, 4-31 and 4-34 of the May 2005 FS). As a result, EPA disagrees with the commenter that EPA failed to identify measurable and achievable goals for the selected alternative or indeed for any of the other alternatives evaluated in the FS. The FS included a rational technology based endpoint for each alternative in the NAPL zone.

In addition, both the FS and the proposed plan make it plain that in-situ thermal technology is expected to reduce the VOC concentrations in soil in the treatment area to a level that is indicative of the absence of pooled or residual NAPL, which is expected to result in 95% to 99% reduction of contaminants in the overburden NAPL area. This reduction in VOC concentrations in soil is both measurable and achievable. Following performance of in-situ treatment technology, cleanup standards are expected to be attained throughout the plume over the long-term. This is also both measurable and achievable. EPA's remedial approach at this Site is similar to cleanups in which EPA first requires a performance based goal for a pump and treat technology (i.e., groundwater cleanup until substantial further reductions in contamination cannot be achieved through pump and treat technology because stabilization, or asymptotic levels, have been achieved, as in the case of the Sullivan's Ledge Site in New Bedford, MA), followed by the termination of pump and treat with

[1] An analysis of remedial action objectives was one of four major issues evaluated by EPA's DNAPL Expert Panel, convened in the summer of 2001, which resulted in the document entitled *The DNAPL Remediation Challenge: Is There a Case for Source Depletion?* (EPA, December 2003). The Expert Panel noted a trend at DNAPL sites to move away from the use of drinking water standards as a measure of success for mass removal and instead adopting the following goals: a) mass removal goals, b) removal of DNAPL "to the maximum extent practicable", and c) removal or stabilization of "mobile" DNAPL. The Expert Panel characterized these as more "flexible regulatory strategies for DNAPL source zones, which may result in a greater range of acceptable remedial action objectives for the source zone other than meeting MCLs throughout the contaminated zone."

reliance on a second technology, such as monitored natural attenuation, until cleanup standards are attained over the long. In both cases, the cleanup objective, while performance based rather than concentration based, is nevertheless measurable and attainable

All the active remedial options considered for Overburden NAPL Area will achieve the remedial action objectives for NAPL source removal. The evaluation, then, of the different technologies turned on how much NAPL each would remove, in what time frame, the relative cost, and the "track record" for each of the technologies. In the end, EPA selected in-situ thermal treatment because of the potential to remove the most NAPL in the shortest period of time, at a relatively moderate cost, and because it is a more proven technology than enhanced bioremediation which is considered by many, including EPA's DNAPL Expert Panel, to be still in an early stage of development.

EPA disagrees with the commenter's assertion that risk reduction is unknown. By implementing a remedy that significantly reduces the volume, toxicity or mobility of the NAPL – which is a principal threat waste at the SRSNE Site – the potential for future human contact and exposure has been significantly reduced, the risk of future releases into the environment is significantly reduced, and the risk of failure of the containment portion of the remedy is significantly reduced.

12. <u>PRP comment that no existing technology will fully remove the NAPL "source" from overburden or bedrock at the Site.</u>

The PRP Group, citing EPA guidance and publications, states that it is not possible to clean up groundwater with NAPL contamination to drinking water standards. They also state their belief that in-situ thermal technology is not yet "proven" and if applied at the SRSNE Site could cause more harm than good.

<u>EPA Response to Comment 12</u>

EPA disagrees. First, as indicated in one of the EPA guidance documents relied on by the PRP Group, EPA should consider "the state of ground-water remediation science at the time" that an evaluation of available technologies is performed. See EPA's Guidance for Evaluating the Technical Impracticability of Ground-Water Restoration (September 1993), page 8. At this Site, the PRP Group's own modeling based on current scientific information provides more than adequate technical support for EPA's conclusion that drinking water standards can be attained at this Site. The State agrees with EPA's conclusion.

Second, the PRP Group's comments as a whole fail to mention that without active treatment of the overburden NAPL area, continued operation of the NTCRA 1 and NTCRA 2 Groundwater Extraction and Treatment System, at a current yearly cost of $500,000, would likely be needed for 400-500 years. Given the need for continued containment at this Site, the selection of a remedy that may cut the time frame for containment in half, based on modeling, is reasonable. While the time frame for attainment of acceptable standards under EPA's remedy is very long, it is significantly shorter than if no active measures were to be taken to address the overburden NAPL area.

Third, much of the information cited by the commenter is dated. Over the past ten years, as treatment technologies to address NAPL have moved out of the lab and into the field, EPA's thinking with respect to NAPL contamination has evolved. As the continued annual costs and uncertainties associated with long-term management of NAPL sites, particularly dense NAPL or DNAPL, become apparent, EPA and others are reassessing the factors controlling decisions on whether to implement DNAPL source reduction actions. EPA has not acknowledged, in recent times, that in-situ remediation technologies are incapable of restoring groundwater to clean up standards. In fact, EPA shared with the PRP Group information about a restoration to near safe levels accomplished recently at Young-Rainey STAR (Pinellas, Florida) using a combination of in-situ thermal technologies (steam injection and electrical resistance hearing). Concerned that requiring thermal remediation at SRSNE to achieve MCLs at the time the thermal system is turned off might be too costly, EPA adopted a more flexible approach, and selected a remedy consisting of thermal treatment to remove mobile NAPL, then allowing natural processes to complete groundwater restoration.

The PRP Group claims that thermal remediation is not a proven technology and has never been applied where "there is pooled DNAPL in a heterogeneous, low-to-medium permeability overburden above fractured bedrock that contains dipping fractures". While it is true that all sites are different and thus no site identical to SRSNE has been treated before, none of the known characteristics of the Site would indicate that it cannot be safely and effectively treated by thermal remediation. All sites have some amount of heterogeneity. However, heterogeneity is typical of subsurface geologic conditions. Other sites that have been treated by thermal remediation, such as East Gate Disposal Yard at Fort Lewis Army Logistics Center and ICN Pharmaceuticals in Portland, Oregon, have a similar degree of heterogeneity. The fact that there is fractured rock beneath the SRSNE Site will not interfere with the treatment of the overburden. Pooled DNAPL has also been present at other sites, notably at an industrial site in Tampa, Florida and in the pilot study at the Silresim Site. Pooled DNAPL does not present an undue challenge for thermal remediation.

The PRP Group also cited a number of research projects funded by the US Government involving in-situ thermal technologies as further evidence that they are not yet "proven" technologies. EPA is directly involved in several of the research projects cited and believes federal support reflects the great interest in and acknowledged potential of these technologies. Thermal technologies will continue to develop and evolve as they are applied and technology vendors adapt their systems to meet the needs of a particular site.

Citing the EPA Expert Panel Report on DNAPL remediation (EPA, December 2003), the PRP Group identified three potential adverse impacts of DNAPL source depletion, as evidence of the uncertainty regarding the benefits and risks of implementing aggressive partial mass removal technologies, all three of which could "increase life-cycle costs of site cleanup." Other relevant considerations include the following explicit benefits of partial mass removal, which were identified by the Expert Panel along with the adverse impacts, but which the PRP Group failed to list in their comments: 1) mitigating the future potential for human contact and exposure through long-term reduction of volume, toxicity and mobility of the DNAPL; 2) reducing the duration and cost of other technologies employed in conjunction with the source removal technology; and 3) *reducing* the life-cycle cost of site cleanup. The expert panel report also identified other implicit benefits of DNAPL source-zone depletion, including: 1) minimizing risks of failure of long-term containment strategies; 2) mitigating public stakeholders' concerns; and 3) minimizing future uncertain transaction costs associated with management of the site.

Of particular concern to the commenter is the potential for downward migration of DNAPL from the overburden to the fractured bedrock during in-situ thermal remediation. Downward mobilization of DNAPLs during thermal remediation has been a concern of researchers developing thermal technologies almost from the start, as it was observed in the lab in sand box experiments where steam injection was used to recover DNAPLs. Engineering approaches to reduce or eliminate downward migration during steam injection have been developed, and steam injection to recover DNAPLs has been used safely in the field. However, it should be noted that steam injection has already been screened out for the SRSNE Site due to unrelated reasons and downward migration has not been observed during heating with the use of other thermal technologies because concentrated condensation fronts do not develop during application of these technologies. An examination of the possible forces that could cause downward migration during heating shows that it is unlikely to occur for contaminants such as TCE and PCE, which comprise a great percentage of the particular contaminants in DNAPL found at SRSNE (Heron, G., T.H. Christensen, T. Heron, and T.H. Larson, *Thermally enhanced remediation at DNAPL sites: The competition between downward mobilization and upward volatilization*, Proceedings of the First International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, CA, 1998). In fact, recent experiments conducted by Dr. Kent Udell at the University of California – Berkeley and observed by EPA show that DNAPL will tend to rise in porous media rather than fall as bubbles are formed that migrate upward, carrying with them liquid DNAPL attached to that bubble. The remedy at SRSNE will be designed to minimize the potential for downward migration by heating first just below the contaminated zone to take advantage of this upward migration mechanism.

13. <u>PRP Comment in Favor of a Technical Impracticability Determination</u>

The PRP Group believes that a determination of technical impracticability (TI) is appropriate for the SRSNE Site and questions EPA's justification for not granting such a waiver after initially considering one. A number of site-specific factors are included in the comment that the commenter believes supports the TI determination. The commenter also provides a list of "smaller and less complex" Superfund sites in Region 1 that were granted TI waivers in support of what they believe is an Agency policy in favor of TI waivers at DNAPL sites.

EPA Response to Comment 13

The commenter is correct that over 10 years ago EPA allowed the PRP Group to begin an evaluation during the Remedial Investigation of whether or not a TI waiver was appropriate for the SRSNE Site. Since that time however, changes in the understanding of the distribution and behavior of NAPL as well as advances in NAPL treatment technologies have taken place. As a result, in March 2001, EPA redirected the PRP Group to study and evaluate more fully in the Feasibility Study treatment technologies to address the very highly contaminated groundwater (contaminant concentrations at the SRSNE site are tens, hundreds and in some cases thousands of times their regulatory limits resulting in an unacceptable human health risk with excess cancer risks calculated to be as high as unity (every person who drinks the water would potentially get cancer over the course of his or her lifetime), and potential exposures estimated at 700 times greater than benchmarks for the protections of non-cancer.)

Although the commenter points to a number of sites where EPA has granted TI waivers, it is difficult, if not impossible, to compare the remedial decisions made at one Superfund site to another as each site presents its own unique issues regarding site characteristics and risk, nature of the contamination, location of the site, and community and state interests. Each site is evaluated independently by EPA. In the 1980's and 1990's, there were no remediation techniques that had been developed to the extent that significant mass removal of VOCs present in the form of DNAPL could be achieved in a variety of hydrogeologic settings, thus, it was appropriate in 1989 to grant a TI waiver to Sullivan's Ledge, and in 1995 to grant one at Pease Air Force Base. Contaminants such as PCBs and creosote, which are present at O'Connor, Hocomonco Pond and Pinette's Salvage Yard, are much more difficult to remediate than the chlorinated solvents present at SRSNE, thus, those sites may more easily qualify for a TI waiver. The groundwater at the Tansitor site has a very low yield and is not a potential drinking water source (i.e., the State has reclassified the groundwater), which is a very different situation than exists at SRSNE. In addition, the contamination at Tansitor is confined to a small area and is not migrating away from the source, thus no active containment measures are needed. Although Loring AFB is listed twice in the PRP's list of Superfund sites, the site has only one TI waiver and it is for DNAPL in fractured bedrock. The DNAPL at the Durham Meadows site is also believed to be in the fractured bedrock. No remediation technologies have been demonstrated to be capable of achieving groundwater cleanup goals in fractured bedrock, although the research project carried out at the quarry site at Loring demonstrated the potential for steam injection to recover significant amounts of contaminants from fractured bedrock. In the future, remedial technologies may be available for bedrock at these sites and the bedrock at SRSNE as well.

The PRP Group also states that EPA's remedy decision at SRSNE is arbitrary and capricious in nature because it is based on direct field observations of pooled and residual DNAPL. The PRP Group suggests that the presence of DNAPL should be based on converging lines of evidence and interpretation of potential and probable DNAPL zones (i.e., based on evaluation of indirect data), rather than direct visual observation of actual site conditions. At the SRSNE Site, where potential and probable NAPL zones were defined ten years ago to aid in the safe drilling and installation of monitoring wells, there was utility to using these designations, which were based on the best available site-specific information, for the TI evaluation in the mid-1990s in the remedial investigation. However, these designations were abandoned for the overburden aquifer (not, it should be noted, the bedrock aquifer) in 2003 in favor of a field-based program to determine the extent of DNAPL for the purposes of delineating an overburden NAPL zone to target for treatment in the feasibility study. EPA's contention was and continues to be that so-called "indirect indicators" and "converging lines of evidence" are appropriate to use to recognize that a site is a NAPL site, as is the case at the Durham Meadows Site where DNAPL has never been directly observed. But EPA feels it is inappropriate to use indirect indicators and converging lines of evidence to delineate where specifically at a site the DNAPL is located, as the PRP Group argued. The PRP Group's point of view was apparently based on a misunderstanding of EPA's 1992 Guidance on *Estimating Potential Occurrence of DNAPL at Superfund Sites.* To the extent that the PRP Group is suggesting that EPA should not rely on direct field observations of the location of DNAPL at the SRSNE Site, the PRP Group's contention is unsupportable.

The PRP Group also submitted a comment citing a number of recommendations and conclusions from the National Research Council (NRC) for the National Academies' 2005 report entitled *Source Zone Assessment and Remediation* for support of its position that a determination of technical impracticability is appropriate for the SRSNE Site. The recommendations and conclusions are very broad in that they address source remediation technologies in general. The NRC is quoted as saying "there is a significant lack of data and information upon which to make definitive statements about source remediation". While the data available to the NRC may have been lacking, there is a significant amount of data that has been collected in the area of thermal remediation over the last dozen or so years. While it may be true that some remediation technologies have not been adequately demonstrated for use on low permeability materials, that is not the case for thermal treatment. Thermal treatment has successfully treated a number of sites with very tight, low permeability soils or clays. In addition, another conclusion reached stated that the effectiveness of source remediation technologies is uncertain at sites where explosive materials are a concern. This conclusion is not relevant for the SRSNE Site as no explosives have been found at SRSNE nor would they be expected to be. However, EPA does agree with the general conclusion that "each technology has the potential to produce negative side effects that need to be accounted for in the design and implementation of that technology". EPA points the reader to Section 4.4.5 of the FS (page 4-11, and Table 4-31) and Section L of the ROD where EPA has identified the potential side effects with remediation of the source zone, and laid out steps to be taken in the design and implementation of the remedy to address these concerns. Such concerns have been addressed at other sites that have used thermal technology.

The PRP Group makes the point in a number of places that no technology currently exists that will achieve applicable groundwater standards at the SRSNE Site in less than 100 to 200 years, therefore instead of attempting to reduce as much of the principal threat waste as possible, the PRP Group believes that the response required by the NCP is a TI determination. This reasoning appears to reflect a general misunderstanding of what a TI determination and subsequent TI waiver would accomplish at SRSNE. Regardless of whether groundwater standards can be achieved, EPA would still require removal of DNAPL to the extent practicable, where significant reduction of current or future risk will result. See *Guidance for Evaluating the Technical Impracticability of Groundwater Restoration* (EPA, September 1993), at 8. Given the conditions at the SRSNE Site (highly-contaminated drinking water source, an estimated 84% of the NAPL at the site in the overburden with the greatest concentration confined to a relatively small area of 1.5 acres, to depths of 25 to 40 feet), a TI waiver in and of itself very likely would not have a significant impact on the selected remedy. In short, EPA would continue to require active treatment of the overburden NAPL area in order to significantly reduce the NAPL mass and thus significantly reduce the potential for future human contact and exposure to high levels of contaminants, the risk of future releases into the environment due to migration, and the risk of failure of the containment portion of the remedy.

14. PRP comment that EPA's selected remedy for the SRSNE is inconsistent with the Silresim "precedent".

The PRP Group states that EPA is being inconsistent because it selected in-situ thermal to achieve mass removal at SRSNE but did not select it at the Silresim Site (Lowell, MA) after performing a pilot study of the technology. The PRP Group further comments that EPA "has elected instead to maintain the existing cap, long-term groundwater treatment and institutional controls for the foreseeable future" and if that approach constitutes a "protective remedy" at Silresim, it should also be protective at SRSNE.

EPA Response to Comment 14

It is EPA's opinion that the remedy selected for the SRSNE Site ***is*** consistent with the remedy selected at the Silresim Site and equally protective. The source reduction component of the Silresim remedy includes soil vapor extraction (SVE). The purpose of the in-situ thermal pilot study at Silresim was to evaluate its effectiveness as an augmentation of the existing SVE system which had already removed an appreciable amount of contaminant mass. The pilot study showed electrical resistance heating

(ERH) to be very effective at removing mass even in the very tight, low permeability soils at the Silresim Site. The reason it was not selected was due to the fact that the addition of ERH at this point in the cleanup did not significantly shorten the length of time it would take to reach the cleanup objectives for the Site when compared to continuing with SVE only. At SRSNE, it is expected that thermal treatment will cut in half the time needed to reach federal drinking water standards than it would without source reduction. EPA believes that the PRP Group's assertion that EPA has selected inconsistent remedies at SRSNE and Silresim that are not equally protective is unfounded.

15. Other Potential Sources of Contamination in Town Wells No. 4 and No. 6

The PRP Group expressed concern that because there are other possible sources of contamination to the aquifer that serves municipal Production Wells No. 4 and 6, these wells are not likely to be used in the future. The PRP Group also states its belief that maintaining these wells as an official public water supply is a "fiction that misleads the public", as it is "exceedingly unlikely that Town residents will ever consent to the use of these wells again" as a public water supply.

EPA Response to Comment 15

Regardless of whether there are other sources of contamination to the aquifer that serves Production Wells No. 4 and 6, extremely high levels of contamination from the SRSNE site is found in the aquifer that serves these wells. This contamination is a potential source to any drinking water well that is currently located or could come to be located in the vicinity of the Site in the future.

The PRP Group's belief that the Town Well Field will likely never be used for drinking water is contrary to the community's express wishes. The Town has the serious responsibility for planning for the long-term drinking water needs of its inhabitants. The Town has not abandoned these wells nor has it currently secured any additional water supply sources for future use. The Town includes the diversion rights for these two wells in its long-term water supply plan. Moreover, CT DEP has advised EPA that it would be unlikely to reclassify the groundwater in this area because: the aquifer is capable of supporting a significant public water supply; groundwater quality will eventually be restored to a background quality; and the Town continues to include these wells in its long-term water supply plans.

The State is also committed to taking appropriate actions to ensure that other potential other sources of contamination to the town wells are adequately addressed over the long-term, including remediation under the State's property transfer law.

Finally, the commenter states incorrectly that Mr. Edward Pocock III, the President of the Southington Board of Water Commissioners, made comments concerning the town wells at the SRSNE Site Public Hearing. Mr. Pocock's comments were made on June 8, 2005 during a public informational meeting. He did not make them at the public hearing for the SRSNE Site that was held on June 30, 2005. No one representing the Southington Board of Water Commissioners offered verbal comments at the public hearing, nor, for that matter were written comments submitted during the comment period.

16. PRP Comment that EPA Unlawfully Eliminated Reclassification from the June 2000 Draft FS

The PRP Group claims that EPA's direction to eliminate reclassification as an option in their June 2000 draft FS has no "legal or factual basis". The PRP Group goes on to assert that this directive "effectively and unjustifiably" eliminates the technical impracticability (TI) option under CT DEP's regulations.

EPA Response to Comment 16

CT DEP has advised EPA that, in its view, the groundwater at the Site is not suitable for reclassification, nor would it be reasonable to approve a request for a technical impracticability variance under the State's remediation program. (See EPA response to comment 17). Moreover, EPA does not believe that it is technically impracticable to attain drinking water standards at this Site. (See EPA response to comment 13). To the extent that the PRP Group claims that EPA somehow unlawfully eliminated groundwater reclassification from the FS, EPA responds that groundwater reclassification is not a remedial alternative or technology that can be selected by EPA. EPA's decision to more fully evaluate treatment technologies to address groundwater contamination at the Site was fully supported by advances in technology that have taken place within the past ten years.

17. Comments concerning whether groundwater at the Site should be reclassified.

Two sets of comments were received that pertain to reclassification of the groundwater.

The first commenter questions why treatment to federal drinking water standards is necessary since in his opinion no one will drill a well in that area and recommends that the groundwater be reclassified.

The second commenter (the PRP Group) states its belief that for federal and state action to be considered other than arbitrary and capricious, the groundwater at SRSNE must be reclassified to GB, as was done at Old Southington Landfill, another Superfund site in Southington.

EPA Response to Comment 17

Federal drinking water standards are applicable to the cleanup at the SRSNE Site because the groundwater at the Site has been classified by CT DEP as GA, GA-

Degraded or GAA. In short, the State's goal for this aquifer is to maintain or restore the groundwater to its natural quality.

Even if some local citizens might feel that they do not want or need to use the water currently, both state and local officials believe the aquifer is a valuable future resource that should not be abandoned because of contamination from the SRSNE Site. A request for reclassification of the groundwater in the vicinity of the SRSNE site to GB could be prepared and submitted; however, such a request is not likely to be approved by CT DEP for the following reasons: the aquifer is capable of supporting a significant public water supply; the groundwater quality of the aquifer will eventually be restored to background quality; and the Town continues to include Production Wells No. 4 and 6 in its long-term water supply plans.

EPA believes that it is technically practicable to restore the groundwater at the Site to cleanup levels based on the modeling presented in the FS. Although these levels will only be attained over a very long time frame, EPA believes that this time frame is reasonable because the implementation of active treatment in the overburden NAPL area will cut in half the time needed to meet safe levels (and contain contaminated groundwater). Similarly, CT DEP has advised EPA that it would not be reasonable to approve a request for a variance due to technical impracticability under state law because it expects that groundwater will be restored, even though the time frame for restoration is very long.

Finally, there is no basis for the claim that federal and state action is arbitrary and capricious because the groundwater at Old Southington Landfill was reclassified, whereas the groundwater at SRSNE was not. Aside from both being located in Southington, the two sites and the potential use and value of the groundwater are dissimilar. The Town of Southington's 1989 request for reclassification of the aquifer near the Old Southington Landfill to GB was approved by the State in 1993. The reclassification was not relevant to the presumptive capping remedy that EPA selected for the Site in 1993; EPA has not yet selected a remedy for the groundwater at Old Southington Landfill. The Town's request for reclassification was approved by the State because: the Town had surrendered its rights to Production Well No. 5, which was located near the Old Southington Landfill; the Town had physically abandoned Well No. 5; and the Town no longer included any contribution from Well No. 5 in its long-term water supply plans as a resource needed to meet future demand.

18. <u>PRP Group support for Hydraulic Displacement and Enhanced In-Situ Bioremediation over In-Situ Thermal Treatment</u>

The PRP Group recommended the use of hydraulic displacement (HD) followed by enhanced in-situ bioremediation (EISB) be used to remove NAPL mass in the overburden aquifer stating that in combination, these technologies comprise the fastest and most aggressive NAPL remedial option that can be safely and reliably implemented at the SRSNE Site without significantly increasing short-term risk of downward NAPL mobilization or health-based risks.

In addition, the PRP Group asks what significant reduction in current or future risk EPA expects to achieve by incremental mass removal afforded by in-situ thermal treatment over hydraulic displacement and enhanced in-situ bioremediation.

EPA Response to Comment 18

Based on the information available to EPA, we disagree that HD and EISB are faster, more aggressive, safer or more reliable than in-situ thermal.

HD is expected to remove up to 44% of the pooled NAPL in the overburden, which means 56% or more will **not** be removed (see Section 4.4.3 of the May 2005 FS). With HD, only pools one meter or larger are expected to be mobilized towards extraction wells and removed, which means that pools one meter or smaller will remain untouched (see Appendix I of the May 2005 FS, page 2). There is significant uncertainty then regarding the rate of removal for the second critical step, EISB, in the treatment process. There is limited or no basis to estimate the actual increase in the rate of removal that will be achieved at the SRSNE Site over what is occurring at the Site without enhancements. The feasibility study looked at three different scenarios. If EISB increases the current rate of degradation by approximately three times its current rate, 99% of the mass in the Overburden NAPL Area is estimated to be removed in 130 years (see Table 4-25 in the May 2005 FS). If the rate of degradation increased ten-fold, the FS estimated it would take 40 years to reach the 99% total removal rate. However, it appears to be just as likely that there will be no increase in the current rate of degradation (Appendix G of the May 2005 FS, page 16). That scenario would be identical then to the HD and MNA alternative which estimated the time to reach the 99% removal rate at 300 to 400 years (see Table 4-22 in the May 2005 FS). As a result, there is a much greater uncertainty factor with the use of this technology. Furthermore, EISB will be implemented in five rounds over the course of 20 to 30 years (see Table 4-27 of the May 2005 FS). On the other hand, in-situ thermal technology is expected to remove between 95% and 99% of the NAPL in the overburden treatment zone in one to two years, including installation, heating and equipment decommissioning (see Tables 4-31 and 4-33 in the May 2005 FS). By comparison, HD/EISB seems neither fast nor aggressive and definitely less certain.

Nor does EPA believe HD and EISB are safer or more reliable than in-situ thermal treatment. In fact, EPA knows of no site similar to SRSNE where the HD/EISB combination has been used to reduce NAPL mass. By comparison, in-situ thermal technologies have been used at over 100 sites with demonstrable success. This is supported by the DNAPL Expert Panel that was convened by EPA. The panel's position was that while in-situ thermal technologies were sufficiently developed and ready for deployment at DNAPL-impacted sites, in-situ biodegradation (i.e., EISB) is still in an early development stage (EPA, December 2003). *Dehalococcoides ethenogenes* is the only known microorganism that dechlorinates PCE and TCE to ethene (Maymo-Gattel, X., Y. Chien, J.M. Gossett, and S.H. Zinder. 1997). Isolation of a bacterium that reductively dechlorinates tetrachloroethene to ethene. *Science*

276:1568-1571.). *Dehalococcoides* are slow growing, "finicky" microorganisms which causes some concern as to their survival and growth rate and therefore the reliability of the technology over the long term.

EPA does not agree that the risk of vertical pool mobilization from HD implementation is necessarily minimal because it is a 'depleting' technology that does not involve the buildup of NAPL banks. While EPA would agree that the tail end of a pool of NAPL moving towards a recovery well is being depleted, NAPL build up could occur at the leading end of the pool, especially if it intersects with other pools moving towards the same recovery well, possibly resulting in vertical downward migration of the NAPL. By contrast, in-situ thermal remediation will not attempt to move liquids over significant distances in the subsurface, but instead will convert the contaminants to vapors that are buoyant and will move upward in the subsurface.

With regard to the question about incremental risk reduction from in-situ thermal treatment over HD and EISB, for the reasons discussed above, EPA has greater certainty that more mass removal will be accomplished in a shorter period of time with in-situ thermal treatment than could be achieved with HD and EISB. NAPL mass is the principal threat at the site and is the primary source of on-going contamination to a potential drinking water supply.

19. PRP Group's Concern that Global Climate Change/Preservation of Natural Resources Should Be Considered by EPA in Remedy Selection.

The PRP Group claims that thermal technology uses significant amounts of power, and estimate that thermal remediation at the Site would use as much energy as 910 households in one year. In contrast, they claim that HD would use as much energy as 165 households in one year. The PRP Group disagrees with EPA's decision to eliminate from the FS an estimate of the greenhouse gases that would be emitted under each alternative.

EPA Response to Comment 19

In general, EPA certainly supports conservation of natural resources. However, in the FS process, as detailed in EPA's *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (1988), EPA evaluates the risks to human health and the environment, including an evaluation of short-term and long-term effectiveness of each remedial alternative, *at or in the vicinity of the site property that is evaluated as part of the RI.* For example, EPA considers such things as the effects of truck traffic during performance of the remedy on the local community, or the potential harm to wetlands or environmental receptors at the Site due to operation of the remedy. Consideration of greenhouse gas emission issues is beyond the scope of EPA's RI/FS evaluation. Therefore, EPA properly excluded the PRP Group's evaluation of greenhouse gas emissions from the RI/FS because it was not relevant.

20. NCP Requires a Cost-Benefit Analysis of Partial NAPL Mass Removal

For the Cape Fear Site (Fayetteville, NC), EPA recommended that thermal treatment not be considered unless it can be shown to be as cost-effective as conventional pump and treat. The PRP Group asserts that this type of cost-benefit analysis is required by the NCP, and questions why this approach was not used at the SRSNE site.

EPA Response to Comment 20

The NCP does *not* require that a cost-benefit analysis be done before EPA can select a mass removal technology. Instead, EPA is directed to compare "the cost to effectiveness of each alternative individually and . . . the cost and effectiveness of alternatives in relation to one another." (NCP preamble, 55 Fed. Reg. 8728). Cost is a factor to be considered if an alternative can be shown to be protective and ARAR compliant.

The decision to implement a remedy with a source-depletion component is based on highly site-specific conditions and criteria, as well as the goals and objectives of the remedial action. At the Cape Fear site, the goal is to reduce NAPL mass to concentrations that will not leach out of soil and continue to affect water quality in the overburden; there is no bedrock at the Cape Fear site. Contrast that with the SRSNE site where there is DNAPL in the fractured bedrock that is not undergoing aggressive treatment, and as a result, will need to be contained for a long time regardless of what happens in the overburden. The difference is that without mass removal in the overburden, it would take 400 to 500 years to reach federal drinking water standards using a basic pumping and treating technology whereas with mass removal in the overburden, that time frame is reduced to approximately 225 years. In addition to shortening the time frame that groundwater standards are exceeded, mass removal at the SRSNE site will protect the containment remedy by preventing the migration of highly mobile NAPL. It is also expected to shrink the size of the groundwater contaminant plume over time and reduce groundwater contaminant concentrations. These outcomes will allow for a less expensive containment/treatment system, and will support the return of the northern portion of the town well field for beneficial use as drinking water. EPA believes that thermal technology is cost-effective[2] at the SRSNE Site in light of all of the above considerations.

Finally, it is worth noting that the in-situ thermal pilot test at the Cape Fear site was highly successful. Electrical resistance heating was able to remove an estimated 5000 gallons of creosote from a 50-75 square foot area. Creosote is much harder to move out of the soils than the type of DNAPL at the SRSNE Site which has a density close to that of water and is highly mobile.

[2] Fractured bedrock remediation continues to be an area of great interest. In fact, there are at least three sites in EPA New England where the bedrock is being actively remediated. These are Eastern Surplus, Eastland Woolen Mill and Union Chemical. All sites have used chemical oxidation, none have TI waivers and 2 of the 3 use federal funds. As advances in DNAPL treatment technology advance, it may become more cost-effective to treat the DNAPL in the bedrock at SRSNE than to contain it for 225 years.

21. In-Situ Thermal Pilot Test

Two commenters asked that a pilot test for in-situ thermal be performed prior to full-scale implementation. One of these commenters (the PRP Group) disagrees with EPA's reported unit price for full-scale electrical resistance heating at a site in Skokie, Illinois, and provided a different unit price.

EPA Response to Comment 21

EPA is not convinced that a pilot test for thermal remediation is required for the SRSNE site, as enough other sites have been completed to demonstrate the mass removal capabilities of thermal remediation for VOCs in a variety of hydrogeologic settings. EPA will consider whether or not a pilot test is needed during remedial design.

EPA cannot comment on the new unit price proposed by the PRP Group for the site in Skokie, Illinois as none of the calculations or assumptions that were used were provided to EPA. However, EPA is aware that cost estimates developed in the FS are just that – estimates. That is why EPA recommends that cost estimates include contingencies for scope, bid, project management, remedial design and construction management. At SRSNE, this amounts to an additional $9,390,000, or 32% of the total cost of the selected remedy, to cover unknowns, unforeseen circumstances, or unanticipated conditions and to reduce the risk of possible cost overruns.

22. PRP Comment that Cost Estimates in the FS and Proposed Plan are Misleading

The PRP Group submitted a comment objecting to the 7% discount rate used by EPA to develop cost estimates for the FS, preferring instead a rate of 3.1%. It is their opinion that the rate of 7% is "inappropriate, unsupported, unrealistic, based on outdated guidance and contrary to direction from the Office of Management and Budget (OMB)". The PRP Group also suggests that EPA's direction to use a higher discount rate was a "financial sleight of hand" that enabled the Agency to avoid an internal review process with the National Remedy Review Board that is mandated where overall remedy cost exceeds $30 million.

EPA Response to Comment 22

EPA does not agree that the 7% discount rate is inappropriate, unsupported, unrealistic, based on outdated guidance or contrary to direction from the OMB. In fact, the 7% discount rate was established through an economic analysis performed by OMB and can be found in OMB Circular A-94 (*Guidelines and Discount Rates for Benefit-Cost Analyses of Federal Programs*) which provides guidance for the use of discount rates in economic analyses performed by the Federal government. EPA changed its policy to 7% (OSWER Directive 9355.3-20) in order to be consistent with Circular A-94 issued by OMB.

Perhaps the source of the misunderstanding is the lower rate that appears in Appendix C to OMB Circular A-94, which is updated annually around the time of the President's budget submission to Congress. The rates in Appendix C are based on interest rates from Treasury notes and bonds and the published rate for 2005 is 3.1%. As discussed in EPA/Army Corps of Engineers guidance for developing cost estimates (*A Guide to Developing and Documenting Cost Estimates During the Feasibility Study,* July 2000), the lower rate is appropriate for use at Federal facilities because the Federal government has a different "cost of capital" from the private sector. However, a discount rate of 7% that appears in the main portion of Circular A-94 (and is not updated annually) is generally appropriate for non-Federal facility sites, such as SRSNE.

EPA does not agree with the assertion that the discount rate was adjusted to a higher rate in a "financial sleight of hand" to avoid internal review with the National Remedy Review Board. In fact, it was during preliminary consultation with the Board in early spring 2005 that the region was advised that 7% is the number that should be used to be consistent with other sites that had gone before the Board including the following from EPA New England: New Bedford Harbor, MA (1996), Fletcher Paint, NH (1996), Beede Waste Oil, NH (2000) and Iron Horse Park, MA (2003). When the 7% discount rate was applied to SRSNE, the estimated cost of EPA's preferred alternative came in under the criterion that mandates internal review by the National Remedy Review Board.

23. Reasonable Time Frame

One commenter asked the rationale for EPA's various determinations of what is a "reasonable" time in which to achieve restoration to ARARs at different site within EPA New England.

EPA Response to Comment 23

As indicated in EPA's response to prior comments, EPA's decisions are site-specific. "[N]o single time frame can be specified during which restoration must be achieved to be considered technically practicable . . . " (TI Guidance, at 16). Moreover, as set forth in the NCP, the time frame for restoration of groundwater will be one that is "reasonable given the particular circumstances of the site." 40 C.F.R. § 300.430(a)(1)(iii)(F).

At SRSNE, CT DEP determined, in its Groundwater Use and Value Determination (May 2005) in support of EPA's RI/FS and remedy selection, that immediate restoration of the aquifer underlying the Site is not required as long as adequate protection is provided to contain the contaminated groundwater plume. At the same time, CT DEP found that the aquifer was one of high use and value due, in part, to the fact that it is capable of supporting a significant public water supply and because the

Town continues to include Production Wells No. 4 and 6 in its long-term water supply plans.

Given these factors, and given that in-situ thermal treatment is expected to achieve a 95%-99% reduction in NAPL in the Overburden NAPL Area, where the greatest concentration of NAPL at the Site is believed to be, within about one year of implementation thereby cutting in half the time needed to attain drinking water standards (and for containment), EPA considers the time frame for attainment of safe drinking water levels (~225 years) to be reasonable at this Site.

24. In-situ Thermal Hot Floor

The PRP Group asserts that EPA "changed its mind" between November 2004 and June 2005 regarding the necessity of a "hot floor" as a component of the in-situ thermal remedy and asked that the Agency provide the information to justify that change.

EPA Response to Comment 24

EPA did not change its mind on the matter of a hot floor for the application of thermal remediation to the SRSNE Site. EPA disagreed with the need for the extensive and costly hot floor proposed by the PRP Group in draft FS submitted in June 2004, but endorses the hot floor proposed by the PRP Group in the May 2005 FS which is reduced in extent (see Appendix V of the May 2005 FS, page 17).

25. Basis for Restoration to ARARs

The PRP Group asked EPA to provide the basis of the conclusions that groundwater at the SRSNE will be restored to ARARs.

EPA Response to Comment 25

The basis of EPA's conclusions regarding the ability of groundwater to be restored to ARARs are the modeling efforts and conclusions in the May 2005 FS.

26. All Remedial Options Not Discussed at the Public Meeting

The PRP Group asks why the public was not informed at the public meeting of other alternatives, such as hydraulic displacement and enhanced in-situ bioremediation that would also achieve the ONOGU cleanup objectives.

EPA Response to Comment 26

The public was informed of all the alternatives considered for the SRSNE site and the pluses and minuses of each alternative in the Proposed Plan dated May 2005, in full compliance with the NCP. An unusually large number of alternatives were considered for this Site – six for soil and wetland soil, seven for groundwater and eight for NAPL. There was insufficient time at the public meeting to go through each of the alternatives and also adequately explain EPA's proposed alternative. EPA therefore provided copies of the Proposed Plan at the meeting, pointed people to all of the alternatives discussed in the Proposed Plan, and focused on the remedy being proposed by EPA. EPA also was available to respond to any questions posed by the public.

27. Another De Minimis Settlement

One commenter asked when EPA might offer another de minimis settlement to small-volume parties associated with the SRSNE Site.

EPA Response to Comment 27

This is not a comment on the proposed remedy but rather a comment on the enforcement process. However, EPA has not yet decided on whether or not it will offer a third round of de mimimis settlements. It there is one, it will likely be as part of the negotiations with the PRP Group to perform the remedy selected in the ROD. The terms of any future de minimis settlement are unknown at this point.

28. Past Permitting and Licensing History

Several questions were asked by one commenter about the past permits and licenses, the timing of the facility operations vis-à-vis the municipal production wells, historical violations and to what extent the public was made aware of them, past monitoring results and so forth.

EPA Response to Comment 28

Questions such as these that pertain to the SRSNE facility while it was in operation are not relevant to the selection of a remedy and as such do not require a response as part of the Superfund responsiveness summary.

However, for historical information, the commenter should review the administrative record, copies of which are located at the Southington library and at EPA's office in Boston. If the commenter seeks additional information beyond what is found in the administrative record, the commenter can contact CT DEP or EPA.

29. Frequency of Testing and Reporting Requirements

One commenter asked a several part question concerning the testing of volatiles and equipment, and whether or not the results will be made available to the public. The commenter also asked if the facility was required to report such things as errors, mishaps and hazards to EPA and other governmental agencies.

One person made the comment that although he lives in the neighborhood (on Hightower Road in Southington) he did not receive a proposed plan and recommends that the plan be mailed to people at least within five thousand feet.

EPA Response to Comment 30

The proposed plan was mailed to approximately 230 residences on about 20 streets in the area bounded by Lazy Lane on the north, Queen Street on the east, West Street on the west, and Hart Street on the south. This neighborhood extends approximately one mile west of the SRSNE Site. Sabina Drive and Kane Street (south of Hart Street and immediately southwest of the Site) were also included. Hightower Road is in the neighborhood south of Hart Street. This entire neighborhood (approximately 12 streets) will be added to the EPA distribution list for future mailings.

31. Wetlands

One commenter asked if any wetlands will be filled as a result of this remedy and whether or not an Army Corps permit was required.

EPA Response to Comment 31

No wetlands will be filled as a result of this remedy, and an Army Corps permit will not be required.

There will, however, be work conducted in wetlands or floodplains. Significant, high-level contamination exists in a small area of wetland soils at the culvert outfall on the Cianci property. EPA has made the determination that there is no practicable alternative to excavation. Damage to surrounding wetlands during the excavation will be reduced using erosion control measures. Wetland restoration with indigenous species will be conducted consistent with the requirements of federal and state wetlands protection laws. Floodplains will be returned to their natural levels so as to prevent the loss of storage capacity.

32. Neighbors' Concerns with In-Situ Thermal

One commenter asked if residents in similar situations have voiced concerns regarding in-situ thermal treatment.

EPA Response to Comment 32

Numerous in-situ thermal treatment projects have been completed at locations directly adjacent to, and in several cases beneath inhabited structures. Many of these projects have been completed under State cleanup programs. EPA lacks information on the extent to which residents had voiced concerns at these sites, however, available information indicates that the remedial actions were completed with adequate and appropriate controls on odors, noise, dust and air emissions. In-situ thermal treatment is currently underway at an EPA-lead removal action at a dry cleaner in North Dakota, and a contract has been awarded and design has begun for an in-situ thermal remedy at an EPA-lead remedial action at a solvent site in Southern California. In both cases, EPA has addressed residents' concerns sufficiently to allow these remedies to proceed in a protective manner.

As described above in response to comment 29, EPA will be working with residents and local officials to update the Community Involvement Plan and tailor communication activities to fit their needs. For this plan we will work to identify what kinds of information people would like to have at their fingertips during in-situ thermal remediation such as how to recognize a problem if one occurs, what to do if there is an emergency, and who to contact.

33. Job Requirements to Monitor In-Situ Thermal Process

One commenter inquired as to the job requirements of a person who would monitor the Site during implementation of the thermal treatment process, specifically training or education background.

EPA Response to Comment 33

For a site like SRSNE, it can be expected that in addition to round-the-clock monitoring, an operator will be on site ten hours/day, six days/week, and that a second operator is likely to be present eight hours/day, five days/week during implementation. These people will be trained in construction and operation of the equipment used on site, health and safety issues related to the equipment, and will have experience working on electrical equipment. The head operator will have worked on at least one site prior to the SRSNE Site, and will have experience with the vapor control and treatment system being used at the SRSNE Site. In addition, a local person (within 20 to 30 minutes of the Site) will be on call when the operators are not on site, and the on-site operator will have at least daily (and often more frequent) conversations with the lead engineers and project managers.

34. Potential Vandalism or Fire

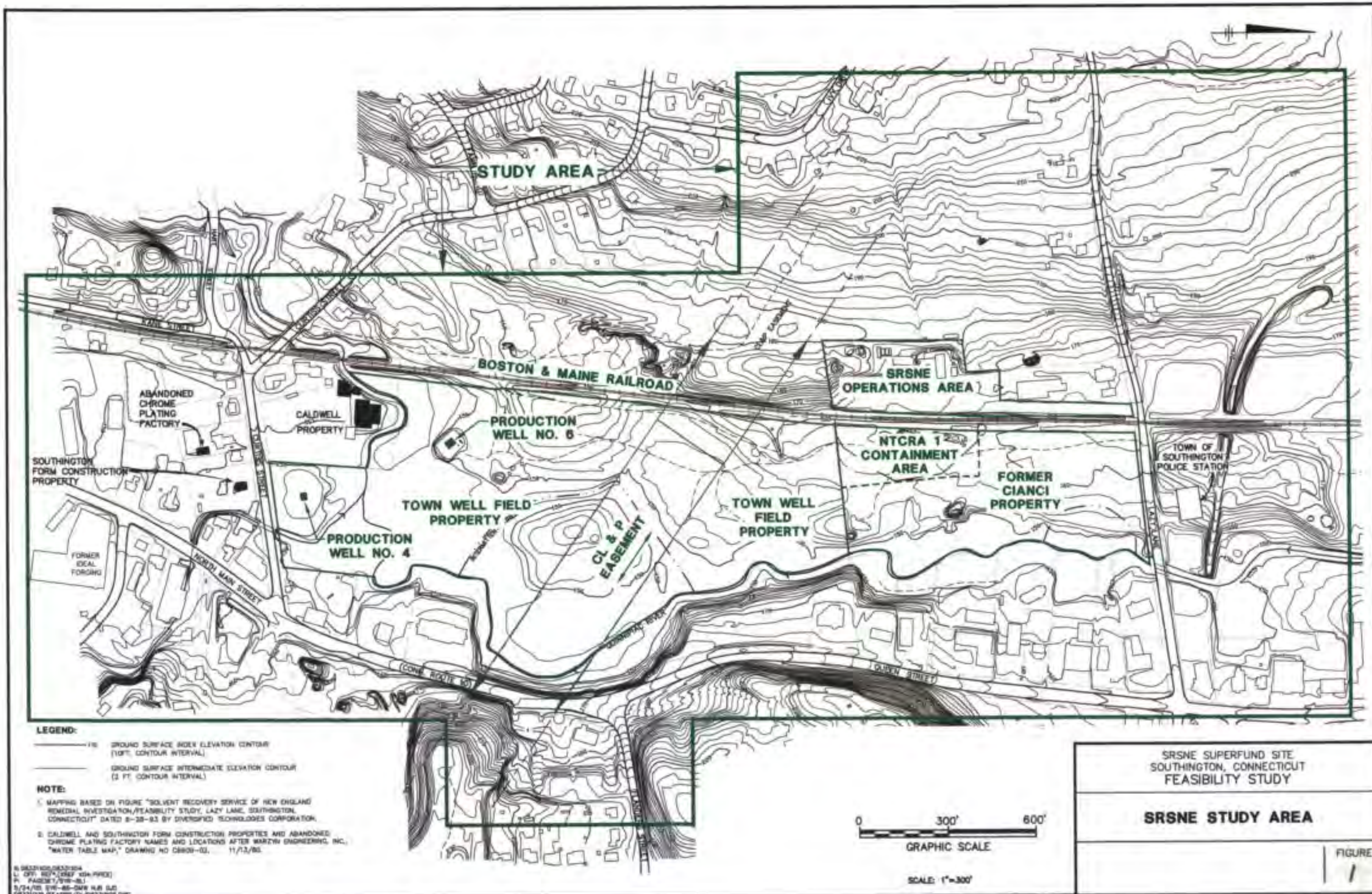
One commenter asked if the buildings currently on site will be removed or demolished to prevent possible vandalism and diminish the chance for major fire.

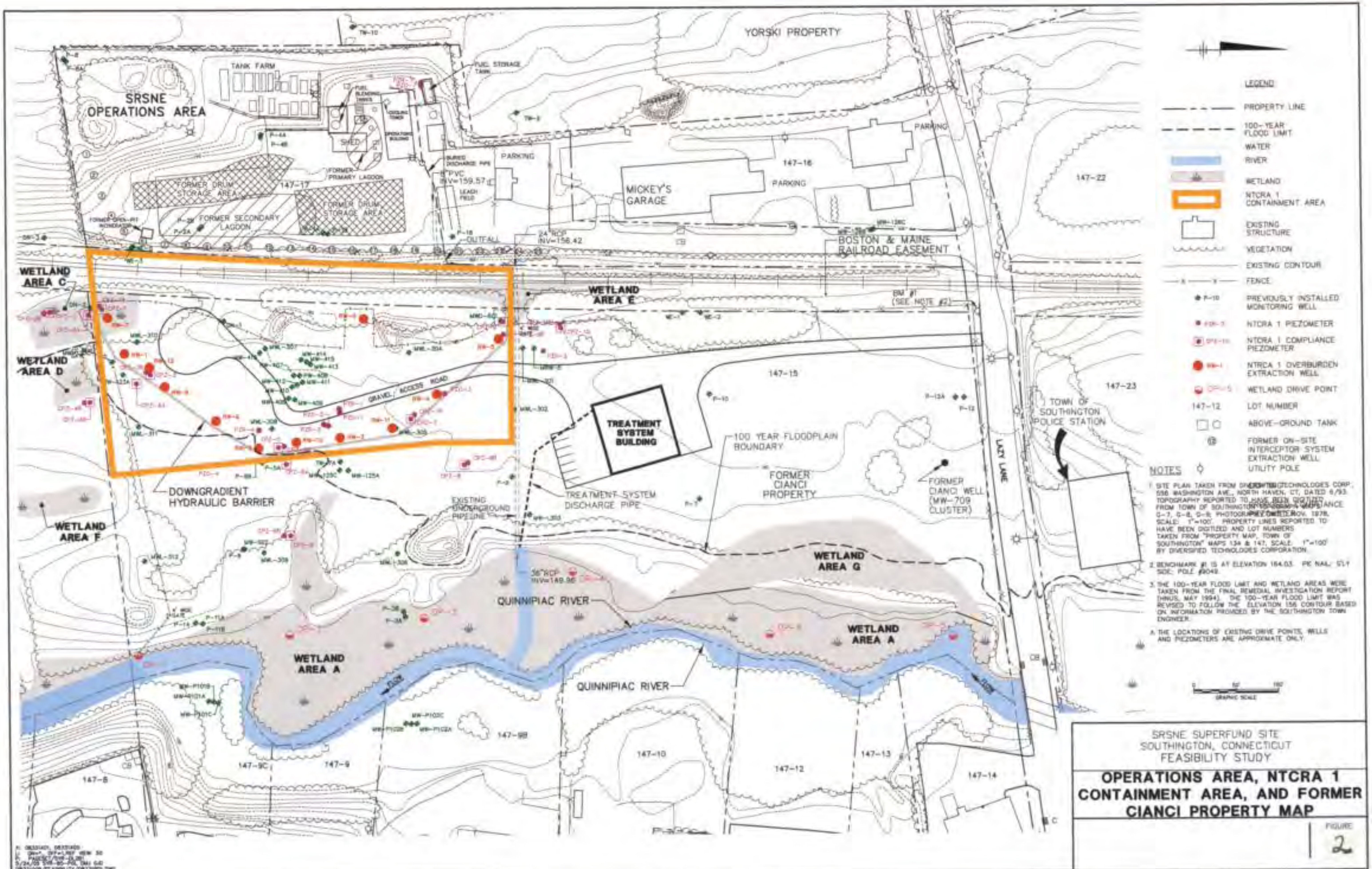
EPA Response to Comment 34

All buildings associated with the SRSNE facility have been removed. The Operations Area is vacant. The only structure that currently exists on site is the building that houses the treatment system for the groundwater that is collected, treated on site to applicable permit limits, and discharged to the Quinnipiac River.

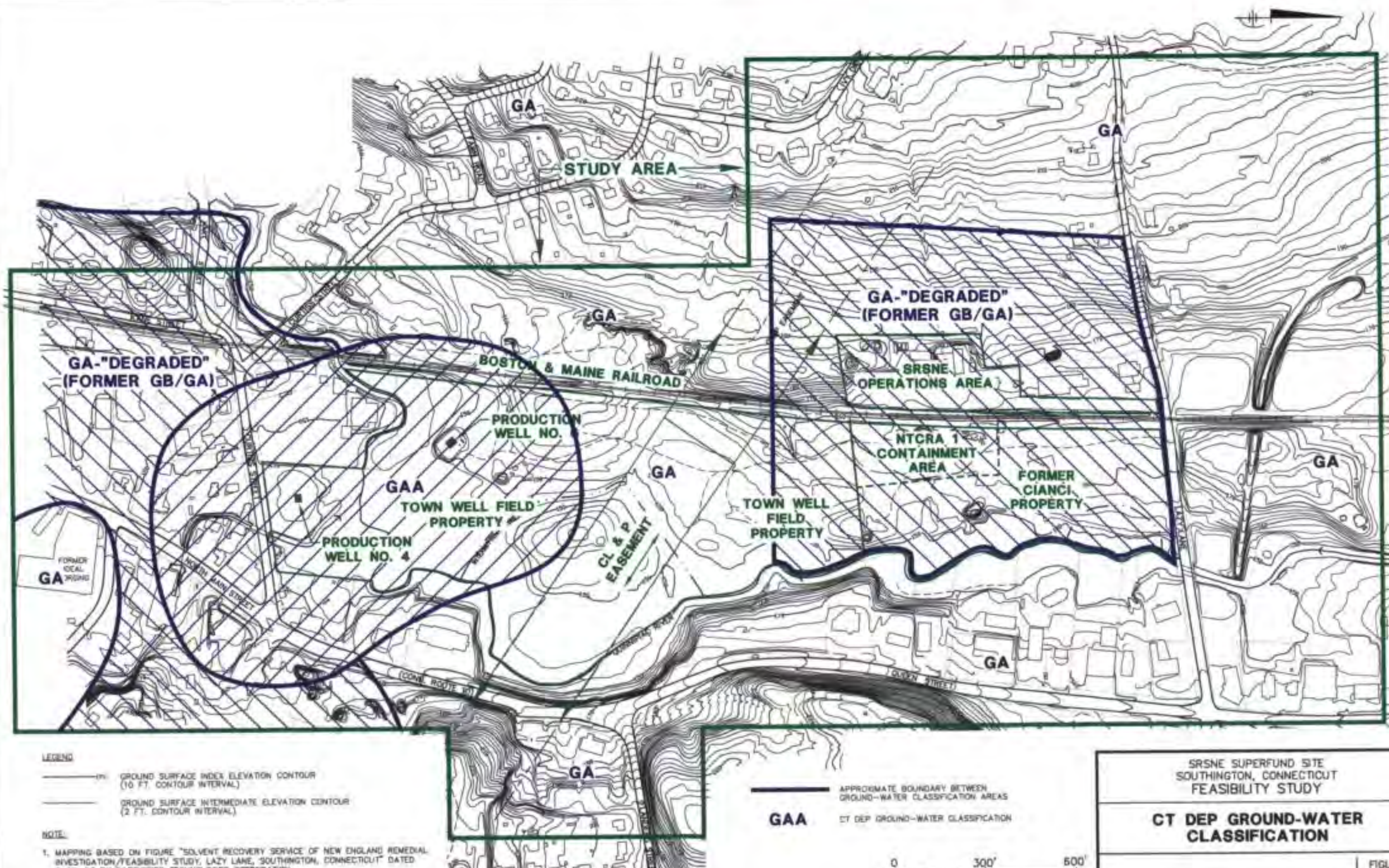
Appendix A

Figures


STUDY AREA
BOSTON & MAINE RAILROAD
SRSNE OPERATIONS AREA
ABANDONED CHROME PLATING FACTORY
CALDWELL PROPERTY
PRODUCTION WELL NO. 6
SOUTHINGTON FORM CONSTRUCTION PROPERTY
NTCRA 1 CONTAINMENT AREA
TOWN OF SOUTHINGTON POLICE STATION
FORMER CIANCI PROPERTY
TOWN WELL FIELD PROPERTY
TOWN WELL FIELD PROPERTY
CL & P EASEMENT
PRODUCTION WELL NO. 4
FORMER IDEAL FORGING
NORTH MAIN STREET
CONN ROUTE 10
QUEEN STREET
LEGEND:
GROUND SURFACE INDEX ELEVATION CONTOUR (10FT. CONTOUR INTERVAL)
GROUND SURFACE INTERMEDIATE ELEVATION CONTOUR (2 FT. CONTOUR INTERVAL)
NOTE:
1. MAPPING BASED ON FIGURE "SOLVENT RECOVERY SERVICE OF NEW ENGLAND REMEDIAL INVESTIGATION/FEASIBILITY STUDY, LAZY LANE, SOUTHINGTON, CONNECTICUT" DATED 8-30-93 BY DIVERSIFIED TECHNOLOGIES CORPORATION.
2. CALDWELL AND SOUTHINGTON FORM CONSTRUCTION PROPERTIES AND ABANDONED CHROME PLATING FACTORY NAMES AND LOCATIONS AFTER WARZYN ENGINEERING, INC., "WATER TABLE MAP," DRAWING NO C8809-02, 11/13/90.
0 300' 600'
GRAPHIC SCALE
SCALE: 1"=300'
SRSNE SUPERFUND SITE
SOUTHINGTON, CONNECTICUT
FEASIBILITY STUDY
SRSNE STUDY AREA
FIGURE
1



YORSKI PROPERTY
SRSNE OPERATIONS AREA
TANK FARM
FUEL STORAGE TANK
SHED
PARKING
FORMER PRIMARY LAGOON
FORMER DRUM STORAGE AREA
FORMER SECONDARY LAGOON
147-17
OUTFALL
24" RCP INV=156.42
MICKEY'S GARAGE
147-16
147-22
BOSTON & MAINE RAILROAD EASEMENT
WETLAND AREA C
WETLAND AREA D
WETLAND AREA E
WETLAND AREA F
WETLAND AREA G
WETLAND AREA A
GRAVEL ACCESS ROAD
147-15
147-23
TOWN OF SOUTHINGTON POLICE STATION
TREATMENT SYSTEM BUILDING
100 YEAR FLOODPLAIN BOUNDARY
FORMER CIANCI PROPERTY
FORMER CIANCI WELL (MW-709 CLUSTER)
LAZY LANE
DOWNGRADIENT HYDRAULIC BARRIER
TREATMENT SYSTEM DISCHARGE PIPE
EXISTING UNDERGROUND PIPELINE
36" RCP INV=149.96
QUINNIPIAC RIVER
FLOW
147-9B
147-10
147-12
147-13
147-14
147-9C
147-9
147-8
LEGEND
PROPERTY LINE
100-YEAR FLOOD LIMIT
WATER
RIVER
WETLAND
NTCRA 1 CONTAINMENT AREA
EXISTING STRUCTURE
VEGETATION
EXISTING CONTOUR
FENCE
PREVIOUSLY INSTALLED MONITORING WELL
NTCRA 1 PIEZOMETER
NTCRA 1 COMPLIANCE PIEZOMETER
NTCRA 1 OVERBURDEN EXTRACTION WELL
WETLAND DRIVE POINT
LOT NUMBER
ABOVE-GROUND TANK
FORMER ON-SITE INTERCEPTOR SYSTEM EXTRACTION WELL
UTILITY POLE
NOTES
2. BENCHMARK #1 IS AT ELEVATION 164.03. PK NAIL S'LY SIDE POLE #9049.
3. THE 100-YEAR FLOOD LIMIT AND WETLAND AREAS WERE TAKEN FROM THE FINAL REMEDIAL INVESTIGATION REPORT (HNUS, MAY 1994). THE 100-YEAR FLOOD LIMIT WAS REVISED TO FOLLOW THE ELEVATION 156 CONTOUR BASED ON INFORMATION PROVIDED BY THE SOUTHINGTON TOWN ENGINEER.
4. THE LOCATIONS OF EXISTING DRIVE POINTS, WELLS AND PIEZOMETERS ARE APPROXIMATE ONLY.
SRSNE SUPERFUND SITE
SOUTHINGTON, CONNECTICUT
FEASIBILITY STUDY
OPERATIONS AREA, NTCRA 1 CONTAINMENT AREA, AND FORMER CIANCI PROPERTY MAP
FIGURE
2



LEGEND

GROUND SURFACE INDEX ELEVATION CONTOUR (10 FT. CONTOUR INTERVAL)

GROUND SURFACE INTERMEDIATE ELEVATION CONTOUR (2 FT. CONTOUR INTERVAL)

APPROXIMATE BOUNDARY BETWEEN GROUND-WATER CLASSIFICATION AREAS

GAA CT DEP GROUND-WATER CLASSIFICATION

0 300' 600'
GRAPHIC SCALE

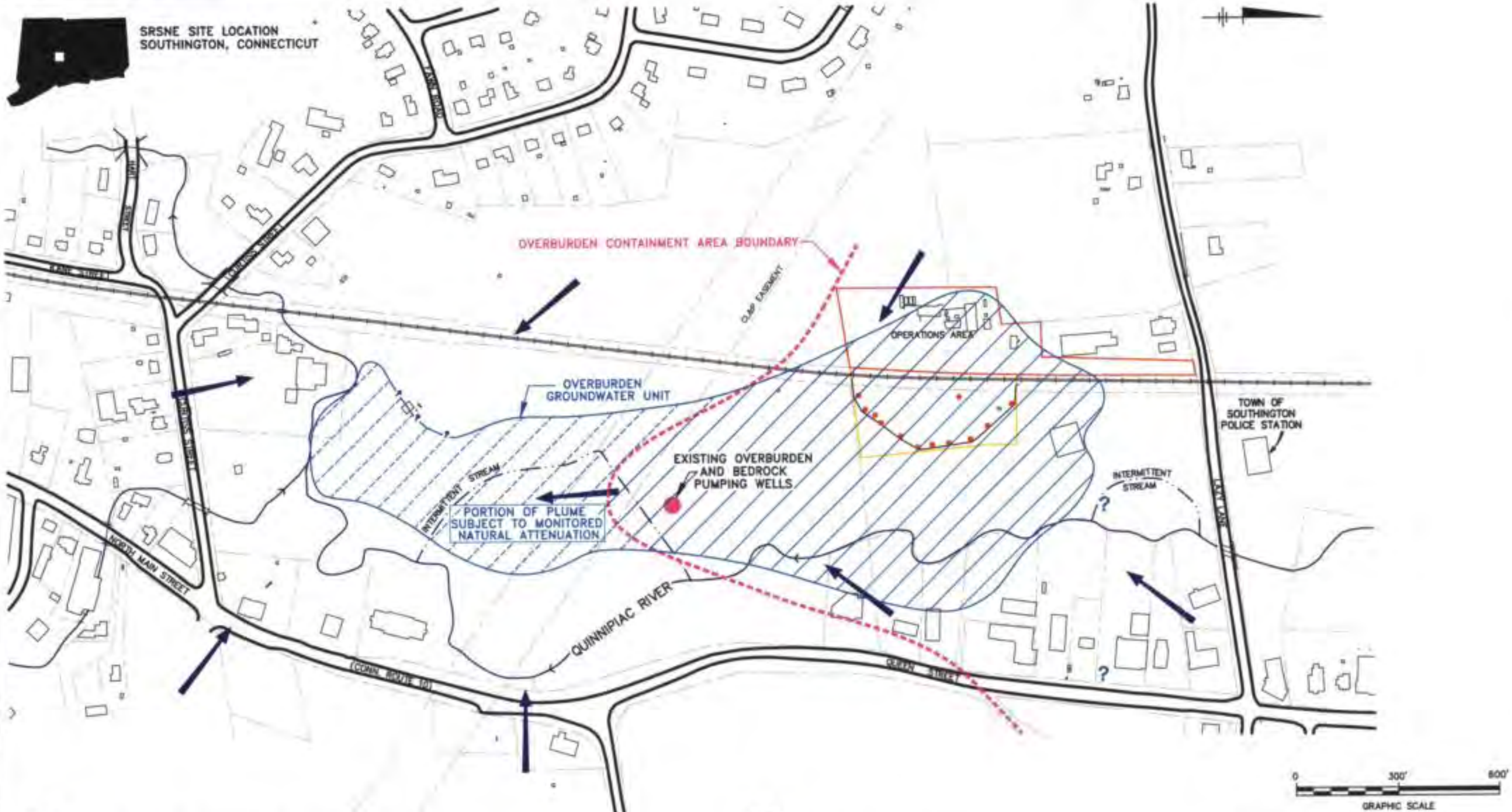
NOTE:

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.

SRSNE SUPERFUND SITE
SOUTHINGTON, CONNECTICUT
FEASIBILITY STUDY

CT DEP GROUND-WATER CLASSIFICATION

FIGURE 3



NOTE:

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.

LEGEND:

- OVERBURDEN SHEET PILE WALL
- OVERBURDEN EXTRACTION WELL (12)
- GENERALIZED GROUND-WATER FLOW DIRECTIONS

SRSNE SUPERFUND SITE
SOUTHINGTON, CONNECTICUT
FEASIBILITY STUDY

OVERBURDEN GROUNDWATER AREA

FIGURE
4

NOTE:

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.

LEGEND:

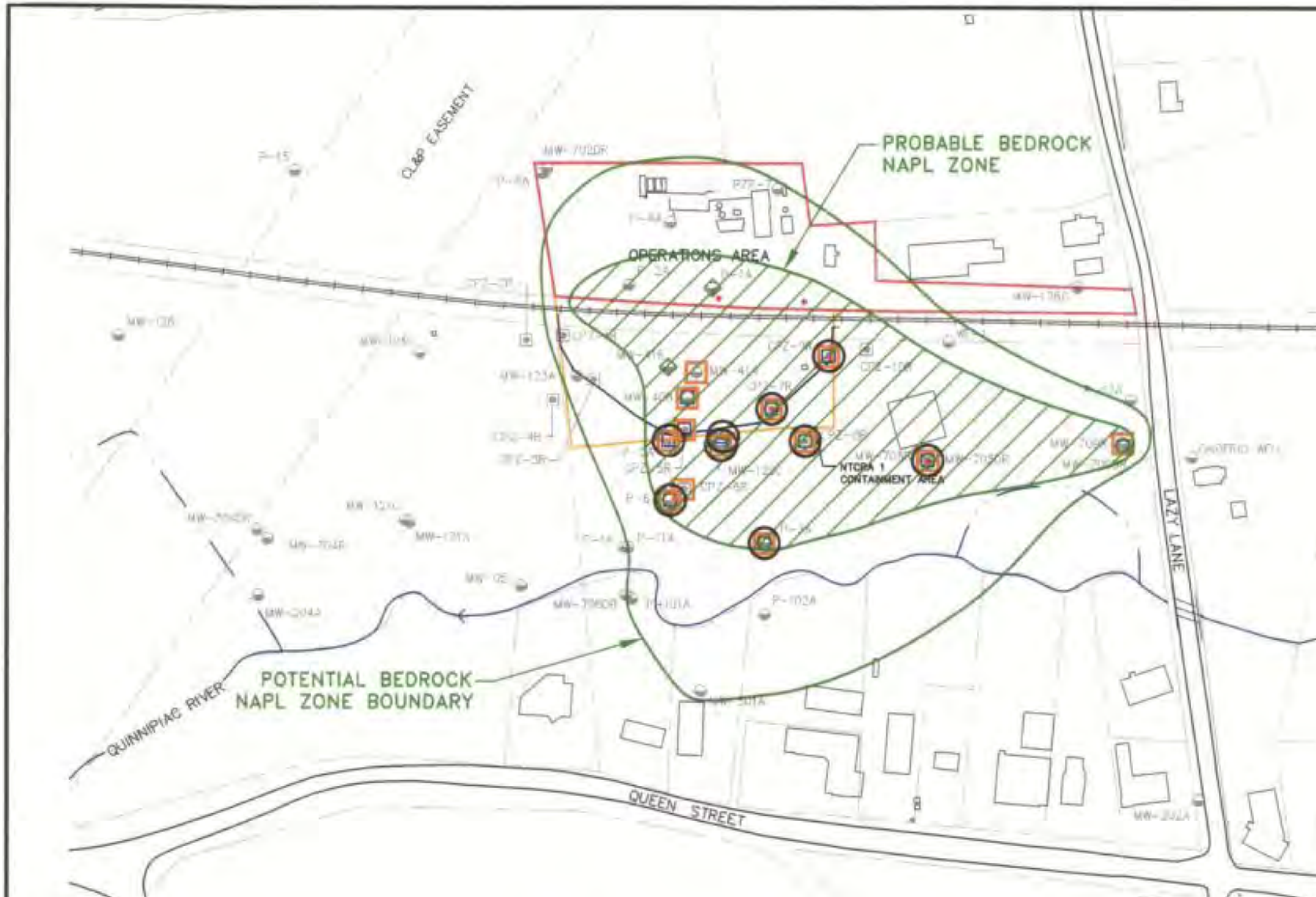
- OVERBURDEN SHEET PILE WALL
- OVERBURDEN EXTRACTION WELL (12)
- GENERALIZED GROUND-WATER FLOW DIRECTIONS

SRSNE SUPERFUND SITE
SOUTHINGTON, CONNECTICUT
FEASIBILITY STUDY

BEDROCK GROUNDWATER AREA

FIGURE 5.

X: 08331X00
L: ON=*, OFF=*REF* P:
PAGESET/SYR-BL1
5/24/05 SYR-85 PGL NJB GJD
08331008/FEASIBILITY/08331T04.DWG



LEGEND:

- GROUND-WATER SAMPLE 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 COMPOUNDS DETECTED >1% OF EMPIRICAL SOLUBILITY
- GROUND-WATER SAMPLING LOCATION WITH ALCOHOLS DETECTED
- OTHER LOCATIONS WHERE NAPL VISUALLY DETECTED BY SHEEN OR POSITIVE HYDROPHOBIC DYE TEST
- MW-709R BEDROCK MONITORING WELL
- CPZ-10R BEDROCK PIEZOMETER

0 200' 400'

GRAPHIC SCALE

NOTE:

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.

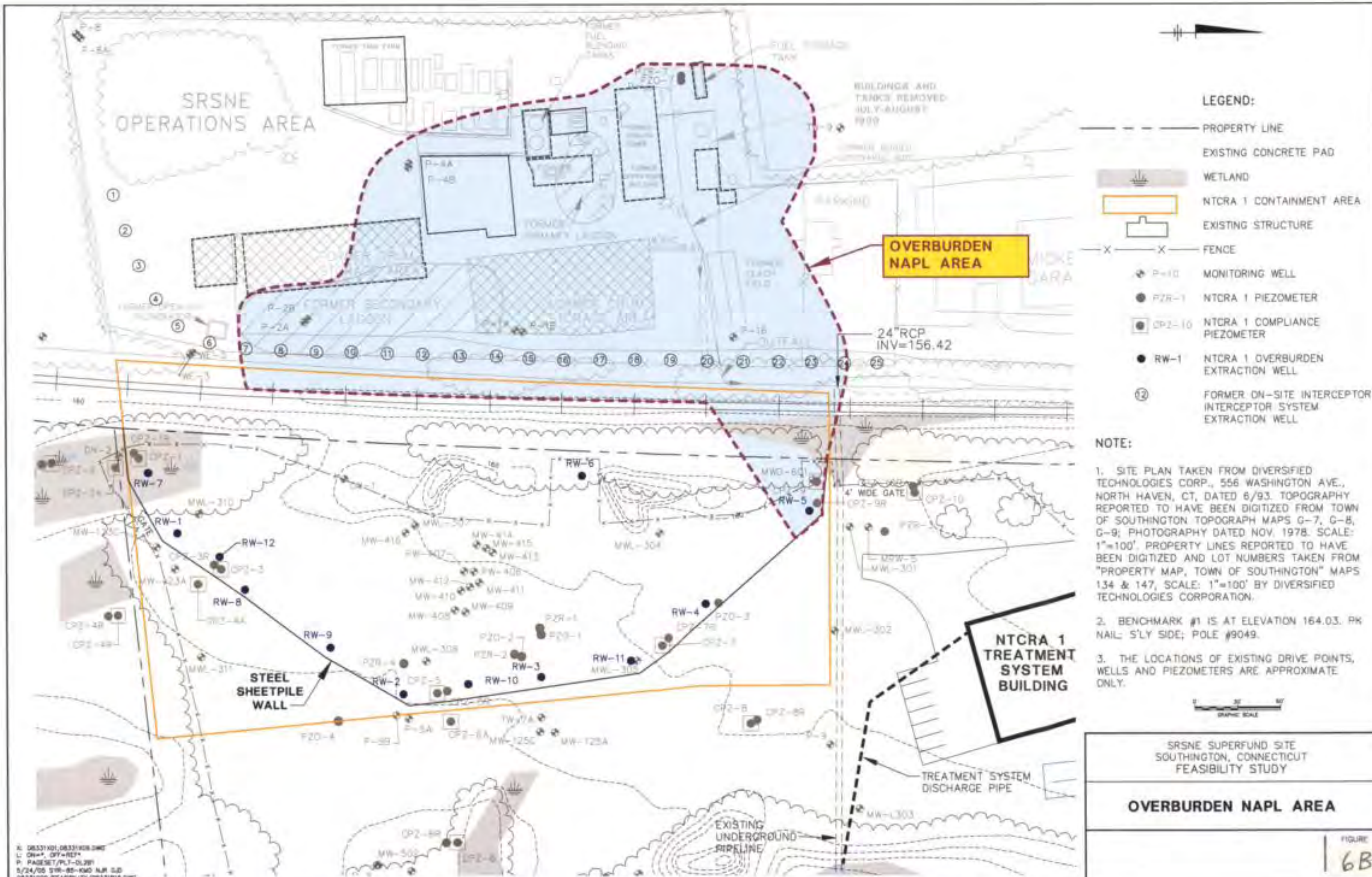
SRSNE PRP GROUP
SOUTHINGTON, CONNECTICUT

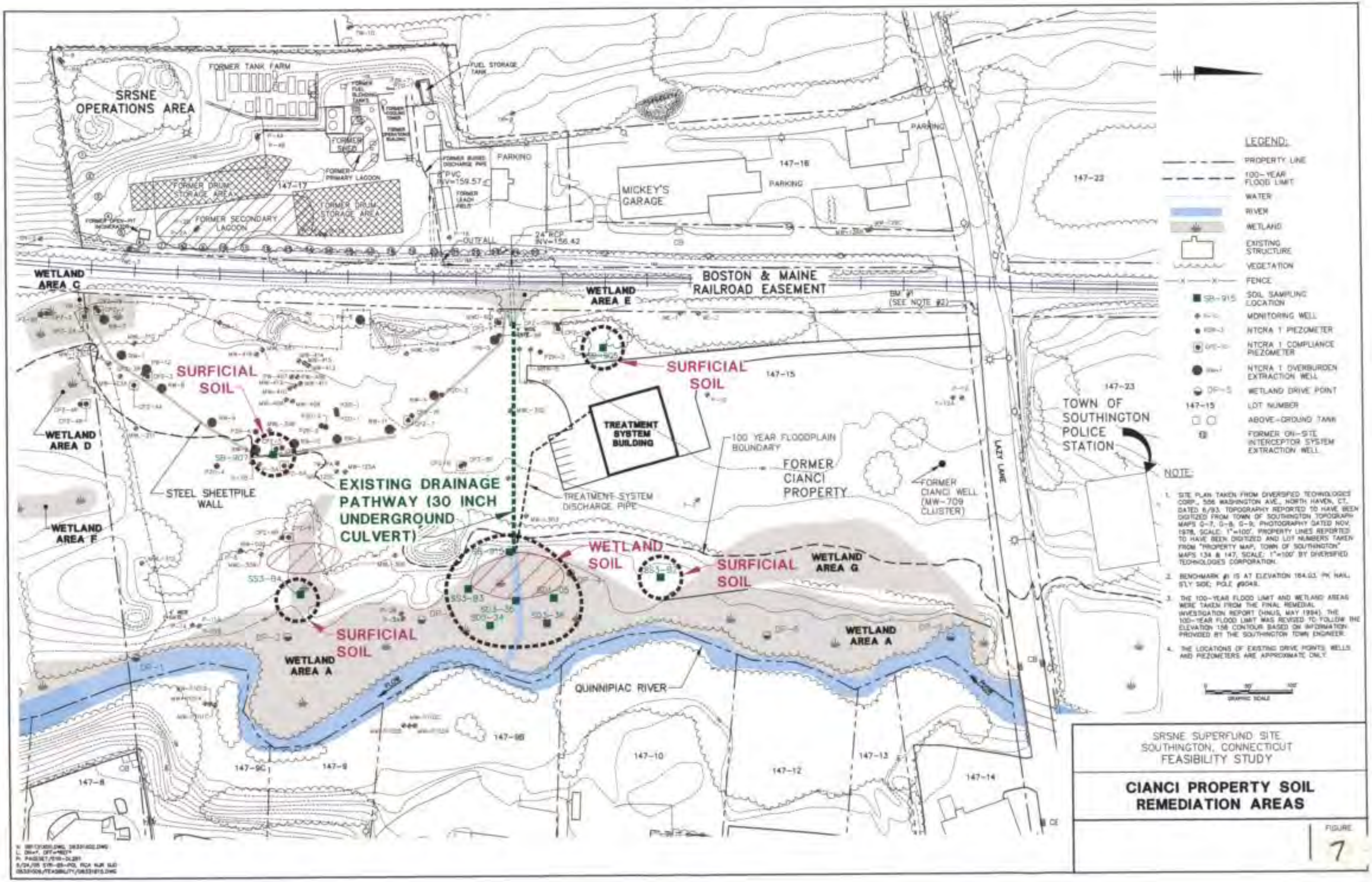
REMEDIAL INVESTIGATION

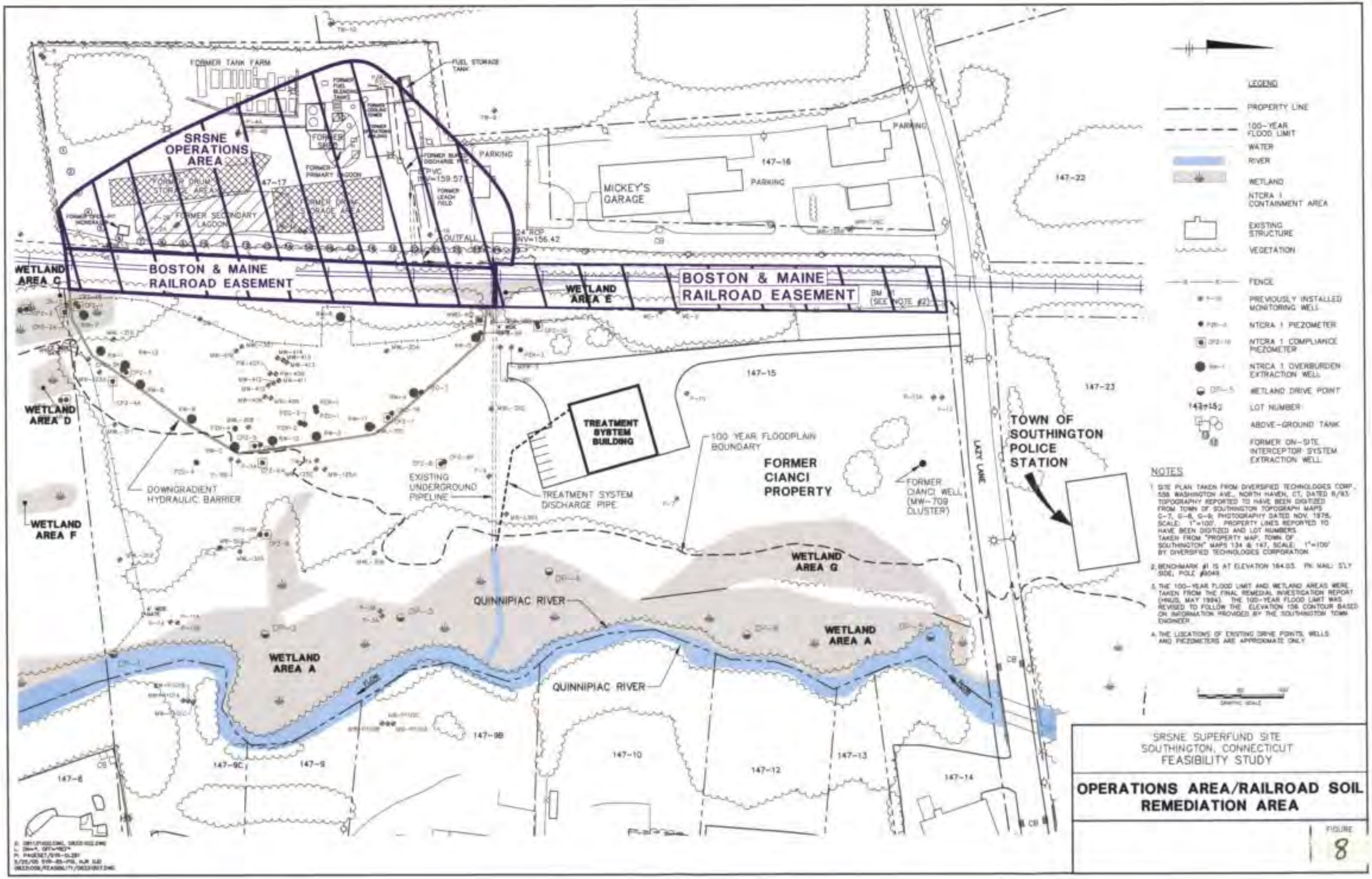
ESTIMATED NAPL-ZONE BOUNDARY IN BEDROCK

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 6A


SRSNE OPERATIONS AREA
OVERBURDEN NAPL AREA
24"RCP INV=156.42
STEEL SHEETPILE WALL
NTCRA 1 TREATMENT SYSTEM BUILDING
TREATMENT SYSTEM DISCHARGE PIPE
EXISTING UNDERGROUND PIPELINE
4' WIDE GATE
RW-1
RW-2
RW-3
RW-4
RW-5
RW-6
RW-7
RW-8
RW-9
RW-10
RW-11
RW-12
LEGEND:
PROPERTY LINE
EXISTING CONCRETE PAD
WETLAND
NTCRA 1 CONTAINMENT AREA
EXISTING STRUCTURE
FENCE
P-10 MONITORING WELL
PZR-1 NTCRA 1 PIEZOMETER
CPZ-10 NTCRA 1 COMPLIANCE PIEZOMETER
RW-1 NTCRA 1 OVERBURDEN EXTRACTION WELL
12 FORMER ON-SITE INTERCEPTOR INTERCEPTOR SYSTEM EXTRACTION WELL
NOTE:
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 SIDE; POLE #9049.
3. THE LOCATIONS OF EXISTING DRIVE POINTS, WELLS AND PIEZOMETERS ARE APPROXIMATE ONLY.
GRAPHIC SCALE
SRSNE SUPERFUND SITE
SOUTHINGTON, CONNECTICUT
FEASIBILITY STUDY
OVERBURDEN NAPL AREA
FIGURE
6B


SRSNE
OPERATIONS AREA
FORMER TANK FARM
FUEL STORAGE TANK
FORMER SHED
PARKING
FORMER PRIMARY LAGOON
FORMER DRUM STORAGE AREA
FORMER SECONDARY LAGOON
FORMER DRUM STORAGE AREA
147-17
OUTFALL
24" RCP
INV=156.42
MICKEY'S GARAGE
147-16
PARKING
BOSTON & MAINE
RAILROAD EASEMENT
WETLAND AREA C
WETLAND AREA E
WETLAND AREA D
WETLAND AREA F
SURFICIAL SOIL
SURFICIAL SOIL
SB-907
147-15
TREATMENT SYSTEM BUILDING
100 YEAR FLOODPLAIN BOUNDARY
FORMER CIANCI PROPERTY
FORMER CIANCI WELL (MW-709 CLUSTER)
STEEL SHEETPILE WALL
EXISTING DRAINAGE PATHWAY (30 INCH UNDERGROUND CULVERT)
TREATMENT SYSTEM DISCHARGE PIPE
WETLAND SOIL
SURFICIAL SOIL
WETLAND AREA G
SS3-B4
SS3-B3
SURFICIAL SOIL
WETLAND AREA A
WETLAND AREA A
QUINNIPIAC RIVER
LAZY LANE
147-22
147-23
TOWN OF SOUTHINGTON POLICE STATION
147-9C
147-9
147-8
147-9B
147-10
147-12
147-13
147-14
LEGEND:
PROPERTY LINE
100-YEAR FLOOD LIMIT
WATER
RIVER
WETLAND
EXISTING STRUCTURE
VEGETATION
FENCE
SOIL SAMPLING LOCATION
MONITORING WELL
NTCRA 1 PIEZOMETER
NTCRA 1 COMPLIANCE PIEZOMETER
NTCRA 1 OVERBURDEN EXTRACTION WELL
WETLAND DRIVE POINT
LOT NUMBER
ABOVE-GROUND TANK
FORMER ON-SITE INTERCEPTOR SYSTEM EXTRACTION WELL
NOTE:
1. SITE PLAN TAKEN FROM DIVERSIFIED TECHNOLOGIES CORP., 586 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 SIDE; POLE #9048.
3. THE 100-YEAR FLOOD LIMIT AND WETLAND AREAS WERE TAKEN FROM THE FINAL REMEDIAL INVESTIGATION REPORT (HNUS, MAY 1994). THE 100-YEAR FLOOD LIMIT WAS REVISED TO FOLLOW THE ELEVATION 158 CONTOUR BASED ON INFORMATION PROVIDED BY THE SOUTHINGTON TOWN ENGINEER.
4. THE LOCATIONS OF EXISTING DRIVE POINTS, WELLS AND PIEZOMETERS ARE APPROXIMATE ONLY.
GRAPHIC SCALE
SRSNE SUPERFUND SITE
SOUTHINGTON, CONNECTICUT
FEASIBILITY STUDY
CIANCI PROPERTY SOIL
REMEDIATION AREAS
FIGURE
7



SRSNE OPERATIONS AREA
FORMER TANK FARM
FUEL STORAGE TANK
FORMER SHED
FORMER PRIMARY LAGOON
FORMER DRUM STORAGE AREA
FORMER SECONDARY LAGOON
FORMER LEACH FIELD
OUTFALL
24" RCP INV=156.42
PARKING
147-17
147-16
MICKEY'S GARAGE
BOSTON & MAINE RAILROAD EASEMENT
BOSTON & MAINE RAILROAD EASEMENT
WETLAND AREA C
WETLAND AREA D
WETLAND AREA E
WETLAND AREA F
WETLAND AREA G
WETLAND AREA A
WETLAND AREA A
TREATMENT SYSTEM BUILDING
147-15
100 YEAR FLOODPLAIN BOUNDARY
FORMER CIANCI PROPERTY
FORMER CIANCI WELL (MW-709 CLUSTER)
DOWNGRADIENT HYDRAULIC BARRIER
EXISTING UNDERGROUND PIPELINE
TREATMENT SYSTEM DISCHARGE PIPE
QUINNIPIAC RIVER
QUINNIPIAC RIVER
LAZY LANE
TOWN OF SOUTHINGTON POLICE STATION
147-22
147-23
147-6
147-9C
147-9
147-9B
147-10
147-12
147-13
147-14
LEGEND
PROPERTY LINE
100-YEAR FLOOD LIMIT
WATER
RIVER
WETLAND
NTCRA 1 CONTAINMENT AREA
EXISTING STRUCTURE
VEGETATION
FENCE
PREVIOUSLY INSTALLED MONITORING WELL
NTCRA 1 PIEZOMETER
NTCRA 1 COMPLIANCE PIEZOMETER
NTRCA 1 OVERBURDEN EXTRACTION WELL
WETLAND DRIVE POINT
LOT NUMBER
ABOVE-GROUND TANK
FORMER ON-SITE INTERCEPTOR SYSTEM EXTRACTION WELL
NOTES
1. SITE PLAN TAKEN FROM DIVERSIFIED TECHNOLOGIES CORP., 556 WASHINGTON AVE., NORTH HAVEN, CT, DATED 8/93. TOPOGRAPHY REPORTED TO HAVE BEEN DIGITIZED FROM TOWN OF SOUTHINGTON TOPOGRAPH MAPS G-7, G-8, G-9; PHOTOGRAPHY DATED NOV. 1976, 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 SIDE; POLE #9049.
3. THE 100-YEAR FLOOD LIMIT AND WETLAND AREAS WERE TAKEN FROM THE FINAL REMEDIAL INVESTIGATION REPORT (HNUS, MAY 1994). THE 100-YEAR FLOOD LIMIT WAS REVISED TO FOLLOW THE ELEVATION 136 CONTOUR BASED ON INFORMATION PROVIDED BY THE SOUTHINGTON TOWN ENGINEER.
4. THE LOCATIONS OF EXISTING DRIVE POINTS, WELLS AND PIEZOMETERS ARE APPROXIMATE ONLY.
SRSNE SUPERFUND SITE
SOUTHINGTON, CONNECTICUT
FEASIBILITY STUDY
OPERATIONS AREA/RAILROAD SOIL REMEDIATION AREA
FIGURE
8

Appendix B

Tables

TABLE E-1

Organic Compound Groups Detected at SRSNE Site

VOLATILE ORGANIC COMPOUNDS			
CHLORINATED HYDROCARBONS	AROMATIC HYDROCARBONS	KETONES	
Chloroethane	Benzene	Acetone	
Methylene Chloride	Toluene	2-Butanone	
1,1 – Dichloroethene	Ethyl Beneze	2-Hexanone	
1,2 – Dichloroethene	Styrene	4- Methyl – 2 – Pentanone	
Trichloroethene			
1,1,1- Trichloroethane			
Carbon tetrachloride			
Tetrachloroethene			
Chlorobenzene			
SEMI-VOLATILE ORGANIC COMPOUNDS			
POLYNUCLEAR AROMATIC HYDROCARBONS	PHTHALATES	PHENOLS	OTHER SVOCS
Naphthalene	Dimethyl Phthalate	Phenol	1,2 - Dichlorobenzene
2-Methylnaphthalene	Diethyl Phthalate	2-Methylphenol	Isophorone
Acenaphthylene	Di-n-butylphthalate	4-Methylphenol	Benzoic Acid
Acenaphthene	Butylbenzylphthalate	4-Chloro-3-methylphenol	4-Chloraniline
Dibenzofuran	Bis(2-ethylhexyl)-phthalate		
Fluorene	Di-n-octylphthalate		
Phenanthrene			
Anthracene			
Fluoranthene			
Pyrene			
Benzo(a)anthracene			
Chrysene			
Benzo(b)fluoranthene			
Benzo(a)pyrene			
Ideno(1,2,3-cd)pyrene			
Dibenz(a,h)anthracene			
Benzo(ghi)perylene			

TABLE G-11
SUMMARY OF ECOLOGICAL CHEMICALS OF CONCERN
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND, INC. SUPERFUND SITE
SOUTHINGTON, CONNECTICUT

Chemical	Environmental Media		
VOLATILE ORGANIC COMPOUNDS	Surface Water	Sediment	Soil
Benzene			X
Xylenes (total)	X	X	X
SEMIVOLATILE ORGANIC COMPOUNDS			
Acenaphthene		X	
Acenaphthylene		X	X
Anthracene		X	X
Benzo(a)anthracene		X	X
Benzo(a)pyrene		X	X
Benzo(b)fluoranthene			X
Benzo(k)fluoranthene			X
Benzo(g,h,i)perylene			X
Bis(2-ethylhexyl)phthalate	X	X	X
Butyl benzyl phthalate		X	X
Chrysene		X	X
Dibenzofuran		X	
Diethyl phthalate			X
Di-n-butyl phthalate		X	X
Di-n-octyl phthalate		X	X
Fluorene		X	X
Fluoranthene			X
Indeno(1,2,3-cd)pyrene			X
2-Methylnaphthalene		X	X
Naphthalene		X	X
Phenanthrene		X	X
1,2,4-Trichlorobenzene			X

SUMMARY OF ECOLOGICAL CHEMICALS OF CONCERN
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND, INC. SUPERFUND SITE
SOUTHINGTON, CONNECTICUT

Chemical	Environmental Media		
PESTICIDES/POLYCHLORINATED BIPHENYLS (PCBs)/DIOXINS	Surface Water	Sediment	Soil
Aldrin		X	
Alpha-Chlordane		X	
Aroclor-1016			X
Aroclor-1248			X
Aroclor-1254	X	X	X
Aroclor-1260		X	X
4,4'-DDD		X	
4,4'-DDE		X	X
4,4'-DDT		X	X
Dieldrin		X	X
Endrin		X	X
Endosulfan I		X	
Endosulfan II			X
Gamma-BHC (Lindane)			X
Gamma-Chlordane		X	X
Heptachlor epoxide		X	X
Methoxychlor			X
Dioxins (as Toxicity Equivalent Concentrations for 2,3,7,8-TCDD)			X
METALS			
Cadmium	X	X	X
Copper	X	X	X
Lead	X	X	X
Mercury		X	X
Nickel		X	
Selenium			X
Zinc		X	

TABLE G-1
SUMMARY OF CHEMICALS OF CONCERN AND EXPOSURE POINT CONCENTRATIONS
OPERATIONS AREA PLUME: OVERBURDEN GROUNDWATER
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND, INC

Scenario Timeframe: Future
Medium: Overburden Groundwater
Exposure Medium: Overburden Groundwater

Exposure Point	Chemical of Concern	Units	Frequency of Detection	Minimum Concentration (1)(2)	Maximum Concentration (1)(2)	Exposure Point Concentration		
						Value (3)	Units	Rationale
Potable Water	1,1,1-Trichloroethane	ug/L	84/264	0.5	204000	204000	ug/L	Region 1 Policy
	1,1-Dichloroethane	ug/L	102/264	0.5	14380	14380	ug/L	Region 1 Policy
	1,1-Dichloroethene	ug/L	31/264	0.5	6910	6910	ug/L	Region 1 Policy
	2-Butanone	ug/L	38/250	2.5	470000	470000	ug/L	Region 1 Policy
	4-Methyl-2-pentanone	ug/L	33/249	2.5	57000	57000	ug/L	Region 1 Policy
	Acetone	ug/L	38/236	2.5	320000	320000	ug/L	Region 1 Policy
	Benzene	ug/L	49/264	0.5	2500	2500	ug/L	Region 1 Policy
	Chlorobenzene	ug/L	28/259	0.5	2500	2500	ug/L	Region 1 Policy
	Chloroethane	ug/L	28/259	0.5	3717	3717	ug/L	Region 1 Policy
	cis-1,2-Dichloroethene	ug/L	58/137	0.5	221250	221250	ug/L	Region 1 Policy
	Ethylbenzene	ug/L	114/264	0.5	84300	84300	ug/L	Region 1 Policy
	M,P-Xylene	ug/L	48/118	0.9	8600	8600	ug/L	Region 1 Policy
	Methylene chloride	ug/L	19/264	0.5	9000	9000	ug/L	Region 1 Policy
	O-Xylene	ug/L	32/118	0.5	3550	3550	ug/L	Region 1 Policy
	Tetrachloroethene	ug/L	26/264	0.5	14000	14000	ug/L	Region 1 Policy
	Tetrahydrofuran	ug/L	49/217	2.75	52000	52000	ug/L	Region 1 Policy
	Toluene	ug/L	95/264	0.5	132000	132000	ug/L	Region 1 Policy
	trans-1,2-Dichloroethene	ug/L	14/155	0.5	6958	6958	ug/L	Region 1 Policy
	Trichloroethene	ug/L	44/264	0.5	95000	95000	ug/L	Region 1 Policy
	Vinyl chloride	ug/L	65/264	0.5	11900	11900	ug/L	Region 1 Policy
	Xylenes, Total	ug/L	107/249	0.5	14000	14000	ug/L	Region 1 Policy
	4-Methylphenol	ug/L	13/30	3	1100	1100	ug/L	Region 1 Policy
	Aroclor-1260	ug/L	2/30	0.5	95	95	ug/L	Region 1 Policy

TABLE G-1
SUMMARY OF CHEMICALS OF CONCERN AND EXPOSURE POINT CONCENTRATIONS
OPERATIONS AREA PLUME: OVERBURDEN GROUNDWATER
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND, INC

Scenario Timeframe: Future
Medium: Overburden Groundwater
Exposure Medium: Overburden Groundwater

Exposure Point	Chemical of Concern	Units	Frequency of Detection	Minimum Concentration (1)(2)	Maximum Concentration (1)(2)	Exposure Point Concentration		
						Value (3)	Units	Rationale
	Arsenic	ug/L	26/29	1.1	42	42	ug/L	Region 1 Policy
	Barium	ug/L	30/30	178	20000	20000	ug/L	Region 1 Policy
	Beryllium	ug/L	20/25	0.2	30	30	ug/L	Region 1 Policy
	Cadmium	ug/L	7/18	0.5	46	46	ug/L	Region 1 Policy
	Chromium	ug/L	26/29	2.6	420	420	ug/L	Region 1 Policy
	1,2-Dichloroethene, total	ug/L	95/222	1	136625	136625	ug/L	Region 1 Policy
	Lead	ug/L	27/30	3.55	85	85	ug/L	Region 1 Policy
	Manganese	ug/L	39/39	20.8	23067	23067	ug/L	Region 1 Policy
	Nickel	ug/L	25/29	7.9	320	320	ug/L	Region 1 Policy
	Thallium	ug/L	1/11	0.65	2	2	ug/L	Region 1 Policy
	Vanadium	ug/L	27/29	30	750	750	ug/L	Region 1 Policy

Notes:
(1) The lowest concentration observed from all wells when concentrations observed in each well were averaged over the period in which it was sampled.
(2) Data qualifiers not included (potential for more than one qualifier as a result of data spanning several years).
(3) The exposure point concentration for groundwater is the highest average concentration observed from all wells, when concentrations observed in each well were averaged over the period in which the well was sampled per Region 1 policy.

The table represents the chemicals of concern (COCs) and exposure point concentrations (EPCs) for each of the COCs detected in overburden groundwater from the Operations Area deemed pertinent to the remedy for the protection of human health (i.e., the concentrations that were used to estimate the exposure and risk). The table includes the range of concentrations detected for each COC, as well as the frequency of detection (i.e., the number of times the chemical was detected in the samples collected at the Site), the EPC, and how the EPC was derived.

TABLE G-2
SUMMARY OF CHEMICALS OF CONCERN AND EXPOSURE POINT CONCENTRATIONS
OPERATIONS AREA PLUME: BEDROCK GROUNDWATER
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND, INC.

Scenario Timeframe: Future
Medium: Bedrock Groundwater
Exposure Medium: Bedrock Groundwater

Exposure Point	Chemical of Concern	Units	Frequency of Detection	Minimum Concentration (1)(2)	Maximum Concentration (1)(2)	Exposure Point Concentration		
						Value (3)	Units	Rationale
Potable Water	1,1,1-Trichloroethane	ug/L	55/147	0.5	64238	64238	ug/L	Region 1 Policy
	1,1-Dichloroethane	ug/L	68/147	0.5	5000	5000	ug/L	Region 1 Policy
	1,1-Dichloroethene	ug/L	46/147	0.5	5100	5100	ug/L	Region 1 Policy
	1,2-Dichloroethane	ug/L	11/146	0.5	5000	5000	ug/L	Region 1 Policy
	2-Butanone	ug/L	23/129	2.5	72375	72375	ug/L	Region 1 Policy
	4-Methyl-2-pentanone	ug/L	36/146	2.5	25000	25000	ug/L	Region 1 Policy
	Acetone	ug/L	27/128	2.5	55500	55500	ug/L	Region 1 Policy
	Benzene	ug/L	40/147	0.5	5000	5000	ug/L	Region 1 Policy
	Carbon tetrachloride	ug/L	10/146	0.5	5000	5000	ug/L	Region 1 Policy
	Chlorobenzene	ug/L	14/146	0.5	5000	5000	ug/L	Region 1 Policy
	Chloroethane	ug/L	49/146	0.5	5000	5000	ug/L	Region 1 Policy
	cis-1,2-Dichloroethene	ug/L	48/80	0.5	110000	110000	ug/L	Region 1 Policy
	Ethylbenzene	ug/L	73/147	0.5	9300	9300	ug/L	Region 1 Policy
	M,P-Xylene	ug/L	28/61	1.0	18000	18000	ug/L	Region 1 Policy
	Methylene chloride	ug/L	15/146	1.0	11000	11000	ug/L	Region 1 Policy
	O-Xylene	ug/L	23/62	0.5	6600	6600	ug/L	Region 1 Policy
	Tetrachloroethene	ug/L	35/147	0.5	51000	51000	ug/L	Region 1 Policy
	Tetrahydrofuran	ug/L	42/113	2.75	50000	50000	ug/L	Region 1 Policy
	Toluene	ug/L	66/147	0.5	92000	92000	ug/L	Region 1 Policy
	trans-1,2-Dichloroethene	ug/L	7/83	0.4	5000	5000	ug/L	Region 1 Policy
	Trichloroethene	ug/L	62/147	0.5	730000	730000	ug/L	Region 1 Policy
	Vinyl chloride	ug/L	47/147	0.5	12730	12730	ug/L	Region 1 Policy
	Xylenes, Total	ug/L	63/145	1.0	25000	25000	ug/L	Region 1 Policy
	4-Methylphenol	ug/L	11/32	3.0	570	570	ug/L	Region 1 Policy
	Naphthalene	ug/L	10/32	0.5	25	25	ug/L	Region 1 Policy

TABLE G-2

SUMMARY OF CHEMICALS OF CONCERN AND EXPOSURE POINT CONCENTRATIONS

OPERATIONS AREA PLUME: BEDROCK GROUNDWATER

SOLVENTS RECOVERY SERVICE OF NEW ENGLAND, INC.

Scenario Timeframe: Future
Medium: Bedrock Groundwater
Exposure Medium: Bedrock Groundwater

Exposure Point	Chemical of Concern	Units	Frequency of Detection	Minimum Concentration (1)(2)	Maximum Concentration (1)(2)	Exposure Point Concentration		
						Value (3)	Units	Rationale
	Aroclor-1254	ug/L	2/32	0.5	97	97	ug/L	Region 1 Policy
	Arsenic	ug/L	19/25	1.45	49	49	ug/L	Region 1 Policy
	Barium	ug/L	32/32	24.0	12000	12000	ug/L	Region 1 Policy
	Beryllium	ug/L	14/21	0.15	52	52	ug/L	Region 1 Policy
	Cadmium	ug/L	2/16	0.5	20	20	ug/L	Region 1 Policy
	Chromium	ug/L	19/31	2.25	760	760	ug/L	Region 1 Policy
	Copper	ug/L	21/29	1.75	1600	1600	ug/L	Region 1 Policy
	1,2-Dichloroethene, total	ug/L	78/124	1.0	120000	120000	ug/L	Region 1 Policy
	Lead	ug/L	23/28	0.95	190	190	ug/L	Region 1 Policy
	Manganese	ug/L	39/39	28.0	43000	43000	ug/L	Region 1 Policy
	Nickel	ug/L	18/29	2.7	790	790	ug/L	Region 1 Policy
	Thallium	ug/L	1/12	0.65	3.8	3.8	ug/L	Region 1 Policy
	Vanadium	ug/L	21/31	2.9	1300	1300	ug/L	Region 1 Policy

Notes:

(1) The lowest average concentration observed from all wells, when concentrations observed in each well were averaged over the period of which it was reported.

(2) Data qualifiers not included (potential for more than one qualifier as a result of data spanning several years).

(3) The exposure point concentration for ground water is the highest average concentration observed from all wells, when concentrations observed in each well were averaged over the period in which the well was sampled per Region 1 policy.

The table represents the chemicals of concern (COCs) and exposure point concentrations (EPCs) for each of the COCs detected in bedrock groundwater from the Operations Area deemed pertinent to the remedy for the protection of human health (i.e., the concentrations that were used to estimate the exposure and risk). The table includes the range of concentrations detected for each COC, as well as the frequency of detection (i.e., the number of times the chemical was detected in the samples collected at the Site), the EPC, and how the EPC was derived.

TABLE G-3

SUMMARY OF CHEMICALS OF CONCERN AND EXPOSURE POINT CONCENTRATIONS

OPERATIONS AREA/ RAILROAD PROPERTY: SUBSURFACE SOILS

SOLVENTS RECOVERY SERVICE OF NEW ENGLAND, INC

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Subsurface Soil

Exposure Point	Chemical of Concern	Units	Frequency of Detection	Arithmetic Mean	95% UCL on the Mean (1)	Maximum Concentration (Qualifier)		Exposure Point Concentration		
								Value (2)	Units	Rationale
Subsurface Soil	Lead	mg/kg	3/3	314	1.4E+29	1750	J	1750	mg/kg	Maximum
	Arsenic	mg/kg	3/3	2.91	1.2E+05	5.5		5.5	mg/kg	Maximum
	Cadmium	mg/kg	3/3	170	4.8E+08	389		389	mg/kg	Maximum
	Vinyl chloride	mg/kg	1/32	0.12	4.1E+02	0.4	J	0.4	mg/kg	Maximum
	Trichloroethene	mg/kg	24/32	1.15	1.4E+04	430		430	mg/kg	Maximum
	Aroclor-1016	mg/kg	2/3	0.17	8.0E+16	1.2	J	1.2	mg/kg	Maximum
	Aroclor-1260	mg/kg	3/3	1.44	5.1E+09	5	J	5	mg/kg	Maximum
	Aroclor-1254	mg/kg	3/3	3.05	2.7E+06	11	J	11	mg/kg	Maximum
	PCBs, total	mg/kg	3/3	4.92	1.06E+07	17.2		17.2	mg/kg	Maximum
	bis(2-Ethylhexyl)phthalate	mg/kg	3/3	16.1	1.9E+17	120	J*	120	mg/kg	Maximum
	Tetrachloroethene	mg/kg	31/32	3.9	1.1E+05	1200		1200	mg/kg	Maximum
	2,3,7,8-TCDD	mg/kg	4/8	0.000011	0.0017	0.0003		0.0003	mg/kg	Maximum
	2,3,7,8-TCDF	mg/kg	1/8	0.00013	0.00046	0.0041		0.00046	mg/kg	95% UCL
	2,3,4,7,8-PeCDF	mg/kg	1/8	0.000081	0.00097	0.00034		0.00034	mg/kg	Maximum
	1,2,3,7,8-PeCDF	mg/kg	1/8	0.00019	0.00082	0.00016		0.00016	mg/kg	Maximum
	1,2,3,6,7,8-HxCDF	mg/kg	1/8	0.00029	0.033	0.00021		0.00021	mg/kg	Maximum
	2,3,4,6,7,8-HxCDF	mg/kg	1/8	0.000085	0.00040	0.00021		0.00021	mg/kg	Maximum
	1,2,3,4,6,7,8-HpCDF	mg/kg	1/8	0.00070	0.04700	0.00049		0.00049	mg/kg	Maximum
	1,2,3,4,7,8-HxCDF	mg/kg	1/8	0.00016	0.00058	0.00038		0.00038	mg/kg	Maximum

Notes:

(1) The 95% upper confidence limit (UCL) of the arithmetic mean for a lognormal distribution was calculated according to USEPA (1992), Supplemental Guidance to RAGS: Calculating the Concentration Term.

(2) As per USEPA (1989), the exposure point concentration is the lesser of the 95% UCL on the mean and the maximum concentration.

Qualifiers:

J = Indicates that the compound was analyzed for and determined to be present in the sample below the reporting limit.

* = Duplicate analysis not within control limits.

The table represents the chemicals of concern (COCs) and exposure point concentrations (EPCs) for each of the COCs detected in subsurfacial soils at the Operations Area/Railroad Property deemed pertinent to the remedy for the protection of human health (i.e., the concentrations that were used to estimate the exposure and risk). The table includes the range of concentrations detected for each COC, as well as the frequency of detection (i.e., the number of times the chemical was detected from the samples collected at the Site), the EPC, and how the EPC was derived.

TABLE G-4
CANCER TOXICITY DATA -- ORAL/DERMAL
SOLVENTS RECOVERY SYSTEM OF NEW ENGLAND, INC.

Chemical of Concern	Oral Cancer Slope Factor (1)		Weight of Evidence/ Cancer Guideline Description (3)	Oral CSF Source(s)	Date(s) (MM/DD/YYYY)
	Value	Units			
1,1,1-Trichloroethane (a)	-	-	D	IRIS	8/1/1991
1,1-Dichloroethene (a)	-	-	C	IRIS	8/13/2002
1,2-Dichloroethane	9.10E-02	(mg/kg-day)-1	B2	IRIS	1/1/1991
2,3,7,8-TCDD	1.50E+05	(mg/kg-day)-1	B2	(HEAST)	7/31/1999
2,3,7,8-TCDF	1.50E+04	(mg/kg-day)-1	B2	(HEAST), WHO TEF (4)	7/31/99, 12/98
2,3,4,7,8-PeCDF	7.50E+04	(mg/kg-day)-1	B2	(HEAST), WHO TEF (4)	7/31/99, 12/98
1,2,3,7,8-PeCDF	7.50E+03	(mg/kg-day)-1	B2	(HEAST), WHO TEF (4)	7/31/99, 12/98
1,2,3,6,7,8-HxCDF	1.50E+04	(mg/kg-day)-1	B2	(HEAST), WHO TEF (4)	7/31/99, 12/98
2,3,4,6,7,8-HxCDF	1.50E+04	(mg/kg-day)-1	B2	(HEAST), WHO TEF (4)	7/31/99, 12/98
1,2,3,4,6,7,8-HpCDF	1.50E+03	(mg/kg-day)-1	B2	(HEAST), WHO TEF (4)	7/31/99, 12/98
1,2,3,4,7,8-HxCDF	1.50E+04	(mg/kg-day)-1	B2	(HEAST), WHO TEF (4)	7/31/99, 12/98
Aroclor-1016 (b)	7.00E-02	(mg/kg-day)-1	B2	IRIS	12/15/1999
Aroclor-1254 (b)	2.00E+00	(mg/kg-day)-1	B2	IRIS	12/15/1999
Aroclor-1254 (d)	4.00E-01	(mg/kg-day)-1	B2	IRIS	12/15/1999
Aroclor-1260 (b)	2.00E+00	(mg/kg-day)-1	B2	IRIS	12/15/1999
Aroclor-1260 (d)	4.00E-01	(mg/kg-day)-1	B2	IRIS	12/15/1999
Arsenic	1.50E+00	(mg/kg-day)-1	A	IRIS	6/1/1995
Benzene	5.50E-02	(mg/kg-day)-1	A	IRIS	4/17/2003
Benzo(a)pyrene	7.30E+00	(mg/kg-day)-1	B2	IRIS	3/31/1987
bis(2-Ethylhexyl)phthalate	1.40E-02	(mg/kg-day)-1	B2	IRIS	2/1/1993
Carbon tetrachloride	1.30E-01	(mg/kg-day)-1	B2	IRIS	6/1/1991
Chloroethane	2.90E-03	(mg/kg-day)-1	-	NCEA/Region 9	10/1/1991
Chloroform	1.00E-02	(mg/kg-day)-1	B2	IRIS	10/19/2001
Copper (c)	-	-	-	-	-
Lead (c)	-	-	-	-	-
Methylene chloride	7.50E-03	(mg/kg-day)-1	B2	IRIS	1/1/1991
PCBs, total (b)	2.00E+00	(mg/kg-day)-1	B2	IRIS	12/15/1999
PCBs, total (d)	4.00E-01	(mg/kg-day)-1	B2	IRIS	12/15/1999
Tetrachloroethene	5.40E-01	(mg/kg-day)-1	-	Cal-Modified/Region 9	10/1/2004
Tetrahydrofuran	7.60E-03	(mg/kg-day)-1	-	NCEA/Region 9	10/1/2004
Trichloroethene	4.00E-01	(mg/kg-day)-1	-	NCEA/Region 9	10/1/2004
Vinyl chloride	7.20E-01	(mg/kg-day)-1	A	IRIS	8/7/2000

TABLE G-4
CANCER TOXICITY DATA -- ORAL/DERMAL
SOLVENTS RECOVERY SYSTEM OF NEW ENGLAND, INC.

Notes:

(1) Toxicity reference values from USEPA's Integrated Risk Information System (IRIS), and HEAST, NCEA, and PPTRV values as presented in the USEPA Region 9 Preliminary Remediation Goals (PRGs). The Risk Assessment Information System (RAIS) was also consulted (www.risk.lsd.ornl.gov/tox/tox_values) and contains toxicity reference values from IRIS, HEAST and other information sources.

(2) Dermal risk evaluated for COC's in soils only. COCs listed in this table do not require adjustment of the oral slope factor for dermal risk evaluations.

(3) Weight-of-Evidence/Cancer Guideline information obtained from IRIS and RAIS (October 1999). Refer to key below.

(4) Oral cancer slope factor for dioxin congeners is the cancer slope factor for 2,3,7,8-TCDD muliplied by the World Health Organization's (WHO's) congener-specific toxicity equivalency factors (TEFs). (The uncertainty section of the 1999 RA Update describes the USEPA-proposed dioxin cancer slope factor of 1×10^6)

(a) No toxicity data. Oral SF removed from IRIS

(b) Upper-bound slope factor for total PCB (soil ingestion)

(c) No toxicity data

(d) Upper-bound slope factor for total PCB for ingestion of water-soluble congeners.

Key	EPA Group
-- : Not available	A - Human carcinogen
IRIS: Integrated Risk Information System, U.S. EPA	B1 - Probable human carcinogen - Indicates that limited human data are available
NCEA: National Center for Environmental Assessment, U.S. EPA	B2 - Probable human carcinogen - indicates sufficient evidence in animals and inadequate or no evidence in humans
WHO TEF: World Health Organization Toxic Equivalency Factor	C - Possible human carcinogen
Cal-Modified: California Environmental Protection Agency	D - Not classifiable as a human carcinogen
HEAST: Health Effects Assessment Summary Table	E - Evidence of noncarcinogenicity
Region 9: EPA Region 9 Preliminary Remediation Goals Database	

This table provides the carcinogenic risk information which is relevant to the contaminants of concern in groundwater and soils. At this time, slope factors are not available for the dermal route of exposure. Thus, the dermal slope factors used in the risk assessment were extrapolated from oral values.

TABLE G-5
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
SOLVENTS RECOVERY SYSTEM OF NEW ENGLAND, INC

Chemical of Concern	Chronic/ Subchronic (1)	Oral RfD (2)		Absorption Efficiency (for Dermal) (3)	Adjusted RfD (for Dermal) (4)		Primary Target Organ(s) (1)	Combined Uncertainty/Modifying Factors (5)	Source(s)	Date(s) (MM/DD/YYYY)
		Value	Units		Value	Units				
1,1,1-Trichloroethane	-	2.80E-01	mg/kg-day	-	-	-	NA	NA	NCEA	10/1/2004
1,1-Dichloroethene	Chronic	5.00E-02	mg/kg-day	-	-	-	liver	UF=1000	IRIS	8/13/2002
1,1-Dichloroethane	--	1.00E-01	mg/kg-day	--	--	--	--	--	HEAST/Region 9	10/1/2004
1,2-Dichloroethene, total	Subchronic	1.00E-02	mg/kg-day	-	-	-	blood chemistry	UF=1000	IRIS	10/1/2004
2-Butanone	Chronic	6.00E-01	mg/kg-day	-	-	-	fetal weight	UF=3000	IRIS	9/26/2004
4-Methyl-2-pentanone	Subchronic	8.00E-02	mg/kg-day	-	-	-	liver, kidney	NA	HEAST/Region 9	10/1/2004
4-Methylphenol	Subchronic	5.00E-03	mg/kg-day	-	-	-	neurotoxicity	NA	HEAST/Region 9	10/1/2004
Acetone	Subchronic	9.00E-01	mg/kg-day	-	-	-	kidney	UF=1000	IRIS	7/31/2003
Aroclor-1016	Chronic	7.00E-05	mg/kg-day	-	-	-	fetal weight	UF=100	IRIS	6/1/1994
Aroclor-1254	Chronic	2.00E-05	mg/kg-day	-	-	-	immune system	UF=300	IRIS	6/1/1994
Arsenic	Chronic	3.00E-04	mg/kg-day	-	-	-	skin	UF=3	IRIS	6/1/1995
Barium	Subchronic/Chronic	7.00E-02	mg/kg-day	0.07	4.9E-03	mg/kg-day	kidney	UF=3	IRIS	1/21/1999
Benzene		4.00E-03	mg/kg-day				blood	UF=300	IRIS	4/17/2003
Beryllium	Chronic	2.00E-03	mg/kg-day	0.007	1.4E-05	mg/kg-day	small intestine	UF=300	IRIS	4/3/1998
bis(2-Ethylhexyl)phthalate	Chronic	2.00E-02	mg/kg-day	-	-	-	liver	UF=1000	IRIS	5/1/1991
Cadmium (a)	Chronic	5.00E-04	mg/kg-day	--	--	--	kidney	UF = 10	IRIS	2/1/1994
Cadmium (b)	Chronic	1.00E-03	mg/kg-day	0.025	2.5E-05	mg/kg-day	kidney	UF=10	IRIS	2/1/1994
Carbon tetrachloride	Subchronic	7.00E-04	mg/kg-day	-	-	-	liver	UF=1000	IRIS	6/1/1991
Chlorobenzene	Subchronic	2.00E-02	mg/kg-day	-	-	-	liver	UF=1000	IRIS	4/1/1993
Chloroethane	-	4.00E-01	mg/kg-day	-	-	-	-	-	NCEA/ Region 9	10/1/2004
Chromium (d)	Chronic	3.00E-03	mg/kg-day	0.025	7.5E-05	mg/kg-day	none *	UF=300	IRIS	9/3/1998
cis-1,2-Dichloroethene	Subchronic	1.00E-02	mg/kg-day	-	-	-	blood chemistry	NA	PPRTV/Region 9	10/1/2004
Copper	-	4.00E-02	mg/kg-day	-	-	-	-	-	HEAST/Region 9	10/1/2004
Ethylbenzene	Subchronic	1.00E-01	mg/kg-day	-	-	-	liver,kidney	UF=1000	IRIS	6/1/1991
Lead (c)	-	-	-	-	-	-	--	--	--	--
M,P-Xylene (e)	Chronic	2.00E-01	mg/kg-day	-	-	-	body weight	UF=100	IRIS	2/21/2003
Manganese (b)	Chronic	7.00E-02	mg/kg-day	0.04	2.8E-03	mg/kg-day	CNS	--	EPA-Recommened	12/2005
Manganese (a)	Chronic	2.40E-02	mg/kg-day	--	--	--	CNS	--	EPA-Recommened	12/2005
Methylene chloride	Chronic	6.00E-02	mg/kg-day	-	-	-	liver	UF=100	IRIS	3/1/1998
Nickel	Chronic	2.00E-02	mg/kg-day	0.04	8.0E-04	mg/kg-day	body and organ weight	UF=300	IRIS	12/1/1996
O-Xylene (e)	Chronic	2.00E-01	mg/kg-day	-	-	-	body weight	UF=100	IRIS	2/21/2003
Tetrachloroethene	Chronic	1.00E-02	mg/kg-day	-	-	-	liver	UF=1000	IRIS	3/1/1998
Tetrahydrofuran	-	2.10E-01	mg/kg-day	-	-	-	-	-	NCEA/Region 9	10/1/2004
Thallium (f)	Subchronic	6.60E-05	mg/kg-day	-	-	-	none	UF=3000	IRIS	9/1/1990
Toluene	Subchronic	2.00E-01	mg/kg-day	-	-	-	liver,kidney	UF=1000	IRIS	10/1/2004
trans-1,2-Dichloroethene	Subchronic	2.00E-02	mg/kg-day	-	-	-	blood chemistry	UF=1000	IRIS	1/1/1989
Vanadium	Chronic	7.00E-03	mg/kg-day	0.026	1.8E-04	mg/kg-day	--	NA	NCEA/PRG	10/1/2004
Viny Chloride		3.00E-03	mg/kg-day				liver	UF=30	IRIS	8/7/2000
Xylenes, total	Chronic	2.00E-01	mg/kg-day	-	-	-	body weight	UF=100	IRIS	2/21/2003

U.S. and State of Connecticut v. American Hoechst, Corp., et al. (D. Conn.)

SRSNE Superfund Site RD/RA Settlement

Appendix A

Record of Decision

Part 3 of 3

TABLE G-5
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
SOLVENTS RECOVERY SYSTEM OF NEW ENGLAND, INC

Notes:

(1) As reported in the oral RfD summary (IRIS) and oral RfD basis (EHRAV).

(2) Toxicity reference values from USEPA's Integrated Risk Information System (IRIS), and HEAST, NCEA, and PPTRV values as presented in the USEPA Region 9 Preliminary Remediation Goals (PRGs). The Risk Assessment Information System (RAIS) was also consulted (www.risk.lsd.oml.gov/tox/tox_values) and contains toxicity reference values from IRIS, HEAST and other information sources.

(3) Dermal risk evaluated for COPC in soils only. Dermal absorption efficiencies listed in this table and dermal absorption factors (listed below) are those summarized in the Draft Dermal Absorption Guidance (USEPA, 1998).

(4) Adjusted RfD = RfD * Absorption Efficiency

(5) As listed in the IRIS Oral RfD summary.

* No critical effect reported.

Oral Rfd for manganese as recommended by USEPA

(a) Oral RfD manganese for water exposure.

(b) Oral RfD for manganese for dietary exposure.

(c) No toxicity data.

(d) Toxicity value for Chromium VI

(e) Toxicity data for xylene

(f) Toxicity data adjusted from the RfD for thallium chloride

Dermal Absorption Factors used in Risk Calculations for Soil (RAGS Part E: Supplemental Guidance for Dermal Risk Assessment, EPA 1998).

PCBs = 0.14

PAHs = 0.13

Dioxins = 0.03

Arsenic = 0.03

Cadmium = 0.01

This table provides non-carcinogenic risk information which is relevant to the contaminants of concern in groundwater and soils.

A toxicity value is not available for lead. Lead hazards were evaluated qualitatively against a screening concentration of 400 mg/kg for soils and the MCL of 15 ug/l for groundwater. Dermal RfDs are not available for any of the COCs. Dermal RfDs can be extrapolated from oral RfDs by applying an adjustment factor as appropriate. Dermal absorption factors for compunds from soils were obtained for the few compounds for which guidance is available (RAGS Part E, EPA 1998).

TABLE G-6

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

OPERATIONS AREA: OVERBURDEN GROUNDWATER

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Overburden Groundwater	Overburden Groundwater	Potable Water	1,1,1-Trichloroethane	NA	-	-	-	NA	NA	2.E+01	-	-	2.E+01
			1,1-Dichloroethane	NA	-	-	-	NA	NA	4.E+00	-	-	4.E+00
			1,1-Dichloroethene	NA	-	-	-	NA	Liver	4.E+00	-	-	4.E+00
			1,2-Dichlorethene,total	NA	-	-	-	NA	Liver	4.E+02	-	-	4.E+02
			2-Butanone	NA	-	-	-	NA	Fetal Weight	2.E+01	-	-	2.E+01
			4-Methyl-2-pentanone	NA	-	-	-	NA	Liver, Kidney	2.E+01	-	-	2.E+01
			4-Methylphenol	NA	-	-	-	NA	Neurotoxicity	6.E+00	-	-	6.E+00
			Acetone	NA	-	-	-	NA	Liver, Kidney	1.E+01	-	-	1.E+01
			Aluminum	NA	-	-	-	NA	NA	NA	-	-	NA
			Aroclor-1260	4.E-04	-	-	-	4.E-04	Immune System	NA	-	-	NA
			Arsenic	7.E-04	-	-	-	7.E-04	Skin	4.E+00	-	-	4.E+00
			Barium	NA	-	-	-	NA	Kidney	8.E+00	-	-	8.E+00
			Benzene	2.E-03	-	-	-	2.E-03	NA	2.E+01	-	-	2.E+01
			Cadmium	NA	-	-	-	NA	Kidney	3.E+00	-	-	3.E+00
			Chlorobenzene	NA	-	-	-	NA	Liver	3.E+00	-	-	3.E+00
			Chloroethane	1.E-04	-	-	-	1.E-04	NA	3.E-01	-	-	3.E-01
			Chromium	NA	-	-	-	NA	NA	4.E+00	-	-	4.E+00
			cis-1,2-Dichloroethene	NA	-	-	-	NA	Blood	6.E+02	-	-	6.E+02
			Ethylbenzene	NA	-	-	-	NA	Liver, Kidney	2.E+01	-	-	2.E+01
			Lead	NA				NA	NA	NA	-	-	NA
			Manganese	NA	-	-	-	NA	CNS	3.E+01	-	-	3.E+01
			Methylene chloride	8.E-04	-	-	-	8.E-04	Liver	4.E+00	-	-	4.E+00
			Tetrachloroethene	9.E-02	-	-	-	8.E-02	Liver	4.E+01	-	-	4.E+01
			Tetrahydrofuran	5.E-03	-	-	-	5.E-03	NA	7.E+00	-	-	7.E+00
			Toluene	NA	-	-	-	NA	Liver,Kidney	2.E+01	-	-	2.E+01
			trans-1,2-Dichloroethene	NA	-	-	-	NA	Blood	1.E+01	-	-	1.E+01
			Trichloroethene	4.E-01	-	-	-	4.E-01	NA	NA	-	-	NA
			Vanadium	NA	-	-	-	NA	NA	3.E+00	-	-	3.E+00
			Vinyl chloride	7.E-01	-	-	-	7.E-01	NA	1.E+02	-	-	1.E+02
			Xylenes, total	NA	-	-	-	NA	Body Weight	2.E+00	-	-	2.E+00

TABLE G-6

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

OPERATIONS AREA OVERBURDEN GROUNDWATER

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total					1.E+00					1.E+03
			Radionuclide Total	NA				NA					NA
		Exposure Point Total						1.E+00					1.E+03

Total Adult Resident Risk for Overburden Groundwater 1.E+00

Total Adult Resident Hazard for Overburden Groundwater 1.E+03

Notes:

Chemicals included in the risk assessment summary have cancer risks greater than 10^{-6} and/or noncancer hazards greater than 1.

Target-specific hazard indices greater than 1 are included in the total target organ hazard index for overburden groundwater.

NA = not available

Total [Liver] HI Across Overburden Groundwater =	5.E+02
Total [Kidney] HI Across Overburdem Groundwater =	8.E+01
Total [Blood] HI Across Overburden Groundwater =	6.E+02
Total [CNS/Neurotoxicity] HI Across Overburden Groundwater =	3.E+01
Total [Body Weight] HI Across Overburden Groundwater =	2.E+01
Total [Skin] HI Across Overburden Groundwater =	4.E+00

This table provides carcinogenic and non-carcinogenic risk estimates for the consumption of groundwater obtained from the overburden aquifer at the Operations Area. These risk estimates are based on a reasonable maximum exposure assumptions and were developed by taking into account various conservative assumptions. The excess lifetime cancer risk for a potential consumer of groundwater from the overburden aquifer at the Operations Area approaches unity, indicating a very high probability that an individual may develop cancer from site related exposures. There is also a high probability that an indivdual may experience adverse effects on the liver, blood, kidney, and nervous system, and other organs/ systems if the overburden groundwater were to be consumed. Vinyl chloride, trichlorethene, tetrachloroethene, chloroethane, and cis-1,2-dichloroethene were key contributors to these risk estimates.

TABLE G-7

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

OPERATIONS AREA PLUME: BEDROCK GROUNDWATER

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Bedrock Groundwater	Bedrock Groundwater	Potable Water	1,1,1-Trichloroethane	NA	-	-	-	NA	NA	6.E+00	-	-	6.E+00
			1,1-Dichloroethane	NA	-	-	-	NA	NA	1.E+00	-	-	1.E+00
			1,1-Dichloroethene	NA	-	-	-	NA	Liver	3.E+00	-	-	3.E+00
			1,2-Dichloroethane	5.E-03	-	-	-	5.E-03	NA	NA	-	-	NA
			1,2-Dichlorethene,total	NA	-	-	-	NA	Liver	3.E+02	-	-	3.E+02
			2-Butanone	NA	-	-	-	NA	Fetal Weight	3.E+00	-	-	3.E+00
			4-Methyl-2-pentanone	NA	-	-	-	NA	Liver, Kidney	9.E+00	-	-	9.E+00
			4-Methylphenol	NA	-	-	-	NA	Neurotoxicity	3.E+00	-	-	3.E+00
			Acetone	NA	-	-	-	NA	Liver, Kidney	2.E+00	-	-	2.E+00
			Aluminum	NA	-	-	-	NA	NA	NA	-	-	NA
			Aroclor 1254	4.E-04	-	-	-	4.E-04	Immune System	1.E+02	-	-	1.E+02
			Arsenic	9.E-04	-	-	-	9.E-04	Skin	4.E+00	-	-	4.E+00
			Barium	NA	-	-	-	NA	Kidney	5.E+00	-	-	5.E+00
			Benzene	3.E-03	-	-	-	3.E-03	NA	3.E+01	-	-	3.E+01
			Cadmium	NA	-	-	-	NA	Kidney	1.E+00	-	-	1.E+00
			Carbon tetrachloride	8.E-03	-	-	-	8.E-03	Liver	2.E+02	-	-	2.E+02
			Chlorobenzene	NA	-	-	-	NA	Liver	7.E+00	-	-	7.E+00
			Chloroethane	2.E-04	-	-	-	2.E-04	NA	3.E-01	-	-	3.E-01
			Chromium	NA	-	-	-	NA	NA	7.E+00	-	-	7.E+00
			cis-1,2-Dichloroethene	NA	-	-	-	NA	Blood	3.E+02	-	-	3.E+02
			Copper	NA	-	-	-	NA	NA	1.E+00	-	-	1.E+00
			Ethylbenzene	NA	-	-	-	NA	Liver, Kidney	3.E+00	-	-	3.E+00
			Lead	NA	-	-	-	NA	NA	NA	-	-	NA
			M,P-Xylene	NA	-	-	-	NA	Body Weight	2.E+00	-	-	2.E+00

TABLE G-7

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

OPERATIONS AREA PLUME: BEDROCK GROUNDWATER

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Manganese	NA	-	-	-	NA	CNS	8.E+00	-	-	5.E+01
			Methylene chloride	1.E-03	-	-	-	1.E-03	Liver	5.E+00	-	-	5.E+00
			Nickel	NA	-	-	-	NA	Body, Organ Weight	1.E+00	-	-	1.E+00
			Tetrachloroethene	3.E-01	-	-	-	3.E-01	Liver	1.E+02	-	-	1.E+02
			Tetrahydrofuran	4.E-03	-	-	-	4.E-03	NA	7.E+00	-	-	7.E+00
			Thallium	NA	-	-	-	NA	Blood	2.E+00	-	-	2.E+00
			Toluene	NA	-	-	-	NA	Liver,Kidney	1.E+01	-	-	1.E+01
			trans-1,2-Dichloroethene	NA	-	-	-	NA	Blood	7.E+00	-	-	7.E+00
			Trichloroethene	3.E+00	-	-	-	1.E+00	NA	NA	-	-	NA
			Vanadium	NA	-	-	-	NA	NA	5.E+00	-	-	5.E+00
			Vinyl chloride	7.E-01	-	-	-	7.E-01	NA	1.E+02	-	-	1.E+02
			Xylenes, total	NA	-	-	-	NA	Body Weight	3.E+00	-	-	3.E+00
			Chemical Total					2.E+00					1.E+03

TABLE G-7

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

OPERATIONS AREA PLUME: BEDROCK GROUNDWATER

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Radionuclide Total	NA				NA					NA
		Exposure Point Total						2.E+00					1.E+03

Notes:

Total Adult Resident Risk for Bedrock Groundwater 2.E+00

Total Adult Resident Hazard for Bedrock Groundwater 1.E+03

Chemicals included in the risk assessment summary have cancer risks greater than 10^{-6} and/or noncancer hazards greater than 1.

Target-specific hazard indices greater than 1 are included in the total target organ hazard index for overburden groundwater.

NA = not available

Total [Liver] HI Across Bedrock Groundwater =	7.E+02
Total [Kidney] HI Across Bedrock Groundwater =	3.E+01
Total [Blood] HI Across Bedrock Groundwater =	3.E+02
Total [Immune System] HI Across Bedrock Groundwater =	1.E+02
Total [CNS/neurotoxicity] HI Across Bedrock Groundwater =	5.E+01
Total [Body Weight] HI Across Bedrock Groundwater =	7.E+00
Total [Skin] HI Across Bedrock Groundwater =	4.E+00

This table provides carcinogenic and non-carcinogenic risk estimates for the consumption of groundwater obtained from the bedrock aquifer at the Operations Area. These risk estimates are based on reasonable maximum exposure assumptions. The excess lifetime cancer risk for a potential consumer of groundwater from the bedrock aquifer at the Operations Area approaches unity, indicating a very high probability that an individual may develop cancer from site were exposure to occur. There is also a high probability that an individual may experience adverse effects on the liver, blood, immune, kidney, nervous system, and other organs or systems if the bedrock groundwater were consumed. Vinyl chloride, trichlorethene, tetrachloroethene, 1,2-dichloroethene, PCBs, carbon tetrachloride were key contributors to these risk estimates.

TABLE G-8

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

OPERATIONS AREA/ RAILROAD PROPERTY SUBSURFACE SOILS

RESIDENTIAL ADULT

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	Subsurface Soil	Arsenic	4.E-06	-	5.E-07	-	4.E-06	Skin	3.E-02	-	3.E-03	3.E-02
			Trichloroethene	8.E-05	-	--	-	8.E-05	NA	NA	-	--	NA
			Aroclor-1260	5.E-06	-	3.E-06	-	8.E-06	Immune System	NA	-	NA	NA
			Aroclor-1254	1.E-05	-	6.E-06	-	2.E-05	Immune System	8.E-01	-	4.E-01	1.E+00
			Tetrachloroethene	3.E-04	-	--	-	3.E-04	Liver	2.E-01	-	--	2.E-01
			2,3,7,8-TCDD	2.E-05	-	3.E-06	-	2.E-05	NA	NA	-	NA	NA
			2,3,7,8-TCDF	3.E-06	-	4.E-07	-	3.E-06	NA	NA	-	NA	NA
			2,3,4,7,8-PeCDF	1.E-05	-	1.E-06	-	1.E-05	NA	NA	-	NA	NA
			1,2,3,4,7,8-HxCDF	3.E-06	-	3.E-07	-	3.E-06	NA	NA	-	NA	NA
			Chemical Total					4.E-04					1.E+00
			Radionuclide Total					NA					NA
		Exposure Point Total						4.E-04					1.E+00

Notes:

Total Adult Resident Risk for Subsurface Soil: 4.E-04

Total Adult Resident Hazard for Subsurface Soil: 1.E+00

-- = Dermal risk not evaluated.

Chemicals included in the risk assessment summary have cancer risks greater than 10^{-6} and/or noncancer risks greater than 1.

Total [Liver] HI Across Subsurface Soil = HI below 1

NA = not available

Total [Immune] HI Across Subsurface Soil = 1.E+00

This table provides carcinogenic and non-carcinogenic risk estimates for a potential adult resident who may ingest or touch soils (presently below the surface) at the Operations Area/ Railroad Property. These risk estimates are based on reasonable maximum exposure assumptions. The excess lifetime cancer risk for a potential adult residential receptor from subsurface soil contamination at the Operations Area/ Railroad Property is 4 x 10^{-4} which exceeds EPA's acceptable cancer risk range. Tetrachlorethene, PCBs, and trichlorethene were key contributors to these risk estimates. Adverse non-carcinogenic effects are not likely for this receptor as all hazard indices were less than or equal to unity.

TABLE G-10

RISK ASSESSMENT SUMMARY

REASONABLE MAXIMUM EXPOSURE

OPERATIONS AREA/ RAILROAD PROPERTY SUBSURFACE SOILS

WORKER

Receptor Population: Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Subsurface Soil	Subsurface Soil	Arsenic	3.E-06	-	4.E-07	-	3.E-06	Skin	2.E-02	-	3.E-03	2.E-02
			Trichloroethene	6.E-05	-	--	-	6.E-05	NA	NA	-	--	NA
			Aroclor-1260	3.E-06	-	2.E-06	-	5.E-06	Immune System	NA	-	NA	NA
			Aroclor-1254	8.E-06	-	5.E-06	-	1.E-05	Immune System	5.E-01	-	4.E-01	9.E-01
			Tetrachloroethene	2.E-04	-	--	-	2.E-04	Liver	1.E-01	-	--	1.E-01
			2,3,7,8-TCDD	2.E-05	-	2.E-06	-	2.E-05	NA	NA	-	NA	NA
			2,3,7,8-TCDF	2.E-06	-	3.E-07	-	2.E-06	NA	NA	-	NA	NA
			2,3,4,7,8-PeCDF	9.E-06	-	1.E-06	-	1.E-05	NA	NA	-	NA	NA
			1,2,3,6,7,8-HxCDF	1.E-06	-	2.E-07	-	1.E-06	NA	NA	-	NA	NA
			2,3,4,6,7,8-HxCDF	1.E-06	-	2.E-07	-	1.E-06	NA	NA	-	NA	NA
			1,2,3,4,7,8-HxCDF	2.E-06	-	3.E-07	-	2.E-06	NA	NA	-	NA	NA
			Chemical Total					3.E-04					1.E+00
			Radionuclide Total					NA					NA
		Exposure Point Total						3.E-04					1.E+00

Notes:

-- = Dermal risk not evaluated.

Chemicals included in the risk assessment summary have cancer risks greater than 10^{-6} and/or noncancer risks greater than 1

Target-specific hazard indices are less than 1, and are therefore not included in the total organ hazard index for surface soil.

NA = not available

Total Adult Worker Risk for Subsurface Soil: 3.E-04

Total Adult Worker Hazard Across Subsurface Soil: 1.E+00

Total [Liver] HI Across Subsurface Soil = HI below 1

Total [Immune] HI AcrossSubsurface Soil = HI below 1

Total [Skin] HI Across Subsurface Soil = HI below 1

This table provides carcinogenic and non-carcinogenic risk estimates for a potential worker who may ingest or touch soils from the subsurface at the Operations Area/ Railroad Property. These risk estimates are based on reasonable maximum exposure assumptions. The excess lifetime cancer risk for an adult worker from potential exposure to subsurface soil contamination at the Operations Area/ Railroad Property is 3×10^{-4} which exceeds EPA's acceptable cancer risk range. Tetrachloroethene and trichloroethene were key contributors to these risk estimates. Adverse non-carcinogenic effects are not likely for this receptor as all hazard indices were less than or equal to unity.

TABLE G-12
RISK ESTIMATES FOR SURFACE WATER COCs
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND, INC. SUPERFUND SITE
SOUTHINGTON, CONNECTICUT

SECTOR	COCs	MAXIMUM CONCEN-TRATION	MEAN CONCEN-TRATION	BENCH-MARK[1]	MAXIMUM RISK	MEAN RISK	ADVERSE EFECTS
Upstream	Xylenes (µg/L)	ND	ND	5000.00	ND	ND	no
	Bis(2-ethylhexyl)phthalate (µg/L)	4.50	4.50	3.00	1.50	1.50	Probable
	Aroclor-1254 (µg/L)	ND	ND	0.014	ND	ND	no
	Cadmium (µg/L)	ND	ND	0.87	ND	ND	no
	Copper (µg/L)	4.60	4.60	8.86	0.52	0.52	no
	Lead (µg/L)	2.50	2.05	2.07	1.21	0.99	Possible
	Cumulative risk	--	--	--	3.23	3.01	
Down-stream	Xylenes (µg/L)	ND	ND	5000.00	ND	ND	no
	Bis(2-ethylhexyl)phthalate (µg/L)	5.00	5.00	3.00	1.67	1.67	Probable
	Aroclor-1254 (µg/L)	ND	ND	0.014	ND	ND	no
	Cadmium (µg/L)	ND	ND	0.87	ND	ND	no
	Copper (µg/L)	180.00	32.52	8.86	20.32	3.67	Probable
	Lead (µg/L)	3.80	2.22	2.07	1.84	1.07	Probable
	Cumulative risk	--	--	--	23.82	6.41	
Floodplain	Xylenes (µg/L)	ND	ND	5000.00	ND	ND	no
	Bis(2-ethylhexyl)phthalate (µg/L)	ND	ND	3.00	ND	ND	no
	Aroclor-1254 (µg/L)	ND	ND	0.014	ND	ND	no
	Cadmium (µg/L)	ND	ND	0.87	ND	ND	no
	Copper (µg/L)	4.60	4.00	8.86	0.52	0.45	no
	Lead (µg/L)	3.20	2.18	2.07	1.55	1.05	Probable
	Cumulative risk	--	--	--	2.07	1.50	
Cluvert outfall/ seep area	Xylenes (µg/L)	37.00	17.00	5000.00	0.01	0.0034	no
	Bis(2-ethylhexyl)phthalate (µg/L)	3.50	3.50	3.00	1.17	1.17	Probable
	Aroclor-1254 (µg/L)	0.85	0.62	0.014	60.71	44.29	Probable
	Cadmium (µg/L)	ND	ND	0.87	ND	ND	no
	Copper (µg/L)	ND	ND	8.86	ND	ND	no
	Lead (µg/L)	2.50	1.83	2.07	1.21	0.88	Possible
	Cumulative risk	--	--	--	63.10	46.34	
Seasonal ponds	Xylenes (µg/L)	1.00	1.00	5000.00	0.0002	0.0002	no
	Bis(2-ethylhexyl)phthalate (µg/L)	ND	ND	3.00	ND	ND	no
	Aroclor-1254 (µg/L)	ND	ND	0.014	ND	ND	no
	Cadmium (µg/L)	48.15	25.32	0.87	55.34	29.10	Probable
	Copper (µg/L)	10.90	8.38	8.86	1.23	0.95	Possible
	Lead (µg/L)	3.50	2.50	2.07	1.69	1.21	Probable
	Cumulative risk	--	--	--	58.27	31.26	

NOTES:

1. Benchmark toxicity values from Table 7-13
ND - Not detected

TABLE G-13
RISK ESTIMATES FOR SEDIMENT COCs
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND, INC. SUPERFUND SITE
SOUTHINGTON, CONNECTICUT

SECTOR	COCs		MAXIMUM CONCEN-TRATION	MEAN CONCEN-TRATION	BENCH-MARK [1]	MAXIMUM RISK	MEAN RISK	ADVERSE EFFECTS
Upstream	Xylenes (µg/l)	c)	ND	ND	5000.00	ND	ND	no
	Acenaphthene (µg/g oc)	b)	11.17	6.59	140.00	0.08	0.05	no
	Acenaphthylene (µg/g oc)	b)	4.77	4.77	140.00	0.03	0.03	no
	Anthracene (µg/Kg)	a)	840.00	296.10	85.00	9.88	3.48	**Probable**
	Benzo(a)anthracene (µg/Kg)	a)	1900.00	564.20	230.00	8.26	2.45	**Probable**
	Benzo(a)pyrene (µg/Kg)	a)	1200.00	446.93	400.00	3.00	1.12	**Probable**
	Bis(2-ethylhexyl)phthalate (µg/l)	c)	0.25	0.10	3.00	0.08	0.03	no
	Butyl benzyl phthalate (µg/l)	c)	0.29	0.29	3.00	0.10	0.10	no
	Chrysene (µg/Kg)	a)	2000.00	627.67	400.00	5.00	1.57	**Probable**
	Dibenzofuran (µg/Kg)	a)	280.00	224.67	230.00	1.22	0.98	Possible
	Di-n-butyl phthalate (µg/l)	c)	ND	ND	3.00	ND	ND	no
	Di-n-octyl phthalate (µg/Kg)	a)	184.67	184.67	NA	NA	NA	no
	Fluorene (µg/l)	c)	1.72	0.82	8.20	0.21	0.10	no
	2-Methylnaphthalene (µg/Kg)	a)	ND	ND	65.00	ND	ND	no
	Naphthalene (µg/l)	c)	ND	ND	620.00	ND	ND	no
	Phenanthrene (µg/g oc)	b)	122.62	32.60	120.00	1.02	0.27	Possible
	Aldrin (µg/Kg)	a)	ND	ND	10.00	ND	ND	no
	Alpha-Chlordane (µg/l)	c)	0.0001	0.0001	0.0043	0.02	0.02	no
	Aroclor 1254 (µg/l)	c)	0.0011	0.0011	0.014	0.08	0.08	no
	Aroclor 1260 (µg/l)	c)	ND	ND	0.014	ND	ND	no
	4,4'-DDD (µg/l)	c)	0.00003	0.00003	0.001	0.03	0.03	no
	4,4'-DDE (µg/l)	c)	ND	ND	0.001	ND	ND	no
	4,4'-DDT (µg/l)	c)	0.00023	0.00023	0.001	0.23	0.23	no
	Dieldrin (µg/g oc)	b)	ND	ND	9.00	ND	ND	no
	Endrin (µg/g oc)	b)	0.038	0.038	4.00	0.01	0.01	no
	Endosulfan I (µg/l)	c)	ND	ND	0.056	ND	ND	no
	Gamma-Chlordane (µg/l)	c)	ND	ND	0.0043	ND	ND	no
	Heptachlor epoxide (µg/l)	c)	0.00006	0.00006	0.0038	0.02	0.02	no
	Cadmium (mg/Kg)	a)	20.10	5.14	1.00	20.10	5.14	**Probable**
	Copper (mg/Kg)	a)	87.25	28.96	100.00	0.87	0.29	no
	Lead (mg/Kg)	a)	45.90	20.54	50.00	0.92	0.41	no
	Mercury (mg/Kg)	a)	0.19	0.09	0.10	1.90	0.90	Possible
	Nickel (mg/Kg)	a)	53.00	17.68	100.00	0.53	0.18	no
	Zinc (mg/Kg)	a)	73.35	33.76	100.00	0.73	0.34	no
	Cumulative risk		--	--	--	54.33	17.82	

NOTES:
1. Benchmark toxicity values from Table 7-13
a) Sediment concentration
b) Sediment concentration per gram of organic carbon
c) Estimated interstitial water concentration / benchmark toxicity value for surface water concentration
g oc – Grams of organic carbon
NA – Appropriate benchmark toxicity value not available; Kp value not available for the calculation of interstitial water concentrations (see Table 7-9).
ND – Not detected

RISK ESTIMATES FOR SEDIMENT COCs
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND, INC. SUPERFUND SITE
SOUTHINGTON, CONNECTICUT

SECTOR	COCs	MAXIMUM CONCEN-TRATION	MEAN CONCEN-TRATION	BENCH-MARK [1]	MAXIMUM RISK	MEAN RISK	ADVERSE EFFECTS
Down-stream	Xylenes (µg/l) c)	0.10	0.10	5000.00	0.00002	0.00002	no
	Acenaphthene (µg/g oc) b)	33.66	13.69	140.00	0.24	0.10	no
	Acenaphthylene (µg/g oc) b)	8.83	5.92	140.00	0.06	0.04	no
	Anthracene (µg/Kg) a)	1400.00	294.19	85.00	16.47	3.46	Probable
	Benzo(a)anthracene (µg/Kg) a)	1800.00	605.85	230.00	7.83	2.63	Probable
	Benzo(a)pyrene (µg/Kg) a)	1400.00	486.70	400.00	3.50	1.22	Probable
	Bis(2-ethylhexyl)phthalate (µg/l) c)	0.37	0.17	3.00	0.12	0.06	no
	Butyl benzyl phthalate (µg/l) c)	0.63	0.50	3.00	0.21	0.17	no
	Chrysene (µg/Kg) a)	1800.00	600.74	400.00	4.50	1.50	Probable
	Dibenzofuran (µg/Kg) a)	500.00	262.33	230.00	2.17	1.14	Probable
	Di-n-butyl phthalate (µg/l) c)	0.08	0.08	3.00	0.03	0.03	no
	Di-n-octyl phthalate (µg/Kg) a)	ND	ND	NA	ND	ND	no
	Fluorene (µg/l) c)	5.09	1.62	8.20	0.62	0.20	no
	2-Methylnaphthalene (µg/Kg) a)	120.00	120.00	65.00	1.85	1.85	Probable
	Naphthalene (µg/l) c)	7.62	7.62	620.00	0.01	0.01	no
	Phenanthrene (µg/g oc) b)	237.62	47.67	120.00	1.98	0.40	Possible
	Aldrin (µg/Kg) a)	ND	ND	10.00	ND	ND	no
	Alpha-Chlordane (µg/l) c)	0.00017	0.00016	0.0043	0.04	0.04	no
	Aroclor 1254 (µg/l) c)	ND	ND	0.014	ND	ND	no
	Aroclor 1260 (µg/l) c)	0.0003	0.0002	0.014	0.02	0.01	no
	4,4'-DDD (µg/l) c)	0.00024	0.00014	0.001	0.24	0.14	no
	4,4'-DDE (µg/l) c)	0.00013	0.00013	0.001	0.13	0.13	no
	4,4'-DDT (µg/l) c)	0.00038	0.00038	0.001	0.38	0.38	no
	Dieldrin (µg/g oc) b)	0.017	0.017	9.00	0.002	0.002	no
	Endrin (µg/g oc) b)	0.085	0.085	4.00	0.02	0.02	no
	Endosulfan I (µg/l) c)	ND	ND	0.056	ND	ND	no
	Gamma-Chlordane (µg/l) c)	0.00019	0.00011	0.0043	0.04	0.03	no
	Heptachlor epoxide (µg/l) c)	ND	ND	0.0038	ND	ND	no
	Cadmium (mg/Kg) a)	25.90	6.17	1.00	25.90	6.17	Probable
	Copper (mg/Kg) a)	464.00	85.39	100.00	4.64	0.85	Possible
	Lead (mg/Kg) a)	212.00	53.37	50.00	4.24	1.07	Probable
	Mercury (mg/Kg) a)	0.30	0.11	0.10	3.00	1.10	Probable
	Nickel (mg/Kg) a)	70.50	21.19	100.00	0.71	0.21	no
	Zinc (mg/Kg) a)	166.00	49.76	100.00	1.66	0.50	Possible
	Cumulative risk	--	--	--	80.62	23.45	

NOTES:
1. Benchmark toxicity values from Table 7-13
a) Sediment concentration
b) Sediment concentration per gram of organic carbon
c) Estimated interstitial water concentration / benchmark toxicity value for surface water concentration
g oc - Grams of organic carbon
NA - Appropriate benchmark toxicity value not available; Kp value not available for the calculation of interstitial water concentrations (see Table 7-9).
ND - Not detected

RISK ESTIMATES FOR SEDIMENT COCs
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND, INC. SUPERFUND SITE
SOUTHINGTON, CONNECTICUT

SECTOR	COCs	MAXIMUM CONCEN-TRATION	MEAN CONCEN-TRATION	BENCH-MARK [1]	MAXIMUM RISK	MEAN RISK	ADVERSE EFFECTS
Floodplain	Xylenes (µg/l) c)	ND	ND	5000.00	ND	ND	no
	Acenaphthene (µg/g oc) b)	6.67	6.67	140.00	0.05	0.05	no
	Acenaphthylene (µg/g oc) b)	35.96	30.24	140.00	0.26	0.22	no
	Anthracene (µg/Kg) a)	560.00	369.72	85.00	6.59	4.35	Probable
	Benzo(a)anthracene (µg/Kg) a)	2600.00	619.72	230.00	11.30	2.69	Probable
	Benzo(a)pyrene (µg/Kg) a)	2500.00	619.72	400.00	6.25	1.55	Probable
	Bis(2-ethylhexyl)phthalate (µg/l) c)	0.17	0.14	3.00	0.06	0.05	no
	Butyl benzyl phthalate (µg/l) c)	ND	ND	3.00	ND	ND	no
	Chrysene (µg/Kg) a)	2500.00	636.39	400.00	6.25	1.59	Probable
	Dibenzofuran (µg/Kg) a)	55.00	55.00	230.00	0.24	0.24	no
	Di-n-butyl phthalate (µg/l) c)	0.18	0.18	3.00	0.06	0.06	no
	Di-n-octyl phthalate (µg/Kg) a)	ND	ND	NA	ND	ND	no
	Fluorene (µg/l) c)	1.88	1.88	8.20	0.23	0.23	no
	2-Methylnaphthalene (µg/Kg) a)	ND	ND	65.00	ND	ND	no
	Naphthalene (µg/l) c)	ND	ND	620.00	ND	ND	no
	Phenanthrene (µg/g oc) b)	192.98	48.66	120.00	1.61	0.41	Possible
	Aldrin (µg/Kg) a)	ND	ND	10.00	ND	ND	no
	Alpha-Chlordane (µg/l) c)	ND	ND	0.0043	ND	ND	no
	Aroclor 1254 (µg/l) c)	ND	ND	0.014	ND	ND	no
	Aroclor 1260 (µg/l) c)	0.00113	0.00112	0.014	0.08	0.08	no
	4,4'-DDD (µg/l) c)	0.0001	0.0001	0.001	0.10	0.10	no
	4,4'-DDE (µg/l) c)	0.0008	0.0006	0.001	0.80	0.60	no
	4,4'-DDT (µg/l) c)	0.0016	0.0011	0.001	1.60	1.10	Probable
	Dieldrin (µg/g oc) b)	0.140	0.140	9.00	0.02	0.02	no
	Endrin (µg/g oc) b)	0.148	0.148	4.00	0.04	0.04	no
	Endosulfan I (µg/l) c)	0.0103	0.0103	0.056	0.18	0.18	no
	Gamma-Chlordane (µg/l) c)	0.00024	0.00024	0.0043	0.06	0.06	no
	Heptachlor epoxide (µg/l) c)	0.00025	0.00025	0.0038	0.07	0.07	no
	Cadmium (mg/Kg) a)	68.80	15.16	1.00	68.80	15.16	Probable
	Copper (mg/Kg) a)	473.00	134.50	100.00	4.73	1.35	Probable
	Lead (mg/Kg) a)	493.00	139.27	50.00	9.86	2.79	Probable
	Mercury (mg/Kg) a)	1.20	0.35	0.10	12.00	3.50	Probable
	Nickel (mg/Kg) a)	112.00	31.09	100.00	1.12	0.31	Possible
	Zinc (mg/Kg) a)	283.00	124.61	100.00	2.83	1.25	Probable
	Cumulative risk	--	--	--	135.17	38.01	

NOTES:
1. Benchmark toxicity values from Table 7-13
a) Sediment concentration
b) Sediment concentration per gram of organic carbon
c) Estimated interstitial water concentration / benchmark toxicity value for surface water concentration
g oc - Grams of organic carbon
NA - Appropriate benchmark toxicity value not available; Kp value not available for the calculation of interstitial water concentrations (see Table 7-9).
ND - Not detected

RISK ESTIMATES FOR SEDIMENT COCs
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND, INC. SUPERFUND SITE
SOUTHINGTON, CONNECTICUT

SECTOR	COCs		MAXIMUM CONCEN-TRATION	MEAN CONCEN-TRATION	BENCH-MARK [1]	MAXIMUM RISK	MEAN RISK	ADVERSE EFFECTS
Culvert outfall/ seep area	Xylenes (µg/l)	c)	0.30	0.30	5000.00	0.00006	0.00006	no
	Acenaphthene (µg/g oc)	b)	ND	ND	140.00	ND	ND	no
	Acenaphthylene (µg/g oc)	b)	28.47	24.75	140.00	0.20	0.18	no
	Anthracene (µg/Kg)	a)	183.33	171.00	85.00	2.16	2.01	Probable
	Benzo(a)anthracene (µg/Kg)	a)	340.00	230.17	230.00	1.48	1.00	Probable
	Benzo(a)pyrene (µg/Kg)	a)	255.00	231.17	400.00	0.64	0.58	no
	Bis(2-ethylhexyl)phthalate (µg/l)	c)	18.70	8.32	3.00	6.23	2.77	Probable
	Butyl benzyl phthalate (µg/l)	c)	4.82	2.33	3.00	1.61	0.78	Possible
	Chrysene (µg/Kg)	a)	375.00	283.17	400.00	0.94	0.71	no
	Dibenzofuran (µg/Kg)	a)	ND	ND	230.00	ND	ND	no
	Di-n-butyl phthalate (µg/l)	c)	0.73	0.67	3.00	0.24	0.22	no
	Di-n-octyl phthalate (µg/Kg)	a)	740.00	411.23	NA	NA	NA	no
	Fluorene (µg/l)	c)	1.04	1.04	8.20	0.13	0.13	no
	2-Methylnaphthalene (µg/Kg)	a)	191.00	182.17	65.00	2.94	2.80	Probable
	Naphthalene (µg/l)	c)	15.61	14.10	620.00	0.03	0.02	no
	Phenanthrene (µg/g oc)	b)	48.51	31.96	120.00	0.40	0.27	no
	Aldrin (µg/Kg)	a)	14.00	6.98	10.00	1.40	0.70	Possible
	Alpha-Chlordane (µg/l)	c)	ND	ND	0.0043	ND	ND	no
	Aroclor 1254 (µg/l)	c)	0.7493	0.2145	0.014	53.52	15.32	Probable
	Aroclor 1260 (µg/l)	c)	0.01744	0.00495	0.014	1.25	0.35	Possible
	4,4'-DDD (µg/l)	c)	ND	ND	0.001	ND	ND	no
	4,4'-DDE (µg/l)	c)	ND	ND	0.001	ND	ND	no
	4,4'-DDT (µg/l)	c)	ND	ND	0.001	ND	ND	no
	Dieldrin (µg/g oc)	b)	ND	ND	9.00	ND	ND	no
	Endrin (µg/g oc)	b)	ND	ND	4.00	ND	ND	no
	Endosulfan I (µg/l)	c)	0.0129	0.0129	0.056	0.23	0.23	no
	Gamma-Chlordane (µg/l)	c)	ND	ND	0.0043	ND	ND	no
	Heptachlor epoxide (µg/l)	c)	ND	ND	0.0038	ND	ND	no
	Cadmium (mg/Kg)	a)	12.10	6.51	1.00	12.10	6.51	Probable
	Copper (mg/Kg)	a)	76.20	30.38	100.00	0.76	0.30	no
	Lead (mg/Kg)	a)	113.00	49.78	50.00	2.26	1.00	Probable
	Mercury (mg/Kg)	a)	0.52	0.21	0.10	5.20	2.10	Probable
	Nickel (mg/Kg)	a)	40.20	15.27	100.00	0.40	0.15	no
	Zinc (mg/Kg)	a)	114.00	58.77	100.00	1.14	0.59	Possible
	Cumulative risk		--	--	--	95.25	38.72	

NOTES:
1. Benchmark toxicity values from Table 7-13
a) Sediment concentration
b) Sediment concentration per gram of organic carbon
c) Estimated interstitial water concentration / benchmark toxicity value for surface water concentration
g oc - Grams of organic carbon
NA - Appropriate benchmark toxicity value not available; Kp value not available for the calculation of interstitial water concentrations (see Table 7-9).
ND - Not detected

RISK ESTIMATES FOR SEDIMENT COCs
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND, INC. SUPERFUND SITE
SOUTHINGTON, CONNECTICUT

SECTOR	COCs		MAXIMUM CONCEN-TRATION	MEAN CONCEN-TRATION	BENCH-MARK [1]	MAXIMUM RISK	MEAN RISK	ADVERSE EFFECTS
Seasonal Ponds	Xylenes (µg/l)	c)	ND	ND	5000.00	ND	ND	no
	Acenaphthene (µg/g oc)	b)	ND	ND	140.00	ND	ND	no
	Acenaphthylene (µg/g oc)	b)	ND	ND	140.00	ND	ND	no
	Anthracene (µg/Kg)	a)	ND	ND	85.00	ND	ND	no
	Benzo(a)anthracene (µg/Kg)	a)	150.00	150.00	230.00	0.65	0.65	no
	Benzo(a)pyrene (µg/Kg)	a)	154.00	154.00	400.00	0.39	0.39	no
	Bis(2-ethylhexyl)phthalate (µg/l)	c)	0.19	0.19	3.00	0.06	0.06	no
	Butyl benzyl phthalate (µg/l)	c)	0.55	0.55	3.00	0.18	0.18	no
	Chrysene (µg/Kg)	a)	175.00	118.50	400.00	0.44	0.30	no
	Dibenzofuran (µg/Kg)	a)	ND	ND	230.00	ND	ND	no
	Di-n-butyl phthalate (µg/l)	c)	ND	ND	3.00	ND	ND	no
	Di-n-octyl phthalate (µg/Kg)	a)	ND	ND	NA	ND	ND	no
	Fluorene (µg/l)	c)	ND	ND	8.20	ND	ND	no
	2-Methylnaphthalene (µg/Kg)	a)	ND	ND	65.00	ND	ND	no
	Naphthalene (µg/l)	c)	ND	ND	620.00	ND	ND	no
	Phenanthrene (µg/g oc)	b)	8.54	8.54	120.00	0.07	0.07	no
	Aldrin (µg/Kg)	a)	2.57	2.57	10.00	0.26	0.26	no
	Alpha-Chlordane (µg/l)	c)	0.0046	0.0046	0.0043	1.07	1.07	Probable
	Aroclor 1254 (µg/l)	c)	ND	ND	0.014	ND	ND	no
	Aroclor 1260 (µg/l)	c)	0.00047	0.00047	0.014	0.03	0.03	no
	4,4'-DDD (µg/l)	c)	ND	ND	0.001	ND	ND	no
	4,4'-DDE (µg/l)	c)	ND	ND	0.001	ND	ND	no
	4,4'-DDT (µg/l)	c)	ND	ND	0.001	ND	ND	no
	Dieldrin (µg/g oc)	b)	ND	ND	9.00	ND	ND	no
	Endrin (µg/g oc)	b)	ND	ND	4.00	ND	ND	no
	Endosulfan I (µg/l)	c)	ND	ND	0.056	ND	ND	no
	Gamma-Chlordane (µg/l)	c)	0.00462	0.00462	0.0043	1.07	1.07	Probable
	Heptachlor epoxide (µg/l)	c)	ND	ND	0.0038	ND	ND	no
	Cadmium (mg/Kg)	a)	10.25	5.33	1.00	10.25	5.33	Probable
	Copper (mg/Kg)	a)	21.53	14.64	100.00	0.22	0.15	no
	Lead (mg/Kg)	a)	56.38	44.04	50.00	1.13	0.88	Possible
	Mercury (mg/Kg)	a)	0.41	0.28	0.10	4.10	2.80	Probable
	Nickel (mg/Kg)	a)	4.45	3.42	100.00	0.04	0.03	no
	Zinc (mg/Kg)	a)	67.60	43.89	100.00	0.68	0.44	no
	Cumulative risk		--	--	--	20.64	13.72	

NOTES:
1. Benchmark toxicity values from Table 7-13
a) Sediment concentration
b) Sediment concentration per gram of organic carbon
c) Estimated interstitial water concentration / benchmark toxicity value for surface water concentration
g oc - Grams of organic carbon
NA - Appropriate benchmark toxicity value not available; Kp value not available for the calculation of interstitial water concentrations (see Table 7-9).
ND - Not detected

TABLE G-14
RISK ESTIMATES FOR SOIL COCs
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND, INC. SUPERFUND SITE
SOUTHINGTON, CONNECTICUT

SECTOR	COCs	MAXIMUM CONCEN-TRATION	MEAN CONCEN-TRATION	BENCH-MARK [1]	MAXIMUM RISK	MEAN RISK	ADVERSE EFFECTS
Cianci Property/ SRSNE Facility	Benzene (μg/Kg)	650.00	197.60	500.00	1.30	0.40	Possible
	Xylenes (μg/Kg)	760000.00	73739.11	5000.00	152.00	14.75	Probable
	Acenaphthylene (μg/Kg)	130.00	96.50	10000.00	0.01	0.01	no
	Anthracene (μg/Kg)	190.00	110.00	10000.00	0.02	0.01	no
	Benzo(a)anthracene (μg/Kg)	490.00	346.20	1000.00	0.49	0.35	no
	Benzo(a)pyrene (μg/Kg)	740.00	355.54	1000.00	0.74	0.36	no
	Benzo(b)fluoranthene (μg/Kg)	1800.00	484.15	1000.00	1.80	0.48	Possible
	Benzo(k)fluoranthene (μg/Kg)	1800.00	484.15	1000.00	1.80	0.48	Possible
	Benzo(g,h,i)perylene (μg/Kg)	280.00	137.67	1000.00	0.28	0.14	no
	Bis(2-ethylhexyl)phthalate (μg/Kg)	120000.00	13942.72	70000.00	1.71	0.20	Possible
	Butyl benzyl phthalate (μg/Kg)	8600.00	1564.54	70000.00	0.12	0.02	no
	Chrysene (μg/Kg)	600.00	358.76	5000.00	0.12	0.07	no
	Diethyl phthalate (μg/Kg)	1600.00	428.80	70000.00	0.02	0.01	no
	Di-n-butyl phthalate (μg/Kg)	5700.00	1168.63	70000.00	0.08	0.02	no
	Di-n-octyl phthalate (μg/Kg)	1450.00	489.33	70000.00	0.02	0.01	no
	Fluorene (μg/Kg)	160.00	126.33	10000.00	0.02	0.01	no
	Fluoranthene (μg/Kg)	1100.00	417.02	10000.00	0.11	0.04	no
	Indeno(1,2,3-cd)pyrene (μg/Kg)	360.00	352.54	1000.00	0.36	0.35	no
	2-Methylnaphthalene (μg/Kg)	2000.00	428.15	5000.00	0.40	0.09	no
	Naphthalene (μg/Kg)	3300.00	682.93	5000.00	0.66	0.14	no
	Phenanthrene (μg/Kg)	1195.00	379.24	5000.00	0.24	0.08	no
	1,2,4-Trichlorobenzene (μg/Kg)	530.00	355.54	1000.00	0.53	0.36	no
	Aroclor 1016 (μg/Kg)	1200.00	185.99	1000.00	1.20	0.19	Possible
	Aroclor 1248 (μg/Kg)	1550.00	230.99	1000.00	1.55	0.23	Possible
	Aroclor 1254 (μg/Kg)	13000.00	2156.00	1000.00	13.00	2.16	Probable
	Aroclor 1260 (μg/Kg)	9700.00	1588.99	1000.00	9.70	1.59	Probable
	4,4'-DDE (μg/Kg)	7.70	3.49	500.00	0.02	0.01	no
	4,4'-DDT (μg/Kg)	7.10	7.10	500.00	0.01	0.01	no
	Dieldrin (μg/Kg)	2.20	2.20	500.00	0.0044	0.0044	no
	Endrin (μg/Kg)	1.50	1.50	500.00	0.003	0.003	no
	Endosulfan II (μg/Kg)	1.80	1.80	500.00	0.0036	0.0036	no
	Gamma-BHC (Lindane, μg/Kg)	ND	ND	500.00	ND	ND	no
	Gamma-Chlordane (μg/Kg)	2.80	1.74	500.00	0.0056	0.0035	no
	Heptachlor epoxide (μg/Kg)	0.30	0.30	500.00	0.0006	0.0006	no
	Methoxychlor (μg/Kg)	29.00	29.00	500.00	0.06	0.06	no
	Dioxins (Toxicity Equivalent Conc, μg/Kg)	0.30	0.078	0.30	1.00	0.26	Possible
	Cadmium (mg/Kg)	389.00	49.44	5.00	77.80	9.89	Probable
	Copper (mg/Kg)	151.00	37.55	100.00	1.51	0.38	Possible
	Lead (mg/Kg)	1750.00	217.30	200.00	8.75	1.09	Probable
	Mercury (mg/Kg)	0.71	0.09	2.00	0.36	0.05	no
	Selenium (mg/Kg)	37.30	3.81	3.00	12.43	1.27	Probable
	Cumulative risk	--	--	--	290.24	35.54	

NOTES:
1. Benchmark toxicity values from Table 7-13
NA - Not analyzed
ND - Not detected

RISK ESTIMATES FOR SOIL COCs
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND, INC. SUPERFUND SITE
SOUTHINGTON, CONNECTICUT

SECTOR	COCs	MAXIMUM CONCEN-TRATION	MEAN CONCEN-TRATION	BENCH-MARK [1]	MAXIMUM RISK	MEAN RISK	ADVERSE EFFECTS
Southing-ton Well Field	Benzene (µg/Kg)	ND	ND	500.00	ND	ND	no
	Xylenes (µg/Kg)	ND	ND	5000.00	ND	ND	no
	Acenaphthylene (µg/Kg)	ND	ND	10000.00	ND	ND	no
	Anthracene (µg/Kg)	ND	ND	10000.00	ND	ND	no
	Benzo(a)anthracene (µg/Kg)	ND	ND	1000.00	ND	ND	no
	Benzo(a)pyrene (µg/Kg)	ND	ND	1000.00	ND	ND	no
	Benzo(b)fluoranthene (µg/Kg)	50.00	50.00	1000.00	0.05	0.05	no
	Benzo(k)fluoranthene (µg/Kg)	50.00	50.00	1000.00	0.05	0.05	no
	Benzo(g,h,i)perylene (µg/Kg)	ND	ND	1000.00	ND	ND	no
	Bis(2-ethylhexyl)phthalate (µg/Kg)	ND	ND	70000.00	ND	ND	no
	Butyl benzyl phthalate (µg/Kg)	ND	ND	70000.00	ND	ND	no
	Chrysene (µg/Kg)	ND	ND	5000.00	ND	ND	no
	Diethyl phthalate (µg/Kg)	ND	ND	70000.00	ND	ND	no
	Di-n-butyl phthalate (µg/Kg)	ND	ND	70000.00	ND	ND	no
	Di-n-octyl phthalate (µg/Kg)	ND	ND	70000.00	ND	ND	no
	Fluorene (µg/Kg)	ND	ND	10000.00	ND	ND	no
	Fluoranthene (µg/Kg)	53.00	48.00	10000.00	0.0053	0.0048	no
	Indeno(1,2,3-cd)pyrene (µg/Kg)	ND	ND	1000.00	ND	ND	no
	2-Methylnaphthalene (µg/Kg)	ND	ND	5000.00	ND	ND	no
	Naphthalene (µg/Kg)	ND	ND	5000.00	ND	ND	no
	Phenanthrene (µg/Kg)	ND	ND	5000.00	ND	ND	no
	1,2,4-Trichlorobenzene (µg/Kg)	ND	ND	1000.00	ND	ND	no
	Aroclor 1016 (µg/Kg)	ND	ND	1000.00	ND	ND	no
	Aroclor 1248 (µg/Kg)	27.00	20.25	1000.00	0.03	0.02	no
	Aroclor 1254 (µg/Kg)	56.00	23.63	1000.00	0.06	0.02	no
	Aroclor 1260 (µg/Kg)	41.00	22.13	1000.00	0.04	0.02	no
	4,4'-DDE (µg/Kg)	27.00	4.90	500.00	0.05	0.01	no
	4,4'-DDT (µg/Kg)	28.00	4.87	500.00	0.06	0.01	no
	Dieldrin (µg/Kg)	2.20	1.60	500.00	0.0044	0.0032	no
	Endrin (µg/Kg)	0.43	0.35	500.00	0.0009	0.0007	no
	Endosulfan II (µg/Kg)	1.80	1.27	500.00	0.0036	0.0025	no
	Gamma-BHC (Lindane, µg/Kg)	1.10	1.03	500.00	0.0022	0.0021	no
	Gamma-Chlordane (µg/Kg)	ND	ND	500.00	ND	ND	no
	Heptachlor epoxide (µg/Kg)	ND	ND	500.00	ND	ND	no
	Methoxychlor (µg/Kg)	20.00	10.19	500.00	0.04	0.02	no
	Dioxins (Toxicity Equivalent Conc, µg/Kg)	NA	NA	0.30	NA	NA	no
	Cadmium (mg/Kg)	1.70	0.51	5.00	0.34	0.10	no
	Copper (mg/Kg)	13.70	9.51	100.00	0.14	0.10	no
	Lead (mg/Kg)	32.00	16.79	200.00	0.16	0.08	no
	Mercury (mg/Kg)	1.20	0.27	2.00	0.60	0.14	no
	Selenium (mg/Kg)	ND	ND	3.00	ND	ND	no
	Cumulative risk	--	--	--	1.63	0.64	

NOTES:
1. Benchmark toxicity values from Table 7-13
NA - Not analyzed
ND - Not detected

RISK ESTIMATES FOR SOIL COCs
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND, INC. SUPERFUND SITE
SOUTHINGTON, CONNECTICUT

SECTOR	COCs	MAXIMUM CONCEN-TRATION	MEAN CONCEN-TRATION	BENCH-MARK [1]	MAXIMUM RISK	MEAN RISK	ADVERSE EFFECTS
Upslope Area	Benzene (µg/Kg)	ND	ND	500.00	ND	ND	no
	Xylenes (µg/Kg)	ND	ND	5000.00	ND	ND	no
	Acenaphthylene (µg/Kg)	71.50	71.50	10000.00	0.01	0.01	no
	Anthracene (µg/Kg)	117.00	117.00	10000.00	0.01	0.01	no
	Benzo(a)anthracene (µg/Kg)	180.00	180.00	1000.00	0.18	0.18	no
	Benzo(a)pyrene (µg/Kg)	180.00	180.00	1000.00	0.18	0.18	no
	Benzo(b)fluoranthene (µg/Kg)	140.00	111.00	1000.00	0.14	0.11	no
	Benzo(k)fluoranthene (µg/Kg)	120.00	101.00	1000.00	0.12	0.10	no
	Benzo(g,h,i)perylene (µg/Kg)	110.50	110.50	1000.00	0.11	0.11	no
	Bis(2-ethylhexyl)phthalate (µg/Kg)	ND	ND	70000.00	ND	ND	no
	Butyl benzyl phthalate (µg/Kg)	ND	ND	70000.00	ND	ND	no
	Chrysene (µg/Kg)	245.00	215.00	5000.00	0.05	0.04	no
	Diethyl phthalate (µg/Kg)	ND	ND	70000.00	ND	ND	no
	Di-n-butyl phthalate (µg/Kg)	ND	ND	70000.00	ND	ND	no
	Di-n-octyl phthalate (µg/Kg)	ND	ND	70000.00	ND	ND	no
	Fluorene (µg/Kg)	ND	ND	10000.00	ND	ND	no
	Fluoranthene (µg/Kg)	370.00	206.75	10000.00	0.04	0.02	no
	Indeno(1,2,3-cd)pyrene (µg/Kg)	104.00	104.00	1000.00	0.10	0.10	no
	2-Methylnaphthalene (µg/Kg)	ND	ND	5000.00	ND	ND	no
	Naphthalene (µg/Kg)	ND	ND	5000.00	ND	ND	no
	Phenanthrene (µg/Kg)	330.00	236.25	5000.00	0.07	0.05	no
	1,2,4-Trichlorobenzene (µg/Kg)	ND	ND	1000.00	ND	ND	no
	Aroclor 1016 (µg/Kg)	ND	ND	1000.00	ND	ND	no
	Aroclor 1248 (µg/Kg)	ND	ND	1000.00	ND	ND	no
	Aroclor 1254 (µg/Kg)	ND	ND	1000.00	ND	ND	no
	Aroclor 1260 (µg/Kg)	ND	ND	1000.00	ND	ND	no
	4,4'-DDE (µg/Kg)	6.15	4.01	500.00	0.01	0.01	no
	4,4'-DDT (µg/Kg)	7.25	4.54	500.00	0.01	0.01	no
	Dieldrin (µg/Kg)	2.05	1.78	500.00	0.004	0.004	no
	Endrin (µg/Kg)	ND	ND	500.00	ND	ND	no
	Endosulfan II (µg/Kg)	0.33	0.33	500.00	0.001	0.001	no
	Gamma-BHC (Lindane, µg/Kg)	0.31	0.31	500.00	0.001	0.001	no
	Gamma-Chlordane (µg/Kg)	ND	ND	500.00	ND	ND	no
	Heptachlor epoxide (µg/Kg)	ND	ND	500.00	ND	ND	no
	Methoxychlor (µg/Kg)	ND	ND	500.00	ND	ND	no
	Dioxins (Toxicity Equivalent Conc, µg/Kg)	NA	NA	0.30	NA	NA	no
	Cadmium (mg/Kg)	ND	ND	5.00	ND	ND	no
	Copper (mg/Kg)	12.10	9.85	100.00	0.12	0.10	no
	Lead (mg/Kg)	27.80	20.84	200.00	0.14	0.10	no
	Mercury (mg/Kg)	ND	ND	2.00	ND	ND	no
	Selenium (mg/Kg)	ND	ND	3.00	ND	ND	no
	Cumulative risk	--	--	--	1.30	1.14	

NOTES:
1. Benchmark toxicity values from Table 7-13
NA - Not analyzed
ND - Not detected

RISK ESTIMATES FOR SOIL COCs
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND, INC. SUPERFUND SITE
SOUTHINGTON, CONNECTICUT

SECTOR	COCs	MAXIMUM CONCEN-TRATION	MEAN CONCEN-TRATION	BENCH-MARK [1]	MAXIMUM RISK	MEAN RISK	ADVERSE EFFECTS
Queen Street	Benzene (µg/Kg)	ND	ND	500.00	ND	ND	no
	Xylenes (µg/Kg)	ND	ND	5000.00	ND	ND	no
	Acenaphthylene (µg/Kg)	ND	ND	10000.00	ND	ND	no
	Anthracene (µg/Kg)	320.00	232.50	10000.00	0.03	0.02	no
	Benzo(a)anthracene (µg/Kg)	380.00	208.75	1000.00	0.38	0.21	no
	Benzo(a)pyrene (µg/Kg)	55.00	55.00	1000.00	0.06	0.06	no
	Benzo(b)fluoranthene (µg/Kg)	810.00	333.75	1000.00	0.81	0.33	no
	Benzo(k)fluoranthene (µg/Kg)	1000.00	371.63	1000.00	1.00	0.37	Possible
	Benzo(g,h,i)perylene (µg/Kg)	340.00	237.50	1000.00	0.34	0.24	no
	Bis(2-ethylhexyl)phthalate (µg/Kg)	ND	ND	70000.00	ND	ND	no
	Butyl benzyl phthalate (µg/Kg)	ND	ND	70000.00	ND	ND	no
	Chrysene (µg/Kg)	390.00	186.50	5000.00	0.08	0.04	no
	Diethyl phthalate (µg/Kg)	ND	ND	70000.00	ND	ND	no
	Di-n-butyl phthalate (µg/Kg)	ND	ND	70000.00	ND	ND	no
	Di-n-octyl phthalate (µg/Kg)	ND	ND	70000.00	ND	ND	no
	Fluorene (µg/Kg)	ND	ND	10000.00	ND	ND	no
	Fluoranthene (µg/Kg)	740.00	296.25	10000.00	0.07	0.03	no
	Indeno(1,2,3-cd)pyrene (µg/Kg)	360.00	242.50	1000.00	0.36	0.24	no
	2-Methylnaphthalene (µg/Kg)	ND	ND	5000.00	ND	ND	no
	Naphthalene (µg/Kg)	ND	ND	5000.00	ND	ND	no
	Phenanthrene (µg/Kg)	300.00	152.75	5000.00	0.06	0.03	no
	1,2,4-Trichlorobenzene (µg/Kg)	ND	ND	1000.00	ND	ND	no
	Aroclor 1016 (µg/Kg)	ND	ND	1000.00	ND	ND	no
	Aroclor 1248 (µg/Kg)	ND	ND	1000.00	ND	ND	no
	Aroclor 1254 (µg/Kg)	9.80	9.40	1000.00	0.01	0.01	no
	Aroclor 1260 (µg/Kg)	ND	ND	1000.00	ND	ND	no
	4,4'-DDE (µg/Kg)	1.65	1.21	500.00	0.0033	0.0024	no
	4,4'-DDT (µg/Kg)	5.35	2.22	500.00	0.0107	0.0044	no
	Dieldrin (µg/Kg)	2.00	1.69	500.00	0.0040	0.0034	no
	Endrin (µg/Kg)	ND	ND	500.00	ND	ND	no
	Endosulfan II (µg/Kg)	0.73	0.50	500.00	0.0015	0.0010	no
	Gamma-BHC (Lindane, µg/Kg)	ND	ND	500.00	ND	ND	no
	Gamma-Chlordane (µg/Kg)	ND	ND	500.00	ND	ND	no
	Heptachlor epoxide (µg/Kg)	0.16	0.16	500.00	0.0003	0.0003	no
	Methoxychlor (µg/Kg)	6.90	6.90	500.00	0.01	0.01	no
	Dioxins (Toxicity Equivalent Conc, µg/Kg)	NA	NA	0.30	NA	NA	no
	Cadmium (mg/Kg)	ND	ND	5.00	ND	ND	no
	Copper (mg/Kg)	13.40	9.34	100.00	0.13	0.09	no
	Lead (mg/Kg)	30.80	25.19	200.00	0.15	0.13	no
	Mercury (mg/Kg)	0.12	0.07	2.00	0.06	0.04	no
	Selenium (mg/Kg)	ND	ND	3.00	ND	ND	no
	Cumulative risk	--	--	--	3.58	1.86	

NOTES:
1. Benchmark toxicity values from Table 7-13
NA - Not analyzed
ND - Not detected

TABLE G-15
BENCHMARK TOXICITY VALUES FOR ECOLOGICAL COCs[1]
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND, INC. SUPERFUND SITE
SOUTHINGTON, CONNECTICUT

Chemical	Benchmark/Environmental Media		
VOLATILE ORGANIC COMPOUNDS	Surface Water	Sediment[2]	Soil
Benzene			500 µg/kg[3]
Xylenes (total)	5,000 µg/l[4]	5,000 µg/l[4]	5,000 µg/kg[3]
SEMIVOLATILE ORGANIC COMPOUNDS			
Acenaphthene		140 $\mu g/g_{oc}$[5]	
Acenaphthylene		140 $\mu g/g_{oc}$[6]	10,000 µg/kg[3]
Anthracene		85 µg/kg[7]	10,000 µg/kg[3]
Benzo(a)anthracene		230 µg/kg[7]	1,000 µg/kg[3]
Benzo(a)pyrene		400 µg/kg[7]	1,000 µg/kg[3]
Benzo(b)fluoranthene			1,000 µg/kg[3]
Benzo(k)fluoranthene			1,000 µg/kg[3]
Benzo(g,h,i)perylene			1,000 µg/kg[3]
Bis(2-ethylhexyl)phthalate	3 µg/l[8]	3 µg/l[8]	70,000 µg/kg[9]
Butyl benzyl phthalate		3 µg/l[8]	70,000 µg/kg[10]
Chrysene		400 µg/kg[7]	5,000 µg/kg[11]
Dibenzofuran		230 µg/kg[12]	
Diethyl phthalate			70,000 µg/kg[10]
Di-n-butyl phthalate		3 µg/l[8]	70,000 µg/kg[10]
Di-n-octyl phthalate		3 µg/l[8]	70,000 µg/kg[10]
Fluorene		8.2 µg/l[13]	10,000 µg/kg[3]
Fluoranthene			10,000 µg/kg[3]
Indeno(1,2,3-cd)pyrene			1,000 µg/kg[3]
2-Methylnaphthalene		65 µg/kg[7]	5,000 µg/kg[14]
Naphthalene		620 µg/l[15]	5,000 µg/kg[3]
Phenanthrene		120 $\mu g/g_{oc}$[16]	5,000 µg/kg[3]
1,2,4-Trichlorobenzene			1,000 µg/kg[11]

BENCHMARK TOXICITY VALUES FOR ECOLOGICAL COCs
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND, INC. SUPERFUND SITE
SOUTHINGTON, CONNECTICUT

Chemical	Benchmark/Environmental Media		
PESTICIDES/POLYCHLORINATED BIPHENYLS (PCBs)/DIOXINS	Surface Water	Sediment	Soil
Aldrin		10 μg/kg[17]	
Alpha-Chlordane		0.0043 μg/l[18]	
Aroclor-1016			1,000 μg/kg[3]
Aroclor-1248			1,000 μg/kg[3]
Aroclor-1254	0.014 μg/l[18]	0.014 μg/l[18]	1,000 μg/kg[3]
Aroclor-1260		0.014 μg/l[18]	1,000 μg/kg[3]
4,4'-DDD		0.001 μg/l[19]	
4,4'-DDE		0.001 μg/l[19]	500 μg/kg[11]
4,4'-DDT		0.001 μg/l[18]	500 μg/kg[11]
Dieldrin		9 $\mu g/g_{oc}$[20]	500 μg/kg[11]
Endrin		4 $\mu g/g_{oc}$[21]	500 μg/kg[11]
Endosulfan I		0.056 μg/l[18]	
Endosulfan II			500 μg/kg[11]
Gamma-BHC (Lindane)			500 μg/kg[11]
Gamma-Chlordane		0.0043 μg/l[18]	500 μg/kg[11]
Heptachlor epoxide		0.0038 μg/l[18]	500 μg/kg[11]
Methoxychlor			500 μg/kg[11]
Dioxins (as Toxicity Equivalent Concentrations for 2,3,7,8-TCDD)			0.3 μg/kg[22]
METALS			
Cadmium	0.87 μg/l[18]*	1 mg/kg[17]	5 mg/kg[3]
Copper	8.86 μg/l[18]*	100 mg/kg[17]	100 mg/kg[3]
Lead	2.07 μg/l[18]*	50 mg/kg[17]	200 mg/kg[3]
Mercury		0.1 mg/kg[17]	2 mg/kg[3]
Nickel		100 mg/kg[17]	
Selenium			3 mg/kg[3]
Zinc		100 mg/kg[17]	

Footnotes

CAWQC Chronic Ambient Water Quality Criteria.
SQC Sediment Quality Criteria.
g_{oc} Grams of organic carbon.

1 - Benchmark toxicity values are presented only for the contaminants that were selected as COCs in each environmental media, as presented on Table 7-6.

2 - Depending on the availability of appropriate benchmarks in the literature, the benchmark values selected for sediment COCs represent either benchmarks for surface water concentrations (comparable to interstitial water concentrations as extrapolated through *equilibrium partitioning*) or benchmarks for sediment concentrations.

3 - Benchmarks represent threshold soil concentrations as presented in the Contaminated Soils Rehabilitation Policy established by the Province of Quebec's Ministry of the Environment. This policy identifies three categories of contaminant levels: concentrations that are expected to represent background levels in soils; concentrations which represent moderate soil contamination and may or may not require cleanup; and concentrations which cause adverse effects to both human and environmental receptors requiring immediate cleanup (Ministere de L'Environnement, 1988). Soil concentrations in the second category were selected as benchmark values for comparison with contaminant soil concentrations at SRSNE.

4 - No CAWQC or SQC available; the saltwater CAWQC for toluene (U.S. EPA, 1986) was used based on the affinity in chemical structure (no freshwater CAWQC for toluene was available either).

5 - Proposed SQC for acenaphthene (U.S. EPA, 1991b).

6 - No CAWQC or SQC available; the proposed SQC for acenaphthene (U.S. EPA, 1991b) was used based on the affinity in chemical structure.

7 - No CAWQC or SQC available; Effects Range-Low value was used as the benchmark toxicity value. Based on sediment analytical data derived from a wide variety of methods and approaches, Long and Morgan (1991) have identified and sorted the concentrations of contaminants in sediments, mostly from coastal marine and estuarine environments, which are associated with observed or potential biological effects. The lower 10 percentile and the median concentrations for different contaminants were derived and identified as Effects Range-Low (ER-L) and Effects Range-Median (ER-M), respectively. The ER-L value for a contaminant represents the sediment concentration (dry weight) which is equivalent to the lower 10^{th} percentile of the screened data. The ER-L and ER-M values are not considered standards or criteria, but can be used to assess sites with regard to the potential for adverse biological effects due to sediment contamination (Long and Morgan, 1991).

8 - CAWQC for phthalate esters (U.S. EPA, 1980a); no SQC available.

9 - Lower concentration of range of "acceptable on-site soil cleanup concentrations" for bis(2-ethylhexyl)phthalate approved by the Ontario Ministry of the Environment for Texaco and Shell refinery sites (Note: the criteria concentrations for these sites were based on an exposure model for human health) (Richardson, 1987). No other soil benchmark toxicity value was available.

10 - No soil benchmark toxicity value available; the benchmark for bis(2-ethylhexyl)phthalate (Richardson, 1987) was used.

11 - "Soil contamination indicator value" from the Province of Quebec, Canada. The policy identifies three categories of criteria: criteria that refer to background concentrations in soil or detection limits; criteria that refer to moderate soil contamination which requires additional study; and criteria that refer to threshold values which require immediate cleanup (Richardson, 1987). Soil concentrations in the second category were selected as benchmark values for comparison with contaminant soil concentrations at SRSNE.

Footnotes

12 - No CAWQC, SQC or toxicity data available for this polynuclear aromatic hydrocarbon (PAH). The ER-L value for benzo(a)anthracene (Long and Morgan, 1991) was used because its value is intermediate in the range of ER-L values for the PAHs considered as COCs at SRSNE.
13 - No CAWQC or SQC available. Benchmark value estimated by acute $LC_{50}/100$, based on the assumption that an acute LC_{50} for a sensitive species divided by 100 provides a reasonable and adequate level of protection for other sensitive species under chronic exposure conditions. An LC_{50} (96 hours) of 820 µg/l has been reported for fluorene in rainbow trout (Eisler, 1987a).
14 - The "soil contamination indicator value" for naphthalene (Richardson, 1987) was used based on the affinity in chemical structure.
15 - CAWQC (U.S. EPA, 1986).
16 - Proposed SQC for phenanthrene (U.S. EPA, 1991c).
17 - Wisconsin's interim criteria for sediments from Great Lakes harbors for disposal in water (WDNR, 1985).
18 - CAWQC (U.S. EPA, 1991f).
19 - No CAWQC available; the CAWQC for 4,4'DDT (U.S. EPA, 1991f) was used based on the affinity in chemical structure.
20 - Proposed SQC for dieldrin (U.S. EPA, 1991d).
21 - Proposed SQC for endrin (U.S. EPA, 1991e).
22 - Concentration of dioxin not to be exceeded in soil according to the Missouri Department of Natural Resources (MDNR, 1988).
* - CAWQC adjusted to a total hardness of 71.353 mg equivalent $CaCO_3$/l, following the procedure presented by U.S. EPA (1991f). The total hardness value was calculated based on site-average surface water concentrations for calcium and magnesium, using the formula presented by Clesceri *et al.* (1989):

Hardness (mg equivalent $CaCO_3$/l) = 2.497 (Ca, mg/l) + 4.118 (Mg, mg/l)

TABLE L-1
INTERIM CLEANUP LEVELS FOR GROUNDWATER [1]

Chemical Name	Units	Interim Cleanup Level [1]	Basis of Interim Cleanup Level
1,1,1-Trichloroethane	ug/l	0.5	CT RSR
1,1,1,2-Tetrachloroethane	ug/l	0.5	CT RSR
1.1.2-Trichloroethane	ug/l	0.5	CT RSR
1,1-Dichloroethane	ug/l	0.5	CT RSR
1,1-Dichloroethene	ug/l	0.5	CT RSR
1,2-Dibromo-3-chloropropane	ug/l	0.05	CT RSR
1,2-Dichlorobenzene	ug/l	0.5	CT RSR
1,2-Dichloroethane	ug/l	0.5	CT RSR
1,4-Dichlorobenzene	ug/l	0.5	CT RSR
2-Butanone	ug/l	5	CT RSR
2-Hexanone	ug/l	5	CT RSR
4-Methyl-2-pentanone	ug/l	5	CT RSR
Acetone	ug/l	5	CT RSR
Benzene	ug/l	0.5	CT RSR
Bromomethane	ug/l	0.5	CT RSR
Carbon Disulfide	ug/l	0.5	CT RSR
Carbon tetrachloride	ug/l	0.5	CT RSR
Chlorobenzene	ug/l	0.5	CT RSR
Chloroethane	ug/l	0.5	CT RSR
Chloroform	ug/l	0.5	CT RSR
Chloromethane	ug/l	0.5	CT RSR
cis-1,2-Dichloroethene	ug/l	0.5	CT RSR
Ethylbenzene	ug/l	0.5	CT RSR
Methylene chloride	ug/l	0.5	CT RSR
Styrene	ug/l	0.5	CT RSR
Tetrachloroethene	ug/l	0.5	CT RSR
Tetrahydrofuran	ug/l	0.5	CT RSR
Toluene	ug/l	0.5	CT RSR
trans-1,2-Dichloroethene	ug/l	0.5	CT RSR
trans-1,3-Dichloropropene	ug/l	0.5	CT RSR
Trichloroethene	ug/l	0.5	CT RSR
Vinyl chloride	ug/l	0.5	CT RSR
Xylenes	ug/l	0.5	CT RSR
1,2,4-Trichlorobenzene	ug/l	2	CT RSR
2,4-Dimethylphenol	ug/l	10	CT RSR
2-Methylphenol	ug/l	10	CT RSR
4-Methylphenol	ug/l	10	CT RSR
Benzoic Acid	ug/l	10	CT RSR
bis(2-Ethylhexyl)phthalate	ug/l	10	CT RSR
Di-n-butyl phthalate	ug/l	10	CT RSR
Di-n-octyl phthalate	ug/l	10	CT RSR
Hexachlorobutadiene	ug/l	0.45 [2]	CT RSR
Isophorone	ug/l	10	CT RSR
Napthalene	ug/l	0.5 [3]	CT RSR
Phenol	ug/l	10	CT RSR
Aroclor-1254	ug/l	0.5	CT RSR
Aroclor-1260	ug/l	0.5	CT RSR

TABLE L-1

INTERIM CLEANUP LEVELS FOR GROUNDWATER [1]

Chemical Name	Units	Interim Cleanup Level [1]	Basis of Interim Cleanup Level
Aluminum	ug/l	(1)	CT RSR
Antimony	ug/l	(1)	CT RSR
Arsenic	ug/l	(1)	CT RSR
Barium	ug/l	(1)	CT RSR
Beryllium	ug/l	(1)	CT RSR
Cadmium	ug/l	(1)	CT RSR
Chromium (Total)	ug/l	(1)	CT RSR
Cobalt	ug/l	(1)	CT RSR
Copper	ug/l	(1)	CT RSR
Iron	ug/l	(1)	CT RSR
Lead	ug/l	(1)	CT RSR
Manganese	ug/l	(1)	CT RSR
Nickel	ug/l	(1)	CT RSR
Silver	ug/l	(1)	CT RSR
Thallium	ug/l	(1)	CT RSR
Vanadium	ug/l	(1)	CT RSR
Zinc	ug/l	(1)	CT RSR
4,4'-DDD	ug/l	0.1	CT RSR
Aldrin	ug/l	0.05	CT RSR
Ethanol	ug/l	1000	CT RSR
Isopropanol	ug/l	1000	CT RSR
Methanol	ug/l	1000	CT RSR
Sec-Butanol	ug/l	1000	CT RSR

Notes:

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

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

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

TABLE L-2

SOIL AND WETLAND SOIL CLEANUP LEVELS FOR THE PROTECTION OF HUMAN HEALTH AND THE AQUIFER[1]

Chemical Name	Connecticut Residential Direct Exposure Criteria (mg/kg)	Connecticut GA, GAA Pollutant Mobility Criteria (mg/kg) [2]	Soil Cleanup Level (mg/kg) [1]	Basis of Cleanup Level	Carcinogenic Risk [3]	Non-Carcinogenic Hazard Quotient [3]	Non-cancer Target Endpoint
1,1,1-Trichlorethane	500	4	4	CT RSR	-	NA	-
1,1,2,2-Tetrachloroethane	3.1	0.01	0.01	CT RSR	2.E-08	1.E-05	liver
1.1.2-Trichloroethane	11	0.1	0.1	CT RSR	1.E-07	3.E-03	blood
1,1-Dichloroethane	500	1.4	1.4	CT RSR	-	3.E-03	kidney
1,1-Dichloroethene	1	0.14	0.14	CT RSR	-	1.E-03	liver
1,2-Dichloroethene, Total	500	1.4	1.4	CT RSR	-	3.E-02	blood
1,2-Dichloropropane	9	0.1	0.1	CT RSR	3.E-07	NA	-
2-Butanone	500	8	8	CT RSR	-	4.E-03	fetal weight
4-Methyl-2-pentanone	500	7	7	CT RSR	-	1.E-03	liver/ kidney
Acetone	500	14	14	CT RSR	-	1.E-03	kidney
Benzene	21	0.02	0.02	CT RSR	3.E-08	1.E-03	blood
Carbon tetrachloride	4.7	0.1	0.1	CT RSR	4.E-07	5.E-02	liver
Chlorobenzene	500	2	2	CT RSR	-	1.E-02	liver
Chlorodibromomethane	7.3	0.01	0.01	CT RSR	9.E-09	3.E-04	liver
Chloroform	100	0.12	0.12	CT RSR	6.E-07	2.E-03	liver
Ethylbenzene	500	10.1	10.1	CT RSR	-	5.E-03	liver
Methylene chloride	82	0.1	0.1	CT RSR	1.E-08	5.E-05	liver
Styrene	500	2	2	CT RSR	-	5.E-04	blood/ immune
Tetrachloroethene	12	0.1	0.1	CT RSR	2.E-07	3.E-03	liver
Toluene	500	20	20	CT RSR	-	3.E-02	liver/kidney
Trichloroethene	56	0.1	0.1	CT RSR	2.E-06	6.E-03	liver/ kidney/ developmental
Vinyl chloride	0.32	0.04	0.04	CT RSR	5.E-07	1.E-03	liver
Xylenes, Total	500	19.5	19.5	CT RSR	-	7.E-02	body weight
2-Methylnapthalene	474	0.98	0.98	CT RSR	NA	NA	-
4-Chloroaniline	270	1	1	CT RSR	-	4.E-03	spleen
4-Methylphenol	340	0.7	0.7	CT RSR	-	2.E-03	nervous system
Benzo(a)anthracene	1	1	1	CT RSR	2.E-06	-	-
Benzo(a)pyrene	1	1	1	CT RSR	2.E-05	-	-
Benzo(b)fluoranthene	1	1	1	CT RSR	2.E-06	-	-
Benzo(k)fluoranthene	8.4	1	1	CT RSR	2.E-07	-	-
bis(2-Ethylhexyl)phthalate	44	1	1	CT RSR	3.E-08	1.E-03	liver
Chrysene	84	1	1	CT RSR	2.E-08	-	-
Dibenzofuran	270	1	1	CT RSR	-	7.E-03	kidney
Di-n-butyl phthalate	1000	14	14	CT RSR	-	2.E-03	mortality
Di-n-octyl phthalate	1000	2	2	CT RSR	-	8.E-04	liver/thyroid

TABLE L-2

SOIL AND WETLAND SOIL CLEANUP LEVELS FOR THE PROTECTION OF HUMAN HEALTH AND THE AQUIFER[1]

Chemical Name	Connecticut Residential Direct Exposure Criteria (mg/kg)	Connecticut GA, GAA Pollutant Mobility Criteria (mg/kg) [2]	Soil Cleanup Level (mg/kg) [1]	Basis of Cleanup Level	Carcinogenic Risk [3]	Non-Carcinogenic Hazard Quotient [3]	Non-cancer Target Endpoint
Fluoranthene	1000	5.6	5.6	CT RSR	-	2.E-03	liver
Indeno(1,2,3-cd)pyrene	1	1	1	CT RSR	2.E-06	-	-
Phenanthrene	1000	4	4	CT RSR	NA	NA	-
Pyrene	1000	4	4	CT RSR	-	2.E-03	kidney
2,3,7,8 TCDD -TEQ	NA [4]	NA [4]	lower of 0.001 mg/kg or background [4]	EPA Policy [4]/ background	To be determined	-	-
PCBs Total	1	0.0005 mg/l [2]	1 mg/kg and 0.0005 mg/l [2]	CT RSR	5.E-06	9.E-01	immune
Antimony	27	0.006 mg/l [2]	27 mg/kg and 0.006 mg/l [2]	CT RSR	-	9.E-01	mortality/ blood
Arsenic	10	0.05 mg/l [2]	10 mg/kg and 0.05 mg/l [2]	CT RSR	3.E-05	5.E-01	skin
Barium	4700	1 mg/l [2]	4700 mg/kg and 1 mg/l [2]	CT RSR	-	9.E-01	kidney
Beryllium	2	0.004 mg/l [2]	2 mg/kg and 0.004 mg/l [2]	CT RSR	1.E-09	1.E-02	small intestine
Cadmium	34	0.005 mg/l [2]	34 mg/kg and 0.005 mg/l [2]	CT RSR	2.E-08	9.E-01	kidney
$Chromium^{+3}$	3900	0.05 mg/l [2,5]	3900 mg/kg and 0.05 mg/l [2,5]	CT RSR	-	3.E-02	none
$Chromium^{+6}$	100	0.05 mg/l [2,5]	100 mg/kg and 0.05 mg/l [2,5]	CT RSR	3.E-06	5.E-01	none
Lead	500	0.015 mg/l [2]	400 mg/kg [6] and 0.015 mg/l [2]	EPA Policy [6]/ CT RSR	NA	NA [6]	nervous system

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

Cumulative HI by Target Endpoint

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

Notes:

NA = Not Available or Not Applicable

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

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

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

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

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

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

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

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Table L-3
SRSNE Superfund Site
Feasibility Study

Operations Area and Railroad Remedial Alternatives Cost Estimate
Alternative OAR-2: Capping and Access Control

Item No.	Description	Quantity	Unit	Unit Cost	Cost
A. Initial Capital Costs					
1	Institutional Controls	100	man hours	$250	$25,000
2	Mobilization/Demobilization	1	LS	$20,000	$20,000
3	Site Preparation/Erosion Control Measures	1	LS	$20,000	$20,000
4	Clean Fill, including backfill and compaction	500	CY	$30	$15,000
5	Granular Subbase (Operations Area)	2,300	SY	$14	$32,200
6	Subbase Leveling	2,300	SY	$14	$32,200
7	Non-woven Geotextile	10,100	SY	$3	$30,300
8	HDPE Geomembrane	10,100	SY	$12	$121,200
9	Granular Cushion Layer	2,300	SY	$14	$32,200
10	Asphalt Cap	10,100	SY	$11	$111,100
11	Restoration/Revegetation of Access Areas	1	LS	$10,000	$10,000
13	Well abandon/conversion	10	Well	$500	$5,000
14	RR Grade Remediation (cap)				
14a	Clean Fill, Backfill & Compaction	1,000	CY	$30	$30,000
14b	Rough Grading	2,950	SY	$0.98	$2,891
14c	Non-woven Geotextile	2,950	SY	$5	$14,750
14d	HDPE Geomembrane	2,950	SY	$12	$35,400
14e	Asphalt Cap	2,950	SY	$11	$32,450
				Initial Capital Cost Subtotal:	$569,691
				Rounded To:	$570,000

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SRSNE Superfund Site
Feasibility Study

Operations Area and Railroad Remedial Alternatives Cost Estimate
<u>Alternative OAR-2: Capping and Access Control</u>

Item No.	Description	Quantity	Unit	Unit Cost	Cost
B. Recurring Capital Costs					
	No Recurring Capital Costs				$0
C. Annual Operation and Maintenance Costs (30 year Present Worth)					
1	**Inspection & Maint. of cover**	150	man hours	$75	$11,250
2	**Verification of Institutional Controls**	20	man hours	$115	$2,300
3	**Annual Report**	20	man hours	$115	$2,300
				Annual O&M Cost Subtotal:	$13,550
				Total Annual O&M Cost:	$10,000
				Present Worth Factor (30-year, 7%):	**12.41**
				Total Present Worth of Annual O&M Cost (rounded):	$120,000
	Description				Cost
				Aggregate Present Worth of Total Cost:	$690,000
				Remedial Design (15%)	$103,500
				Project Administration/Management Cost (8%)	$55,200
				Construction Management (10%)	$69,000
				Scope Contingency (10%)	$69,000
				Bid or Construction Contingency (10%):	$69,000
				Subtotal	$1,055,700
				Rounded To:	**$1,060,000**

Operations Area and Railroad Remedial Alternatives Cost Estimate
Alternative OAR-2: Capping and Access Control

Notes:

1. Institutional controls includes implementing a ELUR to limit future usage of the Site and prevent disturbance of the cap.
2. Mobilization/demobilization includes site preparation and staging/handling area for equipment and materials.
3. Costs include materials and installation and are based on past project experience, published references and vendor estimates. Costs do not include costs associated with sales tax, bonding, financial costs insurance, etc.
4. Clean fill, including backfill and compaction, is assumed necessary to regrade the railroad grade for proper surface runoff to the relocated drainage culvert (along Lazy Lane).
5. Subbase leveling assumes that approximately 25% of the Operations Area (particularly area surrounding concrete pads) will need to be filled with gravel subbase material prior to liner installation.
6. Geotextile Liner will be Type 2, Non-Woven (16 oz/sq.yd).
7. Geomembrane will be 40 mil HDPE.
8. Granular Subbase will be 8" thick.
9. Asphalt cap will consist of a 2-1/2" bituminous concrete base course with a 1-1/2" bituminous concrete wearing surface.
10. Contingency includes unforeseen legal and administrative fees.
11. LS - lump sum.
12. Costs rounded to the nearest $10,000.
13. Inspection and maintenance of the asphalt cap includes cost for surface sealing

Table L-4
SRSNE Superfund Site
Feasibility Study

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Cianci Property Remedial Alternatives
Alternative CP-2 - Culvert Removal and Excavation with On-Site Disposal

Item No.	Description	Quantity	Unit	Unit Cost	Cost
A. Initial Capital Costs					
1	**Mobilization/Demobilization**	1	LS	$10,000	$10,000
2	**Access Area Development**	1	LS	$20,000	$20,000
3	**Site Preparation/Erosion Control Measures**	1	LS	$5,000	$5,000
4	**Pipe Removal/Drainage Swale Construction**				
4a	Flowable Fill (RR Culvert)	6	CY	$50	$275
4b	Pipe Excavation	300	LF	$15	$4,500
4c	Soil Removal	20	CY	$12	$240
4d	General Backfill	150	CY	$30	$4,500
4e	Pipe Installation Underneath RR Tracks	30	LF	$100	$3,000
4f	Drainage Swale Excavation	293	CY	$12	$3,516
5	**Culvert Outfall Remediation**				
5a	Sediment Excavation	500	CY	$12	$6,000
5b	Stabilization Agent	167	TN	$60	$10,020
5c	Material Handling	500	CY	$6	$3,000
5d	Special Fill	278	CY	$20	$5,560
5e	On-site Disposal	500	CY	$10	$5,000
5f	Replacement Culvert Installation (36" HDPE)	350	LF	$75	$26,250
6	**Cianci Property Soils**				
6a	Soil Excavation	400	CY	$12	$4,800
6b	General Backfill	400	CY	$15	$6,000
6c	On-site Disposal	400	CY	$10	$4,000
7	**Restoration/Revegetation of Access Areas**	1	LS	$15,000	$15,000
8	**Revegetation of Excavated Areas**	1	LS	$25,000	$25,000
				Initial Capital Cost Subtotal:	$161,661
				Rounded To:	**$160,000**

SRSNE Superfund Site
Feasibility Study

Cianci Property Remedial Alternatives
Alternative CP-2 - Culvert Removal and Excavation with On-Site Disposal

Item No.	Description	Quantity	Unit	Unit Cost	Cost
B. Recurring Capital Costs					
	No Recurring Capital Costs				$0
C. Annual Operation and Maintenance Costs (30 year Present Worth)					
1	No O&M Costs	1	LS	$0	$0
				Annual O&M Cost Subtotal:	$0
				Total Annual O&M Cost:	$0
				Present Worth Factor (30-year, 7%):	12.41
				Total Present Worth of Annual O&M Cost:	**$0**
	Description				**Cost**
				Aggregate Present Worth of Total Cost:	$180,000
				Remedial Design (15%)	$27,000
				Project Administration/Management Cost (8%)	$14,400
				Construction Management (10%)	$18,000
				Scope Contingency (25%)	$45,000
				Bid or Construction Contingency (15%):	$27,000
				Subtotal	$311,400
				Rounded To:	**$310,000**

SRSNE Superfund Site
Feasibility Study

Cianci Property Remedial Alternatives
Alternative CP-2 - Culvert Removal and Excavation with On-Site Disposal

Notes:

1. Remedial design includes engineering of replacement pipe to handle additional run-off from capped area
2. Mobilization/demobilization is taken as a lump sum based on project size.
3. Access area development includes clearing and preparation of an equipment staging/handling area and the construction of temporary gravel access roads.
4. Site preparation/erosion control costs include the installation and maintenance of silt fences and/or straw bales around the perimeter of the site, and the installation of silt containment systems downstream of active remediation areas.
5. Pipe removal and drainage swale construction costs include: (a) excavation of the existing 30" diameter drainage pipe, plugging of RR culvert; (b) the installation of a new section of 30" pipe to transmit storm water underneath the existing railroad tracks.
6. Culvert outfall remediation costs are based on the removal of the top foot of sediment over a 140 by 100 foot area centered around sediment sample SD3-36. Costs assume materials would be handled and stabilized to pass the paint filter test for disposal. Approximately 6 inches of special fill material, indicative of wetlands soils, would be placed over the excavated area prior to restoration.
7. Excavation of Cianci soils assumes the removal of soil in 4 isolated areas to a depth of one foot (and to a depth of 2 ft at SB-905). Following excavation, clean fill materials will be placed to match the existing grade.
8. Restoration and revegetation of access areas includes removal and disposal of gravel, replacement of excavated stockpiled fill, followed by topsoil and vegetation.
9. Revegetation of excavated areas includes hydro seeding, and the placement of revegetation matting (i.e., jute mat) at the culvert outfall, the drainage ditch, and in the newly constructed drainage swale.

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Table L-5
SRSNE Superfund Site
Feasibility Study

Overburden NAPL Area Remedial Alternatives Cost Estimate
Alternative ONOGU-5: Thermal Treatment and MNA

Item No.	Description	Quantity	Unit	Unit Cost	Cost (500,000 pounds VOCs)	Cost (1,000,000 pounds VOCs)	Cost (2,000,000 pounds VOCs)
A. Initial Capital Costs							
1	**Thermal Treatment Design and Construction**						
1a	PreMobilization and Procurement	1	LS	$350,000	$350,000	$350,000	$350,000
1b	Mobilization	900	man hours	$75	$67,500	$67,500	$67,500
1c	Install Well Field and Electrodes	1	LS	$ 2,500,000	$2,500,000	$2,500,000	$2,500,000
1d	Construct Cover	1	LS	$500,000	$500,000	$500,000	$500,000
1e	Piping and Electrical	1	LS	$450,000	$450,000	$450,000	$450,000
1f	Utility Installation	1	LS	$80,000	$80,000	$80,000	$80,000
1g	Treatment System (Vapor & Condensate)	1	LS	$1,300,000	$1,300,000	$1,300,000	$1,800,000
1h	Condensate Pumping and Separation	1	LS	$162,000	$162,000	$162,000	$162,000
1i	Final Post-Installation Modifications	1	LS	$45,000	$45,000	$45,000	$45,000
1j	Decommission cap and equipment	1	LS	$390,000	$390,000	$390,000	$390,000
1k	Site Clearance & demobilization	1	LS	$69,000	$69,000	$69,000	$69,000
1l	Contractor Internal Management/Coordination	1	LS	$200,000	$200,000	$200,000	$200,000
1m	Pre- and Post-Treatment Sampling and Analysis	1	LS	$250,000	$250,000	$250,000	$250,000
1n	Perimeter barrier (1,300' linear, 20' avg. depth)	26,000	SQ FT	$16	$416,000	$416,000	$416,000
1o	Earthwork and grading	7,260	SQ YD	$5	$36,300	$36,300	$36,300
1p	Fiber optic relocation	1	LS	$75,000	$75,000	$75,000	$75,000
1q	NTCRA Infrastructure Modifications (Abandon RW-5, MWD-601, realign HDPE forcemain, etc.)	1	LS	$50,000	$50,000	$50,000	$50,000
1r	Pilot Study (assumes 50' by 50' by 20' deep target zone)	1	LS	$1,500,000	$1,500,000	$1,500,000	$1,500,000
2	**Well Abandonment**						
2a	Monitoring Well Abandonment	10	well	$500	$5,000	$5,000	$5,000
2b	System Well Abandonment	525	well	$500	$262,500	$262,500	$262,500
				Initial Capital Cost Subtotal:	$8,708,300	$8,708,300	$9,208,300
				Total Initial Capital Cost (rounded):	**$8,710,000**	**$8,710,000**	**$9,210,000**

SRSNE Superfund Site
Feasibility Study

Overburden NAPL Area Remedial Alternatives Cost Estimate
Alternative ONOGU-5: Thermal Treatment and MNA

Item No.	Description	Quantity	Unit	Unit Cost	Cost (500,000 pounds VOCs)	Cost (1,000,000 pounds VOCs)	Cost (2,000,000 pounds VOCs)
B. Thermal Treatment Operating Cost (2 people, 24 hrs/day, 200 days for 95% removal)							
1	**Operating ISTD System**	9,600	man hours	$95	$912,000	$912,000	$912,000
2	**Air Monitoring (~ 2 RCRA perf tests)**	2	LS	$50,000	$100,000	$100,000	$100,000
3	**Utilities**						
3a	Electricity	7,700,000	KW-Hr	$0.11	$847,000	$847,000	$847,000
3b	Natural Gas	80,000	Therm (100 ft^3)	$0.60	$24,000	$48,000	$96,000
3c	Potable Water	1,000,000	gallons	$0.03	$30,000	$30,000	$30,000
4	**Field Supplies**	1	LS	$170,000	$170,000	$170,000	$170,000
5	**Contractor Management/Reporting**	1	LS	$250,000	$250,000	$250,000	$250,000
6	**Interim Soil Sampling**	1	LS	$75,000	$75,000	$75,000	$75,000
7	**Condensed NAPL Disposal**	23,000	kg	$2.10	$48,300	$96,600	$193,200
8	**Caustic 25%NaOH HCL neutralization**	120,000	Gal	$1.25	$75,000	$150,000	$300,000
9	**Brine Disposal**	64,800	gal	$0.50	$16,200	$32,400	$64,800
				Thermal O&M Cost Subtotal:	$2,547,500	$2,711,000	$3,038,000
				Total Operating Capital Cost (rounded):	**$2,550,000**	**$2,710,000**	**$3,040,000**
Item No.	**Description**	**Quantity**	**Unit**	**Unit Cost**	**Cost (500,000 pounds VOCs)**	**Cost (1,000,000 pounds VOCs)**	**Cost (2,000,000 pounds VOCs)**
C. Monitoring Costs (5 Years of Monitoring, 10 wells, twice per year, VOCs + MNA parameters)							
1	**Compliance Monitoring**	100	man hours	$95	$9,500	$9,500	$9,500
2	**Analytical**	24	analysis	$500	$12,000	$12,000	$12,000
3	**Equipment**	20	each	$125	$2,500	$2,500	$2,500
				Subtotal Annual O&M Cost:	$24,000	$24,000	$24,000
				Total Annual O&M Cost:	$24,000	$24,000	$24,000
				Present Worth Factor (5 years, no discount):	5	5	5
				Total Present Worth of Annual O&M Cost (rounded):	**$120,000**	**$120,000**	**$120,000**

Overburden NAPL Area Remedial Alternatives Cost Estimate
Alternative ONOGU-5: Thermal Treatment and MNA

Description	Cost (500,000 pounds VOCs)	Cost (1,000,000 pounds VOCs)	Cost (2,000,000 pounds VOCs)
Aggregate Present Worth of Total Cost:	**$11,380,000**	**$11,540,000**	**$12,370,000**
Remedial Design (6%)	$682,800	$692,400	$742,200
Project Administration/Management Cost (5%)	$569,000	$577,000	$618,500
Construction Management (6%)	$682,800	$692,400	$742,200
Scope Contingency (25%)	$2,845,000	$2,885,000	$3,092,500
Bid or Construction Contingency (15%):	$1,707,000	$1,731,000	$1,855,500
Total Cost	$17,866,600	$18,117,800	$19,420,900
Rounded To:	**$17,870,000**	**$18,120,000**	**$19,420,000**
Remedial Cost Reduction Associated with Successful Pilot Study			
Pilot Study = 3.9% of ONOGU Volume, Assumed Cost Reduction = 3.9% of Capital + O&M Costs)	**($460,000)**		
Total Cost - 95% Removal (Rounded):	**$17,660,000**		

SRSNE Superfund Site
Feasibility Study

Overburden NAPL Area Remedial Alternatives Cost Estimate
Alternative ONOGU-5: Thermal Treatment and MNA

Notes:

1. Thermal Treatment assumes 30% and Final Design.
2. System Instrumentation and Equipment includes additional cost for a back-up power supply
3. IDW Volumes: .74 cubic yard per well
4. Mobilization & Demobilization includes cost for shipment of equipment and decontamination
5. Install Well Field- includes cost for drillers time and materials to install well field consisting of 450 20' deep Heater Wells and conductors/elements, 450 4' deep vapor Extraction Wells, and 75 20' pressure/temperature monitoring locations
6. Construct Cover- Cover will consist of a asphalt or concrete cover to minimize heat loss, contain vapors, and to ensure adequate heating
7. Utility Installation includes cost for electrical and natural gas installations and upgrades
8. Well Abandonment- 10 wells within the Operations Area will be abandoned prior to the installation of the well field.
9. Vapor treatment assumes capture and treatment of up to 850,000 pounds of VOCs during thermal remediation, and treatment using condensation, thermal oxidation, acid-gas scrubbing and other measures as needed to comply with ARARs.
10. Operations and maintenance costs assume 200 days of operation, and use of NTCRA system for final treatment of groundwater. Additional NTCRA O&M costs are not included.
11. LS - lump sum.
12. Long-term monitoring includes labor and materials for semi-annual monitoring of ONOGU ground-water quality utilizing a subset of the existing on-site ground-water monitoring well network. This assumes that 10 wells will sampled semi-annually for VOCs and MNA parameters.
13. Pilot Study necessary to determine implementability and ability to achieve target clean up goals, to confirm ability to control grounwater migration, and to confirm selection of materials of construction. Scope assumed to be similar to Silresim Site.

Table L-6
SRSNE Superfund Site
Feasibility Study

NAPL in Bedrock Groundwater Unit Remedial Alternatives Cost Estimate
Alternative NBGU-2: Institutional Measures and MNA

Item No.	Description	Cost
A. Initial Capital Costs		
1	No Initial Capital Costs	$0
B. Recurring Capital Costs		
1	No Recurring Capital Costs	$0
C. Annual Operation and Maintenance Costs (30 year Present Worth)		
1	MNA costs included with BGW-2 and BGW-3	$0
	Annual O&M Cost Subtotal:	$0
	Total Annual O&M Cost:	$0
	Present Worth Factor (30-year, 7%):	12.41
	Total Present Worth of Annual O&M Cost:	**$0**
	Aggregate Present Worth of Total Cost:	**$0**
	Rounded To:	**$0**

Notes:
1. Institutional controls costs included with OGW-2 and OGW-3 costs
2. LS - lump sum

Table L-7
SRSNE Superfund Site
Feasibility Study

Groundwater Remedial Alternatives Cost Estimate
Alternative OGW-3: Hydraulic Containment and MNA

Item No.	Description	Quantity	Unit	Unit Cost	Cost
A. Initial Capital Costs					
1	**Institutional Controls**	200	man hours	$250	$50,000
2	**Sheet Pile Removal (Create Gaps)**	1	LS	$100,000	$100,000
3	**Initial Groundwater Sampling**				
3a	**Sampling**	800	man hours	$95	$76,000
3b	**Analytical**	240	analysis	$500	$120,000
3c	**Equipment**	200	each	$125	$25,000
4	**Final Post-HD System Modification**	1,000	man hours	$115	$115,000
5	**New Equipment**	1	LS	$500,000	$500,000
				Initial Capital Cost Subtotal:	$986,000
				Total Initial Capital Cost (rounded):	**$990,000**
B. Recurring Capital Costs					
1	Equipment Replacement	1	LS	$500,000	$500,000
				Recurring Capital Cost Subtotal:	$500,000
				Total Recurring Capital Cost	$500,000
				Annualization Factor (15 years, 7%)	0.040
				Total Annualized Recurring Capital Cost	$19,900
				Present Worth Factor (30-year, 7%):	12.41
				Total Present Worth of Recurring Capital Cost (rounded):	**$250,000**

SRSNE Superfund Site
Feasibility Study

Groundwater Remedial Alternatives Cost Estimate
Alternative OGW-3: Hydraulic Containment and MNA

Item No.	Description	Quantity	Unit	Unit Cost	Cost
C. Annual Operation and Maintenance Costs (Extraction and Treatment for 30 years)					
1	**System Operation and Maintenance**	3,000	man hours	$75	$225,000
1a	System Utilities	100000	KW hours	$0.15	$15,000
1b	Well redevelopment	200	man-hours	$75	$15,000
1c	Development Chemicals	550	gallons	$5	$2,750
1d	Replacement Equipment Cost	12	days	$1,000	$12,000
1e	Spare Parts	1	LS	$30,000	$30,000
1f	System Chemicals	2000	gallons	$5	$10,000
1g	Laboratory Analysis	50	each	$500	$25,000
1h	Filter Cake Disposal Costs	30	CY	$500	$15,000
2	**Compliance Monitoring**	208	man hours	$75	$15,600
3	**Annual MNA Sampling and Analysis**				
3a	MNA Sampling	200	man hours	$95	$19,000
3b	MNA Analytical	60	analysis	$600	$36,000
3c	MNA Equipment	60	each	$125	$7,500
4	**Complete Round of TCL/TAL every five years**	200	wells		
4a	Sampling	160	man hours	$95	$15,200
4b	Analytical	48	analysis	$500	$24,000
4c	Equipment	40	each	$125	$5,000
5	**Five Year Reviews**	1	LS	$5,000	$5,000
				Annual O&M Cost Subtotal:	$477,050
				Total Annual O&M Cost (rounded):	$480,000
				Present Worth Factor (30-year, 7%):	12.41
				Total Present Worth of Annual O&M Cost (rounded):	**$5,960,000**

SRSNE Superfund Site
Feasibility Study

Groundwater Remedial Alternatives Cost Estimate
Alternative OGW-3: Hydraulic Containment and MNA

Item No.	Description	Quantity	Unit	Unit Cost	Cost
D. Site Closure Capital Costs					
1	**Monitoring Well Abandonment**	300	Wells	$1,000	$300,000
2	**Well Abandonment IDW**	555	CY	$75	$41,625
3	**Demobe of equipment**	1,000	man hours	$115	$115,000
4	**Dismantling NTCRA GW Treat. Bldg.**	1,000	man hours	$75	$75,000
5	**Demo & Disposal**	22,000	kg	5	$99,000
				Subtotal Site Closure Cost:	$630,625
				Total Site Closure Cost:	**$630,000**
				Single Future Payment Factor	**0.356**
				Total Present Worth of Site Closure Cost (rounded):	**$220,000**
	Description				Cost
				Aggregate Present Worth of Total Cost:	**$7,420,000**
				Remedial Design (3%)	$222,600
				Project Administration/Management Cost (5%)	$371,000
				Construction Management (1%)	$74,200
				Scope Contingency (10%)	$742,000
				Bid or Construction Contingency (10%):	$742,000
				Subtotal	$9,571,800
				Rounded To:	**$9,570,000**

SRSNE Superfund Site
Feasibility Study

Groundwater Remedial Alternatives Cost Estimate
Alternative OGW-3: Hydraulic Containment and MNA

Item No.	Description	Quantity	Unit	Unit Cost	Cost

Notes:

1. Long-term monitoring includes labor and materials for semi-annual monitoring of ground-water quality utilizing the existing on-site ground-water monitoring wells. This assumes that a subset of approximately 25 wells would be sampled for MNA parameters (including VOCs) semi-annually.
2. Institutional controls includes implementing an ELUR to limit future usage of the Site and use of Site ground water. Because these institutional controls would be in addition to those employed as part of the vadose zone soil remedy, the costs included for this alternative would be additive to those costs included in the vadose soil alternatives.
3. It is assumed that hydraulic containment would be achieved by pumping existing well RW-13 and one new downgradient extraction well. For the purpose of cost estimation, the additional downgradient well is assumed to pump at the same rate as the existing well at the TI Boundary for a total influent flow rate of 45 gpm to the remedial treatment system from NTCRA2.

SRSNE Superfund Site
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Groundwater Remedial Alternatives Cost Estimate
Alternative OGW-3: Hydraulic Containment and MNA

Item No.	Description	Quantity	Unit	Unit Cost	Cost

4. Installation of extraction wells includes one backup overburden pumping well and one downgradient pumping well.
5. Equipment replacement cost assumes 50% of the initial capital construction cost will be required within 15 years of commencing operation to replace mechanical components (e.g. pumps, valves, well rehabilitation), including the equipment installed as part of the NTCRA 1 system.
6. Long-term operation and maintenance costs include all costs necessary to operate and maintain the pumping wells and the remedial treatment system including: equipment repair, energy costs, carbon regeneration and off-gas treatment.
7. LS - lump sum.
8. Contingency includes unforeseen legal and administrative fees and insurance.
9. Initial sampling assumes one round of 200 wells for TCL/TAL parameters.
10. Assumes sampling 25 wells for VOCs and MNA parameters twice per year
11. Assumes sampling 200 wells for TCL/TAL parameters once every five years
12. Assumes the Groundwater Treatment System and Equipment will be removed at Site Closure
13. Assumes all Groundwater monitoring wells will be abandoned at Site Closure.
14. Costs for NTCRA O&M are based on past project experience.

Table L-8
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Groundwater Remedial Alternatives Cost Estimate
Alternative OGW-4: Supplemental Containment (Contingent)

Item No.	Description	Quantity	Unit	Unit Cost	Cost
A. Initial Capital Costs					
1	**Installation of Additional Wells**	3	EA	$85,000	$255,000
2	**Tie-in to Existing System**	1	LS	$25,000	$25,000
				Initial Capital Cost Subtotal:	$280,000
				Total Initial Capital Cost (rounded):	**$280,000**
B. Recurring Capital Costs					
	No Recurring Capital Costs				$0
C. Annual Operation and Maintenance Costs (30+ years)					
1	Additional O&M Costs	1	LS	$50,000	$50,000
				Annual O&M Cost Subtotal:	$50,000
				Total Annual O&M Cost:	**$50,000**
				Present Worth Factor (30-year, 7%):	12.41
				Total Present Worth of Annual O&M Cost (rounded):	**$620,000**

SRSNE Superfund Site
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Groundwater Remedial Alternatives Cost Estimate
<u>Alternative OGW-4: Supplemental Containment (Contingent)</u>

Item No.	Description	Quantity	Unit	Unit Cost	Cost
D. Site Closure Capital Costs					
1	**Well Abandonment**				
1a	Well Abandonment	5	Wells	$1,000	$5,000
1b	Well Abandonment IDW	9	CY	$75	$694
2	**Infrastructure Abandonment**	5	LS	$1,000	$5,000
				Subtotal Site Closure Cost:	$10,694
				Total Site Closure Cost:	**$11,000**
				Single Future Payment Factor	**0.356**
				Total Present Worth of Annual O&M Cost (rounded):	**$4,000**
	Description				**Cost**
				Aggregate Present Worth of Total Cost:	**$900,000**
				Remedial Design (6%)	$54,000
				Project Administration/Management Cost (3%)	$27,000
				Construction Management (4%)	$36,000
				Scope Contingency (25%)	$225,000
				Bid or Construction Contingency (15%):	$135,000
				Subtotal	$1,377,000
				Rounded To:	**$1,380,000**

<u>Notes:</u>

1. The cost for this alternative would be in addition to the cost for the OGW-3 ground-water remedial alternative.
2. LS - lump sum.
3. Assumes extraction wells will be abandoned at site closure.

Table L-9
SRSNE Superfund Site
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Bedrock Groundwater Unit Remedial Alternatives Cost Estimate
<u>Alternative BGW-3: Hydraulic Containment and MNA</u>

Item No.	Description	Quantity	Units	Unit Cost	Cost
A. Initial Capital Costs					
1	**Remedial Design (incl below)**	0	man hours	$0	$0
				Annual Capitol Cost Subtotal:	$0
				Total Initial Capital Cost (rounded):	**$0**
B. O&M Costs (NTCRA Extraction and Treatment)					
1	**O&M Costs included with OGW-3**				$0
				Annual O&M Cost Subtotal:	$0
				Total Annual O&M Cost:	$0
				Present Worth Factor (30-year, 7%):	12.41
				Total Annual O&M Cost:	**$0**

Table
SRSNE Superfund Site
Feasibility Study

Bedrock Groundwater Unit Remedial Alternatives Cost Estimate
Alternative BGW-3: Hydraulic Containment and MNA

C. Annual Operation and Maintenance Costs (30 years)					
1	Monitored Natural Attenuation Sampling	120	man hours	$95	$11,400
2	Analytical	36	analysis	$750	$27,000
				Annual O&M Cost Subtotal:	$38,400
				Total Annual O&M Cost:	$40,000
				Present Worth Factor (30-year, 7%):	12.41
				Total Present Worth of Annual O&M Cost (rounded):	**$500,000**
	Description				Cost
				Aggregate Present Worth of Total Cost:	**$500,000**
				Remedial Design (6%)	$30,000
				Project Administration/Management Cost (6%)	$30,000
				Construction Management (0%)	$0
				Scope Contingency (10%)	$50,000
				Bid or Construction Contingency (10%):	$50,000
				Subtotal	$660,000
				Rounded To:	**$660,000**

Notes:

1. Bedrock Hydraulic Containment and ELUR Costs covered in OGW options
2. LS - lump sum
3. Assumes sampling 15 wells for VOCs and MNA parameters twice per year

Appendix C

Glossary of Terms and Acronyms

7. List of Acronyms

ACL	alternate concentration limit
AOC	Administrative Order on Consent
ARAR	applicable or relevant and appropriate requirement
AST	aboveground storage tank
AWQC	Ambient Water Quality Criteria
BGW	bedrock groundwater unit
B&M	Boston & Maine
BBL	Blasland, Bouck and Lee, Inc.
BEHP	bis (2-ethylhexyl) phthalate
BTEX	benzene, toluene, ethylbenzene, xylenes
CAA	Clean Air Act
CAWQC	chronic ambient water quality criteria
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CH_4	methane
CL&P	Connecticut Light & Power
CO_2	carbon dioxide
COC	chemical of concern
COPC	chemical of potential concern
CT DEP	Connecticut Department of Environmental Protection
CVOC	chlorinated volatile organic compound
CWA	Clean Water Act
DCE	dichloroethylene
DEC	risk-based Direct Exposure Criteria (CT DEP)
DHC	dehalococcoides
DNAPL	dense non-aqueous phase liquid
EE/CA	engineering evaluation/cost analysis
EISB	enhanced in situ biological treatment
ELUR	Environmental Land Use Restrictions
ERA	ecological risk assessment
ER-L	effects range - low
FS	feasibility study
GRA	general response action
GWPC	ground water protection criteria
GWUVD	Ground Water Use & Value Determination
HASP	Health and Safety Plan
HI	hazard index
HNUS	Halliburton NUS Environmental Corporation
HQ	hazard quotient
IMS	interim monitoring and sampling
LDR	RCRA Land Disposal Restrictions
LNAPL	light non-aqueous phase liquid
LTTD	low temperature thermal desorption
MCL	RCRA Maximum Contaminant Level
MCLG	RCRA Maximum Contaminant Level Goal
MNA	monitored natural attenuation
NAAQS	National Ambient Air Quality Standards
NAPL	non-aqueous phase liquid
NCP	National Oil and Hazardous Substances Pollution Contingency Plan

NBGU	NAPL in the Bedrock Groundwater Unit
NPDES	National Pollutant Discharge Elimination System
NPL	National Priority List
NTCRA	non-time critical removal action
OGW	overburden groundwater unit
O&M	operation and maintenance
OIS	on-site ground-water interceptor system
ONOGU	observed NAPL in the Overburden Groundwater Unit
OSHA	Occupational Safety and Health Administration
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PCR	polymerase chain reaction
PLFA	phospholipid fatty acid
PMC	pollutant mobility criteria
POTW	publicly owned treatment work
PMC	Pollutant Mobility Criteria (CT DEP)
ppb	part per billion
PPE	personal protective equipment
ppm	parts per million
PRG	preliminary remediation goal
PRP	potentially responsible party
QA/QC	quality assurance/quality control
RA	risk assessment
RAGs	risk assessment guidance (USEPA)
RAO	remedial action objective
RCRA	Resource Conservation and Recovery Act
RfD	reference dose
RI	remedial investigation
ROD	record of decision
RSR	Remediation Standard Regulations (CTDEP)
SAFE	Southington Association for the Environment
SARA	Superfund Amendments and Reauthorization Act
SDWA	Safe Drinking Water Act
SIP	state implementation plan
SITE	Superfund Innovative Technology Evaluation program
SOW	scope of work
SRSNE	Solvents Recovery Service of New England, Inc.
SVE	soil vapor extraction
SVOC	semi-volatile organic compound
TAG	Technical Assistance Grant
TBC	"to be considered" criteria
TCA	trichloroethane
TCE	trichloroethylene
TCLP	Toxicity Characteristic Leaching Procedure
TI	technical impracticability
TSCA	Toxic Substances Control Act
TSDF	treatment storage and disposal facility
TEX	toluene, ethyl benzene, and xylenes
UCL	upper confidence limit
UCONN	University of Connecticut
USAF	United States Air Force Center for Environmental Excellence

USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UvOx	ultraviolet oxidation
VC	vinyl chloride
VOC	volatile organic compound

8. Glossary

Administrative Order On Consent (AOC): A legal agreement signed by EPA and an individual, business, or other entity through which the violator agrees to pay for correction of violations, take the required corrective or cleanup actions, or refrain from an activity. It describes the actions to be taken, may be subject to a comment period, applies to civil actions, and can be enforced in court.

Applicable or Relevant and Appropriate Requirements (ARAR): Any state or federal statute that pertains to protection of human life and the environment in addressing specific conditions or use of a particular cleanup technology at a Superfund site.

Activated Carbon: A highly adsorbent form of carbon used to remove odors and toxic substances from liquid or gaseous emissions. In waste treatment it is used to remove dissolved organic matter from waste water.

Aerobic Treatment: Process by which microbes decompose complex organic compounds in the presence of oxygen and use the liberated energy for reproduction and growth.

Aerobic: Life or processes that require, or are not destroyed by, the presence of oxygen.

Air Pollutant: Any substance in air that could, in high enough concentration, harm man, other animals, vegetation, or material. Pollutants may include almost any natural or artificial composition of airborne matter capable of being airborne. They may be in the form of solid particulates, liquid droplets, gases, or in combination thereof. Generally they fall into two main groups: (1) those emitted directly from identifiable sources and (2) those produced in the air by interaction between two or more primary pollutants, or by reaction with normal atmospheric constituents, with or without photoactivation.

Air Pollution Control Device: Mechanism or equipment that cleans emissions generated by an incinerator by removing pollutants that would otherwise be released to the atmosphere.

Air Stripper: A treatment system that removes volatile organic compounds (VOCs) from contaminated ground water or surface water by forcing an air stream through the water and causing the compounds to evaporate.

Ambient Air: Any unconfined portion of the atmosphere: open air, surrounding air.

Anaerobic: A life or process that occurs in, or is not destroyed by, the absence of oxygen.

Aquifer: An underground geologic formation, or group of formations, containing usable amounts of ground water that can supply wells and springs.

Attenuation: The process by which a compound is reduced in concentration over time, through absorption, adsorption, degradation, dilution, and/or transformation.

Bacteria: Microscopic living organisms that can aid in pollution control by metabolizing organic matter in media such as ground water, soil, oil spills, and sewage.

Bedrock: Any solid rock exposed at the surface of the earth or overlain by unconsolidated overburden soil.

Bedrock Groundwater (BGW): Groundwater and the fractured consolidated rock matrix that contain contaminant concentrations exceeding acceptable risk levels or regulatory criteria.

Biodegradable: Capable of decomposing rapidly under natural conditions.

Biological Treatment: A treatment technology that uses bacteria to consume organic waste.

Bioremediation: Use of living organisms to clean up oil spills or remove other pollutants from soil, water or wastewater; use of organisms such as non-harmful insects to remove agricultural pests or counteract diseases of trees, plants, and garden soil.

Cap: A layer of clay, or other impermeable material installed over the top of a landfill or contaminated area of soil to prevent entry of rainwater and minimize leaching of pollutants into ground water.

Carbon Adsorption: A treatment system that removes contaminants from ground water or surface water by forcing it through tanks containing activated carbon treated to attract the contaminants.

Chlorinated Solvents: An organic solvent containing chlorine atoms, e.g., methylene chloride and 1,1,1-trichloromethane, often used in aerosol spray containers and paint.

Chronic Toxicity: The capacity of a substance to cause long-term poisonous human health effects.

Cleanup: Actions taken to deal with a release or threat of release of a hazardous substance that could affect humans and/or the environment. The term "cleanup" is sometimes used interchangeably with the terms remedial action, removal action, response action, or corrective action.

CFR: Code of Federal Regulations

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): (Commonly known as Superfund) This law, enacted by Congress on December 11, 1980, created the Superfund program. Specifically, CERCLA established prohibitions and requirements concerning closed and abandoned hazardous waste sites; provided for liability of persons responsible for releases of hazardous waste at these sites; and established a trust fund to provide for cleanup when no responsible party could be identified.

Consent Decree: A legal document, approved by a judge, that formalizes an agreement reached between EPA and potentially responsible parties (PRPs) through which PRPs will conduct all or part of a cleanup action at a Superfund site; cease or correct actions or processes that are polluting the environment; or otherwise comply with EPA initiated regulatory enforcement actions to resolve the contamination at the Superfund site involved.

Contaminant: Any physical, chemical, biological, or radiological substance or matter that has an adverse effect on air, water, or soil.
Dechlorination: Removal of chlorine from a substance by chemically replacing it with hydrogen or hydroxide ions in order to detoxify a substance.

Dense Non-Aqueous Phase Liquid (DNAPL): A non-aqueous phase liquid (NAPL) that is more dense than water and would tend to migrate below the water table.

Ecological Impact: The effect that a man-made or natural activity has on living organisms and the non-living (abiotic) environment.

Ecological Risk Assessment: The application of a formal framework, analytical process, or model to estimate the effects of human action(s) on a natural resource and to interpret the significance of those effects in light of the uncertainties identified in each component of the assessment process. Such analysis includes initial hazard identification, exposure and dose-response assessments, and risk characterization.

Effluent: Wastewater, treated or untreated, that flows out of a treatment facility, sewer, or industrial outfall. Generally refers to wastes discharged into surface waters.

Effluent Limitations: Restrictions established by a State or EPA on quantities, rates, and concentrations in wastewater discharges.

Emission: Pollution discharged into the atmosphere from smokestacks, other vents, and surface areas of commercial or industrial facilities; from residential chimneys; and from motor vehicle, locomotive, or aircraft exhausts.

Exceedence: Concentration that is greater than the pollutant levels permitted by environmental protection standards.

Ex-Situ: Moved from its original place; excavated; removed or recovered from the subsurface.

Feasibility Study: Analysis of the practicability of a proposal; e.g., a description and analysis of potential cleanup alternatives for a site. The feasibility study usually recommends selection of a cost-effective alternative. It usually starts as soon as the remedial investigation is underway; together, they are commonly referred to as the "RI/FS".

General Response Action (GRA): Actions identified/taken for each media of interest that will contain, treat or remove potential health-threatening environmental events such as spills, sudden releases. GRAs are developed to satisfy the remedial action objectives for the site.

Generator: A facility or mobile source that emits pollutants into the air or releases hazardous waste into water or soil.

Ground Water: Water found beneath the earth=s surface that fills pores between materials such as sand, soil, or gravel. In aquifers, ground water occurs in sufficient quantities that it can be used for drinking water, irrigation, and other purposes.

Hazard Quotient (HQ): A value calculated during risk assessment of non-carcinogens that is equal to the average intake (based on ingestion rate and exposure duration) divided by the reference dose. A HQ value greater than 1 indicates that a calculated exposure is greater than the reference dose for a given constituent, and that there may be some potential for health concerns.

Hazardous Waste: By-products of society that can pose a substantial or potential hazard to human health or the environment when improperly managed. Possesses at least one of four characteristics (ignitability, corrosivity, reactivity or toxicity), or appears on special EPA lists.

Hydraulic Gradient: In general, the direction of ground water flow due to changes in the depth of the water table.

Infiltration: The penetration of water through the ground surface into sub-surface soil.

In-Situ: Remaining in original place.

Leachate: Water that collects contaminants as it trickles through waste (e.g. landfills), and may result in hazardous substances entering surface water, ground water or soil.

Leaching: The process by which soluble constituents are dissolved and filtered through the soil by a percolating fluid (e.g. rain water).

Light Non-Aqueous Phase Liquid (LNAPL): A non-aqueous phase liquid (NAPL) that is less dense than water and would tend to remain above the water table.

Maximum Contaminant Level (MCL): The maximum permissible level of a contaminant in water delivered to any user of a public system. MCLs are enforceable standards.

Maximum Contaminant Level Goal (MCLG): Under the Safe Drinking Water Act (SDWA), a non-enforceable concentration of a drinking water contaminant, set at the level at which no known or anticipated adverse effects on human health occur and which allows an adequate safety margin. The MCLG is usually the starting point for determining the regulated MCL.

Media: Specific environments- air, water, soil - which are the subject of regulatory concern and activities.

Mitigation: Measures taken to reduce adverse impacts on the environment.

Monitoring Wells: Wells drilled at specific locations on or off a hazardous waste site where ground water can be sampled at selected depths and studied to determine the direction of ground water flow and the types and amounts of contaminants present.

National Ambient Air Quality Standards (NAAQS): Standards established by EPA that apply to outside air throughout the country.

National Oil and Hazardous Substances Contingency Plan (NCP): The federal regulation that guides determination of the sites to be corrected under both the Superfund program and the program to prevent or control spills into surface waters or elsewhere.

National Pollutant Discharge Elimination System (NPDES): A provision of the Clean Water Act which prohibits discharge of pollutants into waters of the United States unless a permit is issued by EPA, a state, or, where delegated, a tribal government on an Indian reservation.

National Priority List (NPL): EPA=s list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under Superfund. The list is based primarily on the score a site receives from the Hazard Ranking System. EPA is required to update the NPL at least once per year. A site must be on the NPL to receive money from the Superfund trust fund for remedial action.

Non-Aqueous Phase Liquid (NAPL): Contaminants that remain as the original bulk liquid in the subsurface (also referred to as "free product").

Non-Time Critical Removal Action (NTCRA): Non-emergency removal action that is conducted prior to completion of the remedial investigation in an effort to expedite cleanup or containment of contaminated sites. NTCRAs are often implemented where the complexity of the remedial investigation may require an extended period of time to evaluate and determine the appropriate final remedial action.

Organic Compound: Animal or plant-produced substances containing mainly carbon, hydrogen, nitrogen, and oxygen.

Outfall: The place where effluent is discharged into receiving waters.

Overburden: Unconsolidated rock and soil comprising the uppermost geologic formation above bedrock.

Overburden Groundwater: Groundwater and saturated soil that contain contaminant concentrations exceeding acceptable risk levels or regulatory criteria.

Oxidation: The addition of oxygen that breaks down organic waste or chemicals such as cyanides, and phenols by bacterial and chemical means.

Particulates: Fine liquid or solid particles such as dust, smoke, mist, fumes, or smog, found in air or emissions.

Parts Per Billion (ppb)/Parts Per Million (ppm): Units commonly used to express contaminant ratios or concentration, especially when defining the maximum permissible amount of a contaminant in water, land or air.

Permeability: The rate at which liquids pass through soil or other materials in a specified direction.

Personal Protective Equipment (PPE): Any equipment or clothing designed to shield or isolate individuals from the chemical, physical, and biologic hazards that may be encountered at a hazardous waste site. PPE should appropriately protect the respiratory system, skin, eyes, face, hands, feet, head, body, and hearing.

Phytoremediation: An in-situ remediation technique that uses plants to remove, stabilize, and destroy contaminants in soil and sediment.

Plume: A visible or measurable discharge of a contaminant from a given point of origin (e.g., dissolved phase contamination in groundwater, downgradient from the initial release or spill).

Potentially Responsible Party (PRP): Any individual or company-including owners, operators, transporters or generators-potentially responsible for, or contributing to a spill or other contamination at a Superfund site. Whenever possible, through administrative and legal actions, EPA requires PRPs to clean up hazardous sites they have contaminated.

Preliminary Remediation Goals (PRGs): Chemical-specific, numeric cleanup criteria for each environmental media that provide the basis for development and comparison of remedial alternatives and the framework to evaluate the relative effectiveness of each respective alternative.

Publicly Owned Treatment Works (POTW): A waste-treatment works owned by a state, unit of local government, or Indian tribe, usually designed to treat domestic wastewater.

Quality Assurance/Quality Control (QA/QC): A system of procedures, checks, audits, and corrective actions to ensure that all work is of the highest achievable quality.

Record of Decision (ROD): A public document that explains which cleanup alternative(s) will be used at National Priority List sites.

Reference Dose (RfD): The concentration of a chemical known to cause health problems; also referred to as the ADD, or acceptable daily intake.

Release: Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment of a hazardous or toxic chemical or extremely hazardous substance.

Remedial Action (RA): The actual construction or implementation phase of a Superfund site cleanup that follows remedial design.

Remedial Action Objective (RAO): Remedial action objectives specify media-specific or site-specific goals for the protection of human health and the environment.

Remedial Design: The phase of remedial action that follows the remedial investigation/feasibility study and includes development of engineering drawings and specifications for a site cleanup.

Remedial Investigation (RI): An in-depth study designed to gather data needed to determine the nature and extent of contamination at a Superfund site; establish site cleanup criteria; identify preliminary alternatives for remedial action; and support technical and cost analyses of alternatives. The remedial investigation is usually done with the feasibility study. Together they are usually referred to as the "RI/FS".

Remediation: Cleanup or other methods used to remove or contain a toxic spill or hazardous materials from a Superfund site.

Removal Action: Short-term immediate actions taken to address releases of hazardous substances that require expedited response.

Residual: Amount of a pollutant remaining in the environment after a natural or technological process has taken place, e.g., the particulates remaining in air after it passes through a scrubbing or other process.

Resource Conservation and Recovery Act (RCRA): A law enacted in 1976 to protect the quality of ground water, surface water, air and land from contamination by solid waste. It established the first comprehensive federal regulatory program for controlling hazardous waste and provided grants and technical assistance to States to help improve their waste management techniques.

Risk: A measure of the probability that damage to life, health, property, and/or the environment will occur as a result of a given hazard.

Risk Assessment: Qualitative and quantitative evaluation of the risk posed to human health and/or the environment by the actual or potential presence and/or use of specific pollutants.

State Implementation Plans (SIP): EPA-approved state plans for the establishment, regulation, and enforcement of air pollution standards.

Superfund: The program operated under the legislative authority of CERCLA and SARA that funds and carries out EPA solid waste emergency and long-term removal and remedial activities. These activities include establishing the National Priorities List, investigating sites for inclusion on the list, determining their priority, and conducting and/or supervising cleanup and other remedial actions.

Superfund Amendments and Reauthorization Act (SARA): Legislation that amended the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) on October 17, 1986. SARA reflected EPA's experience in administering the complex Superfund program during its first six years and made several important changes and additions to the program. SARA stressed the importance of permanent remedies and innovative treatment technologies; required Superfund actions to consider the standards and requirements found in other State and Federal environmental laws and regulations; provided new enforcement authorities and settlement tools; increased State involvement; increased the focus on human health problems; encouraged greater citizen participation; and increased the size of the Trust Fund to $8.5 billion.

Surface Water: All water naturally open to the atmosphere (rivers, lakes, reservoirs, ponds, streams, impoundments, seas, estuaries, etc.) and all springs, wells, or other collectors directly influenced by surface water.

Technical Assistance Grant (TAG): As part of the Superfund program, Technical Assistance Grants of up to $50,000 are provided to citizens' groups to obtain assistance in interpreting information related to cleanups at Superfund sites or those proposed for the National Priorities List. Grants are used by such groups to hire technical advisors to help them understand the site-related technical information for the duration of response activities.

Toxic Pollutants: Materials that cause death, disease, or birth defects in organisms that ingest or absorb them. The quantities and exposures necessary to cause these effects can vary widely.

Toxic Substance: A chemical or mixture that may present an unreasonable risk of injury to health or the environment.

Treatability Studies: Tests of potential cleanup technologies conducted in a laboratory.

Treatment, Storage, and Disposal Facility (TSDF): Site where a hazardous substance is treated, stored, or disposed of. TSDFs are regulated by EPA and states under RCRA.

Trial Burn: An incinerator test in which emissions are monitored for the presence of specific organic compounds, particulates, and hydrogen chloride.

Unsaturated Zone: The area below ground surface and above the water table where soil pores are not fully saturated, although some water may be present.

Vadose Zone: The unsaturated zone.

Variance: Government permission for a delay or exception in the application of a given law, ordinance, or regulation.

Volatile: Any substance that evaporates readily.

Volatile Organic Compound (VOC): Any organic compound that is characterized by being highly mobile in ground water and tends to readily volatilize or evaporate into the atmosphere.

Wastewater: The spent or used water from a home, community, farm, or industry that contains dissolved or suspended matter.

Water Quality Criteria: Levels of water quality expected for its designated use. Criteria are based on specific levels of pollutants that would make the water harmful if used for drinking, swimming, farming, fish production, or industrial processes.

Water Table: The level of ground water.

Wetlands: An area that is saturated by surface or ground water with vegetation adapted for life under those soil conditions, as swamps, bogs, fens, marshes, and estuaries.

Appendix D

ARARs Tables

Table 4-5
SRSNE Superfund Site
Feasibility Study

Evaluation of ARARs -Operations Area/Railroad Soil
Alternative OAR-2: Capping and Institutional Controls

ARAR Category	Regulatory Level	Requirement	Citation	Status	Synopsis	Evaluation	Comply w/ARAR
Chemical-Specific	State of Connecticut	Remediation Standard Regulations for soil	CGS 22a-133k; RCSA 2a-133k-2	Applicable	These regulations establish direct exposure and pollutant mobility criteria for contaminated soils based on either industrial or residential use of the Site.	Contaminated soil exceeding these values would be managed according to these standards (through a variance), including land use restrictions, and construction of an engineered control to prevent exposure to soil.	Y
Location Specific		None apply.					
Action-Specific	State of Connecticut	Hazardous Waste Regulations	CGS 22a ch 445 RCSA §22a-449(c) 100 through 119	Relevant and Appropriate	These regulations establish standards for treatment, storage and disposal of hazardous waste and remediation waste, groundwater monitoring and requirements for closure and post-closure of hazardous waste facilities.	All treatment, storage and disposal standards. Emergency requirements, groundwater monitoring requirements and landfill closure and post closure requirements would be met by this alternative.	Y
		Air Pollution Control	CGS 22a ch 446c RCSA §22a-174-1 to 33	Applicable	These regulations include requirements to control emissions. Pollutant abatement controls/measures are required.	Would comply with emission standards to control fugitive dust from excavation activities.	Y
		Control of Noise	RCSA §22a-69- 1 to 7.4	Applicable	These regulations establish allowable noise levels; and would apply to construction activities at the site.	All construction activities on-site would comply with these noise level requirements.	Y
To Be Considered	Federal	EPA Technical Guidance Document: Final Covers on Hazardous Waste Landfills and Surface Impoundments	EPA/530-SW-89-047	TBC	Presents technical specifications for the design of multi-barrier covers at landfills at which hazardous wastes were disposed.	Will be considered during the design of the cap.	Y

ARAR Category	Regulatory Level	Requirement	Citation	Status	Synopsis	Evaluation	Comply w/ARAR
		Technical Memorandum: Revised Landfill Cap Design Guidance Proposed for Unlined Hazardous Waste Landfills in EPA Region 1	Dated February 5, 2001	TBC	Provides guidance for landfill cap design for unlined hazardous waste landfills at Superfund site in EPA Region 1.	Will be considered during the design of the cap.	Y

Table 4-14
SRSNE Superfund Site
Feasibility Study

Evaluation of ARARs - Cianci Property Soil
Alternative CP-2: Culvert Removal and Excavation with Onsite Disposal[1]

ARAR Category	Regulatory Level	Requirement	Citation	Status	Synopsis	Evaluation	Comply w/ARAR
Chemical-Specific	State of Connecticut	Remediation Standard Regulations for soil	CGS 22a-133k; RCSA 22a-133k-2	Applicable	These regulations establish direct exposure and pollutant mobility criteria for contaminated soils based on either industrial or residential use of the Site.	These regulations would be used to determine the cleanup levels for soil/sediment. Contaminated soil/sediment exceeding PMC or DEC values would be excavated.	Y
Location-Specific	Federal	Fish and Wildlife Coordination Act	16 U.S.C. 661	Applicable	This order protects fish and wildlife when federal actions result in control or structural modification of a natural stream or body of water.	Appropriate agencies would be consulted should remedial action involve modification to a waterway.	Y
		Clean Water Act (CWA)-Discharge to Waters of the United States, Section 404	33 USC 1344; 40 CFR Part 230 and 33 CFR Parts 320-323	Applicable	These rules regulate the discharge of dredge and fill materials in wetlands and navigable waters. Such discharges are not allowed if practicable alternatives are available.	There is no practical alternative to address contaminated sediment and relocation of the culvert in the wetlands. Measures will be taken to minimize impacts.	Y
	State of Connecticut	Surface Water and Wetlands, Inland Wetlands and Watercourses Act	CGS 22a-36 through 45	Applicable	This rule regulates any activities within or affecting inland wetlands involving removal or deposition of material or any obstruction, construction, alteration or pollution of such wetlands.	Would meet requirements for removal or deposition of material or any obstruction, construction, alteration or pollution of wetlands.	Y
Action-Specific	Federal	Toxic Substances Control Act	15 USC 2601, 40 CFR 761	Applicable	Soil containing PCBs>50 ppm is regulated under this Act.	Should PCBs be encountered during excavation/consolidation they will be addressed in accordance with these requirements.	Y
	Federal	Clean Water Act-Section 402		Applicable	These regulations regulate discharge of pollutants from point sources into navigable waters.	Should dewater be necessary and wastewater generated is required to be discharged, it will meet the requirement of Section 402. Stormwater runoff from cap would also be treated to meet these requirements.	Y

[1] ARARs associated with placing contaminated soil and sediment under Operations Area cap are included in Table 4-3

Table 4-14 (Continued)
SRSNE Superfund Site
Feasibility Study

Evaluation of ARARs - Cianci Property Soil
Alternative CP-2: Culvert Removal and Excavation with Onsite Disposal

ARAR Category	Regulatory Level	Requirement	Citation	Status	Synopsis	Evaluation	Comply w/ARAR
Action-Specific (cont)	State of Connecticut	Hazardous Waste Management: Land Disposal Restrictions and Corrective Action Management Units	CGS 22a ch 445 RCSA §22a-449(c) – 108, -104	Relevant and Appropriate	These regulations establish treatment standards for placement/disposal of hazardous waste.	Contaminated soil/sediment would be excavated and disposed of on-site by placing it in the Operations Area beneath the cap. All excavated soil/sediment would be evaluated prior to placement beneath the cap to ensure compliance with LDR. Soil/sediment requiring further treatment would be managed in accordance with requirements of these regulations.	Y
		Hazardous Waste Management	CGS 22a ch 445 RCSA §22a-449(c) 100 through 119	Relevant and Appropriate	These regulations establish standards for treatment, storage and disposal of hazardous waste, remediation waste treatment, storage and disposal, groundwater monitoring and requirements for closure and post-closure of hazardous waste facilities.	Soil and sediment would be handled in accordance with these requirements.	Y
		Disposition of PCBs	CGS 22a-467	Relevant and Appropriate	This regulation establishes prohibitions of, and requirements for the disposal, storage, and marking of PCBs and PCB waste. The standard requires the handling of PCB waste to be consistent with the Toxic Substances Control Act (TSCA) listed at 40 CFR 761.	Sampling data indicates that levels of PCBs are low and would not trigger these requirements. Should these levels be exceeded during the cleanup, PCBs will be managed in accordance with these requirements.	Y
		Air Pollution Control	CGS 22a ch 446c RCSA §22a-174-1 to 33	Applicable	These regulations include requirements to control emissions. Pollutant abatement controls/measures are required. Specific standards pertain to fugitive dust (18b).	Would comply with emission standards to control fugitive dust from excavation/construction activities with dust control measures.	Y

Table 4-14 (Continued)
SRSNE Superfund Site
Feasibility Study

Evaluation of ARARs - Cianci Property Soil
Alternative CP-2: Culvert Removal and Excavation with Onsite Disposal

ARAR Category	Regulatory Level	Requirement	Citation	Status	Synopsis	Evaluation	Comply w/ARAR
Action-Specific (cont)	State of Connecticut (cont)	Control of Noise	RCSA §22a-69-1 to 7.4	Applicable	These regulations establish allowable noise levels; and would apply to construction activities at the site.	All construction activities on-site would comply with these noise level requirements.	Y
		Water Quality Standards	CGS 22a-426	Applicable	The Connecticut Water Quality Standards establish specific numeric criteria for surface water. The standards provide criteria for maintaining the quality of surface waters through limitations on point source discharges and implementation of reasonable controls or best management practices.	Extracted NAPL/groundwater that may be collected during dewatering that is discharged to surface water would be treated to meet the requirements of these regulations.	Y
		Water Pollution Control: Connecticut Discharge Permit Regulations	CGS 22a ch 446k RCSA §22a-430-1 to 8	Applicable	These regulations establish the requirements for discharge to surface water.	The effluent discharge from ~~the treatment facility~~ dewatering and stormwater runoff from cap would meet the substantive requirements of these regulations.	Y
To Be Considered	Federal	Floodplain Management Executive Order	E.O. 11988	Relevant and Appropriate	Federal agencies are required to avoid any action in floodplains if there is a practicable alternative.	There is no practical alternative to address contaminated sediment and the location of the culvert in the floodplain. Measures will be taken to minimize impacts.	Y
		Protection of Wetlands Executive Order	E.O. 11990	Relevant and Appropriate	Federal agencies are required to avoid construction in wetlands if there is a practicable alternative.	There is no practical alternative to address contaminated sediment and the location of the culvert in the wetlands. Measures will be taken to minimize impacts.	Y
	Connecticut Guidance	Connecticut Guidance for Soil Erosion and Sediment Control	CT Council on Soil and Water Conservation	TBC	This document includes guidance for development, adoption and implementation of erosion and sediment control program.	These guidelines would be considered during excavation activities to protect wetland and aquatic resources.	Y

Table 4-32 (Continued)
SRSNE Superfund Site
Feasibility Study

Evaluation of ARARs - Overburden NAPL Zone
Alternative ONOGU-5: Thermal Treatment and MNA

ARAR Category	Regulatory Level	Requirement	Citation	Status	Synopsis	Evaluation	Comply w/ARAR
Action-Specific	Federal	RCRA Air Emission Standards for Equipment Leaks	40 CFR 264 Subpart BB	Relevant and Appropriate if treatment involves groundwater with organic concentrations of at least 10% by weight.	Standards for air emissions for equipment that contains or contacts hazardous substances with organic concentrations of at least 10% by weight.	If these requirements are determined to be relevant and appropriate, then the substantive requirements of these regulations will be met in addressing emissions from thermal treatment.	Y
		RCRA Air Emission Standards for Process Vents	40 CFR 264 Subpart AA	Relevant and Appropriate if threshold concentrations are met.	Standards for air emissions from process vents associated with treatment of hazardous substances and have total organic concentrations of 10 ppm or greater.	If these requirements are determined to be relevant and appropriate, then the substantive requirements of these regulations will be met in addressing emissions from thermal treatment.	Y
	State of Connecticut	Hazardous Waste Management Regulations	CGS 22a ch 445 RCSA §22a-449(c)	Applicable	These regulations establish standards for treatment, storage and disposal of hazardous waste and remediation waste, groundwater monitoring and requirements for closure and post-closure of hazardous waste facilities	Treatment residues (spent filtration residue and activated carbon) could contain high concentrations of regulated constituents. If determined to be hazardous waste, will be stored on site consistent with these requirements before being shipped offsite for disposal. NAPL collected from the thermal treatment process will be stored on site consistent with these requirements before being shipped off site for disposal. Groundwater will be monitored. General facility, preparedness and prevention, contingency plan and emergency procedures will also be met.	Y

Table 4-32 (Continued)
SRSNE Superfund Site
Feasibility Study

Evaluation of ARARs - Overburden NAPL Zone
Alternative ONOGU-5: Thermal Treatment and MNA

ARAR Category	Regulatory Level	Requirement	Citation	Status	Synopsis	Evaluation	Comply w/ARAR
Action-Specific (cont.)	State of Connecticut (cont.)	Air Pollution Control	CGS 22a ch 446c RCSA §22a-174-1 to 33	Applicable	These regulations include requirements to control emissions. Pollutant abatement controls/measures may be required. Specific standards pertain to fugitive dust and control of air toxics.	Would comply with emission standards, requirements for pollution abatement, and requirements for control of fugitive dust from construction activities with dust control measures. Will take appropriate measures to address state air toxics requirements.	Y
		Control of Noise	RCSA §22a-69- 1 to 7.4	Applicable	These regulations establish allowable noise levels; and would apply to construction activities at the site.	All construction activities on-site would comply with these noise level requirements.	Y

Table 4-53
SRSNE Superfund Site
Feasibility Study

Evaluation of ARARs - Bedrock NAPL Zone
Alternative NBGU-2: Institutional Controls and MNA

ARAR Category	Regulatory Level	Requirement	Citation	Status	Synopsis	Evaluation	Comply w/ARAR
Chemical-Specific	Federal	Safe Drinking Water Act (SDWA): Maximum Contaminant Levels (MCLs) and non-zero Maximum Contaminant Level Goals (MCLGs)	Pub. L. 93-523; 40 CFR 141	Relevant and Appropriate	These regulations establish primary drinking water regulations and goals pursuant the SDWA.	Would achieve compliance eventually through monitored natural attenuation, therefore, alternative would meet ARAR	Y
		EPA Reference Doses (RfDs) and EPA Carcinogen Assessment Group Potency Factors		To Be Considered	RfD is an estimate of human daily oral exposure that is likely to be without an appreciable risk of non-cancer effects. The potency factors are used as qualitative weight-of-evidence judgment as to the likelihood of a chemical being a carcinogen.	Will be considered in developing groundwater clean up levels.	
		EPA Health Advisories		To Be Considered	A health advisory is an estimate of acceptable drinking water levels for a chemical based upon health effects.	Will be considered in developing groundwater clean up levels.	
	State of Connecticut	Remediation Standard Regulations for groundwater	CGS 22a-133k; RCSA §22a-133k-3	Relevant and Appropriate	These regulations establish groundwater cleanup standards. Requirements are based on groundwater in the area being classified by the state as GA-degraded	Would achieve compliance eventually through monitored natural attenuation, therefore, alternative would meet ARAR	Y
Location-Specific		None apply.					
Action-Specific		None apply.					

Table 4-44
SRSNE Superfund Site
Feasibility Study

Evaluation of ARARs - Overburden Groundwater Unit
Alternative OGW-3: Hydraulic Containment and MNA

ARAR Category	Regulatory Level	Requirement	Citation	Status	Synopsis	Evaluation	Comply w/ARAR
Chemical-Specific	Federal	Safe Drinking Water Act (SDWA): Maximum Contaminant Levels (MCLs) and non-zero Maximum Contaminant Level Goals (MCLGs)	Pub. L. 93-523; 40 CFR 141	Relevant and Appropriate	These regulations establish primary drinking water regulations and goals pursuant the SDWA.	Would eventually achieve compliance through natural attenuation.	Y
		EPA Reference Doses (RfDs) and EPA Carcinogen Assessment Group Potency Factors		To Be Considered	RfD is an estimate of human daily oral exposure that is likely to be without an appreciable risk of non-cancer effects. The potency factors are used as qualitative weight-of-evidence judgment as to the likelihood of a chemical being a carcinogen.	Will be considered in developing groundwater clean up levels.	
		EPA Health Advisories		To Be Considered	A health advisory is an estimate of acceptable drinking water levels for a chemical based upon health effects.	Will be considered in developing groundwater clean up levels.	
	State of Connecticut	Remediation Standard Regulations for groundwater	CGS 22a-133k; RCSA §22a-133k-3	Applicable	These regulations establish groundwater cleanup standards. Requirements are based on groundwater in the area being classified by the state as GA-degraded.	Would eventually achieve compliance though natural attenuation. May apply the provision in regulation for exemption from restoring groundwater to background once remediation has met GWPS and other ARAR/risk based cleanup levels.	Y
		Proposed Revisions – Connecticut's Remediation Standard Regulations Volatilization Criteria, March 2003	Proposed Revisions to portions of RCSA §§22a-133k-1 through 3	TBC Will be applicable (as part of the RSRs) when adopted	Revises how volatilization criteria are calculated, incorporated revised transport models and updated risk information, and volatilization criteria are applied.	Would eventually achieve compliance though natural attenuation.	

Table 4-44 (Continued)
SRSNE Superfund Site
Feasibility Study

Evaluation of ARARs - Overburden Groundwater Unit
Alternative OGW-3: Hydraulic Containment and MNA

ARAR Category	Regulatory Level	Requirement	Citation	Status	Synopsis	Evaluation	Comply w/ARAR
Location-Specific		None apply.					
Action-Specific	State of Connecticut	Hazardous Waste Management	CGS 22a ch 445 RCSA §22a-449(c) 100 through 119	Applicable	These regulations establish standards for treatment, storage and disposal of hazardous waste and remediation waste, groundwater monitoring and requirements for closure and post-closure of hazardous waste facilities	Treatment residues (spent filtration residue and activated carbon) could contain high concentrations of regulated constituents. If determined to be hazardous waste, will be stored on site consistent with these requirements before being shipped offsite for disposal. Groundwater will be monitored in accordance with these requirements.	Y
		Water Quality Standards	CGS 22a-426	Applicable	The Connecticut Water Quality Standards establish specific numeric criteria for surface water. The standards provide criteria for maintaining the quality of surface waters through limitations on point source discharges and implementation of reasonable controls or best management practices.	Extracted groundwater that is discharged to surface water would be treated in a manner would meet the requirements of these regulations.	Y
		Water Pollution Control: Connecticut Discharge Permit Regulations	CGS 22a ch 446k RCSA §22a-430-1 to 8	Applicable	These regulations establish the requirements for discharge to surface water.	The effluent discharge from the treatment facility would meet the substantive requirements of these regulations.	Y
		Air Pollution Control	CGS 22a ch 446c RCSA §22a-174-1 to 33	Applicable	These regulations include requirements to control emissions. Pollutant abatement controls/measures may be required. Specific standards pertain to fugitive dust (18b).	Would comply with emission standards, requirements for pollutant abatement and requirements for control of fugitive dust from construction/excavation activities with dust control measures	Y

Table 4-44 (Continued)
SRSNE Superfund Site
Feasibility Study

Evaluation of ARARs - Overburden Groundwater Unit
Alternative OGW-3: Hydraulic Containment and MNA

ARAR Category	Regulatory Level	Requirement	Citation	Status	Synopsis	Evaluation	Comply w/ARAR
		Control of Noise	RCSA §22a-69- 1 to 7.4	Applicable	These regulations establish allowable noise levels; and would apply to construction activities at the site.	All construction activities on-site would comply with these noise level requirements.	Y

Table 4-47
SRSNE Superfund Site
Feasibility Study

Evaluation of ARARs - Overburden Groundwater
Alternative OGW-4: Supplemental Containment (Contingent)

ARAR Category	Regulatory Level	Requirement	Citation	Status	Synopsis	Evaluation	Comply w/ARAR
Chemical-Specific	Federal	Safe Drinking Water Act (SDWA): Maximum Contaminant Levels (MCLs) and non-zero Maximum Contaminant Level Goals (MCLGs)	Pub. L. 93-523; 40 CFR 141	Relevant and Appropriate	These regulations establish primary drinking water regulations and goals pursuant the SDWA.	Would eventually achieve compliance through natural attenuation.	Y
		EPA Reference Doses (RfDs) and EPA Carcinogen Assessment Group Potency Factors		To Be Considered	RfD is an estimate of human daily oral exposure that is likely to be without an appreciable risk of non-cancer effects. The potency factors are used as qualitative weight-of-evidence judgment as to the likelihood of a chemical being a carcinogen.	Will be considered in developing groundwater clean up levels.	
		EPA Health Advisories		To Be Considered	A health advisory is an estimate of acceptable drinking water levels for a chemical based upon health effects.	Will be considered in developing groundwater clean up levels.	
	State of Connecticut	Remediation Standard Regulations for groundwater	CGS 22a-133k; RCSA §22a-133k-3	Applicable	These regulations establish groundwater cleanup standards. Requirements are based on groundwater in the area being classified by the state as GA-degraded.	Would eventually achieve compliance through natural attenuation. May apply the provision in regulation for exemption from restoring groundwater to background once remediation has met GWPS and other ARAR/risk based cleanup levels.	Y

Table 4-47 (Continued)
SRSNE Superfund Site
Feasibility Study

Evaluation of ARARs - Overburden Groundwater Unit
Alternative OGW-4: Supplemental Containment (Contingent)

ARAR Category	Regulatory Level	Requirement	Citation	Status	Synopsis	Evaluation	Comply w/ARAR
		Proposed Revisions – Connecticut's Remediation Standard Regulations Volatilization Criteria, March 2003	Proposed Revisions to portions of RCSA §§22a-133k-1 through 3	Will be applicable (as part of the RSRs) when adopted	Revises how volatilization criteria are calculated, incorporated revised transport models and updated risk information, and volatilization criteria are applied.	Would eventually achieve compliance through natural attenuation.	
Location-Specific		None apply.					
Action-Specific	State of Connecticut	Hazardous Waste Management Regulations	CGS 22a ch 445 RCSA §22a-449(c) 100 through 119	Applicable	These regulations establish standards for treatment, storage and disposal of hazardous waste and remediation waste, groundwater monitoring and requirements for closure and post-closure of hazardous waste facilities	Treatment residues (spent filtration residue and activated carbon) could contain high concentrations of regulated constituents. If determined to be hazardous waste, will be stored on site consistent with these requirements before being shipped offsite for disposal. Groundwater will be monitored in accordance with these requirements.	Y
		Water Quality Standards	CGS 22a-426	Applicable	The Connecticut Water Quality Standards establish specific numeric criteria for surface water. The standards provide criteria for maintaining the quality of surface waters through limitations on point source discharges and implementation of reasonable controls or best management practices.	Extracted groundwater that is discharged to surface water would be treated in a manner would meet the requirements of these regulations.	Y
		Water Pollution Control: Connecticut Discharge Permit Regulations	CGS 22a ch 446k RCSA §22a-430-1 to 8	Applicable	These regulations establish the requirements for discharge to surface water.	The effluent discharge from the treatment facility would meet the substantive requirements of these regulations.	Y

Table 4-47 (Continued)
SRSNE Superfund Site
Feasibility Study

Evaluation of ARARs - Overburden Groundwater Unit
Alternative OGW-4: Supplemental Containment (Contingent)

ARAR Category	Regulatory Level	Requirement	Citation	Status	Synopsis	Evaluation	Comply w/ARAR
		Air Pollution Control: Control of Particulate Matter	CGS 22a ch 446c RCSA §22a-174-1 to 20	Applicable	These regulations include requirements to control emissions. Pollutant abatement controls/measures may be required. Specific standards pertain to fugitive dust (18b).	Would comply with emission standards to control fugitive dust from construction/excavation activities with dust control measures	Y
		Control of Noise	RCSA §22a-69- 1 to 7.4	Applicable	These regulations establish allowable noise levels; and would apply to construction activities at the site.	All construction activities on-site would comply with these noise level requirements.	Y

Table 4-62
SRSNE Superfund Site
Feasibility Study

Evaluation of ARARs - Bedrock Groundwater Unit
Alternative BGW-3: Hydraulic Containment and MNA

ARAR Category	Regulatory Level	Requirement	Citation	Status	Synopsis	Evaluation	Comply w/ARAR
Chemical-Specific	Federal	Safe Drinking Water Act (SDWA): Maximum Contaminant Levels (MCLs) and non-zero Maximum Contaminant Level Goals (MCLGs)	Pub. L. 93-523; 40 CFR 141	Relevant and Appropriate	These regulations establish primary drinking water regulations and goals pursuant the SDWA.	Would eventually achieve compliance through monitored natural attenuation.	Y
		EPA Reference Doses (RfDs) and EPA Carcinogen Assessment Group Potency Factors		To Be Considered	RfD is an estimate of human daily oral exposure that is likely to be without an appreciable risk of non-cancer effects. The potency factors are used as qualitative weight-of-evidence judgment as to the likelihood of a chemical being a carcinogen.	Will be considered in developing groundwater clean up levels.	
		EPA Health Advisories		To Be Considered	A health advisory is an estimate of acceptable drinking water levels for a chemical based upon health effects.	Will be considered in developing groundwater clean up levels.	
	State of Connecticut	Remediation Standard Regulations for groundwater	CGS 22a-133k; RCSA §22a-133k-3	Applicable	These regulations establish groundwater cleanup standards. Requirements are based on groundwater in the area being classified by the state as GA-degraded.	Would eventually achieve compliance through monitored natural attenuation. May apply the provision in regulation for exemption from restoring groundwater to background once remediation has proceeded to meet GWPS.	Y
Location-Specific		None apply.					

Table 4-62 (Continued)
SRSNE Superfund Site
Feasibility Study

Evaluation of ARARs - Bedrock Groundwater Unit
Alternative BGW-3: Hydraulic Containment and MNA

ARAR Category	Regulatory Level	Requirement	Citation	Status	Synopsis	Evaluation	Comply w/ARAR
Action-Specific	State of Connecticut	Hazardous Waste Management: Storage Requirements	CGS 22a ch 445 RCSA §22a-449(c) 100 through 119	Applicable	These regulations establish standards for treatment, storage and disposal of hazardous waste and remediation waste, groundwater monitoring and requirements for closure and post-closure of hazardous waste facilities.	Treatment residues (spent filtration residue and activated carbon) could contain high concentrations of regulated constituents. If determined to be hazardous waste, will be stored on site consistent with these requirements before being shipped offsite for disposal. .	Y
		Water Quality Standards	CGS 22a-426	Applicable	The Connecticut Water Quality Standards establish specific numeric criteria for surface water. The standards provide criteria for maintaining the quality of surface waters through limitations on point source discharges and implementation of reasonable controls or best management practices.	Extracted groundwater that is discharged to surface waters would be treated in a manner that is consistent with the requirements of this rule.	Y
		Water Pollution Control: Connecticut Discharge Permit Regulations	CGS 22a ch 446k RCSA §22a-430-1 to 8	Applicable	These regulations establish the requirements for discharge to surface water.	The effluent discharge from the treatment facility would meet the substantive requirements of these regulations.	Y
		Air Pollution Control: Control of Particulate Matter	CGS 22a ch 446c RCSA §22a-174-1 to 20	Applicable	These regulations include requirements to control emissions. Pollutant abatement controls/measures may be required. Specific standards pertain to fugitive dust (18b).	Would comply with emission standards to control fugitive dust from construction activities with dust control measures	Y
		Control of Noise	RCSA §22a-69-1 to 7.4	Applicable	These regulations establish allowable noise levels; and would apply to construction activities at the site.	All construction activities on-site would comply with these noise level requirements.	Y

Appendix E

CT DEP Letter of Concurrence

STATE OF CONNECTICUT

DEPARTMENT OF ENVIRONMENTAL PROTECTION

79 ELM STREET HARTFORD, CT 06106-5127

PHONE: 860-424-3001

Gina McCarthy
Commissioner

September 30, 2005

Ms. Susan Studlien
Director
Office of Site Remediation and Restoration
EPA New England
1 Congress Street, Suite 1100 (Mail Code HIO)
Boston MA 02114-2023

Subject: Letter of Partial Concurrence with Proposed Remedy for The Solvents Recovery Service of New England, Inc. (SRSNE) Site, Southington CT

Dear Ms. Studlien,

The Connecticut Department of Environmental Protection (DEP) has reviewed the remedy being selected by EPA for the Solvents Recovery Service of New England (SRSNE) site in Southington, Connecticut. DEP concurs with most components of the selected remedy, but does not concur with the component of the remedy in which EPA is proposing to address the risk to public health posed by the volatile organic compounds in shallow ground water that may migrate into existing or future buildings overlying the ground water plume.

DEP concurs with the following components of the selected remedy which comply with State ARARS and which will fully protect human health and the environment:

- the in-situ treatment of subsurface source material (non-aqueous phase liquid or NAPL) in the overburden aquifer beneath the Operations Area
- consolidation and capping of surface source material (contaminated soil and wetland soil)
- maintenance and monitoring of the cap and monitoring of groundwater over the long term
- capture and on-site treatment of groundwater which exceeds federal safe drinking water standards in both the overburden and bedrock aquifers
- monitoring of natural attenuation of NAPL in the deep subsurface (bedrock) and contaminated groundwater outside the capture zone until cleanup levels are achieved across the entire Site in an estimated 100 to 200 years.

Further, DEP supports the proposed collection of additional data to delineate the edge of the shallow groundwater plume. However, DEP does not concur with the vapor intrusion component of the remedy which proposes a risk assessment on each separate parcel overlying the plume to determine if volatile organic compounds in groundwater at that portion of the plume exceeds EPA's acceptable risk range. DEP's position is that, once it has already been demonstrated that volatile organic compounds in the shallow groundwater plume at the SRSNE site pose risk outside EPA's acceptable risk range, Connecticut's Remediation Standard Regulations are applicable requirements (ARARs) over the full areal extent of the shallow groundwater plume (regardless of parcel boundaries) without any additional parcel-specific risk assessments. If exceedances of the volatilization criteria for groundwater contained in Connecticut's Remediation Standard Regulations are identified anywhere in the shallow groundwater plume, the action described in the remedy for shallow groundwater (institutional controls to restrict the construction of buildings into which vapors could migrate) to address this condition should be triggered. Because of the approach being proposed by EPA for the parcels described above, DEP does not believe the proposed remedy for vapor intrusion complies with State ARARs for groundwater and we are concerned that the final remedial actions will not be adequately protective of public health with respect to vapor intrusion.

However, DEP supports every other component of the remedy, all of which are in compliance with State ARARS, protective of public health and the appropriate actions necessary to restore an important drinking water resource in Connecticut.

Yours truly,

Gina McCarthy
Commissioner

GM/cal

Appendix F

References

REFERENCES

Agency for Toxic Substance and Disease Registry (ATSDR), United States Public Health Service, Department of Health and Human Services. Public Health Assessment, Solvents Recovery Service of New England, Southington, Hartford County, Connecticut, CERCLIS No. CTD009717604. July 21, 1992.

Blasland, Bouck & Lee, Inc. (BBL). Remedial Investigation Report. June 1998.

Connecticut Department of Environmental Protection (CT DEP). Water Quality Standards. Surface-Water Quality Standards Effective May 15, 1992.

Connecticut Department of Environmental Protection (CT DEP). Water Quality Standards. Ground-Water Quality Standards Effective April 12, 1996.

Connecticut Department of Environmental Protection (CT DEP). State of Connecticut Remediation Standard Regulations. January 1996.

Connecticut Department of Environmental Protection (CT DEP). Groundwater Use and Value Determination. May 2005.

Halliburton NUS (HNUS) Environmental Corporation. Final Remedial Investigation Report: Remedial Investigation/Feasibility Study. SRSNE Site, Southington, Connecticut. May 1994.

United States Environmental Protection Agency (EPA). Preliminary Reuse Assessment, Solvents Recovery Service of New England, Inc, Southington, Connecticut. September 2003.

Appendix G

Administrative Record Index and Guidance Documents

Solvents Recovery Service of New England NPL Site Administrative Record Record of Decision (ROD)

Index

Prepared by
EPA New England
Office of Site Remediation & Restoration

September 2005

Introduction to the Collection

This is the Administrative Record for the Solvents Recovery Service of New England Superfund site, Southington, CT, Record of Decision (ROD), released September 2005. The file contains site-specific documents and a list of guidance documents used by EPA staff in selecting a response action at the site.

This file replaces the administrative record file for the Record of Decision (ROD) Proposed Plan, released June 2005. This file includes, by reference, the administrative record files for the Solvents Recovery Service of New England, NPL Site, issued June 26, 1992; NPL Site Addendum, issued July 9, 1992; NPL Site Addendum issued September 17, 1992; Removal Action Addition, issued October, 1992; Removal Action III (Laboratory Chemicals), issued December 1993; DeMinimus Settlement, issued September 29, 1994; Non-Time Critical Removal Action (NTCRA) #2, issued June, 1995; and DeMinimus Settlement Supplement, issued September 28, 1995.

The administrative record file is available for review at:

Southington Public Library
225 Main Street
Southington, CT 07489
(860) 628-0947 (phone)
(860) 628-0488 (fax)
http://www.southingtonlibrary.org/

EPA New England Superfund Records & Information Center
1 Congress Street, Suite 1100 (HSC)
Boston, MA 02114 (by appointment)
617-918-1440 (phone)
617-918-1223 (fax)
www.epa.gov/region01/superfund/resource/records.htm

Questions about this administrative record file should be directed to the EPA New England site manager. An administrative record file is required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA).

Some of the documents in this collection are available as a Portable Document Format (PDF) file. The PDF process maintains the look and presentation of the original document. To view PDF files, you will need Adobe Acrobat Reader software loaded on your computer. This software is available, free of charge, from Adobe Software [this is a link to http://www.adobe.com]. To ensure you will be able to see a PDF file in its entirety, please obtain the most recent version of the free Adobe Reader from the Adobe Web site. (http://www.adobe.com/products/acrobat/readstep.html)

01: SITE ASSESSMENT

6241 **POTENTIAL HAZARDOUS WASTE SITE IDENTIFICATION, PRELIMINARY ASSESSMENT (PA), SOLVENTS RECOVERY SERVICE OF NEW ENGLAND, SOUTHINGTON (CT)**

Author: US EPA REGION 1
Addressee:
Doc Type: REPORT
Doc Date: 08/29/1979 **# of Pages:** 9
File Break: 01.02

5690 **HYDROGEOLOGIC INVESTIGATION, SOUTHINGTON (CT), FINAL DRAFT**

Author: WARZYN ENGINEERING INC
Addressee: US EPA REGION 1
Doc Type: REPORT
Doc Date: 11/12/1980 **# of Pages:** 222
File Break: 01.18

6240 **POTENTIAL HAZARDOUS WASTE SITE, SITE INSPECTION REPORT**

Author: MARGRET HANLEY ECOLOGY & ENVIRONMENT INC
Addressee: ROBERT OMEARA US EPA REGION 1
Doc Type: REPORT
Doc Date: 05/05/1982 **# of Pages:** 12
File Break: 01.03

5689 **HYDROGEOLOGIC ASSESSMENT REPORT, FINAL**

Author: WEHRAN ENGINEERING CORP
Addressee: SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
Doc Type: REPORT
Doc Date: 10/01/1982 **# of Pages:** 56
File Break: 01.18

02: REMOVAL RESPONSE

6243 **ENGINEERING REPORT FOR OFF-SITE GROUNDWATER INTERCEPTOR SYSTEM INCLUDING FINAL ENGINEERING DRAWINGS AND EQUIPMENT SPECIFICATIONS**

Author: LOUREIRO ENGINEERING ASSOCIATES INC
Addressee: YORK WASTEWATER CONSULTANTS INC
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
Doc Date: 02/28/1984 **# of Pages:** 28
File Break: 02.06
Doc Type: REPORT

5179 **ESTIMATES OF VOLATILE ORGANIC COMPOUNDS CAPTURED BY ON-SITE SYSTEM**

Author: LIYANG CHU NUS/TETRA TECH INC
Addressee: MATTHEW R HOAGLAND US EPA REGION 1
Doc Date: 02/09/1990 **# of Pages:** 13
File Break: 02.01
Doc Type: LETTER

5094 **DOCUMENTATION FOR SHALLOW WELL INTERCEPTOR SYSTEM, INCLUDING TWO TABLES SUMMARIZING GROUNDWATER LEVELS IN HYDRAULIC VERIFICATION WELLS AND GROUNDWATER INTERCEPTOR WELLS AND 1 FIGURE DEPICTING GROUNDWATER CONTOURS, ALL BASED ON**

Author: SARAH F JOHNSON TRC COMPANIES INC
Addressee: BRIAN NADEAU SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
Doc Date: 07/23/1991 **# of Pages:** 6
File Break: 02.03
Doc Type: LETTER

02: REMOVAL RESPONSE

5650 **REMOVAL PROGRAM SUPPLEMENTAL SITE INVESTIGATION**

Author: ROY F WESTON INC
Addressee: US EPA REGION 1
Doc Date: 06/01/1992 **# of Pages:** 242
File Break: 02.02
Doc Type: REPORT

8307 **REQUEST FOR REMOVAL ACTION AT THE SOLVENTS RECOVERY SERVICE OF NEW ENGLAND SITE**

Author: GARY LIPSON US EPA REGION 1
Addressee: JULIE BELAGA US EPA REGION 1
Doc Date: 08/28/1992 **# of Pages:** 13
File Break: 02.09
Doc Type: MEMO

5562 **ENGINEERING EVALUATION / COST ANALYSIS (EE/CA) FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA), FINAL**

Author: NUS/TETRA TECH INC
Addressee: US EPA REGION 1
Doc Date: 12/01/1992 **# of Pages:** 334
File Break: 02.02
Doc Type: REPORT

4883 **RESPONSIVENESS SUMMARY FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA)**

Author: US EPA REGION 1
Addressee:
Doc Date: 04/01/1993 **# of Pages:** 52
File Break: 02.02
Doc Type: REPORT

02: REMOVAL RESPONSE

8330 **REQUEST FOR REMOVAL ACTION AT THE SOLVENTS RECOVERY SERVICE OF NEW ENGLAND SITE**

Author: MICHAEL NALIPINSKI US EPA REGION 1
Addressee: PAUL G KEOUGH US EPA REGION 1
Doc Date: 04/01/1993 **# of Pages:** 22
File Break: 02.09
Doc Type: MEMO

8306 **REQUEST FOR REMOVAL ACTION AT THE SOLVENTS RECOVERY SERVICE OF NEW ENGLAND SITE, ACTION MEMORANDUM**

Author: DOROTHY L GIRTEN US EPA REGION 1
Addressee: PAUL G KEOUGH US EPA REGION 1
Doc Date: 11/08/1993 **# of Pages:** 8
File Break: 02.09
Doc Type: MEMO

5590 **ENGINEERING EVALUATION / COST ANALYSIS (EE/CA) REPORT, FOR NON-TIME CRITICAL REMOVAL (NTCRA) 2, FINAL**

Author: NUS/TETRA TECH INC
Addressee: US EPA REGION 1
Doc Date: 11/01/1994 **# of Pages:** 392
File Break: 02.02
Doc Type: REPORT

6258 **100% GROUNDWATER CONTAINMENT AND TREATMENT SYSTEM DESIGN REPORT FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1**

Author: BLASLAND BOUCK & LEE INC
Addressee: SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
Doc Date: 12/01/1994 **# of Pages:** 476
File Break: 02.06
Doc Type: REPORT

02: REMOVAL RESPONSE

225371 **CONCEPTUAL WETLANDS MITIGATION PLAN**

Author: BLASLAND BOUCK & LEE INC
Addressee: SRSNE SITE PRP GROUP
Doc Date: 04/01/1995 **# of Pages:** 43
File Break: 02.02
Doc Type: REPORT

6245 **DEMONSTRATION OF COMPLIANCE PLAN FOR NON-TIME CRITICAL REMOVAL (NTCRA) 1**

Author: BLASLAND BOUCK & LEE INC
Addressee: SRS PRP GROUP
Doc Date: 06/01/1995 **# of Pages:** 113
File Break: 02.06
Doc Type: REPORT

6259 **GROUNDWATER CONTAINMENT AND TREATMENT SYSTEM IMPLEMENTATION WORK PLAN FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1**

Author: BLASLAND BOUCK & LEE INC
Addressee: SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
Doc Date: 06/01/1995 **# of Pages:** 18
File Break: 02.06
Doc Type: WORK PLAN

8308 **REQUEST FOR REMOVAL ACTION AT THE SOLVENTS RECOVERY SERVICE OF NEW ENGLAND SITE, SOUTHINGTON, CT [NON-TIME CRITICAL REMOVAL ACTION (NTCRA) #2]**

Author: KELLY S MCCARTY US EPA REGION 1
Addressee: JOHN P DEVILLARS US EPA REGION 1
Doc Date: 06/01/1995 **# of Pages:** 48
File Break: 02.09
Doc Type: MEMO

02: REMOVAL RESPONSE

4930 **NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1 AS-BUILT DESIGN DOCUMENTS, ATTACHMENTS 2-5, WITH TRANSMITTAL**

Author: EDWARD R LYNCH BLASLAND BOUCK & LEE INC
Addressee: KELLY S MCCARTY US EPA REGION 1
Doc Date: 08/30/1995 **# of Pages:** 13
File Break: 02.06
Doc Type: DRAWING

4931 **NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1 AS-BUILT DESIGN DOCUMENTS, ATTACHMENT 1**

Author: BLASLAND BOUCK & LEE INC
Addressee:
Doc Date: 08/30/1995 **# of Pages:** 1
File Break: 02.06
Doc Type: DRAWING

225372 **DETAILED WETLANDS MITIGATION DESIGN**

Author: BLASLAND BOUCK & LEE INC
Addressee: SRSNE SITE PRP GROUP
Doc Date: 09/01/1995 **# of Pages:** 66
File Break: 02.02
Doc Type: REPORT

5334 **APPROVAL OF DEMONSTRATION OF COMPLIANCE PLAN 1 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1**

Author: KELLY S MCCARTY US EPA REGION 1
Addressee: A J MOODY SRS PRP GROUP
Doc Date: 09/22/1995 **# of Pages:** 1
File Break: 02.06
Doc Type: LETTER

02: REMOVAL RESPONSE

5584 **ON-SITE INTERCEPTOR SYSTEM, MONITORING WELL ABANDONMENT ACTIVITIES DURING NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1**

Author: EDWARD R LYNCH BLASLAND BOUCK & LEE INC
Doc Date: 10/26/1995 **# of Pages:** 20
Addressee: KELLY S MCCARTY US EPA REGION 1
File Break: 02.06
Doc Type: LETTER

5335 **APPROVAL OF DEMONSTRATION OF COMPLIANCE REPORT 2 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1**

Author: KELLY S MCCARTY US EPA REGION 1
Doc Date: 11/01/1995 **# of Pages:** 1
Addressee: A J MOODY SRS PRP GROUP
File Break: 02.06
Doc Type: LETTER

5337 **DEMONSTRATION OF COMPLIANCE REPORT 3 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 09/01-31/1995**

Author: BLASLAND BOUCK & LEE INC
Doc Date: 11/01/1995 **# of Pages:** 49
Addressee: SRS PRP GROUP
File Break: 02.06
Doc Type: REPORT

5585 **ON-SITE INTERCEPTOR SYSTEM, MONITORING WELL ABANDONMENT REPORT REVIEWED AND FOUND ADEQUATE**

Author: MARK R LEWIS CT DEPT OF ENVIRONMENTAL PROTECTION
Doc Date: 11/06/1995 **# of Pages:** 1
Addressee: KELLY S MCCARTY US EPA REGION 1
File Break: 02.01
Doc Type: LETTER

02: REMOVAL RESPONSE

5586 **COMMENTS ON ON-SITE INTERCEPTOR SYSTEM AND MONITORING WELL ABANDONMENT DURING NON-TIME CRITICAL REMOVAL ACTION 1 (NTCRA) REPORT AND PRIVATE WELL MONITORING REPORT**

Author: LIYANG CHU NUS/TETRA TECH INC
Doc Date: 11/09/1995 **# of Pages:** 3
Addressee: KELLY S MCCARTY US EPA REGION 1
File Break: 02.01
Doc Type: LETTER

5336 **APPROVAL OF DEMONSTRATION OF COMPLIANCE REPORT 3 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1**

Author: KELLY S MCCARTY US EPA REGION 1
Doc Date: 11/21/1995 **# of Pages:** 1
Addressee: A J MOODY SRS PRP GROUP
File Break: 02.06
Doc Type: LETTER

5338 **DEMONSTRATION OF COMPLIANCE REPORT 4 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 11/01-30/1995**

Author: JOSEPH LANDWYN HANDEX OF NEW ENGLAND INC
Doc Date: 12/06/1995 **# of Pages:** 22
Addressee: KELLY S MCCARTY US EPA REGION 1
File Break: 02.06
Doc Type: REPORT

5339 **DEMONSTRATION OF COMPLIANCE REPORT 5 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 12/01-31/1995**

Author: JOSEPH LANDWYN HANDEX OF NEW ENGLAND INC
Doc Date: 01/05/1996 **# of Pages:** 21
Addressee: KELLY S MCCARTY US EPA REGION 1
File Break: 02.06
Doc Type: REPORT

02: REMOVAL RESPONSE

5340 **DEMONSTRATION OF COMPLIANCE REPORT 6 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 01/01-31/1996**

Author: JOSEPH LANDWYN HANDEX OF NEW ENGLAND INC
Addressee: SHEILA M ECKMAN US EPA REGION 1
Doc Date: 02/06/1996 **# of Pages:** 21
File Break: 02.06
Doc Type: REPORT

5341 **DEMONSTRATION OF COMPLIANCE REPORT 7 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 02/01-01/1996**

Author: JOSEPH LANDWYN HANDEX OF NEW ENGLAND INC
Addressee: SHEILA M ECKMAN US EPA REGION 1
Doc Date: 03/06/1996 **# of Pages:** 22
File Break: 02.06
Doc Type: REPORT

5342 **DEMONSTRATION OF COMPLIANCE REPORT 8 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 03/01-31/1996, LETTER MISDATED, RECEIVED 04/09/1996**

Author: JOSEPH LANDWYN HANDEX OF NEW ENGLAND INC
Addressee: SHEILA M ECKMAN US EPA REGION 1
Doc Date: 03/06/1996 **# of Pages:** 22
File Break: 02.06
Doc Type: REPORT

5343 **DEMONSTRATION OF COMPLIANCE REPORT 9 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 04/01-30/1996**

Author: JOSEPH LANDWYN HANDEX OF NEW ENGLAND INC
Addressee: SHEILA M ECKMAN US EPA REGION 1
Doc Date: 05/06/1996 **# of Pages:** 22
File Break: 02.06
Doc Type: REPORT

02: REMOVAL RESPONSE

5344 **DEMONSTRATION OF COMPLIANCE REPORT 10 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 05/01-01/1996**

Author: JOSEPH LANDWYN HANDEX OF NEW ENGLAND INC
Addressee: SHEILA M ECKMAN US EPA REGION 1
Doc Date: 06/06/1996 **# of Pages:** 22
File Break: 02.06
Doc Type: REPORT

5345 **DEMONSTRATION OF COMPLIANCE REPORT 11 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 06/01-30/1996**

Author: JOSEPH LANDWYN HANDEX OF NEW ENGLAND INC
Addressee: SHEILA M ECKMAN US EPA REGION 1
Doc Date: 07/03/1996 **# of Pages:** 23
File Break: 02.06
Doc Type: REPORT

5593 **DESIGN AND STUDY WORK PLAN FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 2**

Author: BLASLAND BOUCK & LEE INC
Addressee: SRS PRP GROUP
Doc Date: 08/01/1996 **# of Pages:** 61
File Break: 02.06
Doc Type: WORK PLAN

5346 **DEMONSTRATION OF COMPLIANCE REPORT 12 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 07/01-31/1996**

Author: JOSEPH LANDWYN HANDEX OF NEW ENGLAND INC
Addressee: SHEILA M ECKMAN US EPA REGION 1
Doc Date: 08/06/1996 **# of Pages:** 22
File Break: 02.06
Doc Type: REPORT

02: REMOVAL RESPONSE

5348 **DEMONSTRATION OF COMPLIANCE REPORT 13 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 08/01-31/1996**

Author: HANDEX OF NEW ENGLAND INC
Addressee: SHEILA M ECKMAN US EPA REGION 1
Doc Date: 09/05/1996 **# of Pages:** 21
File Break: 02.06
Doc Type: REPORT

5349 **DEMONSTRATION OF COMPLIANCE REPORT 14 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 09/01-30/1996**

Author: HANDEX OF NEW ENGLAND INC
Addressee: SHEILA M ECKMAN US EPA REGION 1
Doc Date: 10/04/1996 **# of Pages:** 20
File Break: 02.06
Doc Type: REPORT

5350 **DEMONSTRATION OF COMPLIANCE REPORT 15 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 09/01-31/1996**

Author: HANDEX OF NEW ENGLAND INC
Addressee: SHEILA M ECKMAN US EPA REGION 1
Doc Date: 11/06/1996 **# of Pages:** 21
File Break: 02.06
Doc Type: REPORT

5351 **DEMONSTRATION OF COMPLIANCE REPORT 16 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 11/01-27/1996**

Author: HANDEX OF NEW ENGLAND INC
Addressee: SHEILA M ECKMAN US EPA REGION 1
Doc Date: 12/06/1996 **# of Pages:** 20
File Break: 02.06
Doc Type: REPORT

02: REMOVAL RESPONSE

5352 **DEMONSTRATION OF COMPLIANCE REPORT 17 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 11/28-31/1996**

Author: HANDEX OF NEW ENGLAND INC
Addressee: SHEILA M ECKMAN US EPA REGION 1
Doc Date: 01/06/1997 **# of Pages:** 21
File Break: 02.06
Doc Type: REPORT

5354 **CERTIFICATION STATEMENT FOR DEMONSTRATION OF COMPLIANCE REPORT 18 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1**

Author: HANDEX OF NEW ENGLAND INC
Addressee: SHEILA M ECKMAN US EPA REGION 1
Doc Date: 01/06/1997 **# of Pages:** 2
File Break: 02.06
Doc Type: REPORT

5353 **DEMONSTRATION OF COMPLIANCE REPORT 18 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 01/01-31/1997**

Author: HANDEX OF NEW ENGLAND INC
Addressee: SHEILA M ECKMAN US EPA REGION 1
Doc Date: 02/06/1997 **# of Pages:** 20
File Break: 02.06
Doc Type: REPORT

5355 **DEMONSTRATION OF COMPLIANCE REPORT 19 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 02/01-28/1997**

Author: HANDEX OF NEW ENGLAND INC
Addressee: SHEILA M ECKMAN US EPA REGION 1
Doc Date: 03/06/1997 **# of Pages:** 23
File Break: 02.06
Doc Type: REPORT

02: REMOVAL RESPONSE

5356 **CERTIFICATION STATEMENT FOR DEMONSTRATION OF COMPLIANCE REPORT 19 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1**

Author: HANDEX OF NEW ENGLAND INC
Addressee: SHEILA M ECKMAN US EPA REGION 1
Doc Date: 03/10/1997 **# of Pages:** 2
File Break: 02.06
Doc Type: REPORT

5357 **DEMONSTRATION OF COMPLIANCE REPORT 20 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 03/01-31/1997**

Author: HANDEX OF NEW ENGLAND INC
Addressee: SHEILA M ECKMAN US EPA REGION 1
Doc Date: 04/04/1997 **# of Pages:** 21
File Break: 02.06
Doc Type: REPORT

5658 **DEMONSTRATION OF COMPLIANCE REPORT 21 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 04/01-30/1997**

Author: HANDEX OF NEW ENGLAND INC
Addressee: US EPA REGION 1
Doc Date: 05/07/1997 **# of Pages:** 19
File Break: 02.06
Doc Type: REPORT

5659 **DEMONSTRATION OF COMPLIANCE REPORT 22 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 05/01-05/31/1997**

Author: GERALD H CRESAP HANDEX OF NEW ENGLAND INC
Addressee: SHEILA M ECKMAN US EPA REGION 1
Doc Date: 06/09/1997 **# of Pages:** 20
File Break: 02.06
Doc Type: REPORT

02: REMOVAL RESPONSE

5661 **DEMONSTRATION OF COMPLIANCE REPORT 23 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 06/01-30/1997**

Author: GERALD H CRESAP HANDEX OF NEW ENGLAND INC
Doc Date: 07/07/1997 **# of Pages:** 20
Addressee: SHEILA M ECKMAN US EPA REGION 1
File Break: 02.06
Doc Type: REPORT

5358 **DEMONSTRATION OF COMPLIANCE REPORT 24 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 07/01-31/1997**

Author: HANDEX OF NEW ENGLAND INC
Doc Date: 08/08/1997 **# of Pages:** 19
Addressee: SHEILA M ECKMAN US EPA REGION 1
File Break: 02.06
Doc Type: REPORT

5359 **DEMONSTRATION OF COMPLIANCE REPORT 25 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 08/01-31/1997**

Author: HANDEX OF NEW ENGLAND INC
Doc Date: 09/08/1997 **# of Pages:** 18
Addressee: SHEILA M ECKMAN US EPA REGION 1
File Break: 02.06
Doc Type: REPORT

5360 **DEMONSTRATION OF COMPLIANCE REPORT 26 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 09/01-30/1997**

Author: HANDEX OF NEW ENGLAND INC
Doc Date: 10/06/1997 **# of Pages:** 19
Addressee: SHEILA M ECKMAN US EPA REGION 1
File Break: 02.06
Doc Type: REPORT

02: REMOVAL RESPONSE

5361 **DEMONSTRATION OF COMPLIANCE REPORT 27 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 10/01-31/1997**

Author: HANDEX OF NEW ENGLAND INC
Addressee: SHEILA M ECKMAN US EPA REGION 1
Doc Date: 11/08/1997 **# of Pages:** 18
File Break: 02.06
Doc Type: REPORT

5662 **DEMONSTRATION OF COMPLIANCE REPORT 28 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 11/01-30/1997**

Author: GERALD H CRESAP HANDEX OF NEW ENGLAND INC
Addressee: SHEILA M ECKMAN US EPA REGION 1
Doc Date: 12/05/1997 **# of Pages:** 18
File Break: 02.06
Doc Type: REPORT

5663 **DEMONSTRATION OF COMPLIANCE REPORT 29 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 12/01-31/1997**

Author: GERALD H CRESAP HANDEX OF NEW ENGLAND INC
Addressee: SHEILA M ECKMAN US EPA REGION 1
Doc Date: 01/06/1998 **# of Pages:** 18
File Break: 02.06
Doc Type: REPORT

5664 **DEMONSTRATION OF COMPLIANCE REPORT 30 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 01/01-30/1997**

Author: JOSEPH LANDWYN HANDEX OF NEW ENGLAND INC
Addressee: SHEILA M ECKMAN US EPA REGION 1
Doc Date: 02/06/1998 **# of Pages:** 18
File Break: 02.06
Doc Type: REPORT

02: REMOVAL RESPONSE

5665 **DEMONSTRATION OF COMPLIANCE REPORT 31 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 01/31-02/27/1998**

Author: ELIZABETH M ANDERSON HANDEX OF NEW ENGLAND INC
Addressee: JOSEPH LANDWYN HANDEX OF NEW ENGLAND INC
KAREN LUMINO US EPA REGION 1
Doc Date: 03/06/1998 **# of Pages:** 18
File Break: 02.06
Doc Type: REPORT

5667 **DEMONSTRATION OF COMPLIANCE REPORT 32 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 03/01-31/1998**

Author: ELIZABETH M ANDERSON HANDEX OF NEW ENGLAND INC
Addressee: KAREN LUMINO US EPA REGION 1
Doc Date: 04/09/1998 **# of Pages:** 17
File Break: 02.06
Doc Type: REPORT

5668 **DEMONSTRATION OF COMPLIANCE REPORT 33 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 04/01-30/1998**

Author: ELIZABETH M ANDERSON HANDEX OF NEW ENGLAND INC
Addressee: JOSEPH LANDWYN HANDEX OF NEW ENGLAND INC
KAREN LUMINO US EPA REGION 1
Doc Date: 05/07/1998 **# of Pages:** 20
File Break: 02.06
Doc Type: REPORT

02: REMOVAL RESPONSE

5669 **DEMONSTRATION OF COMPLIANCE REPORT 34 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 05/01-31/1998**

Author: ELIZABETH M ANDERSON HANDEX OF NEW ENGLAND INC
Addressee: JOSEPH LANDWYN HANDEX OF NEW ENGLAND INC
KAREN LUMINO US EPA REGION 1
Doc Date: 06/05/1998 **# of Pages:** 20
File Break: 02.06
Doc Type: REPORT

5670 **DEMONSTRATION OF COMPLIANCE REPORT 35 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 06/01-30/1998**

Author: ELIZABETH M ANDERSON HANDEX OF NEW ENGLAND INC
Addressee: JOSEPH LANDWYN HANDEX OF NEW ENGLAND INC
KAREN LUMINO US EPA REGION 1
Doc Date: 07/07/1998 **# of Pages:** 20
File Break: 02.06
Doc Type: REPORT

5674 **DEMONSTRATION OF COMPLIANCE REPORT 36 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 07/01-30/1998**

Author: ELIZABETH M ANDERSON HANDEX OF NEW ENGLAND INC
Addressee: JOSEPH LANDWYN HANDEX OF NEW ENGLAND INC
KAREN LUMINO US EPA REGION 1
Doc Date: 10/07/1998 **# of Pages:** 25
File Break: 02.06
Doc Type: REPORT

02: REMOVAL RESPONSE

5676 **CERTIFICATION PAGE FOR QUARTERLY DEMONSTRATION OF COMPLIANCE REPORT 36**

Author: ELIZABETH M ANDERSON HANDEX OF NEW ENGLAND INC
Addressee: KAREN LUMINO US EPA REGION 1
Doc Date: 10/07/1998 **# of Pages:** 2
File Break: 02.06
Doc Type: LETTER

5620 **INTERIM MONITORING AND SAMPLING PLAN, 06/1998, REVISED 11/1998**

Author: BLASLAND BOUCK & LEE INC
Addressee: SRS PRP GROUP
Doc Date: 11/01/1998 **# of Pages:** 17
File Break: 02.06
Doc Type: WORK PLAN

5725 **NON-TIME CRITICAL REMOVAL ACTION (NTCRA) #2 TECHNICAL MEMORANDUM, FINAL; UPDATED BY LETTER 05/25/1999, APPROVED BY US EPA 07/08/1999**

Author: BLASLAND BOUCK & LEE INC
Addressee: SRS PRP GROUP
Doc Date: 11/24/1998 **# of Pages:** 135
File Break: 02.02
Doc Type: REPORT

02: REMOVAL RESPONSE

5678 **QUARTERLY DEMONSTRATION OF COMPLIANCE REPORT 37 FOR NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1, 10/01-30/1998**

Author: JOSEPH LANDWYN HANDEX OF NEW ENGLAND INC
Addressee: CHRISTOPHER P MCCLURE HANDEX OF NEW ENGLAND INC
KAREN LUMINO US EPA REGION 1
Doc Date: 01/07/1999 **# of Pages:** 26
File Break: 02.06
Doc Type: REPORT

5644 **INTERIM MONITORING AND SAMPLING REPORT 1**

Author: GARY R CAMERON BLASLAND BOUCK & LEE INC
Addressee: KAREN LUMINO US EPA REGION 1
Doc Date: 02/17/1999 **# of Pages:** 45
File Break: 02.06
Doc Type: LETTER

5726 **RESPONSE TO US EPA COMMENTS REGARDING DRAFT NON-TIME CRITICAL REMOVAL ACTION (NTCRA), TWO TECHNICAL MEMORANDUM**

Author: GARY R CAMERON BLASLAND BOUCK & LEE INC
Addressee: BYRON MAH US EPA REGION 1
Doc Date: 05/25/1999 **# of Pages:** 4
File Break: 02.02
Doc Type: LETTER

02: REMOVAL RESPONSE

5623 **DEMOLITION OF OPERATIONS AREA**

Author: DE MAXIMIS INC
Addressee:
Doc Type: REPORT
Doc Date: 07/01/1999 **# of Pages:** 190
File Break: 02.02

5727 **NOTICE OF APPROVAL OF NON-TIME CRITICAL REMOVAL ACTION (NTCRA), TWO TECHNICAL MEMORANDUM**

Author: MARY JANE ODONNELL US EPA REGION 1
Addressee: SRS PRP GROUP
Doc Type: LETTER
Doc Date: 07/08/1999 **# of Pages:** 1
File Break: 02.02

5645 **INTERIM MONITORING AND SAMPLING REPORT 2**

Author: GARY R CAMERON BLASLAND BOUCK & LEE INC
Addressee: BYRON MAH US EPA REGION 1
Doc Type: LETTER
Doc Date: 08/03/1999 **# of Pages:** 29
File Break: 02.06

44020 **FINAL NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 2 100% GROUND WATER SYSTEM DESIGN REPORT**

Author: BLASLAND BOUCK & LEE INC
Addressee: SRSNE SITE PRP GROUP
Doc Type: REPORT
Doc Date: 11/01/1999 **# of Pages:** 104
File Break: 02.02

02: REMOVAL RESPONSE

222203 **DEMONSTRATION OF COMPLIANCE REPORT #41 FOR NON-TIME-CRITICAL REMOVAL ACTION (NTCRA) 1 [WITH TRANSMITTAL]**

Author: HANDEX OF NEW ENGLAND INC
Addressee: SRSNE SITE PRP GROUP
Doc Date: 01/06/2000 **# of Pages:** 26
File Break: 02.06
Doc Type: REPORT

222204 **DEMONSTRATION OF COMPLIANCE REPORT #42 FOR NON-TIME-CRITICAL REMOVAL ACTION (NTCRA) 1, [WITH TRANSMITTAL]**

Author: HANDEX OF NEW ENGLAND INC
Addressee: SRSNE SITE PRP GROUP
Doc Date: 04/07/2000 **# of Pages:** 25
File Break: 02.06
Doc Type: REPORT

18685 **INTERIM MONITORING AND SAMPLING REPORT #4**

Author: GARY R CAMERON BLASLAND BOUCK & LEE INC
Addressee: BYRON MAH US EPA REGION 1
Doc Date: 07/05/2000 **# of Pages:** 29
File Break: 02.06
Doc Type: REPORT

222205 **DEMONSTRATION OF COMPLIANCE REPORT #43 FOR NON-TIME-CRITICAL REMOVAL ACTION (NTCRA) 1 [WITH TRANSMITTAL]**

Author: HANDEX OF NEW ENGLAND INC
Addressee: SRSNE SITE PRP GROUP
Doc Date: 07/10/2000 **# of Pages:** 26
File Break: 02.06
Doc Type: REPORT

02: REMOVAL RESPONSE

222206 **DEMONSTRATION OF COMPLIANCE REPORT #44 FOR NON-TIME-CRITICAL REMOVAL ACTION (NTCRA) 1 [WITH TRANSMITTAL]**

Author: HANDEX OF NEW ENGLAND INC
Addressee: SRSNE SITE PRP GROUP
Doc Date: 10/21/2000 **# of Pages:** 27
File Break: 02.06
Doc Type: REPORT

222207 **DEMONSTRATION OF COMPLIANCE REPORT #45 FOR NON-TIME-CRITICAL REMOVAL ACTION (NTCRA) 1 [WITH TRANSMITTAL]**

Author: HANDEX OF NEW ENGLAND INC
Addressee: SRSNE SITE PRP GROUP
Doc Date: 01/05/2001 **# of Pages:** 28
File Break: 02.06
Doc Type: REPORT

18686 **INTERIM MONITORING AND SAMPLING REPORT #5**

Author: GARY R CAMERON BLASLAND BOUCK & LEE INC
Addressee: BYRON MAH US EPA REGION 1
Doc Date: 01/09/2001 **# of Pages:** 35
File Break: 02.06
Doc Type: REPORT

222208 **DEMONSTRATION OF COMPLIANCE REPORT #46 FOR NON-TIME-CRITICAL REMOVAL ACTION (NTCRA) 1 [WITH TRANSMITTAL]**

Author: HANDEX OF NEW ENGLAND INC
Addressee: SRSNE SITE PRP GROUP
Doc Date: 04/09/2001 **# of Pages:** 25
File Break: 02.06
Doc Type: REPORT

02: REMOVAL RESPONSE

19238 **RESPONSES TO EPA COMMENTS ON THE DRAFT NTCRA 2 100% GROUNDWATER SYSTEM DESIGN REPORT**

Author: GARY R CAMERON BLASLAND BOUCK & LEE INC
Addressee: KAREN LUMINO US EPA REGION 1
Doc Type: LETTER
Doc Date: 05/30/2001 **# of Pages:** 4
File Break: 02.02

222209 **DEMONSTRATION OF COMPLIANCE REPORT #47 FOR NON-TIME-CRITICAL REMOVAL ACTION (NTCRA) 1 [WITH TRANSMITTAL]**

Author: HANDEX OF NEW ENGLAND INC
Addressee: SRSNE SITE PRP GROUP
Doc Type: REPORT
Doc Date: 07/06/2001 **# of Pages:** 25
File Break: 02.06

222210 **DEMONSTRATION OF COMPLIANCE REPORT #48 FOR NON-TIME-CRITICAL REMOVAL ACTION (NTCRA) 1 [WITH TRANSMITTAL]**

Author: HANDEX OF NEW ENGLAND INC
Addressee: SRSNE SITE PRP GROUP
Doc Type: REPORT
Doc Date: 10/08/2001 **# of Pages:** 26
File Break: 02.06

222211 **DEMONSTRATION OF COMPLIANCE REPORT #49 FOR NON-TIME-CRITICAL REMOVAL ACTION (NTCRA) 1 [WITH TRANSMITTAL DATED 1/8/01 IN ERROR]**

Author: HANDEX OF NEW ENGLAND INC
Addressee: SRSNE SITE PRP GROUP
Doc Type: REPORT
Doc Date: 01/08/2002 **# of Pages:** 26
File Break: 02.06

02: REMOVAL RESPONSE

225373 **INTERIM MONITORING AND SAMPLING REPORT NO. 7**

Author: GARY R CAMERON BLASLAND BOUCK & LEE INC
Addressee: KAREN M LUMINO US EPA REGION 1
Doc Type: REPORT
Doc Date: 01/09/2002 **# of Pages:** 35
File Break: 02.06

229273 **NON-TIME-CRITICAL REMOVAL ACTION (NTCRA) NO. 1 AND 2 DEMONSTRATION OF COMPLIANCE REPORT #50, JANUARY 1 THROUGH MARCH 29, 2002, FIRST QUARTER 2002 [WITH TRANSMITTAL DATED 04/18/2002]**

Author: HANDEX OF NEW ENGLAND INC
Addressee: SRS PRP GROUP
Doc Type: REPORT
Doc Date: 03/29/2002 **# of Pages:** 38
File Break: 02.06

229274 **NON-TIME-CRITICAL REMOVAL ACTION (NTCRA) NO. 1 AND 2 DEMONSTRATION OF COMPLIANCE REPORT #51, APRIL 1 THROUGH JUNE 30, 2002, SECOND QUARTER 2002 [WITH TRANSMITTAL DATED 06/10/2002]**

Author: HANDEX OF NEW ENGLAND INC
Addressee: SRS PRP GROUP
Doc Type: REPORT
Doc Date: 06/30/2002 **# of Pages:** 40
File Break: 02.06

229275 **NON-TIME-CRITICAL REMOVAL ACTION (NTCRA) NO. 1 AND 2 DEMONSTRATION OF COMPLIANCE REPORT #52, JULY 1 THROUGH SEPTEMBER 30, 2002, THIRD QUARTER 2002**

Author: HANDEX OF NEW ENGLAND INC
Addressee: SRS PRP GROUP
Doc Type: REPORT
Doc Date: 09/30/2002 **# of Pages:** 38
File Break: 02.06

02: REMOVAL RESPONSE

229276 **NON-TIME-CRITICAL REMOVAL ACTION (NTCRA) NO. 1 AND 2 DEMONSTRATION OF COMPLIANCE REPORT #53, OCTOBER 1 THROUGH DECEMBER 31, 2002, FOURTH QUARTER 2002**

Author: HANDEX OF NEW ENGLAND INC
Addressee: SRS PRP GROUP
Doc Date: 12/31/2002 **# of Pages:** 38
File Break: 02.06
Doc Type: REPORT

229277 **NON-TIME-CRITICAL REMOVAL ACTION (NTCRA) NO. 1 AND 2 DEMONSTRATION OF COMPLIANCE REPORT NO. 54, 1 JANUARY THROUGH 31 MARCH 2003, FIRST QUARTER 2003**

Author: WESTON SOLUTIONS INC
Addressee: SRS PRP GROUP
Doc Date: 03/31/2003 **# of Pages:** 41
File Break: 02.06
Doc Type: REPORT

229278 **NON-TIME-CRITICAL REMOVAL ACTION (NTCRA) NO. 1 AND 2 ANNUAL DEMONSTRATION OF COMPLIANCE REPORT NO. 55, 1 JANUARY THROUGH 31 DECEMBER 2003**

Author: WESTON SOLUTIONS INC
Addressee: SRS PRP GROUP
Doc Date: 12/31/2003 **# of Pages:** 89
File Break: 02.06
Doc Type: REPORT

229279 **INTERIM MONITORING AND SAMPLING REPORT NO. 11**

Author: MICHAEL J GEFELL BLASLAND BOUCK & LEE INC
Addressee: KAREN M LUMINO US EPA REGION 1
Doc Date: 01/06/2004 **# of Pages:** 57
File Break: 02.06
Doc Type: REPORT

02: REMOVAL RESPONSE

229280 **INTERIM MONITORING AND SAMPLING REPORT NO. 12**

Author: MICHAEL J GEFELL BLASLAND BOUCK & LEE INC
Addressee: KAREN M LUMINO US EPA REGION 1
Doc Date: 07/06/2004 **# of Pages:** 59
File Break: 02.06
Doc Type: REPORT

229289 **NON-TIME-CRITICAL REMOVAL ACTION (NTCRA) NO. 1 AND 2 ANNUAL DEMONSTRATION OF COMPLIANCE REPORT NO. 56, 1 JANUARY THROUGH 31 DECEMBER 2004**

Author: WESTON SOLUTIONS INC
Addressee: SRSNE SITE PRP GROUP
Doc Date: 12/31/2004 **# of Pages:** 1
File Break: 02.06
Doc Type: REPORT

229281 **INTERIM MONITORING AND SAMPLING REPORT NO. 13**

Author: MICHAEL J GEFELL BLASLAND BOUCK & LEE INC
Addressee: KAREN M LUMINO US EPA REGION 1
Doc Date: 01/06/2005 **# of Pages:** 59
File Break: 02.06
Doc Type: REPORT

229285 **PROPOSED WORK, CONTINUED OPERATION OF THE COMBINED NON-TIME-CRITICAL REMOVAL ACTION (NTCRA) 1 AND 2 CONTAINMENT SYSTEMS**

Author: ROBERT KIRSCH HALE AND DORR LLP
Addressee: AUDREY ZUCKER US EPA REGION 1
Doc Date: 02/14/2005 **# of Pages:** 1
File Break: 02.01
Doc Type: LETTER

02: REMOVAL RESPONSE

229284 **EXTENSION OF OPERATIONS OF NON-TIME-CRITICAL REMOVAL ACTION (NTCRA) CONTAINMENT SYSTEMS**

Author: MARY JANE ODONNELL US EPA REGION 1
Doc Date: 02/15/2005 **# of Pages:** 1
Addressee: ROBERT KIRSCH HALE AND DORR LLP
File Break: 02.01
Doc Type: LETTER

03: REMEDIAL INVESTIGATION (RI)

6414 **WORK IN SUPPORT OF EPA ENFORCEMENT CASE, CONTAMINATION OF CURTISS STREET WELL FIELD, SOUTHINGTON, CT, TDD F1-8077-01A, DRAFT**

Author: PAUL EXNER ECOLOGY & ENVIRONMENT INC
Doc Date: 10/31/1980 **# of Pages:** 148
Addressee: MERRILL S HOHMAN US EPA REGION 1
File Break: 03.04
Doc Type: REPORT

6413 **INFORMATION OBTAINED REGARDING GROUNDWATER CONTAMINATION SOUTHEAST OF PRODUCTION WELL 4, SOUTHINGTON, CT, TDD F1-8104-09**

Author: MARGRET HANLEY ECOLOGY & ENVIRONMENT INC
Doc Date: 07/27/1981 **# of Pages:** 4
Addressee: MICHAEL PARISE US EPA REGION 1
File Break: 03.01
Doc Type: LETTER

03: REMEDIAL INVESTIGATION (RI)

5526 **HYDROGEOLOGIC ASSESSMENT REPORT, FINAL**

Author: WEHRAN ENGINEERING CORP
Addressee: SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
Doc Date: 10/01/1982 **# of Pages:** 55
File Break: 03.04
Doc Type: REPORT

5514 **ENGINEERING REPORT FOR OFF-SITE GROUNDWATER INTERCEPTOR SYSTEM, ADDENDUM 1**

Author: ERM NEW ENGLAND INC
Addressee: YORK WASTEWATER CONSULTANTS INC
SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
Doc Date: 06/08/1984 **# of Pages:** 33
File Break: 03.04
Doc Type: REPORT

5527 **ENGINEERING REPORT FOR OFF-SITE GROUNDWATER INTERCEPTOR SYSTEM, ADDENDUM 1 TO 02/28/1984 SUBMITTAL**

Author: YORK WASTEWATER CONSULTANTS INC
Addressee: SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
Doc Date: 06/22/1984 **# of Pages:** 64
File Break: 03.04
Doc Type: REPORT

03: REMEDIAL INVESTIGATION (RI)

5120 **PRELIMINARY HEALTH ASSESSMENT**

Author: US PUBLIC HEALTH SERVICE/ATSDR
Addressee:
Doc Type: REPORT
Doc Date: 12/15/1988 **# of Pages:** 11
File Break: 03.09

5538 **LABORATORY REPORT OF 16 GROUNDWATER SAMPLES FROM OFF-SITE WELLS, TAKEN ON 05/17-18/1989**

Author: KEITH E WARNER YORK WASTEWATER CONSULTANTS INC
Addressee: JAMES R HULM SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
Doc Type: LETTER
Doc Date: 06/20/1989 **# of Pages:** 11
File Break: 03.02

5535 **BIOTOXICITY MONITORING TEST RESULTS, FOR MONITORING DONE 01/15-19/1990, OF PLANT EFFLUENT AND WATER FROM QUINNIPIAC RIVER**

Author: ENVIRONMENTAL SCIENCE CORP
Addressee: SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
Doc Type: REPORT
Doc Date: 01/01/1990 **# of Pages:** 20
File Break: 03.02

5528 **LABORATORY REPORT FOR WATER SAMPLES TAKEN 01/16/1990 FROM PLANT EFFLUENT AND RIVER EFFLUENT**

Author: ENVIRONMENTAL SCIENCE CORP
Addressee: PAUL LETENDRE SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
Doc Type: SAMPLING & ANALYSIS DATA
Doc Date: 01/16/1990 **# of Pages:** 10
File Break: 03.02

03: REMEDIAL INVESTIGATION (RI)

5530 **LABORATORY REPORT FOR WATER SAMPLES TAKEN 01/17/1990 FROM PLANT EFFLUENT AND RIVER EFFLUENT**

Author: ENVIRONMENTAL SCIENCE CORP
Addressee: PAUL LETENDRE SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
Doc Date: 01/17/1990 **# of Pages:** 10
File Break: 03.02
Doc Type: SAMPLING & ANALYSIS DATA

5537 **LABORATORY REPORT FOR MONITORING DONE 01/17/1990**

Author: ENVIRONMENTAL SCIENCE CORP
Addressee: MICHAEL SUSCA TRC COMPANIES INC
Doc Date: 01/17/1990 **# of Pages:** 15
File Break: 03.02
Doc Type: REPORT

5531 **LABORATORY REPORT FOR WATER SAMPLES TAKEN 01/18/1990 FROM PLANT EFFLUENT AND RIVER EFFLUENT**

Author: ENVIRONMENTAL SCIENCE CORP
Addressee: PAUL LETENDRE SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
Doc Date: 01/18/1990 **# of Pages:** 11
File Break: 03.02
Doc Type: SAMPLING & ANALYSIS DATA

5532 **LABORATORY REPORT FOR WATER SAMPLES TAKEN 01/19/1990 FROM PLANT EFFLUENT AND RIVER EFFLUENT**

Author: ENVIRONMENTAL SCIENCE CORP
Addressee: PAUL LETENDRE SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
Doc Date: 01/19/1990 **# of Pages:** 9
File Break: 03.02
Doc Type: SAMPLING & ANALYSIS DATA

03: REMEDIAL INVESTIGATION (RI)

5533 **TOXICITY REPORT FOR COMPARATIVE TOXICITY TESTING**

Author: CAROL E BOWER NEW ENGLAND BIOASSAY INC
Addressee: THOMAS MCGLOIN ENVIRONMENTAL SCIENCE CORP
Doc Date: 01/25/1990 **# of Pages:** 34
File Break: 03.02
Doc Type: LETTER

5002 **SAMPLING AND ANALYSIS PLAN FOR REMEDIAL INVESTIGATION / FEASIBILITY STUDY (RI/FS), FINAL**

Author: NUS/TETRA TECH INC
Addressee: US EPA REGION 1
Doc Date: 05/01/1990 **# of Pages:** 147
File Break: 03.02
Doc Type: WORK PLAN

5605 **TRANSMITTAL FOR ADDENDUM TO PRELIMINARY HEALTH ASSESSMENT BASED ON 05/1990 SAMPLING DATA**

Author: MARTHA DEE KENT US PUBLIC HEALTH SERVICE/ATSDR
Addressee: LOUISE A HOUSE US PUBLIC HEALTH SERVICE/ATSDR
Doc Date: 10/15/1990 **# of Pages:** 1
File Break: 03.01
Doc Type: LETTER

5606 **ADDENDUM TO PRELIMINARY HEALTH ASSESSMENT BASED ON 05/1990 SAMPLING DATA**

Author: US PUBLIC HEALTH SERVICE/ATSDR
Addressee:
Doc Date: 10/15/1990 **# of Pages:** 6
File Break: 03.09
Doc Type: REPORT

03: REMEDIAL INVESTIGATION (RI)

222216 **RESIDENTIAL WELL SAMPLING LISTING, WITH REDACTIONS**

Author: LIYANG CHU NUS/TETRA TECH INC
Addressee: MARGARET VELIE US EPA REGION 1
Doc Type: LETTER
Doc Date: 12/18/1990 **# of Pages:** 4
File Break: 03.02

5621 **SURFACE GEOPHYSICAL SURVEYS**

Author: HAGER-RICHTER GEOSCIENCE INC
Addressee: NUS/TETRA TECH INC
Doc Type: REPORT
Doc Date: 04/01/1991 **# of Pages:** 28
File Break: 03.04

5200 **RESPONSE TO REQUEST FOR INFORMATION REGARDING CONTAMINATION IN GROUNDWATER AND SURFACE WATER, INCLUDES TWO TABLES**

Author: BETSY SHAW US EPA REGION 1
Addressee: DARRELL KERN
Doc Type: LETTER
Doc Date: 08/19/1991 **# of Pages:** 4
File Break: 03.01

5728 **PROPOSED TECHNOLOGIES FOR TREATABILITY STUDIES**

Author: NUS/TETRA TECH INC
Addressee: US EPA REGION 1
Doc Type: REPORT
Doc Date: 10/01/1991 **# of Pages:** 47
File Break: 03.04

03: REMEDIAL INVESTIGATION (RI)

5525 **PHASE 2 TECHNICAL MEMORANDUM, FINAL**

Author: NUS/TETRA TECH INC
Addressee: US EPA REGION 1
Doc Date: 06/01/1992 **# of Pages:** 538
File Break: 03.04
Doc Type: REPORT

5587 **SEISMIC REFRACTION SURVEY**

Author: HAGER-RICHTER GEOSCIENCE INC
Addressee: NUS/TETRA TECH INC
Doc Date: 06/01/1992 **# of Pages:** 39
File Break: 03.04
Doc Type: REPORT

5178 **PUBLIC HEALTH ASSESSMENT**

Author: US DHHS/US PUBLIC HEALTH SERVICE
Addressee:
Doc Date: 07/21/1992 **# of Pages:** 75
File Break: 03.09
Doc Type: REPORT

5589 **WETLANDS EVALUATION STUDY, TECHNICAL MEMORANDUM, FINAL**

Author: NUS/TETRA TECH INC
Addressee: US EPA REGION 1
Doc Date: 12/01/1993 **# of Pages:** 48
File Break: 03.04
Doc Type: REPORT

03: REMEDIAL INVESTIGATION (RI)

5624 **SOIL, GROUNDWATER, ADDITIONAL STUDIES WORK PLAN, FINAL**

Author: ENSR CONSULTING & ENGINEERING
Addressee: SRS PRP GROUP
Doc Date: 03/01/1994 **# of Pages:** 464
File Break: 03.07
Doc Type: WORK PLAN

4877 **REMEDIAL INVESTIGATION (RI) REPORT, VOLUME 1 OF 4, TEXT, FINAL**

Author: NUS/TETRA TECH INC
Addressee: US EPA REGION 1
Doc Date: 05/01/1994 **# of Pages:** 462
File Break: 03.06
Doc Type: REPORT

4878 **REMEDIAL INVESTIGATION (RI) REPORT, VOLUME 2 OF 4, TABLES, FINAL**

Author: NUS/TETRA TECH INC
Addressee: US EPA REGION 1
Doc Date: 05/01/1994 **# of Pages:** 371
File Break: 03.06
Doc Type: REPORT

4879 **REMEDIAL INVESTIGATION (RI) REPORT, VOLUME 3 OF 4, FIGURES, APPENDIX A OF VOLUME 4 OF 4, FINAL**

Author: NUS/TETRA TECH INC
Addressee: US EPA REGION 1
Doc Date: 05/01/1994 **# of Pages:** 330
File Break: 03.06
Doc Type: REPORT

03: REMEDIAL INVESTIGATION (RI)

4880 **REMEDIAL INVESTIGATION (RI) REPORT, VOLUME 4 OF 4, APPENDICES B THROUGH H, FINAL**

Author: NUS/TETRA TECH INC
Addressee: US EPA REGION 1
Doc Date: 05/01/1994 **# of Pages:** 533
File Break: 03.06
Doc Type: REPORT

4875 **GROUNDWATER TECHNICAL MEMORANDUM, SOIL STUDY & ADDITIONAL STUDIES REPORT, VOLUME 1, DRAFT**

Author: ENSR CONSULTING & ENGINEERING
Addressee:
Doc Date: 06/01/1994 **# of Pages:** 426
File Break: 03.04
Doc Type: REPORT

238241 **GROUNDWATER TECHNICAL MEMORANDUM, SOILS STUDY, AND ADDITIONAL STUDIES REPORT, VOLUME 1 - GROUNDWATER TECHNICAL MEMORANDUM**

Author: ENSR CONSULTING & ENGINEERING
Addressee:
Doc Date: 06/01/1994 **# of Pages:** 1
File Break: 03.04
Doc Type: REPORT

238242 **GROUNDWATER TECHNICAL MEMORANDUM, SOILS STUDY, AND ADDITIONAL STUDIES REPORT, VOLUME 2 - SOILS STUDY REPORT**

Author: ENSR CONSULTING & ENGINEERING
Addressee:
Doc Date: 06/01/1994 **# of Pages:** 1
File Break: 03.04
Doc Type: REPORT

03: REMEDIAL INVESTIGATION (RI)

238243 **GROUNDWATER TECHNICAL MEMORANDUM, SOILS STUDY, AND ADDITIONAL STUDIES REPORT, VOLUME 3 - ADDITIONAL STUDIES REPORT**

Author: ENSR CONSULTING & ENGINEERING
Addressee:
Doc Type: REPORT
Doc Date: 06/01/1994 **# of Pages:** 1
File Break: 03.04

238244 **SAMPLE IDENTIFICATION NUMBERS**

Author: ENSR CONSULTING & ENGINEERING
Addressee:
Doc Type: MEMO
Doc Date: 11/21/1994 **# of Pages:** 1
File Break: 03.01

238245 **RESULTS OF COMPREHENSIVE GROUNDWATER SAMPLING**

Author: ENSR CONSULTING & ENGINEERING
Addressee:
Doc Type: LETTER
Doc Date: 06/19/1995 **# of Pages:** 1
File Break: 03.01

5648 **PRIVATE WELL MONITORING REPORT, ASSOCIATED WITH NON-TIME CRITICAL REMOVAL ACTION (NTCRA) 1**

Author: BLASLAND BOUCK & LEE INC
Addressee: SRS PRP GROUP
Doc Type: REPORT
Doc Date: 10/01/1995 **# of Pages:** 62
File Break: 03.02

03: REMEDIAL INVESTIGATION (RI)

5591 **REMEDIAL INVESTIGATION (RI) WORK PLAN**

Author: BLASLAND BOUCK & LEE INC
Addressee: SRS PRP GROUP
Doc Date: 11/01/1995 **# of Pages:** 197
File Break: 03.07
Doc Type: WORK PLAN

4952 **COMMENTS REGARDING REMEDIAL INVESTIGATION WORK PLAN, PREPARED BY BLASLAND, BOUCK & LEE INC, 11/1995.**

Author: MARK R LEWIS CT DEPT OF ENVIRONMENTAL PROTECTION
Addressee:
Doc Date: 01/23/1996 **# of Pages:** 9
File Break: 03.07
Doc Type: LETTER

4953 **ADDENDUM TO REMEDIAL INVESTIGATION (RI) WORK PLAN IN RESPONSE TO COMMENTS BY HALLIBURTON NUS, CT DEP AND US EPA**

Author: GARY R CAMERON BLASLAND BOUCK & LEE INC
Addressee: SHEILA M ECKMAN US EPA REGION 1
Doc Date: 02/13/1996 **# of Pages:** 10
File Break: 03.07
Doc Type: LETTER

4960 **EPA COMMENTS ON DRAFT REMEDIAL INVESTIGATION WORK PLAN & DRAFT PROJECT OPERATIONS PLAN, ATTACHMENT 1 TO ADDENDUM 2 OF REMEDIAL INVESTIGATION WORK PLAN.**

Author: SHEILA M ECKMAN US EPA REGION 1
Addressee: BRUCE R THOMPSON DE MAXIMIS INC
Doc Date: 04/04/1996 **# of Pages:** 9
File Break: 03.07
Doc Type: LETTER

03: REMEDIAL INVESTIGATION (RI)

4959 **ADDENDUM 2 TO REMEDIAL INVESTIGATION (RI) WORK PLAN PREPARED BY BLASLAND, BOUCK & LEE INC, 11/1995**

Author: GARY R CAMERON BLASLAND BOUCK & LEE INC
Addressee: SHEILA M ECKMAN US EPA REGION 1
Doc Date: 06/07/1996 **# of Pages:** 10
File Break: 03.07
Doc Type: WORK PLAN

4961 **ADDENDUM 3 TO REMEDIAL INVESTIGATION (RI) WORK PLAN SUBMITTED BY BLASLAND, BOUCK & LEE INC, 11/1995**

Author: GARY R CAMERON BLASLAND BOUCK & LEE INC
Addressee: SHEILA M ECKMAN US EPA REGION 1
Doc Date: 07/18/1996 **# of Pages:** 6
File Break: 03.07
Doc Type: LETTER

4967 **SAMPLING AND ANALYSIS PLAN, PART 1 OF 2, QUALITY ASSURANCE PROJECT PLAN (QAPP)**

Author: BLASLAND BOUCK & LEE INC
Addressee: SRS PRP GROUP
Doc Date: 08/01/1996 **# of Pages:** 247
File Break: 03.04
Doc Type: WORK PLAN

4968 **SAMPLING AND ANALYSIS PLAN, PART 2 OF 2, FIELD SAMPLING PLAN**

Author: BLASLAND BOUCK & LEE INC
Addressee: SRS PRP GROUP
Doc Date: 08/01/1996 **# of Pages:** 188
File Break: 03.04
Doc Type: WORK PLAN

03: REMEDIAL INVESTIGATION (RI)

4969 **SITE MANAGEMENT PLAN**

Author: BLASLAND BOUCK & LEE INC
Addressee: SRS PRP GROUP
Doc Date: 08/01/1996 **# of Pages:** 121
File Break: 03.04
Doc Type: WORK PLAN

238246 **APPROVAL OF REMEDIAL INVESTIGATION WORKPLAN AND DRAFT PROJECT OPERATIONS PLAN**

Author: MARY JANE ODONNELL US EPA REGION 1
Addressee: WILLIAM C MORRIS UNITED INDUSTRIAL SERVICES
Doc Date: 08/14/1996 **# of Pages:** 1
File Break: 03.01
Doc Type: LETTER

5594 **CANCER INCIDENCE IN SOUTHINGTON, CT 1968-1991 IN RELATION TO EMISSIONS**

Author: CT DEPT OF ENVIRONMENTAL PROTECTION
Addressee: US PUBLIC HEALTH SERVICE/ATSDR
Doc Date: 03/01/1997 **# of Pages:** 73
File Break: 03.09
Doc Type: REPORT

238247 **COMMENTS ON THE DRAFT REMEDIAL INVESTIGATION REPORT**

Author: SHEILA M ECKMAN US EPA REGION 1
Addressee: WILLIAM C MORRIS UNITED INDUSTRIAL SERVICES
Doc Date: 01/22/1998 **# of Pages:** 1
File Break: 03.06
Doc Type: LETTER

03: REMEDIAL INVESTIGATION (RI)

238248 **COMMENTS ON THE DRAFT REMEDIAL INVESTIGATION REPORT**

Author: KAREN M LUMINO US EPA REGION 1
Addressee: WILLIAM C MORRIS UNITED INDUSTRIAL SERVICES
Doc Date: 02/27/1998 **# of Pages:** 1
File Break: 03.06
Doc Type: LETTER

4932 **REMEDIAL INVESTIGATION (RI) REPORT, VOLUME 1 OF 2, TEXT & FIGURES**

Author: BLASLAND BOUCK & LEE INC
Addressee: SRS PRP GROUP
Doc Date: 06/01/1998 **# of Pages:** 248
File Break: 03.06
Doc Type: REPORT

4933 **REMEDIAL INVESTIGATION (RI) REPORT, VOLUME 2 OF 2, APPENDICES**

Author: BLASLAND BOUCK & LEE INC
Addressee: SRS PRP GROUP
Doc Date: 06/01/1998 **# of Pages:** 776
File Break: 03.06
Doc Type: REPORT

5647 **INTERIM MONITORING AND SAMPLING REPORT 3**

Author: GARY R CAMERON BLASLAND BOUCK & LEE INC
Addressee: BYRON MAH US EPA REGION 1
Doc Date: 01/05/2000 **# of Pages:** 28
File Break: 02.06
Doc Type: LETTER

03: REMEDIAL INVESTIGATION (RI)

6078 **LIST OF DATA VALIDATION REPORTS AVAILABLE FOR REVIEW THROUGH EPA NEW ENGLAND SUPERFUND RECORDS CENTER**

Author:
Addressee:
Doc Type: LIST

Doc Date: 05/03/2000 **# of Pages:** 3
File Break: 03.02

04: FEASIBILITY STUDY (FS)

238250 **FIRST DRAFT FEASIBILITY STUDY, VOLUMES 1, 2 & 3**

Author: BLASLAND BOUCK & LEE INC
Addressee: SRSNE SITE PRP GROUP
Doc Type: REPORT

Doc Date: 11/01/1998 **# of Pages:** 1
File Break: 04.06

238251 **F1RST DRAFT FEASIBILITY STUDY, APPENDICES**

Author: BLASLAND BOUCK & LEE INC
Addressee: SRSNE SITE PRP GROUP
Doc Type: REPORT

Doc Date: 11/01/1998 **# of Pages:** 1
File Break: 04.06

04: FEASIBILITY STUDY (FS)

5622 **PROPOSAL AND RATIONAL REGARDING GROUNDWATER BACKGROUND LOCATION, WITH ATTACHMENTS**

Author: GARY R CAMERON BLASLAND BOUCK & LEE INC
Doc Date: 07/27/1999 **# of Pages:** 38
Addressee: MARTIN M BESKIND CT DEPT OF ENVIRONMENTAL PROTECTION
File Break: 04.01
Doc Type: LETTER

6759 **REMEDY IMPLEMENTATION RISK EVALUATION**

Author: ENVIRON CORP
Doc Date: 11/01/1999 **# of Pages:** 431
Addressee: SRSNE SITE PRP GROUP
File Break: 04.06
Doc Type: REPORT

238252 **EPA ELIMINATES SOIL EXCAVATION FROM FEASIBILITY STUDY**

Author: BRUCE R THOMPSON DE MAXIMIS INC
Doc Date: 02/28/2000 **# of Pages:** 1
Addressee: BLASLAND BOUCK & LEE INC
File Break: 04.01
Doc Type: MEMO

238253 **TRANSMITTAL OF NOTES ON THE 2/1/00 MEETING SRSNE INC RI/FS OVERSIGHT RAC**

Author: LIYANG CHU TETRA TECH NUS INC
Doc Date: 03/06/2000 **# of Pages:** 1
Addressee: BYRON MAH US EPA REGION 1
File Break: 04.01
Doc Type: LETTER

04: FEASIBILITY STUDY (FS)

238254 **SECOND DRAFT FEASIBILITY STUDY VOLUMES 1, 2 & 3**

Author: BLASLAND BOUCK & LEE INC
Addressee: SRSNE SITE PRP GROUP
Doc Date: 06/01/2000 **# of Pages:** 1
File Break: 04.06
Doc Type: REPORT

238255 **SECOND DRAFT FEASIBILITY STUDY APPENDICES**

Author: BLASLAND BOUCK & LEE INC
Addressee: SRSNE SITE PRP GROUP
Doc Date: 06/01/2000 **# of Pages:** 1
File Break: 04.06
Doc Type: REPORT

238256 **EXPRESSION OF DISAPPOINTMENT IN EPA'S CHANGE IN APPROACH TO SITE CONDITIONS**

Author: ROBERT C KIRSCH WILMER CUTLER PICKERING HALE & DORR
Addressee: SRSNE SITE PRP GROUP
MARY JANE ODONNELL US EPA REGION 1
Doc Date: 01/26/2001 **# of Pages:** 1
File Break: 04.01
Doc Type: LETTER

04: FEASIBILITY STUDY (FS)

238257 **RESPONSE TO LETTER EXPRESSING DISAPPOINTMENT IN EPA'S CHANGE IN APPROACH TO SITE CONDITIONS**

Author: GRETCHEN MUENCH US EPA REGION 1
Addressee: ROBERT C KIRSCH WILMER CUTLER PICKERING HALE & DORR
Doc Type: LETTER
Doc Date: 02/26/2001 **# of Pages:** 1
File Break: 04.01

238258 **RESPONSE TO PRELIMINARY EPA/CTDEP COMMENTS ON THE JUNE 2000 DRAFT FEASIBILITY STUDY**

Author: SRSNE SITE PRP GROUP
Addressee:
Doc Type: MISC
Doc Date: 11/01/2001 **# of Pages:** 1
File Break: 04.06

238259 **DISTINGUISHING OUTEWASH, ABLATION TILL AND BASAL TILL WITHIN THE SRSNE SITE POTENTIAL OVERBURDEN NAPL ZONE**

Author: SRSNE SITE PRP GROUP
Addressee:
Doc Type: MISC
Doc Date: 08/21/2002 **# of Pages:** 1
File Break: 04.06

238260 **TABLE - DRAFT FEASIBILITY STUDY - REMEDIAL ACTION OBJECTIVES, GENERAL RESPONSE ACTIONS, TECHNOLOGY TYPES AND PROCESS OPTIONS**

Author: SRSNE SITE PRP GROUP
Addressee:
Doc Type: MISC
Doc Date: 07/11/2003 **# of Pages:** 1
File Break: 04.06

04: FEASIBILITY STUDY (FS)

238261 **TABLE - DRAFT FEASIBILITY STUDY - IDENTIFICATION AND SCREENING OF REMEDIAL TECHNOLOGIES AND PROCESS OPTIONS FOR SATURATED SOILS CONTAINING NAPL**

Author: SRSNE SITE PRP GROUP
Addressee:
Doc Type: MISC
Doc Date: 08/12/2003 **# of Pages:** 1
File Break: 04.06

238262 **TABLE - DRAFT FEASIBILITY STUDY - SUMMARY OF DETAILED EVALUATION CRITERIA**

Author: SRSNE SITE PRP GROUP
Addressee:
Doc Type: MISC
Doc Date: 08/20/2003 **# of Pages:** 1
File Break: 04.06

238263 **TABLE - INITIAL SCREENING OF ALLTERNATIVES - RISKS POSED, PRINCIPLE THREATS, REMEDIAL ACTION OBJECTIVES AND RELATED PROCESS OPTIONS**

Author: SRSNE SITE PRP GROUP
Addressee:
Doc Type: MISC
Doc Date: 08/20/2003 **# of Pages:** 1
File Break: 04.06

222219 **PRELIMINARY REUSE ASSESSMENT**

Author: US EPA REGION 1
Addressee:
Doc Type: REPORT
Doc Date: 09/01/2003 **# of Pages:** 35
File Break: 04.06

04: FEASIBILITY STUDY (FS)

229282 **NAPL DELINEATION PILOT STUDY SCOPE**

Author: MICHAEL J GEFELL BLASLAND BOUCK & LEE INC
Addressee: KAREN M LUMINO US EPA REGION 1
Doc Date: 10/24/2003 **# of Pages:** 23
File Break: 04.06
Doc Type: REPORT

238264 **TABLE - REVISED PRINCIPLE AND REMEDIAL ACTION OBJECTIVES**

Author: US EPA REGION 1
Addressee:
Doc Date: 11/13/2003 **# of Pages:** 1
File Break: 04.06
Doc Type: MISC

225370 **NAPL DELINEATION PILOT STUDY**

Author: MICHAEL J GEFELL BLASLAND BOUCK & LEE INC
Addressee: KAREN M LUMINO US EPA REGION 1
Doc Date: 12/12/2003 **# of Pages:** 1
File Break: 04.06
Doc Type: MEMO

238272 **THIRD DRAFT FEASIBILITY STUDY REPORT, VOLUME 1**

Author: BLASLAND BOUCK & LEE INC
Addressee:
Doc Date: 06/01/2004 **# of Pages:** 1
File Break: 04.06
Doc Type: REPORT

04: FEASIBILITY STUDY (FS)

238273 **THIRD DRAFT FEASIBILITY STUDY REPORT, APPENDICES**

Author: BLASLAND BOUCK & LEE INC
Addressee:
Doc Type: REPORT
Doc Date: 06/01/2004 **# of Pages:** 1
File Break: 04.06

238265 **COST EXPERIENCE UTILIZING IN SITU THERMAL PROCESS TO ADDRESS CHLORINATED SOLVENT ORGANIC COMPOUND (CVOC) CONTAMINATION**

Author: JIM CUMMINGS US EPA - OFFICE OF EMERGENCY & REMEDIAL RESPONSE
Addressee: KAREN M LUMINO US EPA REGION 1
Doc Type: MEMO
Doc Date: 10/05/2004 **# of Pages:** 1
File Break: 04.01

238266 **COMMENTS ON THE DRAFT FEASIBILITY STUDY**

Author: EVA L DAVIS US EPA
Addressee: KAREN M LUMINO US EPA REGION 1
Doc Type: MEMO
Doc Date: 10/07/2004 **# of Pages:** 1
File Break: 04.06

238267 **ELECTRICAL RESISTANCE HEATING TECHNOLOGY SCREENING REPORT, SOLVENTS RECOVERY SERVICE OF NEW ENGLAND SUPERFUND SITE**

Author: THERMAL REMEDIATION SERVICES
Addressee:
Doc Type: REPORT
Doc Date: 11/04/2004 **# of Pages:** 1
File Break: 04.06

04: FEASIBILITY STUDY (FS)

238268 **ASSESSMENT REPORT ON THE VIABILITY OF IN-SITU THERMAL TREATMENT, SOLVENTS RECOVERY SERVICE OF NEW ENGLAND SUPERFUND SITE**

Author: TETRA TECH NUS INC
Addressee:
Doc Type: REPORT
Doc Date: 11/22/2004 **# of Pages:** 1
File Break: 04.06

238289 **FOCUSED GROUNDWATER SAMPLING PROGRAM**

Author: MICHAEL J GEFELL BLASLAND BOUCK & LEE INC
Addressee: KAREN M LUMINO US EPA REGION 1
Doc Type: LETTER
Doc Date: 02/04/2005 **# of Pages:** 3
File Break: 04.02

238269 **SRSNE PRP GROUP EXPRESSES CONCERNS ABOUT THE PROCESS OF FINALIZING THE FEASIBILITY STUDY AND SELECTING A REMEMDY FOR THE SITE**

Author: CYNTHIA V BAILEY GEORGIA-PACIFIC CORP
Addressee: ROBERT C KIRSCH WILMER CUTLER PICKERING HALE & DORR
SRSNE SITE PRP GROUP
MARY JANE ODONNELL US EPA REGION 1
Doc Type: LETTER
Doc Date: 02/23/2005 **# of Pages:** 1
File Break: 04.06

04: FEASIBILITY STUDY (FS)

238270 **RESPONSE TO SRSNE PRP GROUP'S EXPRESSION OF CONCERNS ABOUT THE PROCESS OF FINALIZING THE FEASIBILITY STUDY AND SELECTING A REMEMDY FOR THE SITE**

Author: MARY JANE ODONNELL US EPA REGION 1
Addressee: CYNTHIA V BAILEY GEORGIA-PACIFIC CORP
ROBERT C KIRSCH WILMER CUTLER PICKERING HALE & DORR
SRSNE SITE PRP GROUP
Doc Date: 02/25/2005 **# of Pages:** 1
File Break: 04.06
Doc Type: LETTER

238271 **RESPONSE TO EPA'S 2/25/04 LETTER TO SRSNE PRP GROUP**

Author: CYNTHIA V BAILEY GEORGIA-PACIFIC CORP
Addressee: ROBERT C KIRSCH WILMER CUTLER PICKERING HALE & DORR
SRSNE SITE PRP GROUP
MARY JANE ODONNELL US EPA REGION 1
Doc Date: 03/07/2005 **# of Pages:** 1
File Break: 04.06
Doc Type: LETTER

222220 **DRAFT FEASIBILITY STUDY (FS) REPORT**

Author:
Addressee:
Doc Date: 05/01/2005 **# of Pages:** 1
File Break: 04.06
Doc Type: REPORT

04: FEASIBILITY STUDY (FS)

229296 **PROPOSED PLAN**

Author: US EPA REGION 1
Addressee:
Doc Type: FACT SHEET
Doc Date: 05/01/2005 **# of Pages:** 1
File Break: 04.09

222217 **GROUNDWATER USE AND VALUE DETERMINATION**

Author: CT DEPT OF ENVIRONMENTAL PROTECTION
Addressee:
Doc Type: REPORT
Doc Date: 05/12/2005 **# of Pages:** 19
File Break: 04.06

229305 **CT DEP REQUEST FOR CLARIFICATION OF EPA'S RECENT APPLICABLE OF RELEVANT AND APPROPRIATE REQUIREMENTS (ARAR) INTERPRETATION**

Author: CHRIS LACAS CT DEPT OF ENVIRONMENTAL PROTECTION
Addressee: KAREN M LUMINO US EPA REGION 1
Doc Type: MEMO
Doc Date: 05/24/2005 **# of Pages:** 1
File Break: 04.05

229306 **EPA'S POSITION REGARDING THE CONNECTICUT REMEDIATION STANDARD REGULATIONS (RSRS) AS APPLICABLE OF RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS)**

Author: GRETCHEN MUENCH US EPA REGION 1
Addressee: KAREN M LUMINO US EPA REGION 1
Doc Type: MEMO
Doc Date: 06/01/2005 **# of Pages:** 1
File Break: 04.05

04: FEASIBILITY STUDY (FS)

238237 **REQUEST FOR EXTENSION OF PUBLIC COMMENT PERIOD**

Author: ROBERT C KIRSCH WILMER CUTLER PICKERING HALE & DORR
Addressee: MARY JANE ODONNELL US EPA REGION 1
Doc Type: LETTER
Doc Date: 06/24/2005 **# of Pages:** 1
File Break: 04.09

238290 **RESULTS OF BACKGROUND GROUNDWATER INVESTIGATION FOR METALS**

Author: MICHAEL J GEFELL BLASLAND BOUCK & LEE INC
Addressee: KAREN M LUMINO US EPA REGION 1
Doc Type: LETTER
Doc Date: 08/16/2005 **# of Pages:** 7
File Break: 04.02

238293 **COMMENTS ON BACKGROUND SAMPLING INFORMATION**

Author: STEPHEN MANGION US EPA REGION 1
Addressee: KAREN M LUMINO US EPA REGION 1
Doc Type: MEMO
Doc Date: 09/12/2005 **# of Pages:** 2
File Break: 04.01

238292 **VAPOR INTRUSION ISSUES AT SRSNE SITE**

Author: SARAH LEVENSON US EPA REGION 1
Addressee:
Doc Type: MEMO
Doc Date: 09/30/2005 **# of Pages:** 1
File Break: 04.01

04: FEASIBILITY STUDY (FS)

238294 **COMMENTS ON BACKGROUND SAMPLING INFORMATION**

Author: MARTIN M BESKIND CT DEPT OF ENVIRONMENTAL PROTECTION
Addressee: KAREN M LUMINO US EPA REGION 1
Doc Date: 10/03/2005 **# of Pages:** 1
File Break: 04.01
Doc Type: MEMO

05: RECORD OF DECISION (ROD)

238231 **COMMENTS ON THE PROPOSED PLAN**

Author: SEVERINO V BOVINO SOUTHINGTON (CT) RESIDENT
Addressee: KAREN M LUMINO US EPA REGION 1
Doc Date: 07/01/2005 **# of Pages:** 1
File Break: 05.03
Doc Type: LETTER

238234 **COMMENTS ON THE PROPOSED PLAN**

Author: VICTOR ZAGER SOUTHINGTON (CT) RESIDENT
Addressee: KAREN M LUMINO US EPA REGION 1
Doc Date: 07/01/2005 **# of Pages:** 1
File Break: 05.03
Doc Type: LETTER

05: RECORD OF DECISION (ROD)

238236 **COMMENTS ON THE PROPOSED PLAN**

Author: MICHELLE ALLAIRE SOUTHINGTON (CT) RESIDENT
Addressee: KAREN M LUMINO US EPA REGION 1
Doc Date: 07/01/2005 **# of Pages:** 2
File Break: 05.03
Doc Type: LETTER

238233 **COMMENTS ON THE PROPOSED PLAN**

Author: IRENE AHERN NAJARIAN SOUTHINGTON (CT) RESIDENT
Addressee: KAREN M LUMINO US EPA REGION 1
Doc Date: 07/07/2005 **# of Pages:** 4
File Break: 05.03
Doc Type: LETTER

238235 **COMMENTS ON THE PROPOSED PLAN**

Author: KELLY BRAYFIELD SOUTHINGTON (CT) RESIDENT
Addressee: KAREN M LUMINO US EPA REGION 1
Doc Date: 07/11/2005 **# of Pages:** 1
File Break: 05.03
Doc Type: LETTER

238238 **COMMENTS ON THE PROPOSED PLAN, INCLUDES CD-ROM**

Author: BRUCE R THOMPSON DE MAXIMIS INC
Addressee: KAREN M LUMINO US EPA REGION 1
Doc Date: 07/25/2005 **# of Pages:** 10
File Break: 05.03
Doc Type: LETTER

05: RECORD OF DECISION (ROD)

238230 **STATE COMMENTS ON THE PROPOSED PLAN**

Author: ELSIE PATTON CT DEPT OF ENVIRONMENTAL PROTECTION
Addressee: MARY JANE ODONNELL US EPA REGION 1
Doc Date: 08/05/2005 **# of Pages:** 2
File Break: 05.03
Doc Type: LETTER

238232 **COMMENTS ON THE PROPOSED PLAN**

Author: MANI TUCCITTI SOUTHINGTON (CT) RESIDENT
Addressee: KAREN M LUMINO US EPA REGION 1
Doc Date: 08/08/2005 **# of Pages:** 1
File Break: 05.03
Doc Type: LETTER

238239 **COMMENTS ON THE PROPOSED PLAN**

Author: BRUCE R THOMPSON DE MAXIMIS INC
Addressee: KAREN M LUMINO US EPA REGION 1
Doc Date: 08/08/2005 **# of Pages:** 121
File Break: 05.03
Doc Type: LETTER

238285 **RECORD OF DECISION**

Author: US EPA REGION 1
Addressee:
Doc Date: 09/30/2005 **# of Pages:** 379
File Break: 05.04
Doc Type: REPORT
Doc Type: RECORD OF DECISION

10: ENFORCEMENT/NEGOTIATION

6746 **CONSENT DECREE, CIVIL ACTION H-79-704 (JAC), CT FUND FOR THE ENVIRONMENT INC, SOUTHINGTON CITIZENS' ACTION GROUP, EDWARD AVERY, JOAN BRADLEY**

Author: US EPA REGION 1
Addressee:
Doc Type: LITIGATION
Doc Date: 02/23/1983 **# of Pages:** 30
File Break: 10.08

4891 **REQUEST FOR INFORMATION, INCLUDES LIST OF RECIPIENTS [AVAILABLE ON MICROFILM AT EPA SUPERFUND RECORDS CENTER]**

Author: MERRILL S HOHMAN US EPA REGION 1
Addressee:
Doc Type: LETTER
Doc Date: 12/07/1992 **# of Pages:** 1
File Break: 10.05

222233 **DE MINIMIS SETTLEMENT OFFER**

Author: JACK LOONEY CT OFFICE OF THE ATTORNEY GENERAL
Addressee: GRETCHEN MUENCH US EPA REGION 1
LLOYD SELBST US EPA REGION 1
US EPA REGION 1
SRSNE DEMINIMIS PARTIES
Doc Type: LITIGATION
Doc Date: 04/19/1994 **# of Pages:** 159
File Break: 10.05

10: ENFORCEMENT/NEGOTIATION

4886 **CONSENT DECREE AT FILING, CA H-79-704 (JAC), CA H-90-598 (JAC)**

Author: US DEPT OF JUSTICE
Addressee: US EPA REGION 1
Doc Type: LITIGATION
Doc Date: 09/16/1994
# of Pages: 54
File Break: 10.08

6767 **ADMINISTRATIVE ORDER ON CONSENT FOR REMOVAL ACTION, US EPA REGION 1 CERCLA DOCKET I-94-1045, WITH APPENDICES A AND B**

Author: JOHN P DEVILLARS US EPA REGION 1
Addressee:
Doc Type: LITIGATION
Doc Date: 09/18/1994
# of Pages: 121
File Break: 10.07

6760 **ADMINISTRATIVE ORDER ON CONSENT FOR REMOVAL ACTION AND REMEDIAL INVESTIGATION / FEASIBILITY STUDY (RI/FS), US EPA REGION 1 CERCLA DOCKET I-97-1000**

Author: LINDA M MURPHY US EPA REGION 1
Addressee:
Doc Type: LITIGATION
Doc Date: 02/06/1997
# of Pages: 105
File Break: 10.07

11: POTENTIALLY RESPONSIBLE PARTY

4896 **MASTER NOTICE LETTER TO GENERATORS, NOTICE OF POTENTIAL LIABILITY AND REQUEST FOR PARTICIPATION IN CLEANUP ACTIVITIES**

Author: MERRILL S HOHMAN US EPA REGION 1
Doc Date: 06/11/1992 **# of Pages:** 6
Addressee:
File Break: 11.05
Doc Type: LETTER

6747 **MODEL INVITATION TO PERFORM OR FINANCE A REMEDIAL INVESTIGATION / FEASIBILITY STUDY (RI/FS) AND NON-TIME-CRITICAL REMOVAL ACTION (NTCRA), NOTICE OF DECISION NOT TO USE SPECIAL NOTICE PROCEDURES**

Author: LINDA M MURPHY US EPA REGION 1
Doc Date: 06/16/1995 **# of Pages:** 7
Addressee:
File Break: 11.05
Doc Type: LETTER

13: COMMUNITY RELATIONS

5066 **SOUTHINGTON CANCER CLUSTER HEALTH STUDY PRELIMINARY INVESTIGATION**

Author: CT DEPT OF HEALTH SERVICES
Doc Date: 01/01/0001 **# of Pages:** 1
Addressee:
File Break: 13.05
Doc Type: FACT SHEET

13: COMMUNITY RELATIONS

5111 **SOLVENTS RECOVERY BREAKS CLEANUP TIMETABLE**

Author: CHRISTIAN WIHTOL MERIDEN RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 01/01/0001 **# of Pages:** 2
File Break: 13.03

5186 **PRESS RELEASE CONCERNING CONSENT DECREE RESOLVING A LAW SUIT**

Author: US EPA REGION 1
Addressee:
Doc Type: PRESS RELEASE
Doc Date: 01/01/0001 **# of Pages:** 1
File Break: 13.03

5438 **RESIDENT WARNED ON WATER USE; CHEMICAL DEGREASER REGISTERS AS STATE TESTS PRIVATE WELLS**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 01/01/0001 **# of Pages:** 2
File Break: 13.03

6712 **CHANGES IN EPA'S SUPERFUND MAY REDUCE WORK FOR LAWYERS**

Author: LESLIE BROBERG PROVIDENCE (RI) BUSINESS NEWS
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 01/01/0001 **# of Pages:** 1
File Break: 13.03

13: COMMUNITY RELATIONS

5105 **DRINKING WATER TESTS FIND CANCER-CAUSING CHEMICALS, TEN OF TWO HUNDRED DRINKING WATER SUPPLIES CONTAIN ORGANIC CHEMICALS THAT COULD CAUSE CANCER AFTER PROLONGED EXPOSURE**

Author: HARTFORD COURANT
Doc Date: 03/07/1979 **# of Pages:** 1
Addressee:
File Break: 13.03
Doc Type: NEWS CLIPPING

5104 **DISCUSSION OF MEETING ON SOUTHINGTON (CT) PUBLIC WELL CONTAMINATION**

Author: MELVIN J SCHNEIDERMEYER CT DEPT OF ENVIRONMENTAL PROTECTION
Doc Date: 04/27/1979 **# of Pages:** 2
Addressee: STEPHEN ELLS US EPA REGION 1
File Break: 13.01
Doc Type: LETTER

5103 **CONCERN OVER SOUTHINGTON (CT) WATER SUPPLY**

Author: JOANNE FOSTER SOUTHINGTON CITIZENS ACTION GROUP [SRS]
Doc Date: 05/13/1979 **# of Pages:** 2
Addressee: STEPHEN ELLS US EPA REGION 1
File Break: 13.01
Doc Type: LETTER

5107 **CITIZEN ACTION GROUPS URGE A STRONG STAND BY EPA TO PREVENT CONTINUED CONTAMINATION IN SOUTHINGTON (CT)**

Author: WANDA A RICKERBY CONNECTICUT ENVIRONMENTAL CAUCUS
Doc Date: 08/16/1979 **# of Pages:** 2
Addressee: LESLIE CAROTHERS CT DEPT OF ENVIRONMENTAL PROTECTION
File Break: 13.01
Doc Type: LETTER

13: COMMUNITY RELATIONS

5187 **ANNOUNCEMENT THAT EPA HAS FILED A CIVIL COMPLAINT AGAINST SOLVENTS RECOVERY SERVICE INC & LORI ENGINEERING CO, UNDER RCRA**

Author: US EPA REGION 1
Addressee:
Doc Type: PRESS RELEASE
Doc Date: 12/17/1979 **# of Pages:** 1
File Break: 13.03

5115 **SOLVENTS RECOVERY ASKS PERMISSION TO DISCHARGE WASTE-WATER INTO RIVER**

Author: E JEAN NICHOLS SOUTHINGTON NEWS
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 10/22/1984 **# of Pages:** 1
File Break: 13.03

5113 **SOLVENTS' PLANS DRAW OPPOSITION**

Author:
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 10/26/1984 **# of Pages:** 2
File Break: 13.03

5109 **REQUEST FOR HELP FOR PEOPLE LIVING NEAR SITE**

Author: SIGMUND YORSKI
Addressee: US EPA REGION 1
Doc Type: LETTER
Doc Date: 11/19/1984 **# of Pages:** 2
File Break: 13.01

13: COMMUNITY RELATIONS

5188 **CONSTRUCTION TO BEGIN ON GROUNDWATER CLEANUP SYSTEM AT SOUTHINGTON HAZARDOUS WASTE SITE**

Author: US EPA REGION 1
Addressee:
Doc Type: PRESS RELEASE
Doc Date: 11/21/1984 **# of Pages:** 2
File Break: 13.03

5108 **EPA MONITORING PROGRESS AT SITE, MEETING SCHEDULED TO DISCUSS CLEANUP STEPS**

Author: PATRICK A PARENTEAU US EPA REGION 1
Addressee: SIGMUND YORSKI
Doc Type: LETTER
Doc Date: 11/27/1984 **# of Pages:** 1
File Break: 13.01

5189 **CONSTRUCTION OF WELLS COMPLETE AT SOUTHINGTON HAZARDOUS WASTE SITE**

Author: US EPA REGION 1
Addressee:
Doc Type: PRESS RELEASE
Doc Date: 05/21/1985 **# of Pages:** 2
File Break: 13.03

5190 **GROUNDWATER CLEANUP BEGINS AT SOUTHINGTON HAZARDOUS WASTE SITE**

Author: US EPA REGION 1
Addressee:
Doc Type: PRESS RELEASE
Doc Date: 12/20/1985 **# of Pages:** 2
File Break: 13.03

13: COMMUNITY RELATIONS

5100 **SUGGESTS SENDING CANCER INCIDENCE STUDY TO BOSTON UNIVERSITY SCHOOL OF PUBLIC HEALTH**

Author: JOHN R PODGURSKI US EPA REGION 1
Addressee: MARIE TUCCITTO SAFE [SRS] SOUTHINGTON ASSOCIATION FOR THE ENVIRONMENT
Doc Type: LETTER
Doc Date: 03/21/1989 **# of Pages:** 1
File Break: 13.01

5116 **RESPONSE TO REQUEST FOR INFORMATION, WITH SITE DESCRIPTION ATTACHED**

Author: MARGARET LESHEN US EPA REGION 1
Addressee: JAMES GRIFFIN
Doc Type: LETTER
Doc Date: 11/08/1989 **# of Pages:** 2
File Break: 13.01

5101 **HAND-DRAWN MAP SHOWING INCIDENCE OF CANCER IN SOUTHINGTON (CT) AREA, WITH HANDWRITTEN TRANSMITTAL**

Author: MARIE TUCCITTO SAFE [SRS] SOUTHINGTON ASSOCIATION FOR THE ENVIRONMENT
Addressee: US EPA REGION 1
Doc Type: LETTER
Doc Date: 04/03/1990 **# of Pages:** 2
File Break: 13.01

5203 **TOWN REACTS TO INQUIRY, RESIDENTS AWAITING MORE INFORMATION ABOUT CANCER CASES**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 06/01/1990 **# of Pages:** 1
File Break: 13.03

13: COMMUNITY RELATIONS

5216 **CANCER STUDY GETS HEAVY RESPONSE**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 06/01/1990 **# of Pages:** 1
File Break: 13.03

5202 **POSSIBLE ENVIRONMENT LINK TO BE STUDIED IN SOUTHINGTON CANCER CASES; HIGH CANCER DRAWS STATE ATTENTION**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 06/11/1990 **# of Pages:** 2
File Break: 13.03

5204 **TIMES GOES BY SO SLOWLY AND POISON CAN DO SO MUCH**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 06/13/1990 **# of Pages:** 1
File Break: 13.03

5205 **OFFICIALS SEEK ANSWERS TO CANCER CASES, EPIDEMIOLOGIST AND RESIDENTS MEET TO DISCUSS CANCER CLUSTER**

Author: SOUTHINGTON OBSERVER
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 06/14/1990 **# of Pages:** 2
File Break: 13.03

13: COMMUNITY RELATIONS

5206 **RESIDENTS FEAR WATER-CANCER LINK, RESIDENTS ASK ASSURANCE ON DRINKING WATER SAFETY, NEWS REPORT OF PUBLIC MEETING**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 06/15/1990
# of Pages: 1
File Break: 13.03

5207 **SOUTHINGTON GROUP WANTS FACTS ON ALLEGED HIGH CANCER RATE. RESIDENTS FEAR CHEMICAL CONTAMINATION OF WATER SUPPLY MAY HAVE CAUSED PROBLEM**

Author: WATERBURY REPUBLICAN AMERICAN
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 06/15/1990
# of Pages: 1
File Break: 13.03

5208 **TEST SET FOR WELLS IN SOUTHINGTON, STATE AND LOCAL OFFICIALS WILL RANDOMLY SELECT AND TEST RESIDENTIAL WELLS FOR POSSIBLE CONTAMINANTS**

Author: NEW BRITAIN HERALD
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 06/15/1990
# of Pages: 1
File Break: 13.03

5209 **SEARCHING FOR ANSWERS IN SOUTHINGTON, PROOF LINKING CANCER TO POLLUTION ELUSIVE, DELAYS IN CLEANUP FRUSTRATE NEIGHBORS, TWO ARTICLES**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 06/17/1990
# of Pages: 4
File Break: 13.03

13: COMMUNITY RELATIONS

5210 **STATE PROBES SOUTHINGTON CANCERS**

Author:
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 06/19/1990
File Break: 13.03
# of Pages: 1

5211 **FIVE WELLS TESTED IN CANCER INQUIRY, SAMPLES TAKEN FROM PRIVATE WELLS NEAR CHEMICAL RECYCLING COMPANY**

Author:
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 06/20/1990
File Break: 13.03
# of Pages: 1

5213 **STATE SAYS COMPANY DISCHARGED UNTREATED WASTE WATER INTO RIVER, SRS CHARGED WITH VIOLATING WATER DISCHARGE PERMIT**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 06/27/1990
File Break: 13.03
# of Pages: 1

5215 **CITIZEN'S GROUP TO FIGHT SOLVENTS, CITIZENS' ACTION GROUP, SOUTHINGTON OPPOSING SOLVENTS, WILL APPLY FOR A TECHNICAL ASSISTANCE GRANT**

Author: NEW BRITAIN HERALD
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 06/29/1990
File Break: 13.03
# of Pages: 1

13: COMMUNITY RELATIONS

5064 **PRESS CONFERENCE INFORMATION**

Author: US EPA REGION 1
Addressee:
Doc Type: FACT SHEET
Doc Date: 07/01/1990 **# of Pages:** 3
File Break: 13.05

5065 **EPA BEGINS REMEDIAL INVESTIGATION (RI), DESCRIPTION OF REMEDIAL INVESTIGATION (RI) / FIELD STUDIES, WITH BACKGROUND INFORMATION ON SITE, INCLUDES ANNOUNCEMENT OF PUBLIC MEETING**

Author: US EPA REGION 1
Addressee:
Doc Type: FACT SHEET
Doc Date: 07/01/1990 **# of Pages:** 4
File Break: 13.05

5191 **MEDIA ADVISORY CONCERNING A PRESS CONFERENCE TO BE HELD TO ANNOUNCE LAW SUIT AGAINST SOLVENTS RECOVERY SERVICE, DRAFT**

Author: US EPA REGION 1
Addressee:
Doc Type: PRESS RELEASE
Doc Date: 07/01/1990 **# of Pages:** 1
File Break: 13.03

5826 **INFORMATION ABOUT CANCER CLUSTERS**

Author: CT DEPT OF PUBLIC HEALTH
Addressee: BETSY SHAW US EPA REGION 1
Doc Type: FACT SHEET
Doc Date: 07/01/1990 **# of Pages:** 2
File Break: 13.05

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5117 **REQUEST FOR INFORMATION ABOUT SITE AND FOR COPIES OF DOCUMENTS**

Author: MARIE TUCCITTO SAFE [SRS] SOUTHINGTON ASSOCIATION FOR THE ENVIRONMENT
Addressee: US EPA REGION 1
Doc Type: LETTER
Doc Date: 07/10/1990 **# of Pages:** 1
File Break: 13.01

5217 **RESIDENTS ASK FOR COUNCIL'S SUPPORT IN OPPOSING SRS, CITIZENS SEEK HELP IN OPPOSING RENEWAL OF SRS OPERATING PERMIT**

Author: SOUTHINGTON OBSERVER
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/12/1990 **# of Pages:** 1
File Break: 13.03

5068 **EPA ANNOUNCES PUBLIC MEETING TO DESCRIBE FIELD TESTING**

Author: US EPA REGION 1
Addressee:
Doc Type: PRESS RELEASE
Doc Date: 07/13/1990 **# of Pages:** 2
File Break: 13.03

5192 **EPA ANNOUNCES PUBLIC MEETING TO DESCRIBE FIELD TESTING AT SOLVENTS RECOVERY SERVICE SUPERFUND SITE IN SOUTHINGTON (CT) STATUS OF RCRA PERMIT APPLICATION WILL ALSO BE DISCUSSED**

Author: US EPA REGION 1
Addressee:
Doc Type: PRESS RELEASE
Doc Date: 07/13/1990 **# of Pages:** 2
File Break: 13.03

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5218 **TOWN TO MAKE SOLVENTS SUIT DECISION AFTER JULY 26, BOARD OF WATER COMMISSIONERS WILL WAIT UNTIL AFTER A MEETING WITH EPA BEFORE DECIDING WHETHER TO TAKE LEGAL ACTION AGAINST SOLVENTS RECOVERY SERVICE OF NEW ENGLAND INC**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/13/1990
# of Pages: 1
File Break: 13.03

5067 **INVITATION TO PUBLIC MEETING ON REMEDIAL INVESTIGATION / FEASIBILITY STUDY (RI/FS) AND RCRA PERMIT RENEWAL ISSUES**

Author: MARGARET LESHEN US EPA REGION 1
Addressee:
CT DEPT OF ENVIRONMENTAL PROTECTION
CT OFFICE OF THE ATTORNEY GENERAL
US PUBLIC HEALTH SERVICE/ATSDR
Doc Type: MEMO
Doc Date: 07/16/1990
# of Pages: 1
File Break: 13.01

5219 **TOWN LOOKS FOR FEDERAL CLEANUP; CITIZENS' GROUP UNHAPPY WITH PLANS FOR CHEMICAL-RECYCLING PLANT**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/17/1990
# of Pages: 1
File Break: 13.03

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5220 **OFFICIALS WANT TO PRESSURE SOLVENTS ON WASTE CLEANUP, MEMBERS OF SOUTHINGTON OPPOSING SOLVENTS CLAIM THAT SRSNE IS NOT LIVING UP TO ITS END OF CONSENT DECREE SIGNED IN 1982**

Author: RECORD JOURNAL
Doc Date: 07/17/1990 **# of Pages:** 1
Addressee:
File Break: 13.03
Doc Type: NEWS CLIPPING

5221 **COUNCIL CONDUCTS WORKSHOP TO REVIEW SAFETY, CLEANUP AT SOLVENTS, CITIZENS' GROUP QUESTIONS TOWN'S ABILITY TO CONTROL EMERGENCIES AT SRSNE**

Author: NEW BRITAIN HERALD
Doc Date: 07/17/1990 **# of Pages:** 1
Addressee:
File Break: 13.03
Doc Type: NEWS CLIPPING

5222 **EPA RIPS WASTE SITE FAILURES; LEAKS CONTINUING; NEIGHBORS FURIOUS, SRSNE HAS NOT TAKEN ALL STEPS REQUIRED IN CONSENT DECREE SIGNED IN 1983**

Author: WATERBURY REPUBLICAN AMERICAN
Doc Date: 07/19/1990 **# of Pages:** 1
Addressee:
File Break: 13.03
Doc Type: NEWS CLIPPING

5225 **EPA TO EXPLAIN SRS ONGOING FIELD TESTING, EPA WILL HOLD MEETING TO DISCUSS SRS RCRA PERMIT RENEWAL AND 3 PHASE REMEDIAL INVESTIGATION (RI) INTO NATURE AND EXTENT OF CONTAMINATION**

Author: SOUTHINGTON OBSERVER
Doc Date: 07/19/1990 **# of Pages:** 1
Addressee:
File Break: 13.03
Doc Type: NEWS CLIPPING

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5226 **NEW PROBE OF SOLVENTS REQUESTED**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/19/1990 **# of Pages:** 1
File Break: 13.03

5227 **SAFE TO PREPARE FOR EPA'S VISIT, SAFE (SOUTHINGTON ASSOCIATION FOR THE ENVIRONMENT) WAS FORMERLY SOS (SOUTHINGTON OPPOSING SOLVENTS)**

Author: NEW BRITAIN HERALD
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/20/1990 **# of Pages:** 1
File Break: 13.03

5228 **OFFICIALS EYE AIR QUALITY AT SOLVENTS, CT DEP EXPECTS TO ORDER SRS TO CONTROL AIR POLLUTION FROM GROUNDWATER CLEANUP SYSTEM**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/21/1990 **# of Pages:** 1
File Break: 13.03

5193 **EPA ANNOUNCES FILING OF A SUIT**

Author: US EPA REGION 1
Addressee:
Doc Type: PRESS RELEASE
Doc Date: 07/24/1990 **# of Pages:** 3
File Break: 13.03

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5229 **COUNCIL HEARS RESIDENTS' CONCERNS ABOUT CHEMICAL OPERATION, FIRE PREPAREDNESS AND AIR POLLUTION WERE RESIDENTS MAIN CONCERNS**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/24/1990
# of Pages: 1
File Break: 13.03

5230 **EPA SUIT WOULD OUST SOLVENTS, EPA AND DOJ FILED SUIT TO FORCE CLOSURE OF SOLVENTS RECOVERY SERVICE OF NEW ENGLAND INC FACILITY, A SEPARATE ACTION ASKS $8 MILLION IN FINES AND PENALTIES FOR VIOLATION OF CONSENT DECREE**

Author: NEW BRITAIN HERALD
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/24/1990
# of Pages: 1
File Break: 13.03

5231 **EPA WANTS TO SEE SOUTHINGTON PLANT CLOSED, FINED $8 MILLION**

Author: ASSOCIATED PRESS
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/25/1990
# of Pages: 1
File Break: 13.03

5232 **EPA MOVES TO CLOSE SOUTHINGTON SITE, FEDERAL GOVERNMENT FILES LAWSUIT TO FORCE SOLVENTS RECOVERY SERVICE OF NEW ENGLAND TO CLOSE AND TO PAY AT LEAST $8.8 MILLION**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/25/1990
# of Pages: 2
File Break: 13.03

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5233 **FEDS SUE TO SHUT DOWN SOLVENTS WASTE SITE, FEDERAL GOVERNMENT MOVES TO SHUT DOWN AND FINE COMPANY FOR VIOLATING A 1983 AGREEMENT TO CLEAN SITE**

Author: RECORD JOURNAL
Doc Date: 07/25/1990 **# of Pages:** 1
Addressee:
File Break: 13.03
Doc Type: NEWS CLIPPING

5236 **OFFICIALS, RESIDENTS APPLAUD EPA SUITS, EPA FILED TWO LAWSUITS AGAINST SOLVENTS, SEEKING PLANT CLOSURE AND OVER $8 MILLION IN FINES**

Author: RECORD JOURNAL
Doc Date: 07/25/1990 **# of Pages:** 1
Addressee:
File Break: 13.03
Doc Type: NEWS CLIPPING

5240 **FEDS SUE SOUTHINGTON WASTE FIRM; US SUES TO SHUT SOLVENTS RECOVERY SERVICE**

Author:
Doc Date: 07/25/1990 **# of Pages:** 2
Addressee:
File Break: 13.03
Doc Type: NEWS CLIPPING

5241 **EPA MOVES TO CLOSE WASTE-TREATMENT SITE; GOVERNMENT SEEKING MILLIONS IN PENALTIES FROM SOUTHINGTON FIRM, EPA SAYS SOLVENTS RECOVERY SERVICE OF NEW ENGLAND INC IS ONE OF STATE'S LARGEST POLLUTERS**

Author: WATERBURY REPUBLICAN AMERICAN
Doc Date: 07/25/1990 **# of Pages:** 2
Addressee:
File Break: 13.03
Doc Type: NEWS CLIPPING

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5242 **RECYCLING FIRM FACES FEDERAL SUIT, SUITS RESULT FROM SOLVENTS RECOVERY SERVICE OF NEW ENGLAND INC'S FAILURE TO CORRECT NUMEROUS VIOLATIONS**

Author: BOSTON GLOBE (BOSTON MA)
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/25/1990
# of Pages: 1
File Break: 13.03

5243 **SOLVENTS FIRM FACING FEDERAL POLLUTION SUITS, FEDERAL OFFICIALS SEEK CLOSURE OF FACILITY AND MORE THAN $8 MILLION IN FINES**

Author:
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/25/1990
# of Pages: 1
File Break: 13.03

5247 **EPA DISCUSSES CLEANUP PLANS AT SHS TONIGHT, MEETING AT SOUTHINGTON HIGH SCHOOL**

Author: SOUTHINGTON OBSERVER
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/26/1990
# of Pages: 2
File Break: 13.03

5201 **LONG TASK IN STORE, SOUTHINGTON CLEANUP COULD TAKE THIRTY YEARS, NEWSPAPER REPORT ON PUBLIC MEETING HELD IN SOUTHINGTON (CT)**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/27/1990
# of Pages: 1
File Break: 13.03

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5248 **RESIDENTS CRITICAL OF EPA, SAY AGENCY MOVED TOO SLOW ON SOLVENTS, REPORT OF PUBLIC MEETING**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/27/1990 **# of Pages:** 1
File Break: 13.03

5250 **RESIDENTS DISGUSTED WITH EPA, DEMAND IMMEDIATE ACTION AGAINST SOLVENTS RECOVERY, REPORT OF PUBLIC MEETING**

Author: NEW BRITAIN HERALD
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/27/1990 **# of Pages:** 1
File Break: 13.03

5255 **EPA WARNS WASTE TAKES TIME TO CLEAR; RESIDENTS SAY THEY CAN'T WAIT**

Author: WATERBURY REPUBLICAN AMERICAN
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/27/1990 **# of Pages:** 3
File Break: 13.03

5267 **30-YEAR CLEANUP FEARED; SOUTHINGTON GETS BAD NEWS ON WASTE PLANT**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/27/1990 **# of Pages:** 1
File Break: 13.03

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5268 **EPA MEETING ON SOLVENTS LEAVES SOME QUESTIONS**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/27/1990 **# of Pages:** 1
File Break: 13.03

5270 **SOLVENTS: IT COULD TAKE DECADES TO CLEAN UP SITE**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/29/1990 **# of Pages:** 2
File Break: 13.03

5272 **NEWSMAKER: MERRILL HOHMAN, EPA'S POINT MAN FOR SOLVENTS CLEANUP**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/30/1990 **# of Pages:** 1
File Break: 13.03

5364 **SAFE MEMBERS EXPAND ROLE BEYOND ONE POLLUTER, GROUP CHANGED NAME TO REFLECT CHANGE OF IMAGE, APPLIED FOR TECHNICAL ASSISTANCE GRANT**

Author: SOUTHINGTON OBSERVER
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 08/02/1990 **# of Pages:** 2
File Break: 13.03

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5102 **CITIZEN ADVOCACY GROUP'S CONCERNS ABOUT INCIDENCE OF CANCER IN SOUTHINGTON (CT)**

Author: MARIE TUCCITTO SAFE [SRS] SOUTHINGTON ASSOCIATION FOR THE ENVIRONMENT
Addressee: BARRY JOHNSON US DHHS/US PUBLIC HEALTH SERVICE
Doc Type: LETTER
Doc Date: 08/07/1990 **# of Pages:** 2
File Break: 13.01

5118 **RESPONSE TO REQUEST FOR DOCUMENT COPIES AND INFORMATION**

Author: MARGARET LESHEN US EPA REGION 1
Addressee: MARIE TUCCITTO SAFE [SRS] SOUTHINGTON ASSOCIATION FOR THE ENVIRONMENT
Doc Type: LETTER
Doc Date: 08/08/1990 **# of Pages:** 1
File Break: 13.01

5365 **SAFE ASKS US SURGEON GENERAL TO SHUT DOWN SOLVENTS, CITIZENS' GROUP UNSATISFIED WITH EPA AND STATE RESPONSE**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 08/08/1990 **# of Pages:** 1
File Break: 13.03

5366 **AGENCY TO CONSIDER RESIDENTS' COMPLAINTS, ATSDR WILL WAIT FOR FURTHER INFORMATION BEFORE DECIDING WHETHER TO INVESTIGATE SRSNE**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 08/09/1990 **# of Pages:** 1
File Break: 13.03

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5367 **SAFE PUSHED TO CLOSE SRS, IMPATIENT WITH EPA DUE PROCESS IN CLOSING SRS, LOCAL GROUP HAS CONTACTED US SURGEON GENERAL**

Author: SOUTHINGTON OBSERVER
Addressee:
Doc Date: 08/09/1990 **# of Pages:** 1
File Break: 13.03
Doc Type: NEWS CLIPPING

5119 **DISCUSSION OF EPA ACTIONS AGAINST SOLVENTS RECOVERY SERVICES**

Author: JULIE BELAGA US EPA REGION 1
Addressee: PAMELA CARDONE SOS [SRS] SOUTHINGTON OPPOSING SOLVENTS
THOMAS CARDONE SOS [SRS] SOUTHINGTON OPPOSING SOLVENTS
DAN VENDETTI SOS [SRS] SOUTHINGTON OPPOSING SOLVENTS
ROBERTA VENDETTI SOS [SRS] SOUTHINGTON OPPOSING SOLVENTS
Doc Date: 08/13/1990 **# of Pages:** 2
File Break: 13.01
Doc Type: LETTER

5369 **TOWN APPEALS RULING BY EPA ON SLUDGE, TOWN WANTS EPA TO REVERSE DECISION THAT SLUDGE IS HAZARDOUS WASTE, NOT SEWAGE SLUDGE**

Author: HARTFORD COURANT
Addressee:
Doc Date: 08/14/1990 **# of Pages:** 1
File Break: 13.03
Doc Type: NEWS CLIPPING

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5214 **NEIGHBORHOOD EFFORT FOR INDUSTRIAL CLEANUP: CITIZENS ACTION COMMITTEE TO FORM**

Author: SOUTHINGTON OBSERVER
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 08/15/1990
# of Pages: 2
File Break: 13.03

5371 **SOLVENTS REQUESTS AN EXTENSION; REQUESTS MORE TIME TO PREPARE RESPONSES TO LAWSUITS FILED BY US ATTORNEY**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 08/16/1990
# of Pages: 1
File Break: 13.03

5373 **EPA MAKING MOTIONS TO DISMISS PETITION, REJECTION OF PETITION TO RECLASSIFY SLUDGE PILE AS NON-HAZARDOUS WASTE IS IMMINENT**

Author: THOMSATON EXPRESS
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 08/16/1990
# of Pages: 1
File Break: 13.03

5374 **PROOF AND DUE PROCESS SLOW ACTION AGAINST SRS; EPA AND STATE NEED SUBSTANTIATED PROOF BEFORE THEY CAN ACT**

Author: SOUTHINGTON OBSERVER
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 08/16/1990
# of Pages: 2
File Break: 13.03

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5375 **TOWN WANTS EPA TO RECONSIDER RULING; APPEAL OF RULING ON SEWAGE SLUDGE**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 08/17/1990 **# of Pages:** 1
File Break: 13.03

5377 **30-DAY EXTENSION SOUGHT IN WASTE CASE; SRS REQUESTS EXTENSION TO SUBMIT RESPONSE TO TWO FEDERAL LAWSUITS**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 08/17/1990 **# of Pages:** 1
File Break: 13.03

5378 **EXTENSION GRANTED FOR RESPONSE TO SUITS**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 08/21/1990 **# of Pages:** 1
File Break: 13.03

5379 **RESIDENTS IN AREA NEAR SOLVENTS TO GET PUBLIC WATER SURVEY; 129 HOMES WILL BE SURVEYED BY SOUTHINGTON WATER DEPARTMENT TO SEE IF THEY WANT PUBLIC WATER**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 08/21/1990 **# of Pages:** 1
File Break: 13.03

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5194 **US EPA ANNOUNCES TECHNICAL ASSISTANCE GRANT APPLICATION TO BE FILED**

Author: US EPA REGION 1
Doc Date: 08/23/1990 **# of Pages:** 2
Addressee:
File Break: 13.03
Doc Type: PRESS RELEASE

5381 **SOLVENTS PROBE SOUGHT; PETITION DEMANDING AN INVESTIGATION AND POSSIBLE LEGAL ACTION AGAINST SRSNE WAS FILED WITH CT DEP**

Author: RECORD JOURNAL
Doc Date: 08/23/1990 **# of Pages:** 1
Addressee:
File Break: 13.03
Doc Type: NEWS CLIPPING

5412 **SAFE APPLIES FOR FEDERAL GRANT; SOUTHINGTON ASSOCIATION FOR THE ENVIRONMENT INTENDS TO APPLY FOR A TECHNICAL ASSISTANCE GRANT FROM EPA**

Author: NEW BRITAIN HERALD
Doc Date: 08/27/1990 **# of Pages:** 1
Addressee:
File Break: 13.03
Doc Type: NEWS CLIPPING

5416 **EPA FILES SUIT UNDER SUPERFUND AT OPERATING FACILITY**

Author:
Doc Date: 08/29/1990 **# of Pages:** 1
Addressee:
File Break: 13.03
Doc Type: NEWS CLIPPING

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5417 **SOLVENTS' NEIGHBORS FAULT INTER-AGENCY COOPERATION; RESIDENTS COMPLAIN OF LACK OF COMMUNICATION BETWEEN AGENCIES**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 08/29/1990
# of Pages: 1
File Break: 13.03

5419 **ACTIVISTS SEEK FEDERAL GRANT TO AID FIGHT AGAINST SOLVENTS; CITIZENS' GROUP WANTS GRANT TO HIRE CONSULTANTS TO EVALUATE CLEANUP**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 08/31/1990
# of Pages: 1
File Break: 13.03

5421 **EPA ANNOUNCES GRANT TO BE FILED FOR SOLVENTS RECOVERY SERVICE OF NEW ENGLAND SUPERFUND SITE; SOUTHINGTON ASSOCIATION FOR THE ENVIRONMENT FILED FOR TECHNICAL ASSISTANCE GRANT**

Author:
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 09/04/1990
# of Pages: 1
File Break: 13.03

5423 **PRIVATE WELL TESTS BEGIN IN OCTOBER; EPA HAS HIRED NUS TO TEST WELLS WITHIN 2 MILES OF SOLVENTS RECOVERY SERVICE OF NEW ENGLAND SUPERFUND SITE**

Author: SOUTHINGTON OBSERVER
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 09/27/1990
# of Pages: 1
File Break: 13.03

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5425 **ENVIRONMENTAL CLEANUP BEGINS WITH SOLVENTS RECOVERY; EDITORIAL, ELECTION ISSUES '90**

Author: SOUTHINGTON OBSERVER
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 09/27/1990 **# of Pages:** 2
File Break: 13.03

5427 **PRIVATE WELL TESTING TO BEGIN ON MONDAY**

Author: SOUTHINGTON OBSERVER
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 10/11/1990 **# of Pages:** 1
File Break: 13.03

5428 **ATTORNEY HIRED TO CHALLENGE RULING; SELECTMEN HIRED ENVIRONMENTAL ATTORNEY TO DISPUTE CLASSIFICATION OF SEWAGE PLANT AS HAZARDOUS WASTE SITE**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 10/17/1990 **# of Pages:** 1
File Break: 13.03

5430 **SAFE SEEKS GRANT FOR SUPERFUND STUDY**

Author: SOUTHINGTON OBSERVER
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 10/18/1990 **# of Pages:** 1
File Break: 13.03

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5432 **STATE TO BEGIN CANCER SURVEY; EPA REVIEWS STUDY OF SOLVENTS; STATE WILL SEND OUT HEALTH QUESTIONNAIRES TO CHART CANCER RATES**

Author: NEW BRITAIN HERALD
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 11/27/1990 **# of Pages:** 1
File Break: 13.03

5433 **PANEL PLANNING TO TOUR SOLVENTS RECOVERY PLANT; CONSERVATION COMMISSION WILL TOUR FACILITY BEFORE MAKING RECOMMENDATIONS ON AIR EMISSIONS PERMIT SUBMISSION BY SRSNE**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 12/19/1990 **# of Pages:** 1
File Break: 13.03

5436 **DIRTY WAR OVER SOLVENTS RECOVERY STARTS NEW YEAR; SOUTHINGTON HAZARDOUS WASTE FIRM FACING MOUNTING LEGAL CHALLENGES**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 12/30/1990 **# of Pages:** 2
File Break: 13.03

5442 **SOLVENTS' LEGAL TANGLE, EDITORIAL**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 01/06/1991 **# of Pages:** 1
File Break: 13.03

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5472 **APPLICATION FOR FINANCIAL ASSISTANCE, WITH ATTACHMENTS**

Author: THOMAS WILLAMETZ SAFE [SRS] SOUTHINGTON ASSOCIATION FOR THE ENVIRONMENT
Addressee: US EPA REGION 1
Doc Type: FORM
Doc Date: 01/08/1991 **# of Pages:** 37
File Break: 13.07

5441 **EPA LEARNS TOWN STILL WORRIED OVER SOLVENTS; REPORT OF PUBLIC MEETING**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 01/09/1991 **# of Pages:** 1
File Break: 13.03

5443 **PERMIT EXPIRES TODAY FOR SOLVENTS RECOVERY; PLANT WILL CONTINUE TO OPERATE UNTIL PERMITS ARE EITHER APPROVED OR DENIED**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 01/21/1991 **# of Pages:** 1
File Break: 13.03

5444 **PROTESTERS WANT SOLVENTS CLOSED**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 01/22/1991 **# of Pages:** 1
File Break: 13.03

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5446 **BLUMENTHAL ASKS TEMPORARY HALT TO SOLVENTS RECOVERY OPERATIONS; STATE ATTORNEY GENERAL REQUESTS TEMPORARY INJUNCTION AGAINST SRSNE**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 01/23/1991
# of Pages: 1
File Break: 13.03

5769 **ATTORNEY GENERAL MOVES TO CLOSE LAZY LANE FIRM**

Author: SOUTHINGTON OBSERVER
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 01/24/1991
# of Pages: 1
File Break: 13.03

5770 **SOLVENTS UNVEILS REVISED STORAGE WAREHOUSE PLANS**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 01/25/1991
# of Pages: 1
File Break: 13.03

5691 **STATE GOES TO COURT MONDAY AGAINST LAZY LANE FIRM; INJUNCTION AGAINST SRSNE AS A RESULT OF ALLEGED PERMIT VIOLATIONS**

Author: SOUTHINGTON OBSERVER
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 02/21/1991
# of Pages: 2
File Break: 13.03

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5692 **STATE, SOLVENTS OFFICIALS AGREE TO TEMPORARY CLOSURE, TWO ARTICLES**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 02/28/1991 **# of Pages:** 2
File Break: 13.03

5693 **WASTE COMPANY AGREES TO SHUT DOWN IN MONTH; SRSNE TO SHUT DOWN MARCH 29**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 02/28/1991 **# of Pages:** 1
File Break: 13.03

5694 **COMPANY CLOSING SOON OWES TOWN $91,000; SRSNE SHARE OF LEGAL AND ENVIRONMENTAL STUDY COSTS**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 03/13/1991 **# of Pages:** 1
File Break: 13.03

5695 **CLEANUP OFFICIALS WORRIED ABOUT SOLVENTS' SOLVENCY; SRSNE IS BEHIND IN PAYMENTS FOR ENVIRONMENTAL STUDIES**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 03/13/1991 **# of Pages:** 1
File Break: 13.03

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5696 **SOLVENTS MEETS STATE DEADLINE FOR CLOSURE**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 03/29/1991 **# of Pages:** 1
File Break: 13.03

5182 **COMMUNITY RELATIONS PLAN, FINAL DRAFT**

Author: NUS/TETRA TECH INC
Addressee: US EPA REGION 1
Doc Type: WORK PLAN
Doc Date: 04/01/1991 **# of Pages:** 31
File Break: 13.02

5697 **'DEATH PENALTY' FORCES SOLVENTS TO CLOSE UP SHOP; LACK OF LIABILITY INSURANCE REQUIRED BY COURT ORDER**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 05/31/1991 **# of Pages:** 1
File Break: 13.03

5089 **PHASE 1 INVESTIGATION REPORT AND PUBLIC MEETING**

Author: US EPA REGION 1
Addressee:
Doc Type: FACT SHEET
Doc Date: 07/01/1991 **# of Pages:** 11
File Break: 13.05

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5698 **LOW LEVELS OF TWENTY-FIVE CHEMICALS AND HEAVY METALS FOUND IN SAMPLES, PARTIAL LIST SHOWN**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING

Doc Date: 07/08/1991 **# of Pages:** 1
File Break: 13.03

5699 **EPA STUDY LISTS CONTAMINANTS FOUND NEAR SOLVENTS PLANT SITE**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING

Doc Date: 07/08/1991 **# of Pages:** 1
File Break: 13.03

5471 **APPROVAL OF APPLICATION FOR FINANCIAL ASSISTANCE AND AWARD OF TECHNICAL ASSISTANCE GRANT**

Author: JULIE BELAGA US EPA REGION 1
Addressee: PAUL G KEOUGH US EPA REGION 1
THOMAS WILLAMETZ SAFE [SRS] SOUTHINGTON ASSOCIATION FOR THE ENVIRONMENT
Doc Type: LETTER

Doc Date: 07/11/1991 **# of Pages:** 7
File Break: 13.07

13: COMMUNITY RELATIONS

5700 **SAFE WINS $50G GRANT FOR WORK AT SOLVENTS; TECHNICAL ASSISTANCE GRANT AWARDED TO SOUTHINGTON ASSOCIATION FOR THE ENVIRONMENT**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/12/1991
File Break: 13.03
# of Pages: 1

5084 **AGENDA FOR PUBLIC MEETING, 07/18/1991**

Author:
Addressee:
Doc Type: LIST
Doc Date: 07/18/1991
File Break: 13.04
# of Pages: 1

5701 **SAFE FOR A YEAR AND BEYOND**

Author: SOUTHINGTON OBSERVER
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/18/1991
File Break: 13.03
# of Pages: 2

5702 **CARCINOGENS FOUND NEAR SOLVENTS RECOVERY, EPA SAYS**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/18/1991
File Break: 13.03
# of Pages: 1

13: COMMUNITY RELATIONS

5703 **FINDINGS ON PLANT CHEMICALS ALARM RESIDENTS**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/19/1991 **# of Pages:** 1
File Break: 13.03

5704 **SOLVENTS CLEANUP DISSATISFIES SOME; RESIDENTS AT PUBLIC MEETING UNSATISFIED WITH MONITORING PERFORMANCE**

Author: NEW BRITAIN HERALD
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/19/1991 **# of Pages:** 1
File Break: 13.03

5705 **FINDINGS ON PLANT CHEMICALS ALARM SOUTHINGTON RESIDENTS; RESIDENTS AT PUBLIC MEETING AIR CONCERNS**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/19/1991 **# of Pages:** 1
File Break: 13.03

5706 **OUT-OF-COURT AGREEMENT SOUGHT WITH SOLVENTS; EPA SEEKS SETTLEMENT**

Author: NEW BRITAIN HERALD
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 07/24/1991 **# of Pages:** 1
File Break: 13.03

13: COMMUNITY RELATIONS

5707 **CARCINOGEN, PCBS FOUND IN DUMP; SOUTHINGTON LANDFILL**

Author: NEW BRITAIN HERALD
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 08/01/1991
File Break: 13.03
# of Pages: 1

5708 **FEDERAL OFFICIALS, RESIDENTS TOUR SOLVENTS SITE; TWO RESIDENTS AND ATSDR REPRESENTATIVE TOUR SITE**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 09/07/1991
File Break: 13.03
# of Pages: 1

5709 **DEP SURPRISED BY METHANE FIND AT MEADOWS; DEP INVESTIGATES POSSIBLE ILLEGAL DUMPING BY SRS**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 09/13/1991
File Break: 13.03
# of Pages: 1

5710 **TOWN SEEKING SOLVENTS' ASSETS TO PAY DEBT; SRS OWES $115,000 FOR LANDFILL STUDY**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 09/14/1991
File Break: 13.03
# of Pages: 1

13: COMMUNITY RELATIONS

5711 **SOIL TESTS INCONCLUSIVE; TESTS DONE AT MEADOWS CONDOMINIUM**

Author:
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 09/18/1991 **# of Pages:** 1
File Break: 13.03

5713 **EPA PUTS LIEN ON SOLVENTS SITE**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 09/27/1991 **# of Pages:** 1
File Break: 13.03

5714 **HOMEOWNERS WANT BREAK FROM TAXING, TOXIC DUMP**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 09/28/1991 **# of Pages:** 1
File Break: 13.03

5715 **SOIL TESTS AT CONDOS REVEAL NO HAZARDS**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 10/25/1991 **# of Pages:** 1
File Break: 13.03

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5716 **SOLVENTS CLEANUP DISCUSSED; CT DEP, STATE HEALTH OFFICIALS MEET WITH SAFE**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 10/29/1991 **# of Pages:** 2
File Break: 13.03

5717 **SOLVENTS EXPOSED SOME TO TOXINS, ANALYSIS SO FAR DOESN'T INDICATE THREAT TO HEALTH**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 11/02/1991 **# of Pages:** 1
File Break: 13.03

5081 **PUBLIC MEETING SUMMARY, 07/18/1991, WITH TRANSMITTAL**

Author: LIYANG CHU NUS/TETRA TECH INC
Addressee: BETSY SHAW US EPA REGION 1
Doc Type: LETTER
Doc Date: 11/05/1991 **# of Pages:** 11
File Break: 13.04

5718 **PUBLIC INTEREST KEY TO SOLVENTS SECRETS**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 11/17/1991 **# of Pages:** 1
File Break: 13.03

13: COMMUNITY RELATIONS

5719 **STOP AND SHOP PLAN CRITICIZED, SPREAD OF SOLVENTS' TOXINS FEARED; OPPONENTS FEAR EXCAVATION WILL CAUSE SPREAD**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 11/21/1991 **# of Pages:** 1
File Break: 13.03

5720 **TOXICITY TEST EYED FOR STORE SITE; DEVELOPERS MAY PERFORM SOIL AND GROUNDWATER TESTS**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 11/23/1991 **# of Pages:** 1
File Break: 13.03

5721 **FORUM TO DISCUSS SOLVENTS REPORT; MEETING TO DISCUSS DRAFT HEALTH ASSESSMENT**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 11/29/1991 **# of Pages:** 1
File Break: 13.03

5722 **RESIDENTS, UNLIKE FEDS, NOT IMPRESSED BY SOLVENTS STUDY; RESIDENTS SAY REPORT DOES NOT ANSWER QUESTIONS**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 12/03/1991 **# of Pages:** 1
File Break: 13.03

13: COMMUNITY RELATIONS

5723 **MARKET SITE FREE OF CONTAMINATION, DEVELOPER SAYS; PRELIMINARY REPORT SHOWS NO SOIL OR GROUNDWATER CONTAMINATION**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 12/04/1991 **# of Pages:** 1
File Break: 13.03

5510 **EPA BEGINS FINAL PHASE OF REMEDIAL INVESTIGATION / FEASIBILITY STUDY (RI/FS)**

Author: US EPA REGION 1
Addressee:
Doc Type: FACT SHEET
Doc Date: 05/01/1992 **# of Pages:** 8
File Break: 13.05

5511 **EPA TO REMOVE CONTAMINATED SOIL FROM SOLVENTS RECOVERY SERVICES OF NEW ENGLAND SUPERFUND HAZARDOUS WASTE SITE**

Author: US EPA REGION 1
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 09/11/1992 **# of Pages:** 2
File Break: 13.03

5091 **EPA PROPOSES ACTION TO MINIMIZE MIGRATION OF CONTAMINATED GROUNDWATER, REDUCE SOIL CONTAMINATION**

Author: US EPA REGION 1
Addressee:
Doc Type: FACT SHEET
Doc Date: 12/01/1992 **# of Pages:** 12
File Break: 13.05

13: COMMUNITY RELATIONS

4910 **TRANSCRIPT OF PUBLIC HEARING**

Author: US EPA REGION 1
Addressee:
Doc Type: PUBLIC MEETING RECORD
Doc Date: 01/20/1993 **# of Pages:** 12
File Break: 13.04

4908 **TRANSMITTAL FOR FINAL PUBLIC HEARING**

Author: NUS/TETRA TECH INC
Addressee: MICHAEL NALIPINSKI US EPA REGION 1
Doc Type: LETTER
Doc Date: 03/22/1993 **# of Pages:** 1
File Break: 13.01

6713 **MILLIONS TARGETED FOR CLEANUP, SOUTHINGTON 1ST; NEW TOXINS FOUND**

Author:
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 04/07/1993 **# of Pages:** 1
File Break: 13.03

6714 **EPA TO PUSH AHEAD WITH SOLVENTS' CLEANUP, FIRST PART OF PLAN WOULD STEM SPREAD OF CONTAMINATION**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 04/07/1993 **# of Pages:** 1
File Break: 13.03

13: COMMUNITY RELATIONS

6715 **SYSTEM TO TREAT TAINTED GROUNDWATER; EPA WILL INSTALL SYSTEM TO CAPTURE AND TREAT GROUNDWATER**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 04/07/1993 **# of Pages:** 1
File Break: 13.03

6716 **EPA TO START CLEAN UP OF SOLVENTS SUPERFUND SITE**

Author: NEW BRITAIN HERALD
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 04/07/1993 **# of Pages:** 1
File Break: 13.03

6717 **TOXIC DUMP TARGETED**

Author: MANCHESTER JOURNAL INQUIRER
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 04/08/1993 **# of Pages:** 1
File Break: 13.03

4909 **CONTAMINATION SPREAD FARTHER THAN THOUGHT**

Author: NEW BRITAIN HERALD
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 04/16/1993 **# of Pages:** 1
File Break: 13.03

13: COMMUNITY RELATIONS

6718 **TOXINS' SPREAD WILL SPEED EFFORT AT SOLVENTS' SITE**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 04/17/1993 **# of Pages:** 1
File Break: 13.03

6719 **TESTS SHOW POLLUTION GOES BEYOND RIVER; RESIDENTS SAY RESULTS CAST DOUBT ON TREATMENT SYSTEM AT SOLVENTS SITE**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 04/17/1993 **# of Pages:** 1
File Break: 13.03

6720 **EPA OFFICIAL TO DISCUSS CLEANUP; PUBLIC MEETING AT SOUTHINGTON PUBLIC LIBRARY**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 04/28/1993 **# of Pages:** 1
File Break: 13.03

6721 **EPA OFFICIALS TO ANSWER SOLVENTS QUERIES; PUBLIC MEETING AT SOUTHINGTON PUBLIC LIBRARY**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 04/29/1993 **# of Pages:** 1
File Break: 13.03

13: COMMUNITY RELATIONS

6722 **EPA SPEEDS CLEANUP AS TOXINS SPREAD**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 04/30/1993 **# of Pages:** 1
File Break: 13.03

6723 **RESIDENTS URGE CAUTION ON CHEMICAL CLEANUP**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 04/30/1993 **# of Pages:** 1
File Break: 13.03

6724 **RESIDENTS WARN EPA TO BE CAREFUL IN ITS CLEANUP OF CONTAMINATION**

Author: NEW BRITAIN HERALD
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 04/30/1993 **# of Pages:** 1
File Break: 13.03

6725 **IT'S TIME TO REFORM SUPERFUND**

Author: JAMES C SHAW SPIROL INTERNATIONAL
Addressee: WILLIMANTIC CHRONICLE
Doc Type: NEWS CLIPPING
Doc Date: 05/22/1993 **# of Pages:** 1
File Break: 13.03

13: COMMUNITY RELATIONS

6726 **$65,000 GRANT TO FUND STUDY OF SUPERFUND SITE'S EFFECTS**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 06/09/1993 **# of Pages:** 1
File Break: 13.03

6728 **'CASH OUT' OFFER PLANNED FOR SRS SITE**

Author: NEW BRITAIN HERALD
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 09/08/1993 **# of Pages:** 1
File Break: 13.03

6729 **AGENCY ADDS TO LONG LIST OF THOSE LIABLE FOR CLEANUP OF SOLVENTS SUPERFUND SITE**

Author: NEW BRITAIN HERALD
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 09/08/1993 **# of Pages:** 1
File Break: 13.03

6730 **FEDS AT WORK ON CLEANUP FOR TOWN'S SUPERFUND SITES**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 09/13/1993 **# of Pages:** 1
File Break: 13.03

13: COMMUNITY RELATIONS

6731 **WEICHSEL CRITICIZES SUPERFUND-SITE 'HYSTERIA'**

Author: RECORD JOURNAL
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 10/20/1993 **# of Pages:** 1
File Break: 13.03

5595 **EPA SEEKS COMMENTS ON INTERIM CLEANUP ACTION**

Author: US EPA REGION 1
Addressee:
Doc Type: FACT SHEET
Doc Date: 11/01/1994 **# of Pages:** 5
File Break: 13.05

4912 **ADDITIONAL FIELD WORK MOVES CLEANUP FORWARD**

Author: US EPA REGION 1
Addressee:
Doc Type: FACT SHEET
Doc Date: 07/01/1996 **# of Pages:** 6
File Break: 13.05

5597 **SOUTHINGTON CANCER INCIDENCE STUDY, HEALTH INFORMATION ON HAZARDOUS WASTE SITES**

Author: CT DEPT OF PUBLIC HEALTH
Addressee:
Doc Type: FACT SHEET
Doc Date: 10/01/1997 **# of Pages:** 6
File Break: 13.05

13: COMMUNITY RELATIONS

5602 **STUDY LOOKS AT CANCER NEAR PLANT; STUDY RELEASED BY CT DEP LOOKS FOR LINKS BETWEEN SRSNE AND CANCER IN SOUTHINGTON, CT**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 10/21/1997 **# of Pages:** 1
File Break: 13.03

5603 **HEALTH OFFICIALS TAKING LOOK AT STUDY LINKING CANCER, FACTORY; STUDY RELEASED BY CT DEP LOOKS FOR LINKS BETWEEN SRSNE AND CANCER IN SOUTHINGTON, CT**

Author: HARTFORD COURANT
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 10/27/1997 **# of Pages:** 1
File Break: 13.03

5598 **PROGRESS UPDATE, FOR SUPERFUND CLEANUP AT SRSNE**

Author: US EPA REGION 1
Addressee:
Doc Type: FACT SHEET
Doc Date: 06/01/1998 **# of Pages:** 10
File Break: 13.05

5600 **A CITIZEN'S GUIDE TO PHYTOREMEDIATION**

Author: US EPA REGION 1
Addressee:
Doc Type: FACT SHEET
Doc Date: 08/01/1998 **# of Pages:** 6
File Break: 13.05

13: COMMUNITY RELATIONS

5601 **OPEN HOUSE ANNOUNCEMENT AND PROGRESS UPDATE**

Author: US EPA REGION 1
Addressee:
Doc Type: FACT SHEET
Doc Date: 08/01/1999 **# of Pages:** 2
File Break: 13.05

238288 **PROPOSED PLAN MAILING LIST ADDRESSES**

Author: US EPA REGION 1
Addressee:
Doc Type: LIST
Doc Date: 05/31/2005 **# of Pages:** 48
File Break: 13.06

238287 **MAILING LIST**

Author: US EPA REGION 1
Addressee:
Doc Type: LIST
Doc Date: 06/03/2005 **# of Pages:** 12
File Break: 13.06

238286 **NOTICE OF PUBLIC COMMENT PERIOD FOR PROPOSED PLAN**

Author: US EPA REGION 1
Addressee:
Doc Type: NEWS CLIPPING
Doc Date: 06/10/2005 **# of Pages:** 1
File Break: 13.03

13: COMMUNITY RELATIONS

238229 **TRANSCRIPT OF PUBLIC HEARING**

Author: US EPA REGION 1
Addressee:
Doc Type: PUBLIC MEETING RECORD
Doc Date: 06/30/2005 **# of Pages:** 19
File Break: 13.04

238291 **COMMUNITY INVOLVMENT ACTIVITY, 1997 - 2005**

Author: JIM MURPHY US EPA REGION 1
Addressee:
Doc Type: MEMO
Doc Date: 09/29/2005 **# of Pages:** 3
File Break: 13.01

14: CONGRESSIONAL RELATIONS

5452 **SRSNE'S LISTING MAY PUT THEM OUT OF BUSINESS**

Author: JAMES R HULM SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
Addressee: RONALD LEFRANCOIS US CONGRESS ADMINISTRATIVE AIDE
Doc Type: LETTER
Doc Date: 08/28/1987 **# of Pages:** 4
File Break: 14.01

14: CONGRESSIONAL RELATIONS

5451 **SRSNE'S PROBLEMS RESULTING FROM NATIONAL PRIORITIES LIST (NPL) LISTING**

Author: NANCY L JOHNSON US HOUSE OF REPRESENTATIVES
Addressee: LEE M THOMAS US EPA - OFFICE OF SOLID WASTE & EMERGENCY RESPONSE
Doc Date: 09/14/1987 **# of Pages:** 2
File Break: 14.01
Doc Type: LETTER

5453 **UPDATE ON STATUS OF SUPERFUND SITES IN SOUTHINGTON (CT)**

Author: JULIE BELAGA US EPA REGION 1
Addressee: ANN P DANDROW CT HOUSE OF REPRESENTATIVES
ANGELO F FUSCO CT HOUSE OF REPRESENTATIVES
Doc Date: 06/22/1990 **# of Pages:** 2
File Break: 14.01
Doc Type: LETTER

5454 **UPDATE ON STATUS OF SUPERFUND SITES IN SOUTHINGTON (CT)**

Author: JULIE BELAGA US EPA REGION 1
Addressee: JOSEPH I LIEBERMAN US SENATE
Doc Date: 07/02/1990 **# of Pages:** 2
File Break: 14.01
Doc Type: LETTER

14: CONGRESSIONAL RELATIONS

5121 **REQUEST FOR REVIEW OF CONSTITUENTS' CONCERNS WITH REGULATORY PROBLEMS**

Author: CHRISTOPHER J DODD US SENATE
Addressee: JULIE BELAGA US EPA REGION 1
Doc Date: 07/19/1990 **# of Pages:** 3
File Break: 14.01
Doc Type: LETTER

5195 **STATEMENT OF BRUCE A MORRISON, DEMOCRAT FOR GOVERNOR, ON SITUATION IN SOUTHINGTON (CT)**

Author: BRUCE A MORRISON BRUCE A MORRISON FOR GOVERNOR COMMITTEE
Addressee:
Doc Date: 07/26/1990 **# of Pages:** 2
File Break: 14.01
Doc Type: PRESS RELEASE

5455 **INFORMATION ON RESIDENTIAL WELL SAMPLING**

Author: JULIE BELAGA US EPA REGION 1
Addressee: STEVEN CASEY CT SENATE
Doc Date: 10/12/1990 **# of Pages:** 1
File Break: 14.01
Doc Type: LETTER

5469 **DISCONTENT WITH REGION'S HANDLING OF SUPERFUND PROCESS**

Author: ARTHUR T BLUMER SOUTHINGTON (CT) DEPT OF HEALTH
Addressee: JOSEPH I LIEBERMAN US SENATE
Doc Date: 02/26/1991 **# of Pages:** 1
File Break: 14.01
Doc Type: LETTER

14: CONGRESSIONAL RELATIONS

5468 **DISCONTENT WITH REGION'S HANDLING OF SUPERFUND PROCESS, SPECIFICALLY COMMUNITY INVOLVEMENT**

Author: JOSEPH I LIEBERMAN US SENATE
Addressee: JULIE BELAGA US EPA REGION 1
Doc Type: LETTER
Doc Date: 03/13/1991 **# of Pages:** 1
File Break: 14.01

5456 **RESPONSE TO LETTER CONCERNING PUBLIC INVOLVEMENT AT SUPERFUND SITES**

Author: JULIE BELAGA US EPA REGION 1
Addressee: JOSEPH I LIEBERMAN US SENATE
Doc Type: LETTER
Doc Date: 03/27/1991 **# of Pages:** 2
File Break: 14.01

4914 **CONSTITUENT'S LIABILITY FOR CHEMICAL DUMPING IN CONNECTICUT**

Author: CHESTER ATKINS US HOUSE OF REPRESENTATIVES
Addressee: MERRILL S HOHMAN US EPA REGION 1
Doc Type: LETTER
Doc Date: 07/02/1992 **# of Pages:** 1
File Break: 14.01

4919 **CONSTITUENT QUESTIONS EPA'S CLAIM AGAINST SOLVENTS RECOVERY SERVICE OF NEW ENGLAND POTENTIALLY RESPONSIBLE PARTIES (PRPS)**

Author: WILLIAM J ENGLISH CERTIFIED TAPE & LABEL
Addressee: PETER BLUTE US HOUSE OF REPRESENTATIVES
Doc Type: LETTER
Doc Date: 02/24/1993 **# of Pages:** 1
File Break: 14.01

14: CONGRESSIONAL RELATIONS

4918 **CONSTITUENT LISTED AS A POTENTIALLY RESPONSIBLE PARTY (PRP)**

Author: PETER BLUTE US HOUSE OF REPRESENTATIVES
Addressee: PAUL G KEOUGH US EPA REGION 1
Doc Type: LETTER
Doc Date: 03/15/1993 **# of Pages:** 1
File Break: 14.01

4915 **EXPLANATION OF LIABILITY GENERATORS UNDER CERCLA**

Author: PAUL G KEOUGH US EPA REGION 1
Addressee: PETER BLUTE US HOUSE OF REPRESENTATIVES
Doc Type: LETTER
Doc Date: 04/09/1993 **# of Pages:** 2
File Break: 14.01

4913 **CONFUSION OVER SIMILARITY OF COMPANY NAMES**

Author: PETER G TORKILDSEN US HOUSE OF REPRESENTATIVES
Addressee: PAUL G KEOUGH US EPA REGION 1
Doc Type: LETTER
Doc Date: 08/18/1993 **# of Pages:** 2
File Break: 14.01

4921 **RESPONSE TO LETTER ON BEHALF OF HOAGUE-SPRAGUE LEASING CO**

Author: PAUL G KEOUGH US EPA REGION 1
Addressee: PETER G TORKILDSEN US HOUSE OF REPRESENTATIVES
Doc Type: LETTER
Doc Date: 09/16/1993 **# of Pages:** 2
File Break: 14.01

14: CONGRESSIONAL RELATIONS

4916 **POSSIBLE MISTAKEN IDENTITY**

Author: JOHN F KERRY US SENATE
Addressee: PAUL G KEOUGH US EPA REGION 1
Doc Type: LETTER
Doc Date: 10/04/1993 **# of Pages:** 3
File Break: 14.01

4917 **COSTS INCURRED BY SMALL BUSINESSES IN SUPERFUND CLEANUP**

Author: JOSEPH I LIEBERMAN US SENATE
Addressee: PAUL G KEOUGH US EPA REGION 1
Doc Type: LETTER
Doc Date: 10/18/1993 **# of Pages:** 3
File Break: 14.01

4922 **RESPONSE TO LETTER ON BEHALF OF HOAGUE-SPRAGUE LEASING CO.**

Author: PAUL G KEOUGH US EPA REGION 1
Addressee: JOHN F KERRY US SENATE
Doc Type: LETTER
Doc Date: 10/22/1993 **# of Pages:** 2
File Break: 14.01

5604 **SEARCH FOR COST EFFECTIVE REMEDIATION TECHNOLOGIES**

Author: JOHN P DEVILLARS US EPA REGION 1
Addressee: NANCY L JOHNSON US HOUSE OF REPRESENTATIVES
Doc Type: LETTER
Doc Date: 04/24/1996 **# of Pages:** 1
File Break: 14.01

16: NATURAL RESOURCE TRUSTEE

5470 **UPDATED PRELIMINARY NATURAL RESOURCES SURVEY**

Author: JONATHAN P DEASON US DEPT OF THE INTERIOR
Doc Date: 10/29/1991 **# of Pages:** 9
Addressee: MERRILL S HOHMAN US EPA REGION 1
File Break: 16.05
Doc Type: LETTER

4927 **QUINNIPIAC RIVER SEDIMENT SAMPLING FOR NOAA NATURAL RESOURCES RELEASE**

Author: MICHAEL NALIPINSKI US EPA REGION 1
Doc Date: 05/04/1993 **# of Pages:** 1
Addressee: KENNETH FINKELSTEIN US NATIONAL OCEANIC ATMOSPHERIC ADMINISTRATION
File Break: 16.01
Doc Type: LETTER

4925 **NOTIFICATION TO TRUSTEES OF NEGOTIATIONS WITH POTENTIALLY RESPONSIBLE PARTIES (PRPS) CONCERNING NON-TIME CRITICAL REMOVAL ACTION (NTCRA)**

Author: MICHAEL NALIPINSKI US EPA REGION 1
Doc Date: 10/21/1993 **# of Pages:** 2
Addressee: WILLIAM PATTERSON US DEPT OF THE INTERIOR
File Break: 16.01
Doc Type: LETTER

4926 **NOTIFICATION TO TRUSTEES OF NEGOTIATIONS WITH POTENTIALLY RESPONSIBLE PARTIES (PRPS) CONCERNING NON-TIME CRITICAL REMOVAL ACTION (NTCRA)**

Author: MICHAEL NALIPINSKI US EPA REGION 1
Doc Date: 10/21/1993 **# of Pages:** 2
Addressee: KENNETH FINKELSTEIN US NATIONAL OCEANIC ATMOSPHERIC ADMINISTRATION
File Break: 16.01
Doc Type: LETTER

17: SITE MANAGEMENT RECORDS

4928 **SEVEN AERIAL PHOTOGRAPHS, EPIC ROLL /016 FR225-227, 232, 504, 505, 511, WITH TRANSMITTAL**

Author: DAVID E STRZEMPKO ROY F WESTON INC
Addressee: RUTH LEABMAN US EPA REGION 1
Doc Type: PHOTOGRAPH
Doc Date: 08/20/1992 **# of Pages:** 1
File Break: 17.04

4929 **ADMINISTRATIVE IMPROVEMENTS DEMONSTRATION PROJECTS**

Author: MERRILL S HOHMAN US EPA REGION 1
Addressee: TIMOTHY FIELDS JR US EPA - OFFICE OF SOLID WASTE & EMERGENCY RESPONSE
Doc Type: MEMO
Doc Date: 06/02/1993 **# of Pages:** 4
File Break: 17.07

19: RCRA (OBSOLETE)

5280 **NOTIFICATION OF RECEIPT OF HAZARDOUS WASTE FROM A FOREIGN SOURCE**

Author: JAMES R HULM SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
Addressee: JOHN R PODGURSKI US EPA REGION 1
Doc Type: LETTER
Doc Date: 11/25/1986 **# of Pages:** 1
File Break: 19.01

19: RCRA (OBSOLETE)

5281 **SRSNE AND SAFETY-KLEEN ANTICIPATE SIGNING A PURCHASE AND SALE AGREEMENT UNDER WHICH SAFETY-KLEEN WILL ACQUIRE SRSNE ASSETS IN EXCHANGE FOR SAFETY-KLEEN STOCK**

Author: JAMES STEWART LOWENSTEIN SANDLER
Addressee: MERRILL S HOHMAN US EPA REGION 1
Doc Date: 12/03/1986 **# of Pages:** 3
File Break: 19.01
Doc Type: LETTER

5282 **PROPOSED TRANSACTION BETWEEN SRSNE AND SAFETY-KLEEN WILL NOT GO FORWARD BEFORE YEAR'S END**

Author: JAMES STEWART LOWENSTEIN SANDLER
Addressee: MERRILL S HOHMAN US EPA REGION 1
Doc Date: 12/13/1986 **# of Pages:** 1
File Break: 19.01
Doc Type: LETTER

5283 **SUGGESTION THAT SRSNE, US EPA AND STATE MEET TO CONFIRM COMMON GOALS AND BARRIERS**

Author: JAMES R HULM SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
Addressee: BARRY L GIROUX CT DEPT OF ENVIRONMENTAL PROTECTION
Doc Date: 02/23/1988 **# of Pages:** 1
File Break: 19.01
Doc Type: LETTER

5284 **REQUEST THAT SRSNE WITHDRAW CLAIM OF CONFIDENTIALITY FOR ITS PART B APPLICATION**

Author: MARGARET LESHEN US EPA REGION 1
Addressee: JAMES R HULM SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
Doc Date: 06/10/1988 **# of Pages:** 1
File Break: 19.01
Doc Type: LETTER

19: RCRA (OBSOLETE)

5285 **EXPOSURE OF ON-SITE WORKERS TO HIGH LEVELS OF VOLATILE ORGANIC COMPOUNDS FROM AN ORGANIC VAPOR ANALYZER, AND TO EXPOSED ASBESTOS AT SITE**

Author: MARGARET LESHEN US EPA REGION 1
Addressee: US NATIONAL OCEANIC ATMOSPHERIC ADMINISTRATION
Doc Type: LETTER
Doc Date: 06/16/1988 **# of Pages:** 1
File Break: 19.01

5286 **CONFIRMATION OF CONVERSATION TO REPORT OF MECHANICAL PROBLEM WITH COOLING TOWER, PROGRESS TOWARDS REPAIR, USE OF HARD PIPE AND NECESSARY EASEMENT WERE ALSO DISCUSSED**

Author: JAMES R HULM SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
Addressee: MARGARET LESHEN US EPA REGION 1
Doc Type: LETTER
Doc Date: 11/01/1988 **# of Pages:** 1
File Break: 19.01

5294 **INDUSTRIAL HYGIENE SURVEY TO DETERMINE EMPLOYEE EXPOSURE TO SOLVENT VAPORS**

Author: ATLANTIC ENVIRONMENTAL INC
Addressee:
Doc Type: REPORT
Doc Date: 11/04/1988 **# of Pages:** 13
File Break: 19.01

5289 **CONFIRMATION OF MEETING, 04/07/1989, PLANNED IMPROVEMENTS**

Author: MATTHEW R HOAGLAND US EPA REGION 1
Addressee: RUSSELL W BARTLEY TRC COMPANIES INC
Doc Type: LETTER
Doc Date: 04/03/1989 **# of Pages:** 1
File Break: 19.01

19: RCRA (OBSOLETE)

5291 **RESPONSE TO CONCERN REGARDING RESPIRATORY PROTECTION FOR WORKERS ON PRODUCTION LINE**

Author: RUSSELL W BARTLEY TRC COMPANIES INC
Addressee: MATTHEW R HOAGLAND US EPA REGION 1
Doc Date: 06/06/1989 **# of Pages:** 2
File Break: 19.01
Doc Type: LETTER

5295 **REQUEST FOR ADDITIONAL INFORMATION NEEDED TO ASSESS INDUSTRIAL HYGIENE SURVEY**

Author: MATTHEW R HOAGLAND US EPA REGION 1
Addressee: CARLETON H BOLL SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
Doc Date: 06/16/1989 **# of Pages:** 2
File Break: 19.01
Doc Type: LETTER

5296 **RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION NEEDED TO ASSESS INDUSTRIAL HYGIENE SURVEY**

Author: RUSSELL W BARTLEY TRC COMPANIES INC
Addressee: MATTHEW R HOAGLAND US EPA REGION 1
Doc Date: 07/07/1989 **# of Pages:** 2
File Break: 19.01
Doc Type: LETTER

5298 **RESPONSE TO QUESTION RAISED ABOUT MISSING INFORMATION AFTER REVIEW OF SRSNE INSPECTION LOGS**

Author: JAMES R HULM SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
Addressee: JOHN R PODGURSKI US EPA REGION 1
Doc Date: 01/23/1990 **# of Pages:** 4
File Break: 19.01
Doc Type: LETTER

19: RCRA (OBSOLETE)

5300 **ERNEST R GEDEON HAS BECOME DIRECTOR FOR ENVIRONMENTAL COMPLIANCE AT SRSNE, AND WILL BE RESPONSIBLE FOR DRAFTING RENEWAL APPLICATION FOR PART B PERMIT**

Author: CARLETON H BOLL SOLVENTS RECOVERY SERVICE OF NEW ENGLAND
Doc Date: 02/26/1990 **# of Pages:** 1
Addressee: MARGARET LESHEN US EPA REGION 1
File Break: 19.01
Doc Type: LETTER

Number of Documents in Collection: 436

EPA Region 1 AR Compendium GUIDANCE DOCUMENTS

EPA guidance documents may be reviewed at the EPA Region I Superfund Records Center in Boston, Massachusetts.

TITLE
INTERIM FINAL GUIDANCE FOR CONDUCTING REMEDIAL INVESTIGATIONS AND FEASIBILITY STUDIES UNDER CERCLA.

DOCDATE	OSWER/EPA ID	DOCNUMBER
10/1/1988	OSWER #9355.3-01	2002

TITLE
ATSDR HEALTH ASSESSMENTS ON NPL SITES (DRAFT)

DOCDATE	OSWER/EPA ID	DOCNUMBER
6/16/1986		5000

TITLE
PROTECTION OF WETLANDS: EXECUTIVE ORDER 11990. 42 FED. REG. 26961 (1977).

DOCDATE	OSWER/EPA ID	DOCNUMBER
5/24/1977		C003

TITLE
FINAL REVISIONS TO OMB CIRCULAR A-94 ON GUIDELINES AND DISCOUNT RATES FOR BENEFIT-COST ANALYSIS.

DOCDATE	OSWER/EPA ID	DOCNUMBER
6/25/1993	OSWER 9355.3-20	C214

TITLE
GUIDE ON REMEDIAL ACTIONS AT SUPERFUND SITES WITH PCB CONTAMINATION. QUICK REFERENCE FACT SHEET.

DOCDATE	OSWER/EPA ID	DOCNUMBER
8/1/1990	OSWER 9355.4-01FS	C254

TITLE
FINAL GROUND WATER USE AND VALUE DETERMINATION GUIDANCE

DOCDATE	OSWER/EPA ID	DOCNUMBER
4/4/1996		C278

TITLE
DRAFT FINAL GUIDELINES FOR ECOLOGICAL RISK ASSESSMENT

DOCDATE	OSWER/EPA ID	DOCNUMBER
7/18/1997		C366

TITLE
RULES OF THUMB FOR SUPERFUND REMEDY SELECTION (EPA 540-R-97-013)

DOCDATE	OSWER/EPA ID	DOCNUMBER
8/1/1997	OSWER 9355.0-69	C473

TITLE
COMMUNITY RELATIONS IN SUPERFUND: A HANDBOOK

DOCDATE	OSWER/EPA ID	DOCNUMBER
1/1/1992	EPA 540/R-92/009	C488

TITLE
APPROACH FOR ADDRESSING DIOXIN IN SOIL AT CERCLA AND RCRA SITES

DOCDATE	OSWER/EPA ID	DOCNUMBER
4/13/1998	OSWER 9200.4-26	C504

TITLE
FINAL OSWER DIRECTIVE "USE OF MONITORED NATURAL ATTENUATION AT SUPERFUND, RCRA CORRECTIVE ACTION, AND UNDERGROUND STORAGE TANK SITES"

DOCDATE	OSWER/EPA ID	DOCNUMBER
4/21/1999	OSWER 9200.4-17P	C512

EPA Region 1 AR Compendium GUIDANCE DOCUMENTS

EPA guidance documents may be reviewed at the EPA Region I Superfund Records Center in Boston, Massachusetts.

TITLE
RISK ASSESSMENT GUIDANCE FOR SUPERFUND, VOLUME 1, HUMAN HEALTH EVALUATION MANUAL, INTERIM

DOCDATE	OSWER/EPA ID	DOCNUMBER
1/1/1998	OSWER 9285.7-01D	C530

TITLE
GUIDANCE FOR EVALUATING THE TECHNICAL IMPRACTICABILITY OF GROUND-WATER RESTORATION.

DOCDATE	OSWER/EPA ID	DOCNUMBER
9/1/1993	EPA 540-R-93-080	C532

TITLE
ECOLOGICAL RISK ASSESSMENT AND RISK MANAGEMENT PRINCIPLES FOR SUPERFUND SITES

DOCDATE	OSWER/EPA ID	DOCNUMBER
10/7/1999	OSWER 9285.7-28 P	C563

TITLE
FINAL GUIDANCE ON ADMINISTRATIVE RECORDS FOR SELECTING CERCLA RESPONSE ACTIONS

DOCDATE	OSWER/EPA ID	DOCNUMBER
3/1/1989	OSWER NO. 9833.3A-1	C576

TITLE
SOIL SCREENING GUIDANCE: USER'S GUIDE

DOCDATE	OSWER/EPA ID	DOCNUMBER
7/1/1996	OSWER NO. 9355.4-23	C577

TITLE
EXECUTIVE ORDER 11988, FLOODPLAIN MANAGEMENT

DOCDATE	OSWER/EPA ID	DOCNUMBER
5/24/1977	EO 11988	C578

TITLE
THE DNAPL REMEDIATION CHALLENGE: IS THERE A CASE FOR SOURCE DEPLETION?

DOCDATE	OSWER/EPA ID	DOCNUMBER
12/1/2003	EPA/600/R-03/143	C581

TITLE
A GUIDE TO DEVELOPING AND DOCUMENTING COST ESTIMATES DURING THE FEASIBILITY STUDY

DOCDATE	OSWER/EPA ID	DOCNUMBER
7/1/2000	OSWER 9355.0-75	C582

TITLE
A GUIDE TO PRINCIPLE THREAT AND LOW LEVEL THREAT WASTES

DOCDATE	OSWER/EPA ID	DOCNUMBER
11/1/1991	9380.3-06FS	C622