U.S. EPA New England, Region 1

# Explanation of Significant Differences

For

# Kearsarge Metallurgical Corporation Superfund Site

Operable Unit 01

Conway, New Hampshire

September 29, 2003

# DECLARATION FOR THE EXPLANATION OF SIGNIFICANT DIFFERENCES KEARSARGE METALLURGICAL CORPORATION SUPERFUND SITE September 2003

## Site Name and Location

Kearsarge Metallurgical Corporation Superfund Site
Conway, New Hampshire

## Identification of Lead and Support Agencies

Lead Agency: **US Environmental Protection Agency**

Support Agency: **NH Department of Environmental Services**

## Statement of Purpose

This decision document sets forth the basis for the determination to issue the attached Explanation of Significant Differences (ESD) for the Kearsarge Metallurgical Corporation (KMC) Superfund Site in Conway, New Hampshire. This ESD focuses on adjustments to the remedial action and groundwater clean up goals previously selected for the site.

## Statutory Basis for Issuance of the ESD

Under Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), if the U.S. Environmental Protection Agency (EPA) determines that the remedial action being undertaken at a site differs significantly from the Record of Decision (ROD) for that site, 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. Section 300.435(c) of the National Contingency Plan (NCP), and EPA guidance (Office of Solid Waste and Emergency Response (OSWER) Directive 9200.1-23P, July 1999), indicate that an ESD, rather than a ROD amendment, is appropriate where the adjustments being made to the ROD are significant but do not fundamentally alter the overall remedy with respect to scope, performance or cost. EPA has determined that the adjustments to the ROD provided in this ESD are significant but do not fundamentally alter the overall remedy for the KMC site with respect to scope, performance, or cost. Therefore, this ESD is being properly issued. In accordance with Section 117 (d) of CERCLA and Section 300.825(a) of the NCP, this ESD will be available for public review at both the EPA Region I Record Center in Boston, Massachusetts and the Conway Public Library in Conway, New Hampshire.

## Background

The September 1990 ROD addressed contamination at this site with both source control and management of migration remedial measures. The ROD required the elimination of source areas that could "contribute to the spread of, or intensification of, contamination to the sediments, groundwater, or surface water at and off the Site". Two waste piles, the septic tank and contents, and leaching field soils were identified as source areas and were removed from the KMC site and disposed off-site as part of the selected remedy.

The management of migration actions required groundwater extraction in two areas of the site identified as the Hobbs Street area and the Culvert Area. The contaminated groundwater would undergo treatment using air stripping and activated carbon technologies. Groundwater clean up goals were established in accordance with applicable ARARs or risk based calculations. The extraction and treatment of contaminated groundwater has been ongoing for nine years.

## Overview of the ESD

Based on the information and data generated since the issuance of the September 28, 1990 ROD, as well as completion of several actions specified in the ROD, the source control and management of migration portions of the ROD have been modified.

## Change in Source Control Excavation and Extraction System

The ROD identified waste piles, the septic tank and contents, and leach field soils as source areas that contribute to groundwater contamination. These sources have been removed. Data gathered as the groundwater clean up progressed, indicated a subsurface source of groundwater contamination might still be present at the site. Further site characterization has found high concentrations of chlorinated solvents in soil at a depth of 8 to 15 feet below the ground surface in the Culvert Area. The contaminant location and the low permeable soils that exist at those depths indicate that this contaminated soil will continue to act as a source of groundwater contamination. The removal of these highly contaminated soils or source will reduce the need for continued management of migration actions from about 50 years to less than 8 years. A new groundwater extraction trench installed in place of the excavated soils will replace the existing extraction well system. Treatment will continue as described in the ROD. Contaminated soil will be excavated and then disposed of off-site at an approved location as part of this change to the remedy at the site.

## Change in Clean up Goals

The 1990 ROD for the KMC site established soils and groundwater clean up goals for eight (8) contaminants of concern (CoCs) based on the ARARs and the most current toxicity data available at that time. The groundwater clean up goal for 1-1, DCA was based on a risk assessment using toxicity data available in the absence of a promulgated clean up standard such as a Maximum Contaminant Level under the Safe Drinking Water Act. Since the remedy selection, EPA has reevaluated the toxicity data associated with all eight CoCs. Based upon this reevaluation, the clean up goal for 1,1-DCA is revised as follows:

1,1-DCA - The ROD clean up goal of 4 ug/l is revised to 3650 ug/l.

## Declaration

For the foregoing reasons and as explained herein, by my signature below, I approve the issuance of an Explanation of Significant Differences for the Kearsarge Metallurgical Corporation Superfund Site in Conway, New Hampshire, and the changes stated therein.

9/29/03
Date

Susan Studlien, Acting Director
Office of Site Remediation and Restoration
U.S. Environmental Protection Agency - NE

# EXPLANATION OF SIGNIFICANT DIFFERENCES
# KEARSARGE METALLURGICAL CORPORATION SUPERFUND SITE

## I. Introduction

### A. Site Name and Location

Site Name: **Kearsarge Metallurgical Corporation Superfund Site**

Site Location: **Town of Conway, New Hampshire**

### B. Lead and Support Agencies

Lead Agency: **US Environmental Protection Agency**

Support Agency: **NH Department of Environmental Services**

### C. Legal Authority

Under Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)[1], Section 300.435(c) of the National Contingency Plan (NCP)[2], and U.S. Environmental Protection Agency (EPA) guidance[3], 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) signed on September 28, 1990 with regard to scope, performance, or cost, EPA shall publish an explanation of the significant differences (ESD) between the remedial action being undertaken and the remedial action set forth in the 1990 ROD as well as the reasons such changes are being made.

### D. Summary of Circumstances Necessitating this Explanation of Significant Differences

The New Hampshire Department of Environmental Services (NHDES) and EPA Region 1 began an inspection and optimization review of the Kearsarge Metallurgical Corporation (KMC) groundwater remediation system during the eighth year of operation. This was in accordance with the EPA guidance document, Transfer of

---

[1]42 U.S.C. Section 9617(c).

[2]40 C.F.R. Section 300.435(c).

[3]Office of Solid Waste and Emergency Response (OSWER) Directive 9200.1-23P

Long-Term Response Action Projects to States (EPA 540-F-01-021, July, 2003). The evaluation examined the effectiveness and efficiency of the remedy in preparation for transfer of the long term response action (LTRA) phase to the State of New Hampshire for the operation and maintenance (O&M) phase.

In recent years, contaminant concentrations in the groundwater have stabilized at levels significantly above cleanup goals in the eastern portion of the KMC site. Due to this lack of progress in attainment of cleanup goals, investigations were performed to evaluate the potential existence of a continuing source of soil contamination. Results of the investigations clearly indicated a concentrated source of chlorinated organic solvents in the eastern portion of the KMC site, also referred to as the Culvert Area. The vertical and horizontal extent of this source was delineated, and options for removal or treatment of the source material were evaluated.

In addition, the cleanup goals for the contaminants of concern (CoCs) at the site were evaluated to determine if they were consistent with current applicable or relevant and appropriate requirements (ARARs) and toxicity data.

### E. Availability of Documents

This ESD and supporting documentation shall become part of the Administrative Record for the site. The ESD, supporting documentation for the ESD, and the Administrative Record are available to the public at the EPA Records Center and at a location close to the site.

| | | |
|---|---|---|
| US Environmental Protection Agency<br>Records Center<br>One Congress Street<br>Boston, MA 02114<br>(617) 918-1440 | Hours: M-F<br>and | 10:00 am - 1:00 pm<br>2:00 pm - 5:00 pm |
| Conway Public Library<br>Main Street<br>Conway, NH 03818<br>(603) 447-5552 | Hours: M-Th<br>F- Sa | 10:00 am - 8:30 pm<br>10:00 am - 5:30pm |

## II. Summary of Site History, Contamination Problems, and Selected Remedy

### A. Site History and Contamination Problems

Kearsarge Metallurgical Corporation manufactured precision stainless steel castings from 1964 until 1982 on four acres of industrial land located on Hobbs Street in Conway, New Hampshire. The KMC site is comprised of three lots along Hobbs Street, lots 139, 140, and 182 as depicted on Map 227 at the Conway Tax Assessor's Office.

The current owner of lot 139 is OCR, Inc. Lot 140 was owned by the defunct KMC. Lot 182 is owned by Conway Business Park, LLC.

The KMC site is bounded by Pequawket Pond to the south, a wooded wetland to the east, Hobbs Street and American Air Systems to the west, Hobbs Street and Conway Business Park to the northwest, and Yield House/Renovator Supply, Inc. to the north. Refer to Figure 1 for a site location map.

Kearsarge Metallurgical Corporation manufactured precision stainless steel castings on this four-acre parcel from 1964 until it went out of business in 1982. The KMC site was placed on the EPA's National Priorities List on September 21, 1984 after investigations showed that groundwater under the site was contaminated with volatile organic compounds (VOCs) including 1,1,1-trichloroethane (1,1,1-TCA). Evidence of industrial waste, which was produced from the cast-making processes (casting, cleaning, finishing, and pickling) was found on the site, including a large, 15-foot (ft)-high pile of approximately 9,000 cubic yards of solid waste. A septic tank, its contents and the leach field soils were contaminated with chlorinated solvents. The waste piles and all the septic tank associated items were identified as potential sources of continuing groundwater contamination.

## B. Summary of the Selected Remedy

The 1990 ROD addressed contamination at the KMC site with both source control and management of migration response actions, and also required long-term groundwater monitoring to evaluate progress toward attainment of cleanup goals. The source control actions included removal and off-site disposal of two waste piles, the septic tank and contents, and leaching field soils down to the water table or a depth of 6 ft.

The portion of the ROD that addressed management of migration included the installation of four extraction wells west of Hobbs Street (Hobbs Street Area), pumping at a total of 40 gpm, and 10 extraction wells east of the former KMC building (Culvert Area), pumping at a total of 2.5 gpm. The extracted groundwater is treated by multimedia filtration to remove suspended solids, air stripping to remove VOCs and activated carbon treatment of the contaminated off gas from the air stripper. The groundwater treatment plant was also equipped with a pretreatment process consisting of chemical precipitation and clarification that was designed to remove chromium, nickel, iron, manganese, and suspended solids. The treated groundwater discharges to the local publicly owned treatment plant. This groundwater remediation system has been operating continuously since the fall of 1993.

The following cleanup goals were established for groundwater and soil at the KMC site:

**Table 1**
Groundwater/Soils Cleanup Goals

| Contaminant of Concern | Groundwater Cleanup Goal (ug/l) | Soil Cleanup Goal for Aquifer Protection (ug/kg) |
|---|---|---|
| Chloroform | 100 | NA |
| Chromium | 50 | NA |
| 1,1-Dichloroethane | 4 | NA |
| 1,2-Dichloroethane | 5 | NA |
| 1,1-Dichlorothene | 7 | NA |
| Nickel (dissolved) | 700 | NA |
| Trichloroethene | 5 | NA |
| 1,1,1-Trichloroethane | 200 | 300 |

ug/l – micrograms per liter [parts per billion (ppb)]
ug/kg – micrograms per kilogram (ppb)

The source control activities were completed in 1992, and the groundwater treatment plant became operational in the fall of 1993. In 2000, one of the Culvert Area extraction wells was replaced with a 120-ft long groundwater extraction trench. Currently, three of the Hobbs Street Area wells, eight of the Culvert Area wells, and the Culvert Area trench are used to extract contaminated groundwater for treatment. One of the Hobbs Street Area wells and one of the Culvert Area wells are no longer operating because groundwater cleanup goals have been attained in the vicinity of these wells.
The chemical precipitation process in the groundwater treatment plant has not been used since 1995 because suspended solids and metals concentrations have been low. Chromium and nickel, two of the CoCs, have not exceeded the 1990 ROD cleanup goals in the groundwater treatment plant influent or monitoring wells since startup of the remediation system in 1993. The groundwater treatment plant is currently in its tenth year of operation.

## III. Basis for the Document

Since the 1990 ROD was issued, EPA has gathered additional information about the KMC site in the course of the long term response activities (operation of the groundwater extraction and treatment system). As part of this information gathering, EPA and NHDES have performed additional characterization studies to locate an

additional groundwater contamination source beyond those identified in the ROD. In addition, EPA has conducted a review of current ARARs and toxicity data for the contaminants of concern at the site to ensure that the cleanup goals established in the ROD continue to be protective.

### A. Basis for Excavation and Disposal of Additional Source Area Soils

Groundwater monitoring has been performed at the KMC site on a triannual basis to evaluate progress toward attainment of cleanup goals. Results of the monitoring indicated a steady decrease in VOC concentrations in most of the monitoring wells during the first 3 years of operation of the groundwater remediation system. A decrease in the size of the contaminant plume was also observed. Although wells in the Hobbs Street Area have continued to show improvement (VOC concentrations are now below cleanup goals in all but one monitoring well (MW-211) in the Hobbs Street Area), VOC concentrations in many of the Culvert Area wells have not decreased significantly since approximately 1997. Culvert Area extraction well EW-13 (located in the area of the KMC site with the highest groundwater VOC concentrations) was replaced by a 120-ft long extraction trench in 2000 to increase the contaminant mass removal in the Culvert Area. Although this approximately doubled the yield from the Culvert Area extraction wells, VOC concentrations in Culvert Area groundwater have not shown a significant improvement since installation of the trench. In well EW-13, groundwater concentrations of the primary contaminant, 1,1,1-TCA, are more than two orders of magnitude higher than the cleanup goal of 200 (mg/L).

As a result of the groundwater concentrations in the Culvert Area stabilizing at concentrations significantly above cleanup goals, investigations were performed to evaluate the potential existence of a continuing source in the Culvert Area. A passive soil gas survey, vertical profiling of groundwater concentrations, and soil sample collection using a GeoProbe drill rig were conducted in 2001 and 2002. These investigations, although conducted site-wide, focused on the Culvert Area where the highest groundwater concentrations were consistently observed.

Results of the investigations clearly indicated a concentrated source of chlorinated organic solvents in the Culvert Area of the KMC site. The majority of the contaminant mass was observed in the saturated zone in low permeability soils (silt and clayey silt with hydraulic conductivities on the order of $10^{-6}$ centimeters per second) at a depth of 8 to 15 ft below ground surface (bgs). In situ chemical oxidation or stimulated biodegradation of the VOCs is not feasible to address this newly identified source of contamination because of the high concentrations of VOCs and the difficulty associated with distributing oxidizing or biological amendments in low permeability soils. The presence of the chlorinated solvent source in the low permeability soils also means that attainment of cleanup goals by the pump and treat system will not be achieved for decades unless other measures are taken to remove the source. Because of the

relatively shallow depth of the source materials, excavation and off-site disposal is the most cost-effective approach for expedited removal of the contaminant mass.

The original goal of the investigations was to delineate the soils in this new source area that contained greater than 0.3 milligrams per kilograms (mg/kg) 1,1,1-TCA, the soil cleanup goal specified in the ROD. During the GeoProbe investigations, however, it was observed that the area of soil contamination with 1,1,1-TCA concentrations greater than 0.3 mg/kg was much larger than anticipated and extended beyond the limited study area. Instead, the data from the GeoProbe investigations were used to develop soil VOC concentration contours for 1 mg/kg; 6 mg/kg (the Resource Conservation Recovery Act land disposal limit for 1,1,1-TCA); and 42 mg/kg, the NHDES Risk Characterization and Management Policy (RCMP) S-1 standard for 1,1,1-TCA in soil. The VOC concentration contours are shown in Figure 2. Although the contours delineate total VOC concentrations, in most cases, 1,1,1-TCA accounts for greater than 90% of the total VOC concentrations.

Figure 3 shows the cumulative mass of VOCs removed from the KMC site since startup of the groundwater remediation system. Approximately 49.5% of the contaminant mass in the Culvert Area has been removed via pump and treat during the past nine years of operation, with 36.6% of the mass being removed during the first year of operation. An average of less than 2% of the original total mass has been removed per year for each of the last eight years. At a removal rate of 2% per year of continued operation, approximately 50 more years would be required to meet cleanup goals. In addition, calculations were performed to estimate the mass of contaminants currently remaining in the source area. For the purpose of this estimate, the source area was delineated by the 1 mg/kg contour. In addition, the contaminant mass contributed by soils with VOC concentrations greater than 6 mg/kg and 42 mg/kg were also estimated. Table 2 contains these estimates in pounds, as well as in percent of total contaminant mass at the KMC site.

-

**Table 2**
**KMC VOC Mass Estimate**

| Source | Total VOC Mass (pounds) | Percent of Total VOC Mass | Percent of Remaining VOC Mass |
|---|---|---|---|
| Hobbs St. GW recovery through 2002 (total VOCs) | 74.6 | 22.4 | NA |
| Culvert Area GW recovery through 2002(total VOCs) | 126.3 | 38.0 | NA |
| Culvert Area Soil with >42 mg/kg total VOCs | 19.1 | 5.8 | 14.5 |
| Culvert Area Soil with > 6 mg/kg and < 42 mg/kg total VOCs | 70.6 | 21.2 | 53.7 |
| Culvert Area Soil with >1 mg/kg and < 6 mg/kg total VOCs | 39.4 | 11.9 | 30.0 |
| Hobbs St. Area and Culvert Area Extended Plume | 2.4 | 0.7 | 1.8 |
| **TOTAL** | **332.4** | **100** | |

Notes: 1. Mass removed by pump and treat was estimated based on average extraction well production rates and average VOC concentrations in nearby monitoring wells.
2. The LDR [c] for 1,1,1-TCA under 40 CFR Part 268 is 6 mg/kg.
3. The NHDES RCMP S-1 for 1,1,1-TCA (based on leachability) is 42 mg/kg. The Risk S-1 standard for 1,1,1-TCA (based on direct contact) is 2300 mg/kg.
4. Volatile organic compound mass remaining in the extended dissolved plume was estimated based on average VOC concentrations in monitoring wells and the estimated volume of groundwater in the extended plume, assuming a soil porosity of 0.3.

Based on the information provided in Table 2, if soils with VOC concentrations greater than 1 mg/kg were removed, 98.2% of the remaining contaminant mass would be removed; if soils with VOC concentrations greater than 6 mg/kg were removed, 68.2% of the remaining contaminant mass would be removed; and if soils with VOC concentrations greater than 42 mg/kg were removed, only 14.5% of the remaining contaminant mass would be removed. Volumes of soil and cost estimates for removal and disposal of the contaminated soil to each of these three levels were also prepared. Based on the mass removal and cost analysis, removal of soils with greater than 6 mg/kg VOCs appears to provide the best value in remedial effectiveness and reduction in remedial duration. See Table 3 for cost summary.

-

**Table 3**

**Summary of Cost Estimates**

| Soil Cleanup Goal | 1 mg/kg | 6 mg/kg | 42 mg/kg | Do Nothing |
|---|---|---|---|---|
| Capital Costs | $3,150,015 | $1,067,367 | $169,792 | $0 |
| Additional Years of Pump and Treat | 1 | 8 | 35 | 50 |
| Present Worth of Long Term Pump and Treat | $194,175 | $1, 403,398 | $4,297,444 | $5,145,953 |
| Total Present Worth Costs | $3,344,190 | $2,471,305 | $4,467,236 | $5,145,953 |

If soils with VOC concentrations greater than 6 mg/kg were removed, only 39.4 pounds of VOCs would remain in the Culvert Area. Most of the remaining mass would be in the fine sand unit, rather than the low permeability silt and clay, making it easier to remove by pump and treat. In addition to the excavation of contaminated soils, a new groundwater extraction trench will be installed in the center of the excavated source area. This new trench is expected to increase the VOC removal rate in the Culvert Area from three pounds per year (2002 Culvert Area mass removal) to approximately five pounds per year, therein accelerating attainment of cleanup goals. Although a post-source removal cleanup time frame is difficult to predict, attainment of cleanup goals within eight years is believed to be reasonable.

## B. Basis for Adjustment of Cleanup Goals

The ROD cleanup goal for 1,1-DCA (1,1- dichloroethane) was based on a risk assessment using toxicity data available in 1990 in the absence of an ARAR such as a Maximum Contaminant Level (MCL) under the Safe Drinking Water Act. Since the remedy was selected, EPA has recalculated the risk associated with1,1-DCA based upon currently accepted risk assumptions. Based upon these calculations, the groundwater cleanup goal for 1,1-DCA is adjusted as explained below:

1,1-DCA - The ROD groundwater cleanup goal of 4 ug/l appears to have been the result of an error in the calculation for this cleanup goal. EPA has recalculated this cleanup goal based upon current toxicity data and has adjusted the cleanup goal upward from 4 ug/l to 3650 ug/l.

## IV. Description of Significant Differences

EPA is revising the remedy for this site by removing additional source materials that are acting as a continuing source of groundwater contamination at the KMC site, by improving the extraction system by installing a new extraction trench in the source area, and by correcting the site-specific groundwater cleanup goal for 1,1-DCA consistent with current toxicity data.

### A. Excavation and Disposal of Additional Source Area Soils

**Original Remedy**

The 1990 ROD addressed contamination at the KMC site with both source control and management of migration remedial measures. The ROD required the elimination of source areas that could "contribute to the spread of, or intensification of, contamination to the sediments, groundwater, or surface water at and off the Site". Two waste piles, the septic tank and contents, and leach field soils were identified as source areas and were required to be removed from the KMC site and disposed off-site as part of the selected remedy. A cleanup goal of 300 ppb of 1,1,1-TCA was established for soils.

The ROD (EPA, 1990) also states that "The remedy is expected to reach target cleanup levels in all locations in the aquifer in 10 years." In addition, "(i)f, after 5 years, there is no progress, or if after 10 years, cleanup levels are not attained, the groundwater remedy shall be reconsidered." Since the discovery of high concentrations of chlorinated solvents (up to 82,900 mg/kg) in the low permeability soils, it has become apparent that groundwater cleanup goals will not be attained in the Culvert Area within the 10-year time frame specified in the ROD (EPA, 1990).

The ROD required excavation of "the area of the leach field down to the water table or a depth of 6 ft". Based on recent GeoProbe site investigation activities, it appears that not all of the highly contaminated source material that migrated from the septic tank and leach field was identified and removed during the initial remedial actions. Chlorinated solvents discharged from the septic tank and leach field probably moved downward through the soils and accumulated in the low permeability silt and clay soils in the Culvert Area. Therefore, it appears that an additional source area actually extended deeper and further to the northeast than was identified in the Remedial Investigation. As a result, the septic tank and leach field soils were removed from the KMC site, as mandated by the ROD, but the contaminated soils extending outside of the leach field source area remained in place.

**Modified Remedy**

The modified remedial action requires excavation and disposal of the remaining highly contaminated soils located at depths of 8 to 15 ft bgs, all of which are below the water

table. Figure 4 depicts the source areas that were required to be removed in accordance with the ROD, as well as the area that will require additional excavation and off-site disposal. Specific remedial activities will include:

1. Removal of existing aboveground groundwater collection system and addition of protective devices on existing groundwater extraction and monitoring wellheads, as needed.

2. Excavation, stockpiling, and reuse of overburden soils (approximately the initial 8 ft of soil) for backfill, as needed.

3. Excavation, stockpiling, waste disposal characterization, loading, transport, and disposal of contaminated soils (greater than 6 mg/kg VOCs) with the primary contaminant being 1,1,1-TCA. These soils are located at depths between 8 and 15 ft below ground surface in the area shown on Figure 4. Contaminated soils will be disposed of off-site in accordance with all applicable federal and state requirements.

4. Installation and maintenance of sediment control measures, decontamination areas, and soil staging areas, as needed.

5. Construction, operation, and maintenance of dewatering and settlement systems for the management of groundwater, surface water, and soil dewatering activities, as needed.

6. Installation of a larger groundwater recovery trench within specified limits of the excavated area. The new trench will extend the full length and width of the proposed excavation shown in Figure 1 (approximately 150 feet in length by 25 feet in width) and will extend to a depth of 10 to 15 feet below ground surface. The bottom 5 feet of the trench will be filled with crushed stone to maximize groundwater flow into the trench.

## B. Cleanup Goals

### Original Remedy

The 1990 ROD for the KMC site established cleanup goals for eight (8) CoCs based on toxicity data and ARARs available at that time.

### Modified Remedy

To ensure that the cleanup goals are protective based on the most recent toxicity data , EPA is adjusting the groundwater cleanup goal for 1,1-DCA to a level that is currently considered protective for this contaminant. The remaining ROD-established cleanup

goals for 1,2-dichloroethane, 1,1-dichloroethene, trichloroethene, chromium, nickel and 1,1,1-TCA in groundwater are all protective of human health and the environment and will not be changed. Because chloroform has not been detected at the site, ARAR changes to this contaminant are not addressed here. EPA is correcting the 1,1-DCA cleanup goal as follows:

| CoC | ROD Cleanup Goal (ug/l) | Corrected Cleanup Goal (ug/L) |
|---|---|---|
| 1.1-DCA | 4 | 3650 |

### C. Summary of Costs

Volumes of soil and cost estimates for removal and disposal of the contaminated soil to three levels were prepared. Based on this mass removal and cost analysis, removal of soils with greater than 6 mg/kg VOCs provided the best value in remedial effectiveness and reduction in remedial duration. The estimated capital cost for excavation and off-site disposal of the source area soils with VOC concentrations greater than 6 mg/kg, including the cost for installation of a new extraction trench and engineering, design, and administrative costs, is estimated to be $1,070,000. This additional response action would be expected to reduce the duration of long-term O&M by approximately 42 years, from 50 years to less than 8 years. Assuming a yearly cost of $200,000 for O&M of the groundwater remediation system and a 3% discount rate, an estimated reduction in the present worth cost of O&M from $5,145,953 to $1,403,938, would be expected if additional source area soils were removed from the KMC site.

## V. Supporting Agency Comments and Community Acceptance

NHDES has participated with EPA in developing the changes to the selected remedy described herein and concurs with these changes and the approach adopted by EPA (see letter of concurrence provided in Appendix A).

## VI. Statutory Determination

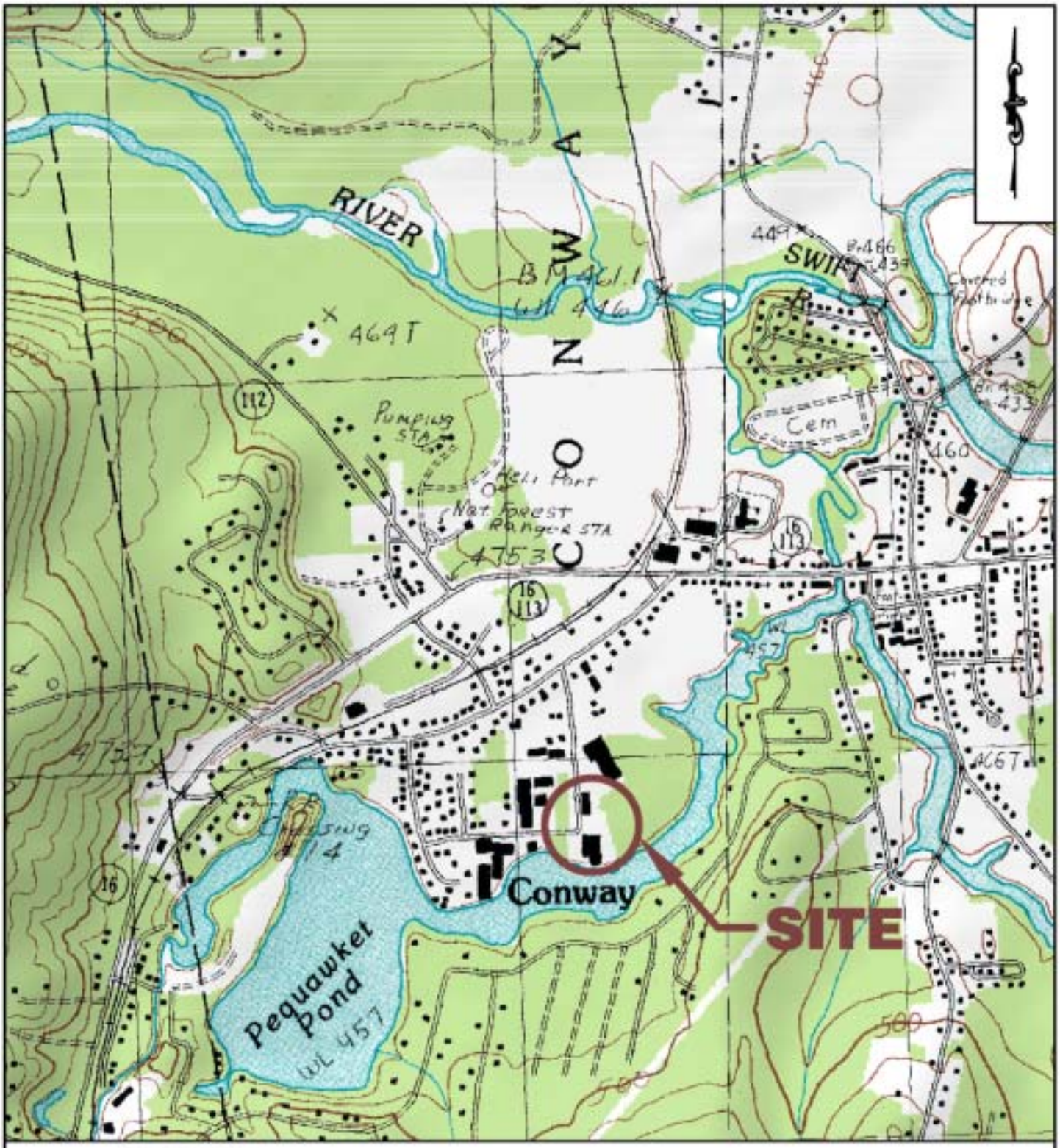
EPA believes that the remedy as adjusted herein remains protective of human health and the environment and satisfies the requirements in Section 121 of CERCLA. The 1990 ROD cleanup goals, as well as the adjusted goals established by this ESD, are currently attained, or are anticipated to be attained in less than 8 years of implementation of the additional source area remedial actions specified herein. Currently, groundwater beneath the KMC site is not used for drinking water. The 1990 ROD and supporting documents did not note any unacceptable risks to human health, public welfare, and the environment from exposure to environmental media in Pequawket Pond. Therefore, from an overall risk perspective, the pond does not

appear to have been adversely impacted by the groundwater beneath the KMC site. Recent sampling results do not alter the conclusion of the 1990 Risk Assessment, assuming that the groundwater is not used as a drinking water source. In addition, there are no newly promulgated applicable or relevant and appropriate federal or state requirements that call into question the protectiveness of the remedy at this site.

## VII. Administrative Record

In accordance with Section 117(d) of CERCLA and §300.825(a) of the NCP, this ESD will become part of the KMC site's Administrative Record which is available for public review at both the EPA Region I Record Center at One Congress Street, Boston, Massachusetts 02114 (617-918-1440), and the Conway Public Library, Main Street Conway, New Hampshire 03818. Additionally, a notice that briefly summarizes the changes and the reasons for making such changes as described in this ESD, will be published in a major local newspaper of general circulation following the signing of this ESD.

**Appendix A -** NHDES Concurrence Letter on the 2003 ESD for the Kearsarge Metallurgical Corporation Superfund Site.




NHDES
KMC SUPERFUND SITE
CONWAY, NEW HAMPSHIRE

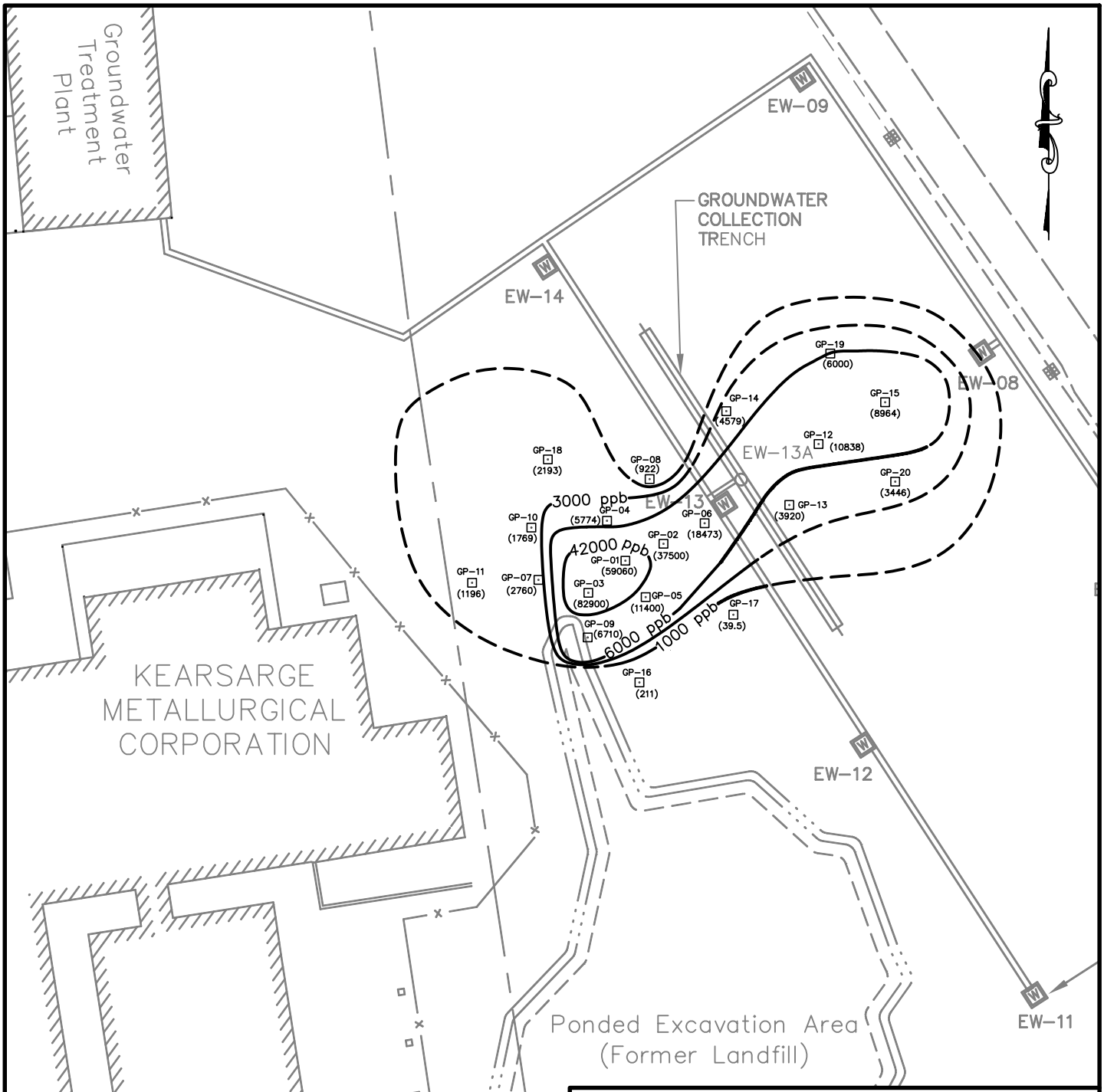
NEW HAMPSHIRE DEPARTMENT OF Environmental Services

SITE LOCATION MAP

WESTON SOLUTIONS
MANCHESTER NEW HAMPSHIRE

| | |
|---|---|
| DRAWN | A.J.M. |
| DATE | SEP. 2003 |
| FIGURE NO. | 1 |

M:\Design\DWG\KRSARGE\ESD\FIG 4-1.dwg, Layout1, 09/04/2003 03:12:25 PM, glrondeb, 1:1




NHDES
KMC SUPERFUND SITE
CONWAY, NEW HAMPSHIRE

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

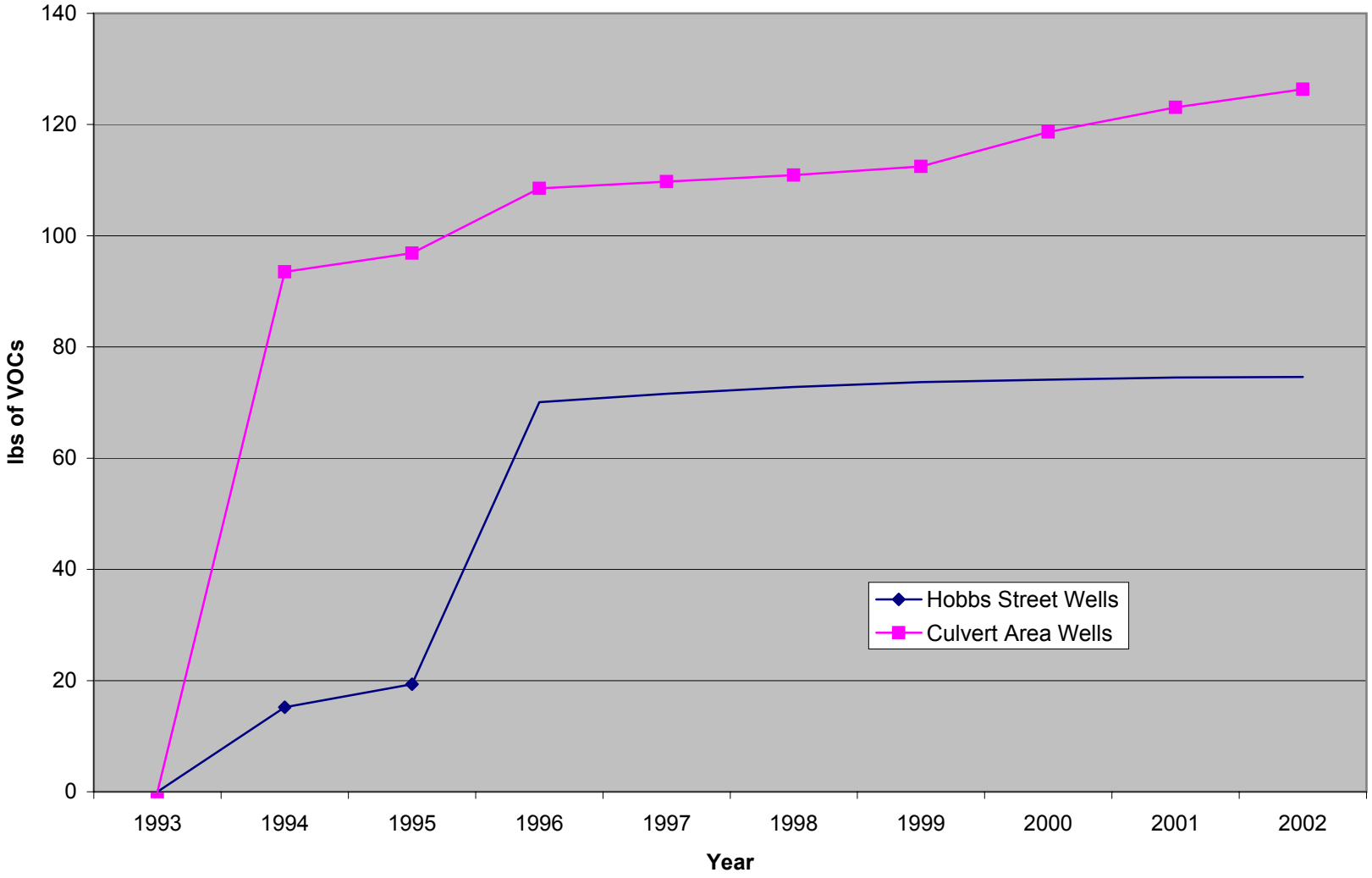
# TOTAL VOC CONCENTRATIONS IN SOIL

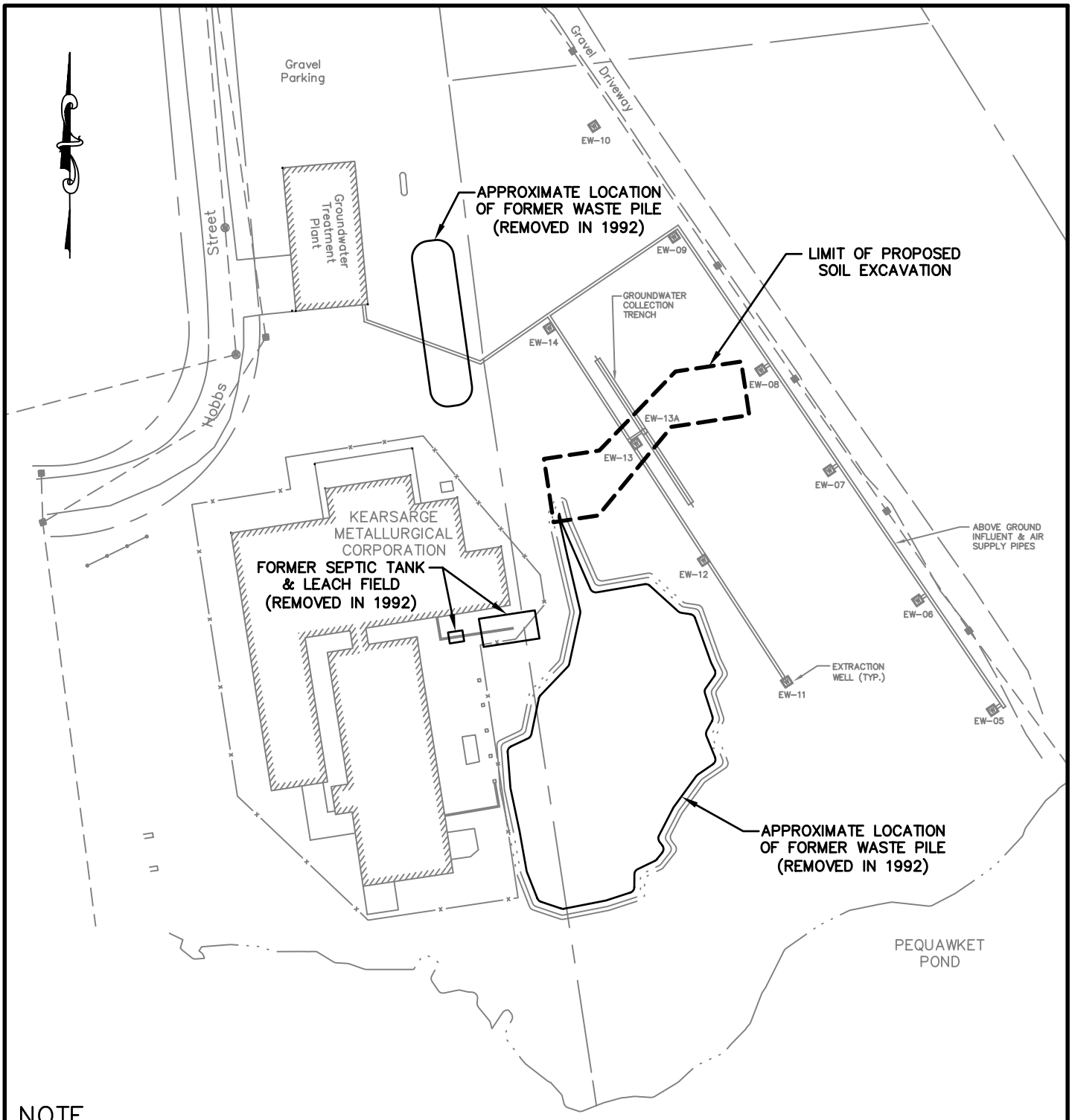
WESTON SOLUTIONS
MANCHESTER NEW HAMPSHIRE

| | |
|---|---|
| DRAWN | A.J.M. |
| DATE | SEP. 2003 |
| DRAWING NO. | 2 |

M:\Design\DWG\KRSARGE\ESD\FIG 6-1.dwg, FIG 6-1 (2), 09/05/2003 03:25:38 PM, girardeb, 1:1

**Figure 3**
**Cumulative VOCs Removed from Kearsarge Site**






NOTE

CONTAMINATED SOIL BETWEEN 8FT. AND 15FT. BELOW GROUND SURFACE WILL BE REMOVED FROM THE PROPOSED SOIL REMOVAL AREA AND DISPOSED OFF SITE.

GRAPHIC SCALE

100 50 0 50 100

APPROXIMATE SCALE IN FEET

NHDES
KMC SUPERFUND SITE
CONWAY, NEW HAMPSHIRE

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

# PROPOSED AREA OF SOIL REMOVAL

WESTON SOLUTIONS
MANCHESTER NEW HAMPSHIRE

| | |
|---|---|
| DRAWN | A.J.M. |
| DATE | SEP. 2003 |
| DRAWING NO. | 4 |

M:\Design\DWG\KRSARGE\ESD\FIG 7-1.dwg, FIG 7-1, 09/04/2003 04:40:43 PM, girardeb, 1:1

# APPENDIX A

State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES
6 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095
(603) 271-3644 FAX (603) 271-2181

September 24, 2003



Susan Studlien, Acting Director
Office of Site Remediation and Restoration
EPA - New England, Region I
1 Congress Street, Suite 1100
Boston, MA 02114-2023

RE: **EXPLANATION OF SIGNIFICANT DIFFERENCES**
**Kearsarge Metallurgical Corporation Superfund Site**
**Conway, New Hampshire - [CERCLIS No. NHD062002001]**

SUBJECT: **Declaration of Concurrence**

Dear Ms. Studlien:

The New Hampshire Department of Environmental Services (Department) has reviewed the "Declaration for the Explanation of Significant Differences Kearsarge Metallurgical Corporation Superfund Site" (ESD) dated September 2003. The United States Environmental Protection Agency (EPA) prepared this ESD in accordance with the provisions of Section 117 (c) the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. The Record of Decision (ROD), issued on 28 September 1990, addressed the remedial actions necessary under CERCLA, as amended, to manage potential threats to human health and the environment at the Kearsarge Metallurgic Corporation Superfund Site ("Site").

## Overview and Justification of the Explanation of Significant Differences

This ESD focuses on additional remedial actions and adjustments to a ground water cleanup goal previously selected for the Site. The ESD defines and justifies the removal of additional source materials that are acting as a continuing source of ground water contamination and changes the cleanup goal established in the 1990 ROD for 1,1- dichloroethane (1,1-DCA) to be consistent with current toxicity data.

### Source Removal

The ROD addressed contamination at this site with both source control and management of migration remedial measures. The ROD required the elimination of source areas that could "contribute to the spread of, or intensification of, contamination to the sediments, ground water, or surface water at and off the Site". Two waste piles, the septic tank and contents, and leaching field soils were identified as source areas and were required to be removed and disposed off-site, as part of the selected remedy. The management of migration actions included extraction and treatment of contaminated ground water from two areas of the Site.

The selected remedy, as presented in the ROD, required a ground water extraction and treatment system to "minimize further horizontal and vertical migration of contaminated ground water from the KMC site". After nine years of operation of the ground water remediation system, concentrations of 1,1,1-trichloroethane (TCA) in groundwater in the eastern portion of the Site stabilized at over two orders of magnitude higher than the cleanup goal and it became apparent that the management of migration actions were unlikely to achieve cleanup goals within the next few decades. This lack of progress indicated that a previously undetected source of groundwater contamination remained at the site.

Based on recent site investigation activities, it appears that not all of the highly contaminated source area soils associated with the septic tank and leach field were identified and removed during the initial remedial actions. Chlorinated solvents that were discharged from the septic tank and leach field appear to have moved downward through the soils and accumulated in the low permeability silt and clay soils. Consequently, contamination in the leach field source area soils actually remains in place and extend deeper and further to the northeast than was identified in the Remedial Investigation.

Therefore, EPA is issuing this ESD to revise the ROD-defined remedial action to include the removal and off-site disposal of the aforementioned source material. At the completion of the source area remedial actions specified in this ESD, ground water is anticipated to meet cleanup goals within 2 to 8 years.

**Change of Cleanup Goals**

The EPA is also adjusting the cleanup goal for 1,1-DCA from 4 $\mu$g/L to 3,650 $\mu$g/L.

At the time the ROD was written, there was not a promulgated cleanup goal for 1,1-DCA. Therefore, an EPA-calculated risk-based cleanup goal of 4 $\mu$g/L was adopted for 1,1-DCA. Subsequently, a review of the calculations revealed an error which will result in changing the cleanup goal from 4 $\mu$g/L to 3,650 $\mu$g/L. Following the ROD, the State of New Hampshire promulgated Env-Wm 1403, Groundwater Management and Groundwater Release Detection Permits, which included an ambient groundwater quality standard (AGQS) of 81 $\mu$g/L for 1,1-DCA. However, in accordance with CERCLA, post-ROD promulgated standards can not be applied to a remedy in an ESD (i.e., ARARs are "frozen" in time). Therefore, the AGQS can not be applied as an ARAR.

The method of calculating the 3,650 $\mu$g/L value for 1,1-DCA is based on assuming a hazard index of one and the same exposure scenario as other contaminants of concern identified in the ROD. Both the EPA and State of NH use the same equation to calculate an initial exposure value. However, the State rounds up to 4,000 $\mu$g/L then applies a number of conservative constants, including: (1) a safety factor of 10, due to limited evidence that 1,1-DCA may be carcinogenic; and (2) a relative source contribution safety factor of 5. Therefore, the AGQS resembles a net fifty-fold reduction in the original toxicity value.

As of the April 2003 sampling round, nine wells exceeded a concentration of 4 µg/L, one well exceeded the AGQS of 81 µg/L, and no wells exceeded the revised cleanup standard of 3,650 µg/L for 1,1-DCA. The one AGQS exceedance is located in the middle of the source area designated for removal. As a result, all site wells are anticipated to be in compliance with the AGQS following the source removal action.

## The Proposed Plan's Consistency with State's Remediation Requirements

The source removal action will remove soil with concentrations of total volatile organic compounds (VOCs) in excess of 6 mg/kg. While this cleanup goal is more rigorous than the State of New Hampshire Risk Characterization and Management Policy's most stringent soil standard for the primary source contaminant, TCA at 42 mg/kg, it is justified based on a site specific evaluation of the impact of the saturated contaminated soils on ground water quality.

The modified cleanup criteria of 3,650 µg/L for 1,1-DCA is not consistent with the current AGQS listed in Env-Wm 1403. At the time the ROD was signed, the State had not yet promulgated a standard for 1,1-DCA. Whereas EPA cannot incorporate newly promulgated standards through an ESD (i.e., in accordance with EPA guidelines, newly promulgated standards can only be incorporated through an amended ROD), the current State standard can not be applied to the Superfund response action, at this time. However, at the end of the remedial action, EPA must conduct a protectiveness finding which will incorporate all ARARs current at that time.

## State Concurrence

Recent investigations identified contaminated soils that are continuing to act as a source of ground water contamination which has resulted in concentrations of some contaminants stabilizing at greater than two orders of magnitude above the site cleanup goal. A cost-benefit analysis concluded the most cost effective approach for attaining groundwater cleanup goals would require the excavation and off-site disposal of soils with total VOC concentrations in excess of 6 µg/L.

Although the revised cleanup goal for 1,1-DCA is greater than the State's AGQS cleanup goal for the same and as a result of the source removal action identified in this ESD, it is anticipated that site ground water will meet all State groundwater standards and ROD cleanup goals within 2 to 8 years. Finally, all State standards will be employed at the conclusion of the remedial action in a protectiveness finding report.

The Department believes that the remedy as adjusted in this ESD will be protective of human health and the environment and will satisfy the requirements in Section 121 of CERCLA. The remedial and cleanup level revisions made by this ESD will not cause increased threat to public health or the environment and will decrease the cost to implement the remedy. Therefore, the Department, acting on behalf of the State of New Hampshire, concurs with changing the selected elements, as described in the ESD.

In striving to maximize the effectiveness of limited public and private resources, the Department continues to seek reasonable and practical solutions to the complex challenges associated with contaminated site cleanups. The partnership and dedication of EPA and the Department will speed up the achievement of our mutual environmental goals at this Site. As always, the Department stands ready to provide the guidance and assistance that EPA may require to take the actions necessary to protect human health and the environment completely and cost-effectively.

Sincerely,

Philip J. O'Brien, Ph.D.
Director
NHDES Waste Management Division

cc: Richard Gochlert, USEPA
Andrew Hoffman, NHDES
Richard Pease, NHDES
Carl W. Baxter, NHDES
Richard Head, NH DOJ