EXPLANATION OF SIGNIFICANT DIFFERENCES

FOR THE

SILRESIM CHEMICAL CORPORATION SUPERFUND SITE

LOWELL, MASSACHUSETTS

SEPTEMBER 2003

U.S. Environmental Protection Agency
Region I – New England
Boston, MA

Silresim Chemical Corporation Superfund Site
Explanation of Significant Differences
September 2003

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I. INTRODUCTION

A. Site Name and Location

Site Name: Silresim Chemical Corporation Superfund Site

Site Location: City of Lowell, Middlesex County, Massachusetts

B. Lead and Support Agencies

Lead Agency: United States Environmental Protection Agency (EPA)

Support Agency: Massachusetts Department of Environmental Protection (MADEP)

C. Legal Authority

Under Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9617 (c), Section 300.435(c) of the National Contingency Plan (NCP), 40 C.F.R. § 300.435(c)(2)(I) and EPA guidance, Office of Solid Waste and Emergency Response (OSWER) Directive 9355.3-02, if EPA determines that differences in the remedial action significantly change but do not fundamentally alter the remedy selected in the Record of Decision (ROD) with respect to scope, performance, or cost, EPA shall publish an Explanation of Significant Differences (ESD) between the remedial action being undertaken and the remedial action set forth in the ROD and the reasons such changes are being made.

D. Summary of Circumstances Necessitating this Explanation of Significant Differences

This ESD documents a change to the remedy for the Silresim Chemical Corporation Superfund Site (Site) that was originally selected in the 1991 ROD. The change is to present revised, risk-based clean-up goals (CUGs) for the Site. In addition, although not a significant change, EPA is also creating a second Operable Unit (OU) to facilitate documenting clean-up activities at the Site.

Revised Clean-up Goals

The 1991 ROD included both source control and management of migration components to obtain a comprehensive remedy for the Site. The source control component of the remedy called for in-situ soil vapor extraction (SVE) of approximately 137,000 cubic yards of contaminated soil. Following treatment, soil with residual contamination would be excavated, stabilized, and capped on the Silresim property. The remedy also included active restoration of the overburden and bedrock aquifers by pumping and treating the contaminated groundwater.

At the time the ROD was written, the aquifer below the Site was classified by the Federal Government as a Class IIB aquifer and by the Commonwealth of Massachusetts as a Class I aquifer. Groundwaters assigned to these classes are defined as being fresh waters found in the saturated zone of unconsolidated deposits or consolidated rock and bedrock, and are designated as a source of potable water supply (potential drinking water). Therefore, the future installation of drinking water wells in residential areas underlain by the contaminated groundwater could result in a potential human health risk.

Groundwater at and in the vicinity of the Site has not been used as a drinking water source because public water has been provided to the area. However, because groundwater might be used as drinking water, exposure to contaminants might occur in the future through ingestion, dermal absorption, or inhalation of vapors.

In order to support the 1991 ROD, a risk assessment was conducted. Risks were computed based on average concentrations of contaminants in conjunction with the corresponding potential receptors. The calculated risks included a scenario whereby groundwater could be used in the future as drinking water in the vicinity of the Site.

In accordance with EPA's 1996 Final Ground Water Use and Value Determination Guidance, in October 1998, MADEP completed a Groundwater Use and Value Determination which resulted in a recommendation of "low use and value" for the groundwater beneath the Site. MADEP has stipulated that groundwater would not be used as drinking water in the future. This determination constituted a significant change from the previous drinking water classification that was used to establish clean-up levels in the 1991 ROD. As a result, MADEP has reclassified this aquifer as a "Non-Potential Drinking Water Source Area."

Following groundwater reclassification, the impact of this change on the existing clean-up levels for the Site was evaluated. The results of this evaluation were summarized in the January 2002 Final Additional Site Investigation and Revision of Site Clean-up Goals Report. Revised, risk-based CUGs were calculated based on the groundwater reclassification, additional data, revised exposure pathways, and current land use assumptions and Site conditions. These CUGs were further modified in 2003 to reflect current EPA risk assessment guidance and protocols.

Additional Operable Units

At the time of the 1991 ROD, the Site consisted of only one OU to address both source control and management of migration components. The term 'operable unit' is used to define a discrete portion or phase of the overall clean-up plan at a Site and facilitates documenting clean-up activities. As such, this ESD will formalize the creation of a second OU to distinguish between groundwater and SVE activities (OU1) and other source control activities (OU2).

E. Availability of Documents

This ESD and supporting documentation shall become part of the Administrative Record for the Site. The Administrative Record, including its index, are available to the public at the following locations and may be reviewed at the times listed:

U.S. Environmental Protection Agency
Records Center
One Congress Street
Boston, MA 02114
Monday through Friday from 10:00 a.m. to 1:00 p.m. and
from 2:00 p.m. to 5:00 p.m.

Pollard Memorial Library
401 Merrimack Street
Lowell, Massachusetts 01852
Ph: 978.970.4120
Monday through Thursday from 9:00 a.m. to 9:00 p.m., and
Friday from 9:00 a.m. to 5:00 p.m.

II. SUMMARY OF SITE HISTORY, CONTAMINATION PROBLEMS, AND SELECTED REMEDY

A. Site History and Contamination Problems

The Site is comprised of approximately 16 acres of land in an industrial area of Lowell, Massachusetts, just south of the City's central business district (Figure 1 and Figure 2). The Site includes a 4.5 acre property formerly owned and operated by the Silresim Chemical Corporation (Silresim) at 86 Tanner Street, and soil and groundwater contamination that extends to other nearby properties.

The 4.5 acre Silresim property is bordered by the Lowell Iron and Steel property to the north, the B&M railroad yard and tracks to the east/northeast, the Lowell Used Auto Parts and Tucci properties to the south, and Tanner Street to the west. Residential areas are located south, east, and northeast of the Silresim property, with the closest residences located on Canada, Main, and Maple Streets, roughly 300 to 500 feet from the Silresim property boundary. River Meadow Brook lies approximately 400 feet west of the Silresim property and flows northeast into the Concord River. The Concord River joins the Merrimack River approximately 1 mile northeast of the Site. East Pond, a small, surface water body, is located about 300 feet to the east of the Silresim property.

An 8-foot high chain link fence secures the Silresim property. Most of the land surface within the fence is covered with a temporary clay cap. Crushed stone has been placed on runoff areas along the northern and southern perimeter of the Silresim property to

prevent direct contact with runoff from contaminated surface soils. The groundwater treatment facility (GWTF) occupies the central portion of the Silresim property and commenced operation in November 1995.

Additional Site infrastructure includes:

- Groundwater extraction wells, SVE wells, and monitoring wells;
- Underground extraction well piping, vapor extraction vent piping, natural gas, potable water and sewer lines, power lines, and process control wiring;
- Overhead and underground high voltage power lines; and
- An interim passive cap venting system.

The Site and its surrounding areas have been used for industrial activities since the early 1900s. From 1916 to 1971, several petroleum companies used the Silresim property as an oil and fuel storage depot. From 1971 through 1977, Silresim operated its chemical waste reclamation facility. The facility's primary operations included recycling and reclaiming various chemicals and consolidating wastes for off-site disposal.

The Massachusetts Division of Water Pollution Control (DWPC), now MADEP, granted the facility a hazardous waste collection and disposal permit in 1973. Wastes were accepted at the facility in drums, tank trucks, railroad tanker cars, and other containers. These substances included halogenated solvents, oily wastes, alcohols, plating wastes, metal sludge, and pesticide wastes. Although exact figures do not exist, it is estimated that the facility handled approximately 3 million gallons of waste per year.

Silresim filed for bankruptcy in late 1977 and abandoned the facility in January 1978, leaving behind approximately one million gallons of hazardous materials in drums and bulk tanks, including almost 30,000 decaying drums covering virtually all open areas of the 4.5 acre property. From 1978 to 1982, DWPC constructed a site fence, hired a 24-hour guard, removed liquid wastes in drums and aboveground tanks, constructed berms and absorbent-filled trenches to reduce the spread of waste through surface runoff, and conducted studies of Site soils and groundwater.

In 1982, EPA proposed the Site on the National Priorities List (NPL) for long-term cleanup. The Site became a final listing on the NPL in 1983. In 1983, EPA monitored the air and sampled soils, and found contamination both on and off the Silresim property. In 1984, EPA raised the height of the fence from 6 to 8 feet and covered highly contaminated areas with 9 inches of crushed gravel and a temporary clay cap. In 1986, damage to the original fence was repaired. Subsequent sampling revealed an additional area of soil contamination that EPA enclosed. In 1986, EPA discovered dioxin; the fence was relocated to prevent public access, and a temporary gravel cover was placed over the dioxin-contaminated soil to prevent contact.

Between 1985 and 1990, Remedial Investigation (RI) and Feasibility Study (FS) activities were conducted to characterize the Site. The RI assessed the type and extent of contaminants present at the Site and included a risk assessment. The risk assessment evaluated the potential impacts from Site contaminants to human health and the environment. The RI provided baseline data required to evaluate potential clean-up actions.

Principal RI field activities included monitoring well installation and the collection and analysis of groundwater, soil, sediment, surface water, and air samples. Surface soil testing and sampling beneath the clay cap and outside the fence determined the extent of soil contamination. The RI identified approximately 100 individual contaminants in on-site groundwater and soils. Volatile organic compounds (VOCs) were the primary contaminant type identified. Semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), metals, herbicides, pesticides and dioxin were also identified.

In September 1991, EPA issued the ROD for the Site. The remedy selected in the ROD called for in-situ SVE of contaminated soil. Soils with residual contamination would be excavated, stabilized, and capped on-site. Contaminated groundwater would be extracted and treated by metals removal, air stripping, and vapor treatment prior to discharge to the City sewer system.

In early 1993, a Consent Decree between EPA and a group of potentially responsible parties (PRPs) was executed. Under this Consent Decree, the PRPs provided approximately $40 million in clean-up funding for the Site.

Management of Migration

Construction of the GWTF began in mid-1994 and groundwater extraction and treatment has been underway since November 1995. Initial actions to fence the Silresim property and cap or cover areas of contamination have reduced the potential for accidental exposure and further migration of contaminated soils. The temporary cap has subsequently been upgraded. These actions have eliminated the immediate threats posed by the Site while final clean-up activities are underway. The operation of the GWTF has several objectives as outlined in the ROD:

- Manage the migration of contaminated groundwater toward downgradient receptors of local building basements, River Meadow Brook, and East Pond;
- Capture as much of the contaminated plume as possible; and
- Drawdown the groundwater across the Site to support the source control remedy.

To date, the groundwater extraction system has been unable to achieve the drawdown objective across the Site. The extraction well array and GWTF have removed a significant amount of VOCs from the groundwater plume (over 50 tons); however, plume

migration has shown some increased concentrations of VOCs in certain areas downgradient of the Silresim property.

Source Control

Source control activities specified in the ROD included the construction, startup, and operation of an SVE system to remove VOCs from unsaturated zone soils. Air permeability and SVE pilot tests were conducted at the Site from July 1995 to December 1996. SVE pilot tests were conducted using three techniques: conventional SVE, heated air injection, and high vacuum or multiphase SVE. In general, extracted vapor flow rates for the extraction wells (< 9 standard cubic feet per minute) and radii of influence (< 2-3 feet at some locations) were less than expected. Due to the results of the air permeability testing, SVE pilot tests were geared towards increasing the achievable flow rate from the subsurface.

A plan was developed to implement a Phase I SVE program focused on maximizing the removal of VOC mass instead of attempting to achieve ROD established soil CUGs. Operation of the Phase I SVE (from October 1998 through December 1999) resulted in the additional removal of an estimated 12 tons of VOCs from the subsurface; however, the effectiveness of the SVE system was limited because the Site was not sufficiently de-watered, soil moisture content was very high, and very low permeability soils were encountered. The overall conclusion of these SVE activities was that despite the removal of relatively significant quantities of VOCs, it would be unlikely that conventional SVE would be able to reach the original clean-up levels for the Site.

The results of these tests are summarized in the following conclusions:

- SVE has the potential for significant subsurface VOC mass removal, however it is not likely to reduce soil contamination to the ROD clean-up levels within the ROD established time frame.
- Site conditions (high soil moisture and low soil permeability) limited SVE effectiveness in removing contaminants from the subsurface soil;
- High vacuum SVE and multiphase extraction were found to be ineffective techniques for removing VOCs from the soil at the Site; and
- Heated air injection with SVE has the potential to increase the rate of contaminant removal from the subsurface soil.

Operation of the existing SVE system at the Site was placed on hold pending further review of applicable enhancements or modifications of the technology to render it more effective. Results of this review, as detailed in the Phase I Summary Report, concluded that SVE alone would not be sufficiently able to reach the ROD clean-up levels within the specified time period.

To address the VOC source control issue, a comparative analysis of more aggressive treatment alternatives was performed. Several technologies with reasonable applicability for the remediation of VOCs at the Site were considered. Weighing advantages and disadvantages for each remedial option resulted in the selection of the electrical resistance heating (ERH) technology as the only viable option for a pilot test at the Site.

ERH is an in-situ thermal remediation technology that uses electrical heating to enhance SVE. The ERH pilot test was designed to evaluate applicability of Site conditions, reveal potential technical difficulties, and determine the effectiveness of the technology for removing subsurface contaminants to targeted levels. Results of the pilot test will be used to evaluate the ability of ERH to overcome the limitations observed during the SVE operations and ultimately allow an effective and cost efficient scale-up to full-scale treatment. The pilot test began in October 2002 and continued through early January 2003. A final report is being prepared and will be evaluated to determine the technology's effectiveness for removing contamination on a wide area of the Site.

B. Summary of the Record of Decision

The ROD (signed September 19, 1991) discussed the alternatives evaluated for remediating contamination at the Site and described, in detail, the selected remedy for the Site. The selected remedy includes a management of migration alternative (groundwater extraction, metals pretreatment, air stripping, aqueous phase carbon adsorption, vapor phase carbon adsorption or thermal oxidation) and a source control alternative (SVE, excavation, stabilization, and capping on the Silresim property) to address all contamination at the Site. A detailed description of the clean-up levels and the selected remedy is presented in Section X of the ROD.

To date, some success has been achieved through the implementation of a number of the remedial activities mandated by the ROD. In particular, SVE has been evaluated via pilot tests and implemented in a limited area on the Site. Management of migration remedial components for groundwater extraction and treatment were successfully installed and continue to operate. Operation of the GWTF and extraction wells has resulted in some VOC contaminant concentration reduction in the groundwater plume, although the extent of the reduction varies significantly depending on the specific area of the Site. In some areas of the Site, VOC concentrations have increased. However, it should be noted that the extraction wells and GWTF were not designed for overall plume remediation. The main objective of the GWTF and extraction wells was to contain the groundwater plume and to de-water the Site sufficiently to allow for remediation of soils utilizing traditional SVE.

III. BASIS FOR ESD

This ESD documents EPA's decision to modify the 1991 ROD clean-up levels. In addition, although not a significant change, EPA is also creating a second OU to facilitate documenting clean-up activities at the Site. The basis for modifying the 1991 ROD clean-up levels is described below.

Groundwater is not currently used for drinking water in the vicinity of the Site. In accordance with EPA's 1996 Final Ground Water Use and Value Determination Guidance, in October 1998, MADEP recommended a "low use and value" determination for the groundwater in the vicinity of the Site. The United States Geological Survey has classified the aquifer as low-yield. As a result, MADEP has reclassified this aquifer as a "Non-Potential Drinking Water Source Area" because of the concentration of industrial development in the area. This is a change in status from the previous drinking water classification used to establish clean-up levels in the 1991 ROD.

Due, in part, to changes in area groundwater classification by MADEP, a ROD Remedy Review was conducted in 1999. As a result of this review, EPA determined that due to Site conditions and the changed groundwater classification, some of the clean-up levels specified in the ROD were no longer appropriate for the Site. In addition, based on SVE pilot test results, EPA also concluded that SVE without thermal enhancement would not be able to reach the ROD clean-up levels. Observations made during operation of the first phase of the SVE system revealed that the SVE system was somewhat effective in the silty sand areas of the Site but was less effective in other parts of the Site due to impermeable soil conditions, short circuiting through the interim cap, and high soil moisture.

The 1999 ROD Remedy Review evaluated the remedial activities conducted at the Site. Based on the inability of management of migration and source control activities to achieve remedial objectives, the ROD Remedy Review recommended several changes. These recommendations took into consideration the changes in Site conditions (reclassification of groundwater under the Site), the inability of the implemented technologies to achieve the objectives stated in the ROD, and the use of some revised risk assessment models for certain contaminants of concern at the Site.

A Five-Year Review of the Site was prepared in September 1999 as required by CERCLA Section 121(c), NCP Section 300.400(f)(4)(ii), and OSWER directive 9355.7-02 (May 23, 1991). Due to limitations in the ability of management of migration and source control activities to achieve remedial objectives of halting groundwater contaminant migration, removing the contaminant source term, and reducing human health and ecological risk at the Site, the Five-Year Review supported the recommendations outlined in the ROD Remedy Review.

In response to issues identified in the ROD Remedy Review and the Five-Year Review, an Action Plan was developed. Issues of concern identified in the Action Plan included the following:

- Inability of the extraction well system to contain contaminant plume migration towards identified downgradient receptors;
- Inability of the extraction well system and GWTF to meet ROD clean-up levels within the foreseeable future;
- Results of the SVE operations indicating that SVE alone would not be able to reduce subsurface soil contamination to meet ROD clean-up levels within the time frame established in the ROD;
- Risk assessment assumptions that no longer appeared appropriate for the Site; and
- The change in the groundwater classification for the aquifer below the Site by MADEP to "low use and value" from its prior classification as drinking water.

The first step of the Action Plan included an investigation focusing on strategies to control the continued migration of contaminated groundwater and to implement innovative technologies to remediate VOC-contaminated soils. The second step of the Action Plan involved a comprehensive investigation to identify and compile existing data, collect new data, and revise clean-up levels. Investigation activities have been completed. Implementation of innovative technologies to address VOC-contaminated soils is ongoing as ERH pilot test results are still being evaluated.

The following activities were identified to evaluate existing clean-up levels based on the new groundwater classification and to revise clean-up levels where necessary:

- Review Site groundwater reclassification;
- Evaluate recent monitoring data and current Site conditions;
- Identify remaining or newly identified exposure pathways;
- Develop response objectives to coincide with remaining or newly identified exposure pathways;
- Evaluate the appropriateness of the groundwater leaching model and subsequent development or application of new soil-to-groundwater modeling parameters or data, as necessary; and
- Develop revised, risk-based CUGs for all impacted media (principally groundwater and unsaturated zone soils).

In order to support the development of revised, risk-based CUGs, field activities were conducted at the Site between November 2000 and July 2001. These activities also helped to delineate areas of soil excavation and the size and extent of the VOC source area. The results of these field activities showed heterogeneous groundwater and soil

contamination consisting of VOCs, SVOCs, PCBs, metals, polycyclic aromatic hydrocarbons (PAHs), and dioxin/furans on and off the Silresim property.

Using this new data along with previously collected data, a revised list of chemicals of potential concern (COPCs) was developed for the Site. The revised list of COPCs includes more chemicals than were included in the 1991 ROD. Based on the revised list of COPCs, a revised conceptual site exposure model, updated toxicological parameters, and risk-based CUGs were calculated for these chemicals using current risk assessment guidance and protocols. For carcinogenic chemicals, CUGs were calculated at an incremental cancer risk of 10^{-6} and for non-carcinogenic chemicals, CUGs were calculated at a hazard index of 0.1 (recognizing the potential for additive effects). Chemical-specific CUGs were calculated for each impacted environmental medium and for each identified receptor potentially exposed to that medium.

The risk-based CUGs do not show an overall increasing or decreasing trend as compared to the 1991 ROD clean-up levels because some exposure pathways were eliminated (direct ingestion of groundwater) while others were added (indoor inhalation of VOCs).

Results of the additional field investigations and the revised, risk-based CUGs were documented in a report entitled, “Final Additional Site Investigation and Revision of Site Clean-up Goals". This report was finalized in January 2002 and satisfies the second step of the Action Plan.

In June 2003 the revised, risk-based CUGs were further modified to reflect current EPA risk assessment guidance and protocols. Specifically, the carcinogenic risk goal was changed from 10^{-6} to 10^{-5} and the non-carcinogenic hazard index was changed from 0.1 to 1.0; both risk goals are in accordance with the criteria specified by the NCP. The risk-based CUGs were also compared to other applicable MADEP standards and the most stringent (lowest) was selected as the recommended CUG for each COPC. The other standards evaluated included the MADEP Method 1 GW-3 standards (to account for ecological impacts from groundwater) and the MADEP Method 3 Upper Concentration Limits for soil and groundwater. The modified CUGs are identified as the “Recommended Clean-Up Goals” in Appendix A.

IV. DESCRIPTION OF THE SIGNIFICANT DIFFERENCE

Based upon the reclassification of groundwater at the Site and current EPA risk assessment guidance, a modification to the 1991 ROD clean-up levels is warranted. EPA and MADEP consider the modified CUGs to be adequately protective of human health and the environment. Additionally, although not a significant change, the creation of a second OU will facilitate documenting clean-up activities at the Site.

A. Revised Clean-up Goals

The 1991 ROD specified clean-up levels for groundwater and soil contaminants that posed an unacceptable risk to either human health or the environment. These clean-up levels were set based on the appropriate Applicable or Relevant and Appropriate Requirements such as Drinking Water Maximum Contaminant Levels and Non-zero Maximum Contaminant Level Goals.

In the 1999 ROD Remedy Review, it was determined that certain ROD clean-up levels were based on assumptions that were no longer appropriate and therefore required revision.

Necessary updates to the original risk assessment were required for the following reasons:

- Changes in regulatory policy – The classification of the aquifer as a drinking water supply needed to be reviewed in response to MADEP's Groundwater Use and Value Determination. The importance of other (non-drinking water) risk exposure pathways needed to be re-evaluated. The appropriateness of leaching from soil to groundwater needed to be reviewed. Future use exposure scenarios needed to be evaluated;
- Changes in exposure pathways – The extent of the contaminated groundwater plume needed to be evaluated because it was moving faster than originally projected. Potential off-property subsurface soil contamination needed to be evaluated;
- Evolution of the technical approaches for Superfund risk assessment – The vapor migration model and the methodology for selecting COPCs were no longer current; and
- Specific technical issues relating to toxicity estimates – The use of toxicity surrogates for PAHs and dioxin was no longer recommended or necessary.

Necessary updates for calculating revised CUGs included:

- Evaluating the subsurface soil to indoor air pathway for the commercial/industrial worker;
- Evaluating additional chemicals the inhalation pathways; and
- Evaluating a child recreational receptor in the event that the Silresim property or adjacent properties are redeveloped for recreational use (e.g., soccer field). The potential exists for this type of development; however, since the area is currently, and for the reasonably foreseeable future, zoned as commercial/industrial, CUGs were not based on a current recreational use scenario. However, CUGs based on a potential future recreational use scenario were calculated for reference purposes.

To support the development of revised CUGs, land use and risk assessment exposure assumptions have been updated to reflect current Site conditions. These assumptions are summarized below. Overall, the changes in risk assumptions regarding groundwater, soil, and air exposures at the Site significantly impact the CUGs for a variety of contaminants.

Current Land Use and Site Conditions

The approximate 16-acre Site is located in a heavily industrialized section of Lowell. Neighboring businesses include numerous used auto parts facilities; junkyards; auto repair facilities; factories for sheet-metal, steel, and plastic; a power plant; office and storage facilities; tractor-trailer storage, light industrial/commercial condominiums; and open industrial land. As a result of MADEP's Groundwater Use and Value Determination, MADEP has stipulated that groundwater in the area would not be used as a drinking water source in the future. This determination constitutes a significant change from the drinking water classification used to establish the 1991 ROD clean-up levels.

Future Land Use

The reasonably foreseeable future land use designation for the Site is commercial/industrial. Soils with residual contamination above the CUGs will be excavated, stabilized, and capped on the Silresim property. Future exposures to soil or exposed groundwater are considered possible even though the cap will likely extend over the entire Silresim property. A potential future recreational use scenario was also evaluated.

The commercial/industrial properties surrounding the Silresim property also are expected to continue to be used for commercial/industrial purposes in the foreseeable future. However, future renovation or redevelopment of these properties is considered possible, including construction of new buildings with basements. The B&M railroad corridor adjacent to the Silresim property on the eastern side is also assumed to remain a railroad corridor for the foreseeable future. Groundwater is assumed to remain unused for consumptive and non-consumptive uses in the future (i.e., for drinking or industrial process uses) due to MADEP's Groundwater Use and Value Determination coupled with the relatively low yield of the shallowest water bearing layers. While this assumption appears reasonable given this classification, no formal restrictions or institutional controls have been established to ensure that the groundwater is not used for consumptive or non-consumptive purposes, or that future land use does not involve contact with potentially contaminated soils.

Exposure Pathways

An exposure pathway describes the physical linkage between the source of a COPC and a current or projected future exposed receptor. The potential human receptors that have been identified at this Site (under current and reasonably anticipated future exposure scenarios) include commercial/industrial workers, railroad workers, construction workers (e.g., new facility construction or utility installation/maintenance workers), and

trespassers. These potential human receptors may come in contact with surface soil (0-1 ft bgs), exposed subsurface soil as a result of excavation (unsaturated soil >1 ft bgs and < 10 ft bgs), groundwater, and ambient or indoor air containing contaminants originating from the Site. The potential routes of exposure are incidental ingestion, inhalation of particulates or volatiles, and dermal absorption. These exposure routes were also evaluated for a potential future recreational use scenario. It should be noted that leaching from soil to groundwater is no longer considered a risk because groundwater is no longer a potential drinking water source. The pathway of most concern is through VOC emissions from contaminated groundwater and subsequent diffusion upward into ambient and indoor air.

CUGs were revised based on available technical information, EPA policy, and risk management considerations. The modified CUGs are identified as the "Recommended Clean-Up Goals" in Appendix A and are summarized in individual tables for surface soil (commercial/industrial and railroad land use), subsurface soil (commercial/industrial land use), and groundwater (commercial/industrial land use). The drinking water standards are no longer Applicable or Relevant and Appropriate Requirements; rather the CUGs are now risk-based numbers.

B. Additional Operable Units

Under this ESD, the Site will be divided into two OUs to facilitate documenting clean-up activities as defined below:

OU1 will include groundwater treatment activities and the SVE pilot test. The GWTF construction remedial action was completed in November 1995 and continues to operate. The SVE system operated from October 1998 to December 1999 and removed approximately 12 tons of subsurface VOC contamination. However, operation of the SVE system was placed on hold because it was unlikely that it would be able to reach Site CUGs.

OU2 will include all other source control activities including soil excavation, stabilization, and capping on the Silresim property. This OU will also include ERH activities, or other soil treatment activities, if implemented.

V. SUPPORTING AGENCY COMMENTS

MADEP has participated with EPA in developing this ESD and concurs with the changes. See Appendix B for the MADEP concurrence letter.

VI. STATUTORY DETERMINATIONS

EPA has determined that the selected remedy specified in the 1991 ROD and the change pursuant to this ESD, remain protective of human health and the environment,

comply with Federal and State requirements that are applicable or relevant and appropriate, and are cost-effective. The revised remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for this Site.

VII. PUBLIC PARTICIPATION

This ESD and supporting information are available for public review at the locations identified within this document. In addition, a notice of availability of the ESD will be provided to a local newspaper of general circulation.

VIII. DECLARATION

For the foregoing reasons, by my signature below, I approve the issuance of an Explanation of Significant Differences for the Silresim Chemical Corporation Superfund Site in Lowell, Massachusetts and the changes and conclusions stated therein.

Susan Studlien, Acting Director
Office of Site Remediation and Restoration
USEPA, Region I

9-30-03
Date

FIGURE 1

Site Location Map

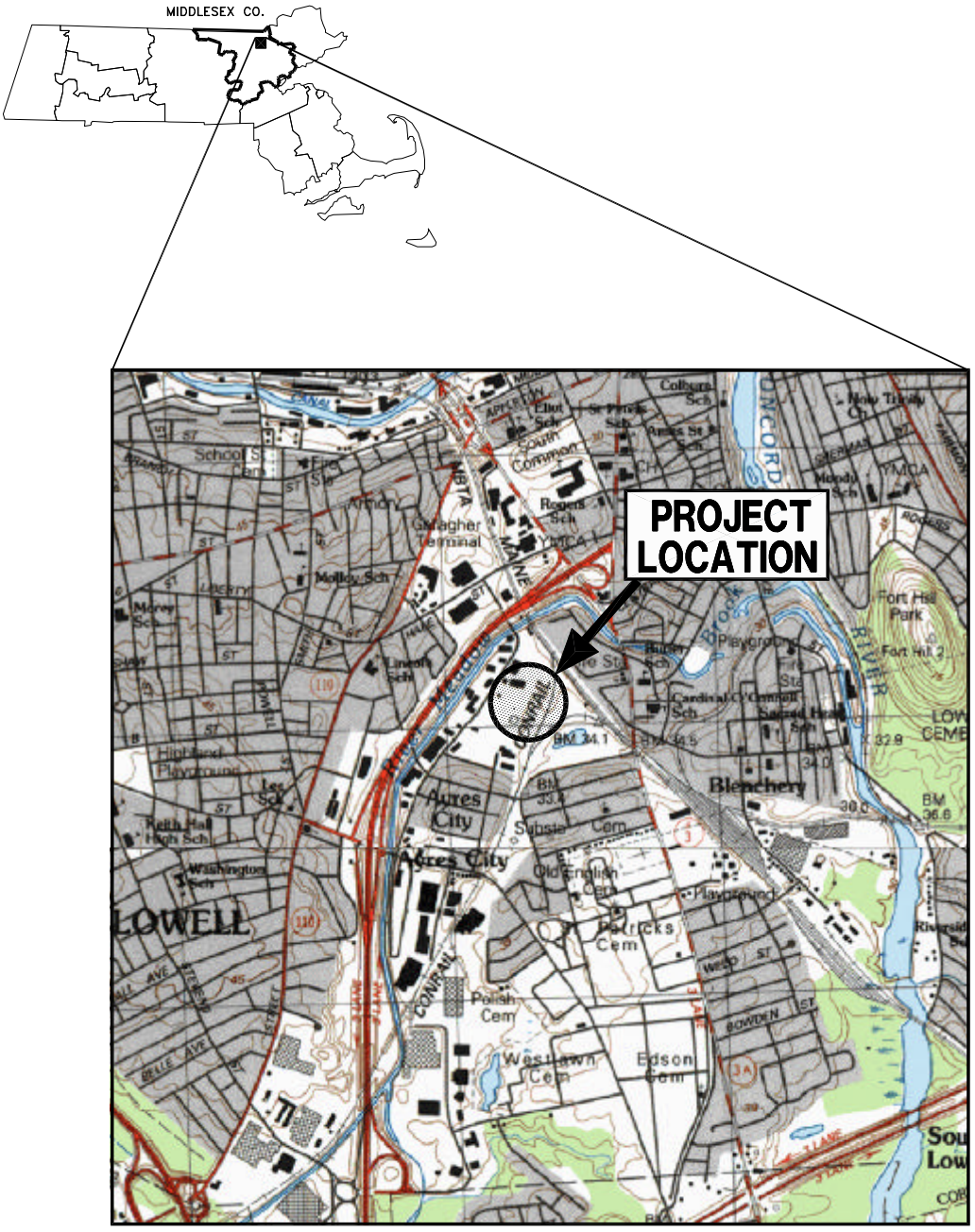


FIGURE 1

SILRESIM SUPERFUND SITE
LOWELL, MASSACHUSETTS

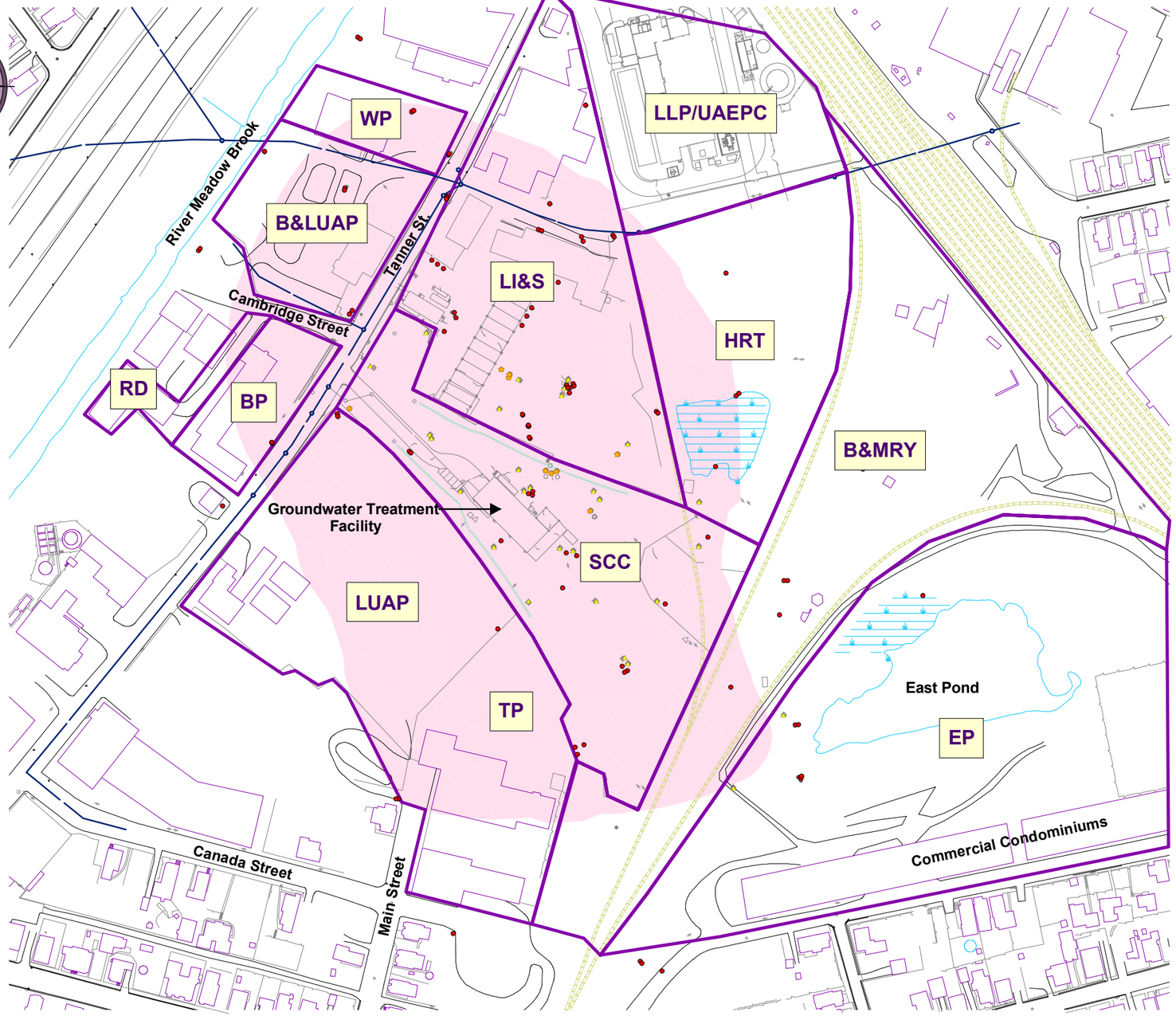
SITE LOCATION MAP

SCALE: AS SHOWN

CADDFILE: SIL_LOCUS.DWG

FIGURE 2

Site Map



Legend

- Monitoring Wells
- Extraction Wells
- Other Wells
- Roads
- Railroad
- Sewer Line
- Structures
- Swale
- Water/Wetland
- Other Features
- Approximate 10 ppb TVO Plume Extent
- Properties - Approximate Boundaries

0 115 230 460 Feet

Scale

Property Legend

Silresim Chemical Corporation: SCC
Lowell Iron and Steel: LI&S
Lowell Used Auto Parts: LUAP
Tucci Property: TP
Bond Property: BP
B&L Used Auto Parts: B&LUAP
B&M Railroad Yard : B&MRY
East Pond: EP
L'Energia Limited Partnership/ UAE Power Corporation: LLP/UAEPC
Hyacynth Realty Trust: HRT
Walbert Plastics: WP
Robert D'Ambroise: RD

FIGURE 2 - SITE MAP
Silresim Superfund Site

WATERMARK ENVIRONMENTAL

STONE ENVIRONMENTAL INC

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APPENDIX A

Recommended Clean-Up Goals for the Silresim Superfund Site

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Silresim Superfund Site
Lowell, MA

Recommended Clean-Up Goals for the Silresim Superfund Site
Based on Discussions During Silresim Site Meetings
September 2003

The purpose of this memorandum is to summarize the recommended Clean-Up Goals (CUGs) for the surface soil, subsurface soil, and groundwater related to the Silresim Superfund Site in support of an Explanation of Significant Difference (ESD). The risk-based CUGs were originally presented in the Final Additional Site Investigation and Revision of Site Clean-Up Goals (Foster Wheeler, 2002). These CUGs were discussed, refined, and then compared to site data, Applicable or Relevant and Appropriate Requirements (ARARs), and current ROD cleanup levels. The following presents the criteria used to develop the recommended CUGs (as compared to the current ROD cleanup levels).

- An updated USEPA COC screening and selection process was used (USEPA, 1989, 1995, 1999).
- The evaluation of the carcinogenic and non-carcinogenic polycyclic aromatic hydrocarbon (PAH) compounds was performed individually instead of as a group (USEPA, 1994, 2001a).
- The updated dermal risk assessment guidance (RAGS Part E) was applied (USEPA, 2001b).
- The USEPA Adult Lead Model was used to calculate soil lead concentrations associated with a target blood lead level and exposure parameters (USEPA, 1996).
- The updated guidance for risk assessment of carcinogenic polychlorinated biphenyls (PCBs) was used (NCEA, 1996).
- Updated toxicological factors and parameters were used (USEPA, 1997a, 2001a; and MADEP, 1994).
- A target risk goal of 1E-5 and a target hazard index of 1 was used for each chemical (direction from USEPA, Region I Site Manager).
- An assumption was made that surface soil consists of the soil between 0 – 1 ft bgs and that subsurface, unsaturated, soil consists of the soil between 1 – 10 ft bgs (USEPA, 1995).
- The Site groundwater was reclassified as being “low use and value” in a MADEP Groundwater Use and Value Determination (MADEP, 1998).
- Leaching from subsurface (unsaturated) soil to groundwater was not considered a critical consideration in setting subsurface soil CUGs (Foster Wheeler, 1999, 2002).
- Commercial/industrial land use was assumed instead of residential land use (Foster Wheeler, 1999, 2002).
- The subsurface vapor intrusion to indoor air was evaluated as a primary inhalation exposure route (Foster Wheeler, 2002; USEPA, 1997b).
- Potential exposures to a construction worker were evaluated for soil and groundwater (Foster Wheeler, 2002).
- Potential exposures to a trespasser were evaluated for soil (Foster Wheeler, 2002).

- Potential exposures to a railroad worker on the B&M Parcel were evaluated for soil (Foster Wheeler, 2002).
- Groundwater was assumed to encompass the "shallow" and "moderate" groundwater that are "reasonably accessible" (i.e., within 15 ft bgs) (Foster Wheeler, 1999, 2002).
- The MCP GW-3 Standards for groundwater (310 CMR 40.0974(2)) and the MCP Upper Concentration Limits (UCLs) for soil and groundwater (310 CMR 40.0996(7))were considered for the CUGs.

Based on these criteria, the following risk-based CUGs are presented for surface soil (commercial/industrial land use/railroad land use), subsurface soil (commercial/industrial land use), and groundwater (commercial/industrial land use) (see Tables 1 through 3, respectively). The risk-based CUGs shown on these tables were compared to other cleanup standards for the Site and the most stringent (lowest) was selected as the recommended CUG for each chemical of concern. These other standards were the MADEP Method 1 GW-3 standards (to account for ecological impacts from the groundwater, which were not explicitly evaluated in the calculation of the risk-based CUGs) and the MADEP Method 3 Upper Concentration Limits for soil and groundwater.

References:

Foster Wheeler Environmental Corporation (Foster Wheeler), 1999. ROD Remedy Review, Silresim Superfund Site, Lowell, Massachusetts. February 1999.

Foster Wheeler, 2002. Final Additional Site Investigation and Revision of Site Clean-Up Goals, Silresim Superfund Site, Lowell, Massachusetts. January 2002.

Massachusetts Department of Environmental Protection (MADEP), 1994. Background Documentation for the Development of the MCP Numerical Standards.

MADEP, 1998. Groundwater Use and Value Determination. Silresim Superfund Site. October 1998.

MADEP, 1999. Massachusetts Contingency Plan. 310 CMR 40.0000. October 29, 1999.

National Center for Environmental Assessment (NCEA), 1996. PCBs: Cancer Dose-Response Assessment and Application to Environmental Mixtures. Office of Research and Development. EPA/600/P-96/001F. September 1996.

United States Environmental Protection Agency (USEPA), 1989. Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part A). EPA/540/1-89/002. December 1989.

USEPA, 1994. Risk Updates, Number 2. Region I, New England. August 1994.

USEPA, 1995. Risk Updates, Number 3. Region I, New England. August 1995.

USEPA, 1996. Recommendations of the Technical Review Workgroup for Lead for an Interim Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil. Technical Review Workgroup for Lead. December 1996.

USEPA, 1997a. Health Effects Assessment Summary Tables (HEAST). Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office. July 1997.

USEPA, 1997b. Users Guide for the Johnson and Ettinger (1991) Model for Subsurface Vapor Intrusion into Buildings. September 1997.

USEPA, 1999. Risk Updates, Number 5. Region I, New England. September 1999.

USEPA, 2001a. Integrated Risk Information System (IRIS). On-line database. Date last verified February 2001.

USEPA, 2001b. Risk Assessment Guidance for Superfund: Volume I – Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), Interim Guidance.

Table 1
RECOMMENDED CUGS FOR SURFACE SOIL
SILRESIM SUPERFUND SITE, LOWELL, MASSACHUSETTS

	Commercial/Industrial Land Use				
Chemicals of Concern (1, 9)	**Current Silresim Site ROD Cleanup Level (6) (mg/kg)**	**Risk-Based Clean-Up Goal for Surface Soil (2) (mg/kg)**	**MADEP Method 3 Upper Concentration Limit (3) (mg/kg)**	**Recommended Clean-Up Goal for Surface Soil (4) (mg/kg)**	**Basis for Recommended Clean-Up Goal**
1,1,2,2-Tetrachloroethane	2.2	23	20	**20**	**MADEP UCL**
Trichloroethene	40	190	5,000	**190**	**Risk-Based CUG**
1,2,4-Trimethylbenzene	-	73	-	**73**	**Risk-Based CUG**
1,3,5-Trimethylbenzene	-	17	-	**17**	**Risk-Based CUG**
Benzo(a)anthracene	11 [7]	50	100	**50**	**Risk-Based CUG**
Benzo(a)pyrene	11 [7]	5	100	**5**	**Risk-Based CUG**
Benzo(b)fluoranthene	11 [7]	50	100	**50**	**Risk-Based CUG**
Dibenz(a,h)anthracene	11 [7]	5	100	**5**	**Risk-Based CUG**
Hexachlorobenzene	-	15	30	**15**	**Risk-Based CUG**
1,2,4-Trichlorobenzene	-	18	10,000	**18**	**Risk-Based CUG**
Arsenic	21	30	300	**30**	**Risk-Based CUG**
Lead	500	448	6,000	**448**	**Risk-Based CUG**
Mercury	-	0.80	600	**0.80**	**Risk-Based CUG**
2,3,7,8-TetraCDD	0.001	0.005	0.0002	**0.0002**	**MADEP UCL**
Aroclor 1242	1 [8]	13	100	**13**	**Risk-Based CUG**
Aroclor 1254	1 [8]	13	100	**13**	**Risk-Based CUG**

	Railroad Land Use				
Chemicals of Concern (5)	**Current Silresim Site ROD Cleanup Level (6) (mg/kg)**	**Risk-Based Clean-Up Goal for Surface Soil (2) (mg/kg)**	**MADEP Method 3 Upper Concentration Limit (3) (mg/kg)**	**Recommended Clean-Up Goal for Surface Soil (4) (mg/kg)**	**Basis for Recommended Clean-Up Goal**
Arsenic	21	110	300	110	Risk-Based CUG

Notes:
- = No MADEP Standard or current ROD Cleanup Level for this chemical, thus no value shown.
(1) Tetrachloroethene, 1,1,2-Trichloroethane, Indeno(1,2,3-c,d)pyrene, Naphthalene, Thallium, and Aroclor 1248 were removed from the list shown on Table 6-48 in the Additional Site Investigation and Revision of Clean-Up Goals Report (Foster Wheeler, 2002) because the maximum detected concentration of these chemicals was less than the recommended clean-up goal. This is the same reasoning shown on Table 6-39 of the report except the recalculated clean-up goals and UCLs were used.
(2) Recommended CUGs assume a target risk goal of 1E-5 and a target hazard index of 1 for each chemical.
(3) MADEP UCLs (310 CMR 40.0996(7) Table 6) were included for comparison as a possible ARAR for the site.
(4) The most stringent of the risk-based CUG or UCL was taken as the recommended CUG for each chemical.
(5) Benzo(a)pyrene was removed from the list shown on Table 6-49 in the Additional Site Investigation and Revision of Clean-Up Goals Report (Foster Wheeler, 2002) because the maximum detected concentration of this chemical was less than the recommended clean-up goal. This is the same reasoning shown on Table 6-41 of the report except the recalculated clean-up goals and UCLs were used.
(6) Current Silresim Site Cleanup Level from Record of Decision Summary, September 19, 1991.
(7) Current ROD Cleanup Level for individual carcinogenic Polyaromatic Hydrocarbons (PAHs); Current Clean-Up Level for Total PAHs is 29 mg/kg.
(8) Current ROD Cleanup Level for Total Polychlorinated Biphenyls.
(9) The following chemicals have a Surficial Soil Cleanup Level under the current ROD, but did not warrant a CUG given the updated exposure and risk assessment (in mg/kg): Benzene (15); 1,1-Dichloroethene (0.72); 1,2-Dichloroethane (4.8); Methylene Chloride (58); and Styrene (14).

Table 2
RECOMMENDED CUGS FOR SUBSURFACE SOIL
SILRESIM SUPERFUND SITE, LOWELL, MASSACHUSETTS

Chemicals of Concern (1, 8)	Commercial/Industrial Land Use				
	Current Silresim Site ROD Cleanup Level (6) (mg/kg)	Risk-Based Clean-Up Goal for Subsurface Soil (2, 3) (mg/kg)	MADEP Method 3 Upper Concentration Limit (4) (mg/kg)	Recommended Clean-Up Goal for Subsurface Soil (5) (mg/kg)	Basis for Recommended Clean-Up Goal
Benzene	0.004	0.04	2,000	**0.04**	**Risk-Based CUG**
Chlorobenzene	0.3	1.2	10,000	**1.2**	**Risk-Based CUG**
Chloroform	0.04	0.015	5,000	**0.015**	**Risk-Based CUG**
1,2-Dichloroethane	0.001	0.031	600	**0.031**	**Risk-Based CUG**
1,1-Dichloroethene	0.005	0.005	90	**0.005**	**Risk-Based CUG**
Ethylbenzene	6.8	1.2	10,000	**1.2**	**Risk-Based CUG**
Methylene Chloride	0.001	0.56	7,000	**0.56**	**Risk-Based CUG**
Styrene	0.17	290	1,000	**290**	**Risk-Based CUG**
1,1,2,2-Tetrachloroethane	0.006	0.16	20	**0.16**	**Risk-Based CUG**
Tetrachloroethene	-	0.85	1,000	**0.85**	**Risk-Based CUG**
Toluene	2.7	11	10,000	**11**	**Risk-Based CUG**
1,1,1-Trichloroethane	0.3	13	5,000	**13**	**Risk-Based CUG**
1,1,2-Trichloroethane	0.003	0.12	100	**0.12**	**Risk-Based CUG**
Trichloroethene	0.006	0.25	5,000	**0.25**	**Risk-Based CUG**
Vinyl Chloride	-	0.0062	20	**0.0062**	**Risk-Based CUG**
1,2-Dichlorobenzene	8.9	75	5,000	**75**	**Risk-Based CUG**
Hexachlorobenzene	0.034	6	30	**6**	**Risk-Based CUG**
Naphthalene	-	16	10,000	**16**	**Risk-Based CUG**
1,2,4-Trichlorobenzene	0.72	1	10,000	**1**	**Risk-Based CUG**
Lead	-	448	6,000	**448**	**Risk-Based CUG**
Mercury	-	0.77	600	**0.77**	**Risk-Based CUG**
2,3,7,8-TetraCDD	0.001	0.005	0.0002	**0.0002**	**MADEP UCL**
Aroclor 1242	2.3 [7]	13	100	**13**	**Risk-Based CUG**

Notes:

- = No current ROD Cleanup Level for this chemical, thus no value shown.

(1) 1,2,3-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Dibenz(a,h)anthracene, 1,4-Dichlorobenzene, and Thallium were removed from the list shown on Table 6-50 in the Additional Site Investigation and Revision of Clean-Up Goals Report (Foster Wheeler, 2002) because the maximum detected concentration of these chemicals was less than the recommended clean-up goal. This is the same reasoning shown on Table 6-46 of the report except the recalculated clean-up goals and UCLs were used.

(2) Recommended CUGs assume a target risk goal of 1E-5 and a target hazard index of 1 for each chemical.

(3) Subsurface Soil includes only unsaturated subsurface soil, assumed to be between 1 ft below ground surface (bgs) and 10 ft bgs.

(4) MADEP UCLs (310 CMR 40.0996(7) Table 6) were included for comparison as a possible ARAR for the site.

(5) The more stringent of the risk-based CUG or UCL was taken as the recommended CUG for each chemical.

(6) Current Silresim Site Cleanup Level from Record of Decision Summary, September 19, 1991.

(7) Current ROD Cleanup Level for Total Polychlorinated Biphenyls.

(8) The following chemicals have an Unsaturated Soil Cleanup Level under the current ROD, but did not warrant a CUG given the updated exposure and risk assessment (in mg/kg): Carbon Tetrachloride (0.005); Bis(2-ethylhexyl)phthalate (0.30); 1,2-Dichloropropane (0.003); Individual carcinogenic PAHs (10); trans-1,2-Dichloroethene (0.067); Phenol (5.3); 2-Butanone (0.06); and Xylenes (22).

Table 3
RECOMMENDED CUGS FOR GROUNDWATER
SILRESIM SUPERFUND SITE, LOWELL, MASSACHUSETTS

Chemicals of Concern (1, 6)	Commercial/Industrial Land Use					
	Current Silresim Site ROD Cleanup Level (5) (mg/L)	Risk-Based Clean-Up Goal for Groundwater (2) (mg/L)	MADEP Method 1 GW-3 Standard (3) (mg/L)	MADEP Method 3 Upper Concentration Limit (3) (mg/L)	Recommended Clean-Up Goal for Groundwater (4) (mg/L)	Basis for Recommended Clean-Up Goal
Acetone	-	-	50	100	**50**	**GW-3 Standard**
Benzene	0.005	0.48	7	70	**0.48**	**Risk-Based CUG**
Chlorobenzene	0.1	4.9	0.5	10	**0.5**	**GW-3 Standard**
Chloroform	0.1	0.2	10	100	**0.2**	**Risk-Based CUG**
1,2-Dichloroethane	0.005	0.5	50	100	**0.5**	**Risk-Based CUG**
1,1-Dichloroethene	0.007	0.015	50	100	**0.015**	**Risk-Based CUG**
1,2-Dichloroethene (total)	-	120	-	-	**120**	**Risk-Based CUG**
cis-1,2-Dichloroethene	-	-	50	100	**50**	**GW-3 Standard**
Ethylbenzene	0.7	3.4	4	100	**3.4**	**Risk-Based CUG**
Hexachlorobutadiene	-	0.041	0.09	0.9	**0.041**	**Risk-Based CUG**
Methylene Chloride	0.005	14	50	100	**14**	**Risk-Based CUG**
1,1,2,2-Tetrachloroethane	0.005	0.61	20	100	**0.61**	**Risk-Based CUG**
Tetrachloroethene	-	5.9	5	50	**5**	**GW-3 Standard**
1,2,3-Trichlorobenzene	-	3.8	-	-	**3.8**	**Risk-Based CUG**
1,1,1-Trichloroethane	0.2	120	50	100	**50**	**GW-3 Standard**
1,1,2-Trichloroethane	0.005	1.1	50	100	**1.1**	**Risk-Based CUG**
Trichloroethene	0.005	1.4	20	100	**1.4**	**Risk-Based CUG**
Vinyl Chloride	-	0.13	40	100	**0.13**	**Risk-Based CUG**
Naphthalene	-	0.89	6	60	**0.89**	**Risk-Based CUG**
1,2,4-Trichlorobenzene	0.009	0.15	0.5	100	**0.15**	**Risk-Based CUG**
Arsenic	0.05	-	0.4	3	**0.4**	**GW-3 Standard**
Cadmium	0.005	-	0.01	0.1	**0.01**	**GW-3 Standard**
Lead	0.015	-	0.03	0.3	**0.03**	**GW-3 Standard**
Nickel	0.1	-	0.08	1	**0.08**	**GW-3 Standard**

Notes:

- = No MADEP Standard or current ROD Cleanup Level for this chemical, thus no value shown.

(1) 1,1-Dichloroethane, Styrene, Toluene, and 1,2-Dichlorobenzene were removed from the list shown on Table 6-51 in the Additional Site Investigation and Revision of Clean-Up Goals Report (Foster Wheeler, 2002) because the maximum detected concentration of these chemicals was less than the recommended clean-up goal. Likewise, Acetone, cis-1,2-Dichloroethene, Arsenic, Cadmium, Lead, and Nickel were added to the same list because the maximum detected concentration of these chemicals was greater than the recommended clean-up goal. This is the same reasoning shown on Table 6-47 of the report except the recalculated clean-up goals, GW-3 standards, and UCLs were used.

(2) Recommended CUGs shown are calculated with a target risk goal of 1E-5 and a target hazard index of 1 for each chemical.

(3) MADEP GW-3 Standards (310 CMR 40.0974(2) Table 1) and UCLs (310 CMR 40.0996(7) Table 6) were included for comparison as a possible ARAR for the site.

(4) The most stringent of the risk-based CUG, GW-3 Standard or UCL was taken as the recommended CUG for each chemical.

(5) Current Silresim Site Cleanup Level from Record of Decision Summary, September 19, 1991.

(6) The following chemicals have an Interim Ground Water Cleanup Level under the current ROD, but did not warrant a CUG given the updated exposure and risk assessment (in mg/kg): Bis(2-ethylhexyl)phthalate (0.004); Carbon Tetrachloride (0.005); 1,2-Dichloropropane (0.005); Dioxin (5.0 x 10-11); Hexachlorobenzene (0.001); Individual Carcinogenic PAHs (0.0002); PCBs (0.0005); Styrene (0.10); 2-Butanone (0.35); Chromium [+3] (0.10); Copper (1.3); 1,2-Dichlorobenzene (0.60); trans-1,2-Dichloroethene (0.10); Phenol (21); Selenium (0.050); Toluene (1.0); and Xylenes (10).

APPENDIX B

MADEP Concurrence Letter

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
ONE WINTER STREET, BOSTON, MA 02108 617-292-5500

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Commissioner

September 29, 2003

Ms. Susan Studlien, Acting Director
Office of Site Remediation and Restoration
US EPA, Suite 1100 (HIO)
One Congress Street
Boston, MA 02114-2023

RE: Explanation of Significant Differences for the Silresim Chemical Corp. Superfund Site Lowell, MA. September 2003

Dear Ms. Studlien:

The Department of Environmental Protection (the Department) has reviewed the proposed Explanation of Significant Differences (ESD) dated September 2003 for the Silresim Chemical Corporation (Silresim) Site. This ESD is for the Silresim record of Decision (ROD) dated September 1991. The Department concurs with the ESD for the Site.

As stated, the purpose of this ESD is twofold. The first is to revise the clean-up goals for soil and groundwater at the Site that were established in the ROD. The second is to divide the Site into two operable units; one for groundwater and the soil vapor extraction pilot test, and the other for source control actions. The Department believes that these changes to the remedy will not affect its overall protectiveness.

The DEP has evaluated the EPA's ESD for consistency with M.G.L. Chapter 21E, and the Massachusetts Contingency Plan (MCP). This ESD establishes new clean-up goals based on the Department's 1998 Groundwater Use and Value Determination, which recommended a "low use and value" for the groundwater beneath the Site, a significant change from the previous drinking water classification that was used to establish clean-up goals in the 1991 ROD. EPA determined that due to Site conditions and the changed groundwater classification, some of the clean-up goals specified in the ROD were no longer appropriate for the Site. The new clean-up goals were derived from the groundwater reclassification, a revised conceptual site exposure model, updated toxicological parameters, current risk assessment guidance and protocols, and current land use assumptions and Site conditions.

Although there were two components to the ROD, management of migration (for groundwater) and source control (for soils), the Site was not divided into separate operable units to address these two aspects. This ESD now divides the Site into two operable units to address these separate components of the remedy. The Department agrees that the creation of an additional operable unit will facilitate documenting clean-up activities at the Site.

The Department appreciates the opportunity to provide input on this ESD and looks forward to the continuing implementation of the remedy at the Site. If you have any questions please call Janet Waldron, Project Manager for the Site, at (617) 556-1156.

Sincerely,

John Fitzgerald, Division Director
Bureau of Waste Site Cleanup

e-copy:Sharon Hayes, US EPA
e-file: 05.00 Record of Decision/DEP Concurrence Letter Silresim ESD 2003