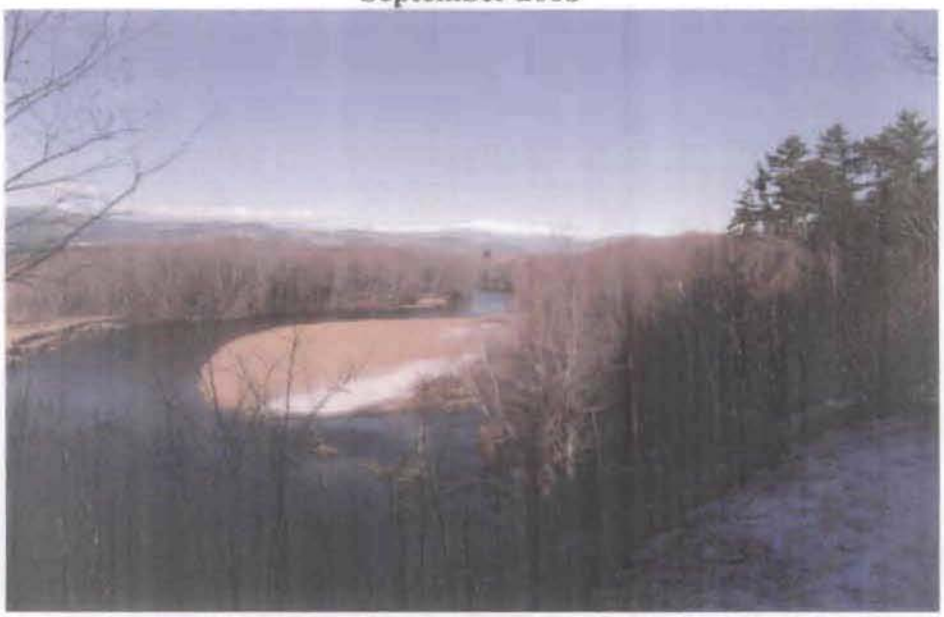
US Army Corps of Engineers®
New England District

EPA
Region 1, New England

Third Five-Year Review Report
For
The Kearsarge Metallurgical Corporation Superfund Site
Town Of Conway
Carroll County, New Hampshire
September 2008



Saco River Valley
Conway, New Hampshire

Prepared by
U.S. Army Corps of Engineers
New England District
Concord, MA
Prepared for
United States Environmental Protection Agency
Region I-New England
Boston, Massachusetts

Approved by:

James T. Owens, III, Director
Office of Site Remediation and Restoration

Date: 9-26-08

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EXECUTIVE SUMMARY

The United States Environmental Protection Agency (EPA) is required to conduct five-year reviews consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This is the third five-year review for the Kearsarge Metallurgical Corporation (KMC) Superfund Site (the Site). This review is a policy review. The action that triggered the Five Year Review cycle was completion of Operable Unit (OU) 2 construction, the ground water remediation system for the selected management of migration remedy, on September 24, 1993.

The Record of Decision (ROD, EPA 1990) and two Explanation of Significant Differences (ESDs) documents (dated 1992 and 2003) define the remedy. OU1 is the source control component and OU2 is the management of migration component. The remedy provides for protection of human health through active remediation by soil removal, ground water pumping and treatment, and long-term ground water monitoring with five year reviews. The remedies were modified with ESDs because contamination levels were not significantly decreasing over time. The remedies were modified to include additional source removal and replacement of 10 extraction wells with a new extraction trench. The 2003 ESD also describes the revision of the ground water cleanup goal for 1,1-dichloroethane (DCA) from 4 μg/L to 3650 μg/L to correct the concentration calculated for the ROD. The purpose of the third five-year review is to assure continued protection of human health and the environment.

The remedy is not currently being operated as originally intended because the ground water extraction system was shut off to evaluate ambient conditions. In December 2005 the decision was made by NHDES, with EPA concurrence, to discontinue pumping and treating ground water because the mass of volatile organic compounds (VOCs) relative to the volume of water being pumped was low and it was believed that the plume would stabilize and reach cleanup levels through monitored natural attenuation in a reasonable time frame. After two years of monitoring, data indicate that there are still slight exceedances of the clean up goals for two contaminants of concern; 1,1,1-trichloroethane (TCA) , and 1,1-dichlorethene (DCE). Although ground water contaminant concentrations and plume dimensions have decreased from the initial state, a rebound of contamination with continued clean-up goal exceedances may be occurring. The plume does not appear to be stabilized; however, additional data must be obtained to further evaluate and support a determination that a change in the remedy to Monitored Natural Attenuation (MNA) may be warranted. New wells installed as part of the source removal and as part of the post treatment plant shutdown evaluation indicate that the contaminants are being transported by ground water moving to the north and east. Site-wide monitoring is performed semi-annually.

Historically, a part of the contaminant plume discharged to a drainage culvert and then directly to Pequawket Pond. The remedial actions of pumping the ground water and the recent source removal have reduced the level of contamination that is discharged to the culvert and thus to the pond. The contaminant levels are below the surface water quality standards for the pond.

The following statements relate to the protectiveness of the remedy:

- The remedy under OU1 is protective of human health and the environment because the waste piles and contaminated leach field soils that could contribute to direct exposure contact have been removed.
- A protectiveness determination of the remedy at OU2 can not be made at this time and must be deferred until further information is obtained. Further information will be obtained by taking the following actions:

- Completion of an MNA Evaluation Study including additional delineation of the contaminant concentrations in the aquitard to determine the remaining mass, modeling of the ground water and evaluation of MNA criteria applicable to the Site and timeframes till cleanup standards are met;

- Evaluation of the ability to implement and the implementation of institutional controls;

- Potential remedy change to MNA, if appropriate, through a future decision document with a public meeting and comment period, and;

- Evaluation of the vapor intrusion pathway using appropriate guidance.

Overall, the protectiveness determination for the remedy at the KMC Site has been deferred until further information is obtained. The additional data and evaluations will occur over the next fifteen months (by approximately December 2009) at which time an Addendum to this report will issued and a protectiveness determination will be made for the entire Site. If a change in the remedy to MNA is not acceptable further active remedial measures will likely need to be initiated.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site name: Kearsarge Metallurgical Corporation Superfund Site		
EPA ID: NHD062002001		
Region: 1	State: NH	City/County: Conway/Carroll

SITE STATUS				
NPL status: **X** Final Deleted Other (specify)				
Remediation status (choose all that apply):	Under Construction	Operating	**X**	Complete
Multiple OUs? **X** YES NO	Construction completion date: 9/24/93			
Has site been put into reuse? NO				

REVIEW STATUS	
Lead agency: **X** EPA **X** State Tribe Other Federal Agency _____	
Author name: U.S. Army Corps of Engineers New England District Chemistry and Geology Section	
Author title:	**Author affiliation:** U.S. Army Corps of Engineers
Review period:** 09/ 30/ 2003 to 09/30/2008	
Date(s) of site inspection: 11/28/2007	

Type of review:

X	Post-SARA	____	Pre-SARA	____	NPL-Removal only
____	Non-NPL Remedial Action Site	____	Regional Discretion	____	NPL State/Tribe-lead

Review number: 1 (first) 2 (second) **X** 3 (third) Other (specify) _____

Triggering action:

____	Actual RA Onsite Construction at OU #____	Actual RA Start at OU#	____
____	Construction Completion	Previous Five-Year Review Report	**X**
____	Other (specify) **Signing of ROD**		

Triggering action date *(from WasteLAN)*: 09/30/2003
Due date (five years after triggering action date): 09/30/2008

* ["OU" refers to operable unit.]
** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

FIVE-YEAR REVIEW SUMMARY FORM, CONT'D.

Issues:

1. Since shutdown of the ground water treatment facility, initial improvements to the ground water quality may not be continuing as expected and that the contaminated ground water plume may not be stable.

2. Land ownership by defunct corporations may limit the ability to implement and monitor institutional controls.

3. The ROD does not include MNA or institutional controls in the remedy.

4. There is potential for contaminant migration into the treatment plant building via vapor intrusion from VOCs in ground water. Inhalation of VOCs could occur if any building above the ground water plume is occupied.

Recommendations and Follow-up Actions:

1. Completion of ongoing MNA Evaluation Study including additional delineation of the contaminant mass, modeling, and evaluation of MNA criteria.

2. Evaluate options to implement institutional controls on appropriate properties.

3. Issue future decision document with public meeting and comment period to include MNA, if appropriate, and ICs in the remedy.

4. Evaluate the vapor intrusion pathway and determine if it is a concern using appropriate guidance.

Protectiveness Statement(s)

Based on the information gathered in support of this five year review, the following protectiveness statements can be made.

Overall, the protectiveness determination for the remedy at the KMC Site has been deferred until further information is obtained.

The remedy at OU1 is protective of human health and the environment because the waste piles and contaminated leach field soils that could contribute to direct exposure contact have been removed.

A protectiveness determination of the remedy at OU2 can not be made at this time and must be deferred until further information is obtained. Further information will be obtained as described above in the recommendations and follow up actions.

Other Comments:

Vapor intrusion should be evaluated to ensure there is no complete pathway if the treatment plant is re-started or if the building is occupied.

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LIST OF ABBREVIATIONS AND ACRONYMS

µg/L	micrograms per Liter
AGQS	Ambient Ground water Quality Standards
AS	Air Stripper
ARARs	Applicable or Relevant and Appropriate Requirements
BDL	Below Detection Limit
Bgs	Below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability
CDM	Camp Dresser &McKee, Inc.
CFR	Code of Federal Regulations
COCs	Contaminants of Concern
CVFD	Conway Village Fire District
CVOC	Chlorinated Volatile Organic Compound
CWA	Clean Water Act
Cy	Cubic Yard
DCA	Dichloroethane
DCE	Dichloroethene or Dichloroethylene
DOT	Department of Transportation
EPA	Environmental Protection Agency
ESD	Explanation of Significant Differences
EW	Extraction Well
FYR	Five Year Review
GAC	Granular Activated Carbon
GEI	Geotechnical Engineers, Inc. of Concord, NH
GMZ	Ground water Management Zone
GWTS	Ground Water Treatment System
HHRA	Human Health Risk Assessment
IC	Institutional Control
IRIS	Integrated Risk Information System
KMC	Kearsarge Metallurgical Corporation
LTRA	Long Term Response Action
MCL	Federal Maximum Contaminant Levels
mg/kg	milligrams per kilogram
MM	Management of Migration
MNA	Monitored Natural Attenuation
MTBE	methyl-tert butyl ether
MW	Monitoring Well
MWS	Monitoring Well Shallow
NGVD	National Geodetic Vertical Datum
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NHBSWM	New Hampshire Bureau of solid Waste Management
NHDES	New Hampshire Department of Environmental Services
NPDES	National Pollution Discharge Elimination System
NPL	National Priorities List
O&M	Operations and Maintenance
OSHA	Occupational Safety and Health Administration
OSWER	Office of Solid Waste and Emergency Response
OU	Operable Unit
P.G.	Professional Geologist
POTW	Publicly Owned Treatment Works
ppb	Parts per billion

PRPs	Potentially Responsible Parties
PSR	Post Source Removal
PZ	Piezometer
RAOs	Remedial Action Objectives
RA	Remedial Action
RCRA	Resource Conservation and Recovery Act
RD/RA	Remedial Action/Remedial Design
RfD	Reference Dose
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
SC	Source Control
SARA	Superfund Amendments and Reauthorization Act
SDWA	Safe Drinking Water Act
SOW	Scope of Work
SW	Surface Water
TBC	To be considered
TCA	Trichloroethane
TCE	Trichloroethene or Trichloroethylene
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VC	Vinyl Chloride
VE	Vapor Extraction
VOC	Volatile Organic Compound
WESTON	Weston Solutions, Inc.

1.0 INTRODUCTION

1.1 Regulatory Background

The United States Environmental Protection Agency (USEPA) is required to conduct five-year reviews consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

CERCLA §121(c), as amended, states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The NCP part 300.430(f)(4)(ii) of the Code of Federal Regulations (CFR) states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

1.2 Purpose of the Five -Year Review

The purpose of this five-year review is to determine whether the remedy for the KMC Superfund Site (Figure 1) is protective of human health and the environment. Specifically, the report addresses the following 3 questions stated in EPA's Five-Year Review Guidance Document (OSWER No. 9355.7-03B-P):

Question A: *Is the remedy functioning as intended by the decision documents?*

Question B: *Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of remedy selection still valid?*

Question C: *Has any other information come to light that could call into question the protectiveness of the remedy?*

The findings and conclusions of this review are documented in this report. The report also identifies issues found during the five-year review process and offers recommendations to address such issues.

This is the third five-year review for the Kearsarge Metallurgical Corporation (KMC) Superfund Site (the Site). The trigger for the initial five year review was the completion of the Management of Migration remedy, marked by the start-up of the ground water extraction and treatment operation on

September 24, 1993. The trigger for this policy review was EPA's signature date of the preceding Five Year Review Report, dated September 30, 2003.

1.3 Personnel Conducting the Review

The U.S. Army Corps of Engineers (USACE) was tasked by USEPA to complete a Five-Year Review at the Kearsarge Metallurgical Corporation Superfund Site in Conway, New Hampshire. This report was prepared in accordance with an approved scope of work (SOW) dated November 6, 2007 and was conducted between November 2007 and March 2008.

The Site was visited on November 28, 2007. Participants in the Site visit included:

Name	Representation	Discipline
Richard Goehlert	USEPA Region 1	Remedial Project Manager
Andrew Hoffman	NHDES	Remedial Project Manager
Tracy Dorgan	USACE	Geologist
Katherine Miller	USACE	Chemist, Lead Author
Ian Osgerby	USACE	Remedial Process Engineer
Bette Nowak	Weston Solutions, Inc.	Project Manager
Scott Hayes	Weston Solutions, Inc.	Plant Operator

2.0 SITE CHRONOLOGY

The chronology of the KMC Site, including all significant events and dates is included in Table 1.

3.0 BACKGROUND

The KMC Site (EPA I.D. Number NHD062002001, CERCLIS Site I.D. Number 0101105) is comprised of three parcels of industrial land located on Hobbs Street in Conway, Carroll County, New Hampshire (Figure 1). As noted in Table 1, the Site was added to the NPL on 21 September 1984. The Site is located in the northern portion of the Silver Lake Quadrangle and lies within the Saco River Valley Subdivision (Figure 1).

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 C&C Thibodeau Properties, Inc. to the north.

Figure 1 Site location Map Kearsarge Metallurgical Corporation Superfund Site Conway, NH

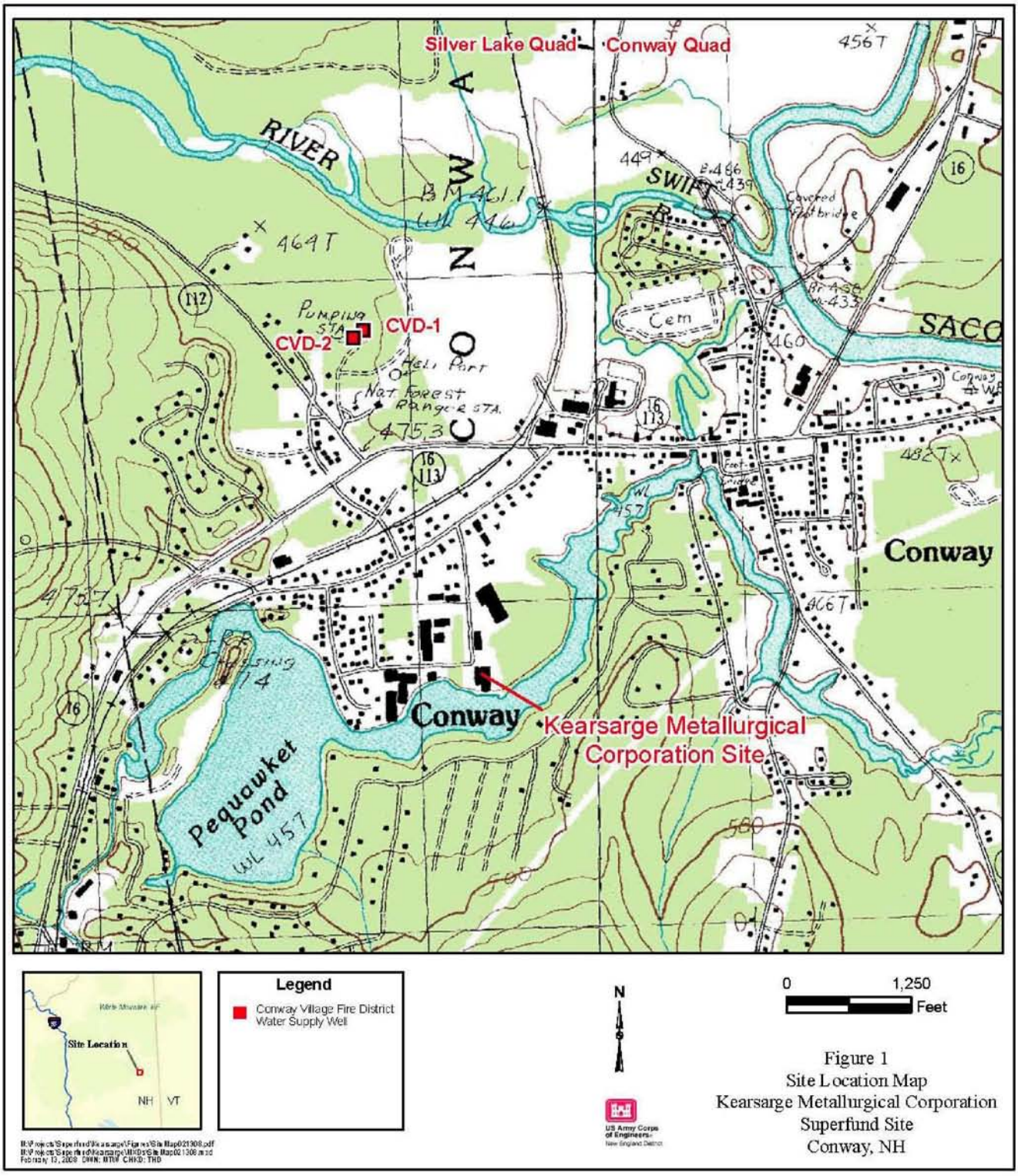


Table 1. Chronology of Site Events.

Event	Date
Operation of Site as a Sawmill.	Pre-1964
Operation of Site as KMC for manufacture of stainless steel castings.	1964 - 1982
Discharge of acids, chlorinated solvents, caustics, and flammable liquids to ground surface (waste piles) and septic system.	1970s
New Hampshire Water Supply and Pollution Control Commission notifies KMC that discharges to ground/septic system are illegal.	1979
EPA and New Hampshire Bureau of Solid Waste Management (NHBSWM) issue verbal order to re-containerize corroded drums in the waste piles.	September 1981
NHBSWM issues Letter of Deficiency to KMC.	December 1981
Indian Head Bank takes possession of KMC Lot 8 (now lot 140). Site abandoned.	1982
Containerized wastes removed from the Site in response to verbal order from EPA and NHBSWM.	June 1982
NHBHWM issues a Notice of Violation and Order of Abatement to KMC.	October 1982
NHBHWM begins hydrologic investigation of Site.	December 1982
EPA and NHBSWM order KMC to remove waste piles from the Site.	May 1983
KMC Site added to the NPL.	September 21, 1984
Consent Order – State of New Hampshire vs. KMC, orders KMC to perform RI/FS.	July 1985
Commencement of Remedial Investigation/Feasibility Study (RI/FS) activities by GEI.	July 1985
Release of RI/FS (completed by Camp Dresser & McKee, Inc. [CDM]) to public. Release of Proposed Plan to public.	June 1990
Action Memorandum providing for removal of seven drums of uncharacterized materials from the Site is issued by EPA.	September 1990
ROD signed by EPA.	September 28, 1990
Explanation of Significant Differences (ESD) providing for some changes/clarifications to the ROD (EPA, 1990) Selected Remedy.	August 1992
Source Control Remedial Action Completed.	September 1992
Ground water Pump and Treat System begins operation.	September 1993
EPA Operational & Functional date: The point in time that EPA declared the GWTP remedy was functioning properly and was performing as designed.	May 9, 1994
Dates of Long-term response action (LTRA).	May 9, 1994 – May 31, 2004
Cooperative Agreement between the EPA and NHDES documenting the takeover by NHDES of the LTRA of the extraction system and treatment plant.	August 1, 1994
First SARA Five-Year Review completed.	July 1998
An active soil gas survey initially conducted by EPA.	October 1999
Modified the ground water system by installing ground water recovery trench and Extraction Well EW-13A; completed by WESTON for NHDES.	October 2000
Capture Zone Analysis For Conway Village Fire District Wells No. 1 and No.2.	January 2001
Passive Soil Gas Survey completed by WESTON for NHDES.	April 2002
Vertical Profiling Study completed by WESTON for NHDES.	June/July 2002
Geoprobe Coring Investigations completed by WESTON.	November 2002
EPA and NHDES met with Conway's town engineer to discuss source remediation and	March 2003

obtain town's feedback.	
EPA and NHDES attended a Town of Conway selectmen's meeting to review future excavation activities work , give overview of Site status and respond to questions.	**July 2003**
ESD providing for additional source material excavations.	**September 2003**
Second Five-Year Review completed by EPA Region I	**September 30, 2003**
Approximately 5,670 tons of chlorinated solvent impacted soils were excavated and removed from the Site as part of additional source material excavation.	**October through December 2003**
New extraction well, EW-13B installed in excavation area and pumping begun	**February 2004**
Discontinued pumping from the Hobbs Street Extraction Wells (EW-01, EW-02, EW-03) due to attainment of cleanup goals	**February 2004**
Ten years of LTRA completed. NHDES assumes full responsibility for O&M.	**May 31, 2004**
Source Removal Action Completion Report completed for NHDES by WESTON Solutions, Inc.	**June 2004**
Catalogue of Wells, Piezometers and Other Subsurface Investigations Report completed by WESTON Solutions, Inc.	**June 2004**
Kearsarge Metallurgical Corporation Reuse Assessment completed	**September 2004**
GWTP turned off as agreed to by EPA and NHDES over informal correspondence	**Early December 2005**
Preliminary Draft Post-Source Removal Data Evaluation Report completed by WESTON Solutions, Inc.	**March 29, 2007**
Formal Start date of the Third Five-Year review	**November 6, 2007**
Final Sampling and Analysis Plan for Ground water Monitoring at the Kearsarge Metallurgical Corporation Superfund Site, Conway, NH completed for NHDES by Weston Solutions, Inc.	**December 2007**

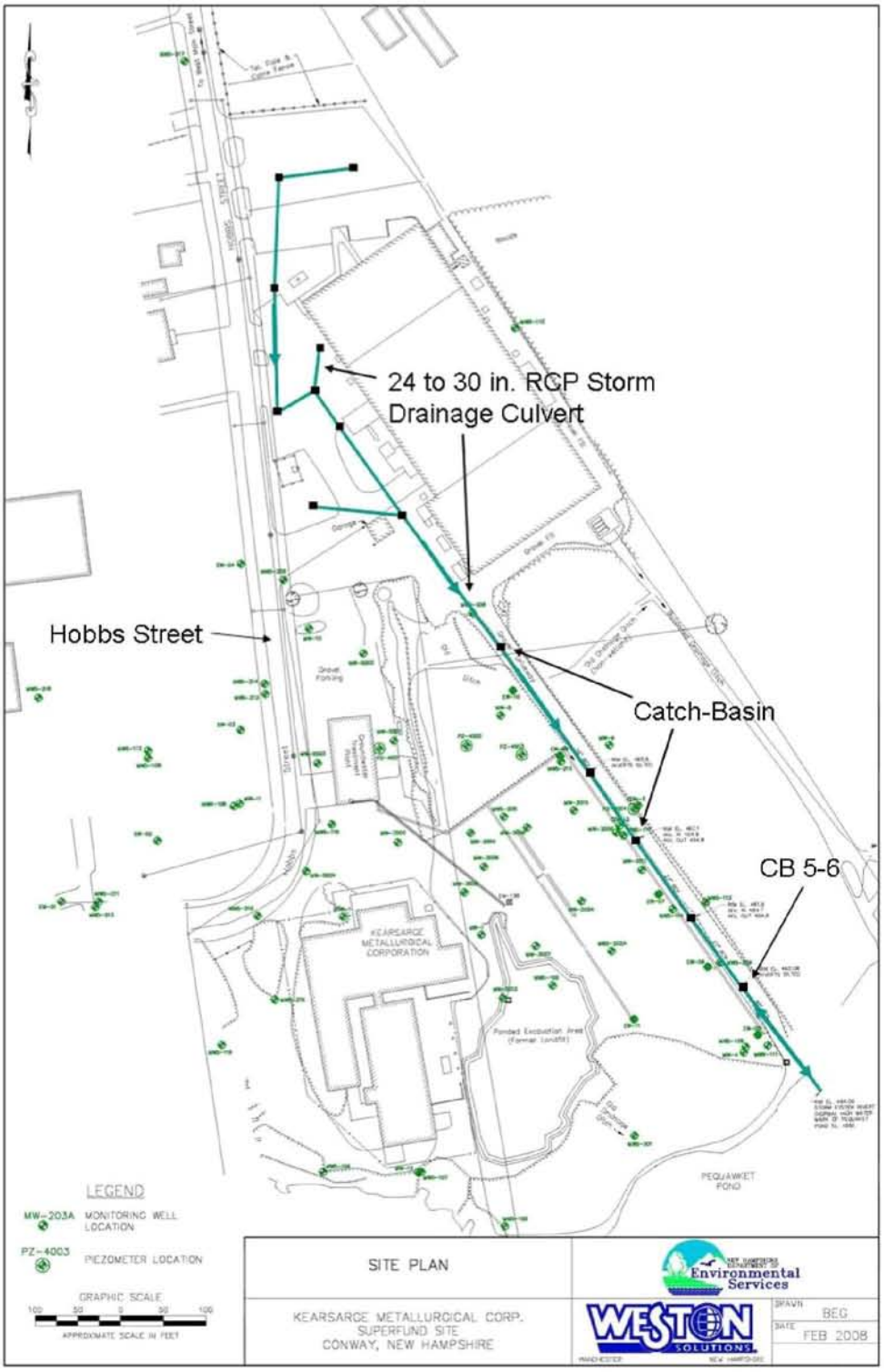
3.1 Physical Characteristics

Surface topography is generally flat, varying in elevation between 460 ft and 465 ft NGVD which is approximately 4 to 6 ft above the average water level of Pequawket Pond at the southern limit of the Site. The pond level is controlled by New Hampshire Water Resources Board via a downstream dam. As such, ground water levels are influenced not only by seasonal variations, but also by changes in the pond level, with an average elevation of 456 ft National Geodetic Vertical Datum (NGVD) and seasonal fluctuations of approximately 5 ft. The entire Site and portions of adjacent properties are within the 100-year floodplain of the pond. Wetlands (formerly forested) cover much of the eastern portion of the Site, while shrub/scrub wetlands fringe the southern boundary bordering the pond. As part of the final landscaping in 2003, a limited area near the southern edge of the Site was replanted with poplar trees as a potential phytoremediation effort. The northern and western portions of the Site are industrial properties. At the time the ROD was published (EPA, 1990) no endangered or threatened species or sensitive ecological habitats were known to exist on or adjacent to the Site.

The Site overlies a well-defined buried glacial bedrock valley and is underlain by the Conway Granite. Bedrock beneath the Site has two major fracture orientations trending north and east. Soils underlying the Site consist of fill, fine to medium fine sand, stratified delta and glaciolacustrine silt, sand, and clay, and glacial till. The bedrock elevation beneath the Site varies from a low of 318 ft NGVD to a high of 364 ft NGVD [approximately 100 to 120 ft below ground surface (bgs)].

The confluence of the Saco and Swift Rivers lies approximately one mile downstream (northeast) from the Site. Pequawket Brook widens to become Pequawket Pond due to the New Hampshire Water Resources Board state controlled dam located approximately 0.5 miles downstream from the Site. Pequawket Brook flows from south to north and eventually empties into the Saco River. Surface water runoff from the Site generally drains to Pequawket Pond or towards the woods located east of the Site which grades towards Pequawket Pond. The eastern portion of the Site contains a 24-30 inch inside diameter dry-fit concrete storm drainage culvert, which grades from Tee Enterprises' parking lot south for approximately 850 ft, discharging to Pequawket Pond (Figure 2). This drainage culvert is between 6 and 8 feet below ground surface and intercepts shallow ground water on the eastern portion of the Site. The culvert consists of several catch basins with the intent of collecting storm drainage and discharging to Pequawket Pond. The catch basin grates for this culvert are set approximately 0.5 feet above ground surface and do not directly receive storm water runoff from the ground surface under non-flood conditions within the Site boundary. While it is unknown if the entire culvert is open to infiltration, the backfill surrounding the culvert itself likely acts as a preferential pathway for both surface recharge and ground water flow. Evidence of erosion and a potentially collapsed pipe was noted at catch-basin CB 5-6 (Figure 2) close to the discharge end of the culvert during the November 2007 Site visit. See photo below.

Figure 2 Site Plan Showing Culvert and Hobbs Street Areas



Catch Basin 5-6

As previously noted, water levels in Pequawket Pond are controlled by a state-owned and controlled dam. The Pond is typically lowered once a year in the fall, and raised again in the spring. Annual fluctuations up to 5 ft in the water level of the Pond have been reported.

Photo of Pequawket Pond taken November 28, 2007

Ground water in the vicinity of the Site has been characterized as occurring in three zones: the shallow aquifer composed of fill or sand and gravel, the deep aquifer, composed of glacial till and the bedrock aquifer within fractured Conway granite. There is a silt, fine sand, and clay aquitard over 60 feet thick

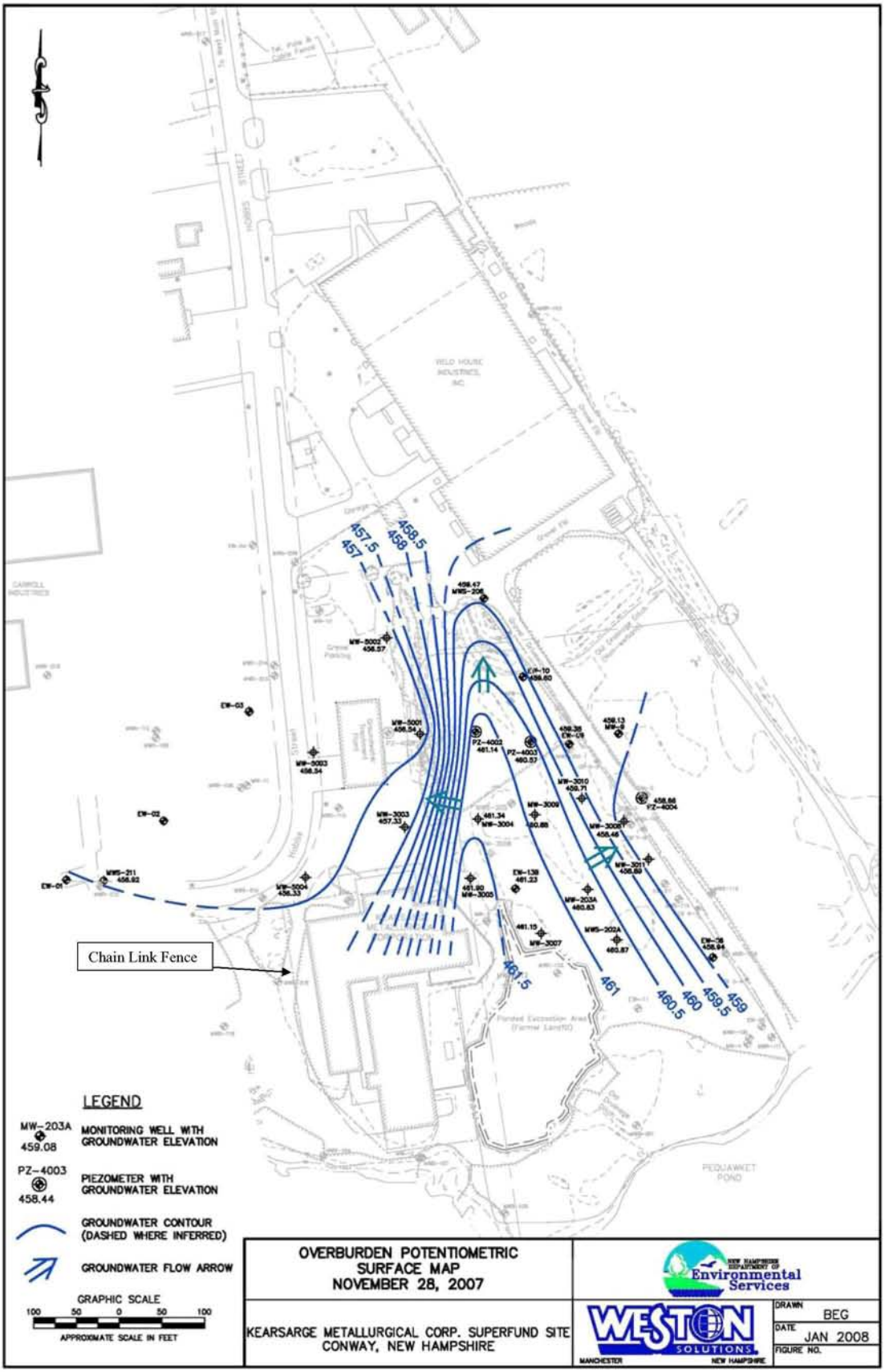
lying between the shallow and deep overburden aquifers that is characterized as a partial to complete barrier to contaminant migration.

The shallow aquifer at the Site consists of alluvial deposits of silty fine and fine to medium sand. The depth to water in the shallow aquifer varies from approximately 2 to 10 ft bgs. The thickness of the shallow aquifer varies between less than 10 feet and 40 ft, with the sand deposits becoming coarser and thicker towards Hobbs Street and the western portion of the Site, resulting in higher transmissivities in this area. Ground water flow in the shallow aquifer is radial from an elongated north - south oriented mound or divide located beneath the north end in the area of the former solid waste pile and the area identified on figures as the current "ponded excavation area". Figure 3 provides the November 2007 potentiometric surface contours as a recent example of this ground water flow pattern. This mounded potentiometric surface has been noted both before and after the OU1 waste pile removal and before and after the pump and treat system shutdown. This mounding effect is likely a result of the lower permeability silts and clay identified in the shallow overburden underlying the thin shallow aquifer in this area. This mounded potentiometric surface varies slightly with the seasonal variations, related to both precipitation and the controlled Pequawket Pond elevations at the southern edge of the Site, previously discussed, and forms a local ground water divide within the Site that may act as a temporary stagnation point for contaminant migration eastward.

Shallow ground water and the contamination within this interval migrates predominantly to the west due to the thicker and more transmissive sands noted north and west of the KMC manufacturing building. Ground water and contaminant migration to the east appears to be controlled to some extent by the changing Pequawket Pond surface water elevation so that during periods when the surface water elevation is higher (typically spring through fall) there is a less significant hydraulic gradient to the east and the northeast towards the drainage culvert. During periods when the Pequawket Pond surface water elevation is lowered, typically in the fall and winter, the eastward ground water gradient is enhanced by the approximate 2 foot elevation decrease thereby strengthening the hydraulic gradient towards the drainage culvert and pipe bedding at the eastern limit of contamination. The culvert outlet in the pond is open thus the potential exists for water to back up into the culvert and the pipe bedding during periods of higher surface water in the Pond further modifying ground water gradients.

The shallow aquifer is underlain by approximately 60 to 100 ft of lower permeability glaciolacustrine deposits of stratified silt, clay, and fine sand that act as an aquitard. This unit may be at or very close to the ground surface in the area immediately east of the former KMC building where ponded water is often observed. The contact between this lower permeability material and the overlying shallow sand aquifer is highly variable in elevation and dips steeply to the west from a high point roughly coinciding with the potentiometric surface mound beneath the eastern edge KMC Building No.1. The silt and clay unit is relatively flat to the east and gently dips down to the north. The change between steeply dipping potentiometric surface contours and the more gradual ground water gradient to the west of the Site, as shown on Figure 3 is indicative of the dramatic change in transmissivity. Based on limited soil and ground water sampling within this lower permeability material the potential exists that remnant contamination which permeated some distance into the silt and clay aquitard may be diffusing back into the shallow upper aquifer. This finer-grained material at the contact with the shallow aquifer sands and fill was targeted for the 2003 soil removal effort based on vertical profiling efforts conducted in 2002. It has been established (Weston Solutions, 2007a) that a "halo" of residual soil contamination still exists and may be acting as an ongoing source of ground water contamination following the 2003 soil removal efforts.

Figure 3 Overburden Potentiometric Surface Map November 28, 2007 (Weston Solutions, 2008a).



The deep aquifer consists of a gravely, silty sand glacial till layer ranging in thickness from 7 to 45 ft. directly over bedrock. Bedrock underlying the glacial till is very dense medium to fine grained granite, with permeabilities as low as 10^{-2} to 10^{-4} ft per day. The depth to the bedrock surface ranges from 100 to 120 ft bgs.

Two water supply wells CVD-1 and CVD-2, are operated by the Conway Village Fire District (CVFD), and are located approximately 3,000 ft northwest of the Site. These wells are capable of yielding more than 1 million gallons per day but, based on NH Geological Survey and NHDES data between 1994 and 2006, the combined yield ranged from 0.32 to 0.71 million gallons/day. These wells are screened in the shallow aquifer in an area where the alluvial sand deposits are generally coarser, and more permeable, and slightly thicker than those at the Site. Figure 1 shows locations of the water supply wells and the Site. The bottom of the supply wells are screened to 69 and 70 feet bgs.

3.2 Land Resource and Use

As of the publication of the ROD, two buildings occupied the KMC property on 5 to 15 ft of fill. Building No. 2 was razed to make room for the current Ground water Treatment Plant building. Building No. 1 has fallen into disrepair, with large portions open to the elements and a great deal of structural damage to the walls and roof. The upper 2 ft of the fill contains varying amounts of sawdust, owing to the previous use of the Site as a sawmill. The sawdust is interspersed with sand and gravel. There is a chain-link fence surrounding the former KMC building and the only other structure on the KMC property is the ground water treatment plant and associated components. Refer to Figure 3 for the locations of the existing buildings.

3.2.1 Business/Industrial

Presently, the Site consists of the defunct KMC, the defunct OCR Corporation and other businesses. The KMC property contains the treatment plant, a portion of the ground water extraction system and the former KMC manufacturing building and office. During the winter of 2007-8 a portion of the former KMC building collapsed under snow load. The remaining portion of the ground water extraction system is located on two other properties. The area surrounding the Site is zoned for commercial/industrial use. Information on property lot numbers and owners for this Five-Year Review was provided by the Conway Assessing Department. When asked about lot numbers on Map 227, cited in previous reports the person looking up the information found that no such map existed, but the property surrounding the Site was on Map 277. It is assumed that prior references meant to cite Map 277, and reference to Map 227 was due to a typographical error. Currently the surrounding lots and the respective owners are as follows and as presented in Figure 4.

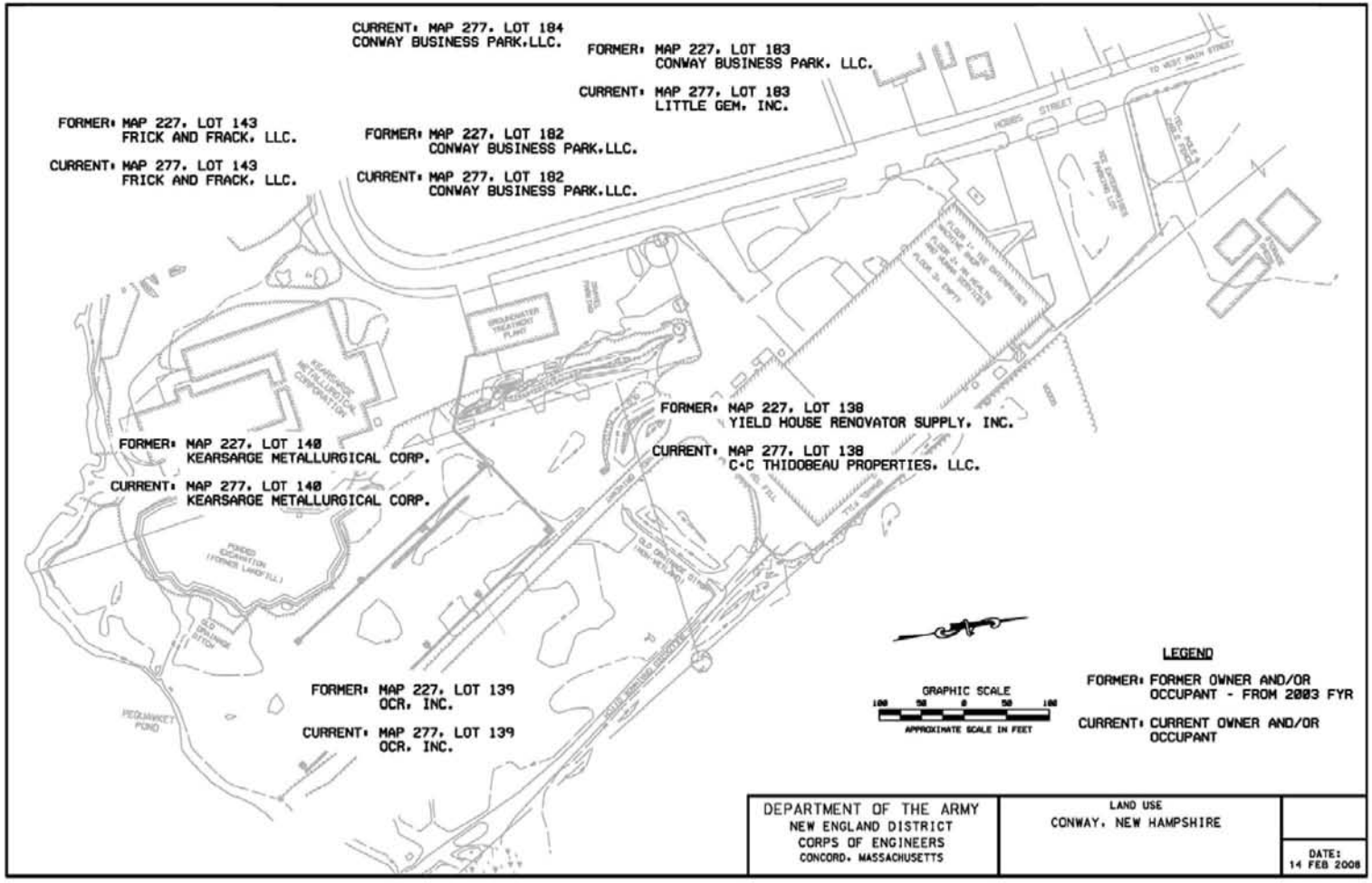
- Map 277, Lot 138 - Owned by C & C Thibodeau Properties, Inc.
- Map 277, Lot 139 - Owned by OCR, Inc. Undeveloped wetland located east of the KMC facility. Contains a portion of the ground water extraction system.
- Map 277, Lot 140 - Owned by the defunct KMC. The part of the Site containing the former KMC building and the ground water treatment plant.
- Map 277, Lot 143 - Owned by Frick and Frack, LLC. Occupied and operated by American Air Systems, Inc.

- Map 277, Lot 182 - Owned by Conway Business Park, LLC. Used primarily for office space and storage, contains a portion of the ground water extraction system (Part of the KMC Site). Warehouse is now owned by Abbotts Premium Ice Cream.
- Map 277, Lot 183 - Owned by Little GEM, Inc.
- Map 277, Lot 184 - Owned by Conway Business Park, LLC. Occupied by Tuckerman Brewing Company.

There have been several changes in business ownership and land use since the previous Five-Year Review. C& C Thibodeau Properties, Inc. is occupied by Tee Enterprises. At the time of the previous Five-Year Review the property was owned by Yield House Renovator Supply, Inc., manufacturer of pine furniture, which went out of business at the end of 2003. The current owner purchased the building on December 21, 2006. The Department of Health and Human Services was in the building and continues to rent office space there. The current owner has made changes to the building including removal of the sawdust collection system and lacquer recovery system. These changes are included in the updated Land Use map (Figure 4). He also improved the parking lot area. These changes have improved the aesthetics of the property. At the time of the previous Five-Year Review one of the tenants at Conway Business Park, LLC, was Child's Place Daycare. Recently the Daycare was purchased by a new owner and is now called Growing Tree Children's Center. The building where the day care center was located collapsed during the 2007-8 winter. The building was razed. The day care center is no longer at this location. The owner of Conway Business Park also rents the building on Lot 184 to Tuckerman Brewing Company who is a new tenant since the last Five-Year Review. There is a new owner of a warehouse on lot 182, the owner of Abbotts Premium Ice Cream. The wagons used to transport the ice cream are stored at the warehouse. The following are the street addresses to some of the businesses:

- Tuckerman Brewing Company - 66 West Main Street
- Storage of Wagons for Abbotts Premium Ice Cream – 64 Hobbs Street
- Department of Health and Human Services – 71 Hobbs Street

Figure 4 Current Land Use around Kearsarge Metallurgical Corporation Superfund Site.



3.2.2 Residential/Recreational

A number of residences are located along Pequawket Pond, which abuts the Site to the south. There are no public beaches on the pond; however, there are private beaches belonging to the Cranmore Shores Association and individual property owners. Cranmore Lake Shores is a residential subdivision consisting of 330 lots on approximately 170 acres. It is located on the south shore of Pequawket Pond opposite the KMC Site (Camp Dresser & McKee, 1990). The drinking water for Cranmore Shores is supplied by CVFD. The pond is also used by local residents for recreational purposes such as boating, fishing, and swimming. There are no residences on or immediately adjacent to the Site. The closest residence is approximately 400 ft from the southern edge of the Site, across Pequawket Pond.

3.2.3 Trespassers

Trespassers have been known to frequent the Site and surrounding properties, and this was taken into account in the human health risk assessment conducted in 1990 by Camp Dresser and McKee, Inc. (CDM) and documented in their Remedial Investigation Report (CDM, June 1990). Since the previous Five-Year Review a perimeter fence was put around the old KMC building. Interviews for the third Five-Year Review revealed that the fence has reduced the number of trespassers, especially high school students who used to go into the building. The interviewees also stated that vandalism is not normally a problem, although days before the Site visit on November 28, 2007 vandals broke the light above the entry door to the GWTP. The light has been repaired.

Fence surrounding the old KMC building.

Photo taken of broken outdoor light (now repaired) above the entrance door to the GWTP.

3.2.4 Surface/Ground water/Drinking Water

Surface water located within or near the Site includes Pequawket Pond. Pequawket Brook, which widens to become Pequawket Pond, flows north and eventually empties into the Saco River. Surface water runoff from the Site generally drains to Pequawket Pond or towards the woods located east of the Site. The eastern portion of the Site contains a concrete storm drainage culvert, which runs from Tee Enterprises' parking lot south for approximately 850 ft, discharging to Pequawket Pond.

There is radial ground water flow beneath the Site, predominately to the east and the west. Ground water flow to the east is intercepted by the drainage culvert. There are no private drinking water wells located in the immediate vicinity of the Site.

The town of Conway receives its drinking water through a public water supply, consisting of a well field operated by the Conway Village Fire District (CVFD). The supply wells are located approximately 3,000 ft northwest of the Site. In 2007 the CVFD hired a contractor to perform their own Capture Zone Analysis. The report is discussed in Section 5 and the wells are on Figures 1 and 7. The industrial park in which the Site is located is also serviced by this public water supply and a sanitary sewer.

3.3 History of Contamination

As documented in the RI/FS (CDM, June 1990), the primary features at the Site were two buildings (No. 1 and No. 2), a septic tank and associated leach field, a drainage culvert and two solid waste piles. Building No. 1 was historically used for foundry operations, while Building No. 2 was used for shipping and receiving of materials. Building No. 2 has been razed and Building No.1 has fallen into disrepair, with large portions open to the elements and a great deal of structural damage to the walls and roof.

Due to the state of disrepair of the building, a fence was installed March 2003 as a safety measure. The septic tank/leach field area was found to be the primary source for discharge of chlorinated compounds at the Site. Compounds detected during the RI/FS included 1,1- DCA and 1,1,1-trichloroethane (TCA).

The RI/FS (CDM, June 1990) documented contamination in a waste pile located east of Building No. 1 (large waste pile – approximately 9,000 cy) and east of Building No. 2 (small waste pile, approximately 400 cy). The waste piles were generated over a period of several years during the KMC facility operation, and consisted primarily of buried drums, caustics, metal debris, and casting sands.

A storm drain culvert runs in a northwest/southeast direction along a gravel driveway approximately 200 ft east of the KMC building. The culvert collects storm water from Tee Enterprises parking lot and also intercepts ground water from the wetland area east of the former building locations. The culvert ultimately discharges to Pequawket Pond. Remedial Investigation sampling and analysis of water and sediment in catch basins, along the drainage culvert, indicated that contaminant concentrations in the drainage pipe were highly variable and were likely influenced by flushing during precipitation events and fluctuation of elevations in Pequawket Pond as a result of manipulation of the dam water level. During the remedial investigations, contaminant concentrations as high as several thousand μg/L of chlorinated solvents were detected in water samples collected from the catch basins. Several of the catch basins and the culvert outlet in the pond were sampled in 1999. Analysis, using a mobile lab, of 1,1,1-TCA and 1,1-DCE showed the maximum total VOCs for a single location of 138 μg/l in catch basin 7-8 and 5.2 μg/l at the culvert outfall. In 2007, a catch basin was sampled and the combined results of 1,1,1-TCA and 1,1-DCE were 5.2 μg /l. This downward trend appears to be the result of the remedial actions undertaken in 2003 which removed approximately 5,670 tons of contaminated soils below the water table and subsequent pumping of contaminated ground water from the reconfigured extraction system. It is unlikely that the VOCs are negatively impacting the Pond due to the relatively high VOC concentrations necessary to impact surface water. According to the NH Water Quality Criteria for Toxic Substances in Env-WS-1700 an example of a standard that applies to the Site is the fresh water acute criteria for 1,1-DCE at a concentration of 11,600 μg/L. The ground water in the culvert leading to the pond will continue to be monitored as part of the existing sampling and analysis plan.

As a result of historic operations at the Site, ground water became contaminated with chlorinated solvents and a few metals. The ground water contamination was primarily found in the shallow aquifer, with lower levels of contamination in the deep aquifer and intermediate aquitard. Contamination was found to flow to the northeast and west of the Site. The predominant contaminant in ground water during the RI was 1,1,1-TCA, with evidence that degradation to daughter products, including 1,1-DCA, 1,2-DCA, and 1,1-dichlorethene was occurring. Total VOC concentrations exceeding 100,000 μg/L were observed in monitoring wells at the Site during the remedial investigations (USEPA, 2003c).

3.4 Initial Response

From the fall of 1981 to selection of the remedy in 1990, a number of response actions were completed, culminating in completion of an RI/FS which included a human health risk assessment/ecological endangerment assessment. However, with the exception of the 1990 removal of seven drums from the waste piles, all of the pre-ROD response actions were investigative in nature, including addition of the Site to the NPL in 1984. The first major removal action implemented was the source control portion of the selected remedy in the ROD (USEPA, 2003c).

3.5 Basis for Taking Action

The primary basis for taking action at the KMC Site was the determination, through preparation of the risk assessment, that the release of hazardous substances at the Site had occurred to soil and ground water which may present an imminent and substantial threat to public health and the ecosystem through contact with waste piles, and through potential consumption of ground water impacted by Site contaminants (USEPA, 2003c).

Site-related hazardous substances that have been identified at the Site in each media and that were included as COCs in the 1990 ROD are:

Soil	**Ground water**
1,1,1-TCA and chromium	1,1,1-TCA 1,1-DCA 1,2-DCA 1,1-dichloroethene (1,1-DCE) Trichloroethene Chloroform Chromium Nickel

Chromium and 1,1,1-TCA in soil have not been an issue at the Site since the initial source removal actions (completed in 1992). 1,1,1-TCA and 1,1-DCE continue to be problems in the ground water. The GWTP effluent was analyzed for chromium and nickel during 2004 and until the plant shutdown in 2005 and neither metal was detected. One round of monitoring well and extraction well sampling in 2003 also included these two metals with neither being detected. The metals' analysis was also included in three rounds of ground water sampling from the monitoring and extraction wells from August of 2006 through June of 2007 as part of the initial testing with the most recent Sampling and Analysis Plan. Again, chromium and nickel were not detected in any of the ground water samples.

Trichloroethene has not been detected in the wells since 2003. There is one round of non-detect data for trichloroethene in 2007 to verify that it no longer is a compound that needs to be regularly monitored. Similarly chloroform has not been detected in any of the wells or in the plant effluent since 2003.

In summary, the remaining VOCs, 1,1,1-TCA, 1,1-DCA, 1,2-DCA, 1,1-dichloethene and their daughter products have been detected since 2003 and are monitored on a semi-annual basis as part of the current Sampling and Analysis Plan (Weston Solutions, 2007b).

4.0 REMEDIAL ACTIONS

4.1 Remedy Selection

The selected remedial alternatives for source control (SC-6) and management of migration (MM-5) were assembled based on a number of Remedial Action Objectives (RAOs), which were developed in the 1990 RI/FS, including:

- Minimize further horizontal and vertical migration of contaminated ground water from the KMC Site.
- Minimize negative impacts to Pequawket Pond resulting from discharge of contaminated ground water.
- Prevent the inhalation of wind blown fine particulate materials from the waste piles.
- Reduce the risks associated with ingestion of, or physical contact with, metals in the waste piles.
- Prevent release of other contaminants in the waste piles.
- Prevent the migration of contaminants from the septic system and surrounding soils that could further degrade ground water quality.
- Reduce the risk associated with inhalation of VOCs and physical contact with the contents of the septic system or the surrounding soils.

Remedy selection was documented in the EPA's ROD dated 29 September 1990 for the Site. The selection was based on a comparative evaluation of several management of migration remedial alternatives, and several source control remedial alternatives.

Restoration of the aquifer to drinking water standards was (and remains) the overall goal of the 1990 selected remedy.

4.2 Remedy Implementation

The remedy selected to address contamination at the Kearsarge Metallurgical Corporation (KMC) Superfund Site, located in Conway, NH, includes source control, management of migration, long-term ground water monitoring to evaluate progress toward attainment of cleanup goals and five year reviews. Both the source control remedy and the management of migration remedies were modified when contamination levels were not significantly decreasing over time. At the same time the remedies were modified, the cleanup goal for one 1,1-DCA was also changed.

The selected remedies included provisions for achieving the following cleanup goals:

Ground water:

- 1,1,1-TCA: 200 micrograms per liter (μg/L)
- 1,1-DCE: 7 μg/L
- 1,2-DCA: 5 μg/L
- Trichloroethene: 5 μg/L
- 1,1-DCA: 4 μg/L (changed in 2003 ESD to 3650 μg/L)
- Chloroform: 100 μg/L
- Chromium: 50 μg/L
- Nickel: 700 μg/L

Soil:

- 1,1,1-TCA: 300 µg/kg
- Chromium: 1400 µg/kg (changed in 1992 to 1400 mg/kg)

4.2.1 Source Control – OU1

The 1990 Record of Decision (ROD) and a 1992 Explanation of Significant Differences (ESD) document describe Operable Unit 1 (OU1), the Source Control remedy. Source control implementation was initiated on 15 July 1992, and completed on 30 September 1992. As a result, the following remedial actions were completed (USEPA, 2003c):

- Removal of the septic tank and its contents and transport to an off-site incinerator for thermal destruction.
- Excavation of leach field soils down to the water table or a depth of six feet and disposal at an off-site Resource Conservation and Recovery Act Subtitle C facility.
- Excavation and off-site disposal of the materials in two waste piles.

Post-remediation sampling indicated that clean up levels specified in the ROD and in the August 1992 ESD (EPA, 1992) were achieved for the contaminants of concern in soil (chromium - 1,400 mg/kg and 1,1,1-TCA – 300 µg/kg) (USEPA, 2003c).

4.2.2 Modifications to the OU1 Remedy

Between the signing of the ROD and remedy implementation, an Explanation of Significant Differences (ESD) (EPA, 1992) was prepared, which allowed for the following deviations from the specifications of the ROD:

- The ESD (EPA, 1992) noted the ROD contained an error in the determination of the cleanup level for hexavalent chromium in soil. The ROD inadvertently stated a cleanup goal of 1,400 µg/kg. The ESD (EPA, 1992) corrected this value to 1,400 mg/kg chromium.
- The ESD (EPA, 1992) provided for the removal of the "small" waste pile, only if analytical testing revealed hexavalent chromium results in excess of 1,400 mg/kg, or if the material was otherwise determined to be a threat to human health and the environment.
- The ESD (EPA, 1992) provided for more flexibility in the final disposition of the waste pile material, the septic tank, and its contents, so that the material could be shipped to either a Subtitle C or Subtitle D facility, depending upon waste disposal characterization results.

Recommendations in the second Five-Year Review report included additional source excavation with the goal of expediting achievement of the ground water cleanup levels. Details of the additional source excavation activities completed in 2003 are provided in the Source Removal Action Completion Report prepared for New Hampshire Department of Environmental Services (NHDES) by Weston Solutions (Weston Solutions, 2004) and the Preliminary Draft Post-source removal Data Evaluation Report (Weston, 2007a). A 2003 ESD describes the modified remedies including additional source removal and replacement of the ground water network of ten extraction wells with a new extraction trench and one well. It also describes the revision of the ground water cleanup goal for 1,1-DCA. The following are components of the modified remedies:

- Removal of existing aboveground ground water collection system.

- Excavation, stockpiling, waste disposal characterization, loading, transport and disposal of contaminated soils.
- Installation of a larger ground water recovery trench in place of the excavated soils to replace the extraction well system.
- Revision of the cleanup goal for 1,1-DCA from 4 µg/L to 3650 µg/L based on a correction to the calculation of the original cleanup goal.

4.2.3 Management of Migration – OU2

The ROD describes Operable Unit 2 (OU2), the Management of Migration remedy. This remedy consists of long term response action (LTRA) activities including the ground water pump and treat facility and long-term ground water monitoring. The goal of this remedy is to provide restoration of the aquifer to drinking water standards and unlimited use of the Site. Implementation of the Management of Migration portion of the remedy originally involved construction of a remediation system consisting of a 14 well ground water extraction system and a 42 gallon per minute (gpm) ground water treatment plant. Startup of the facility occurred on 22 September 1993.

As constructed, the remediation system at the KMC Site consisted of the following treatment processes:

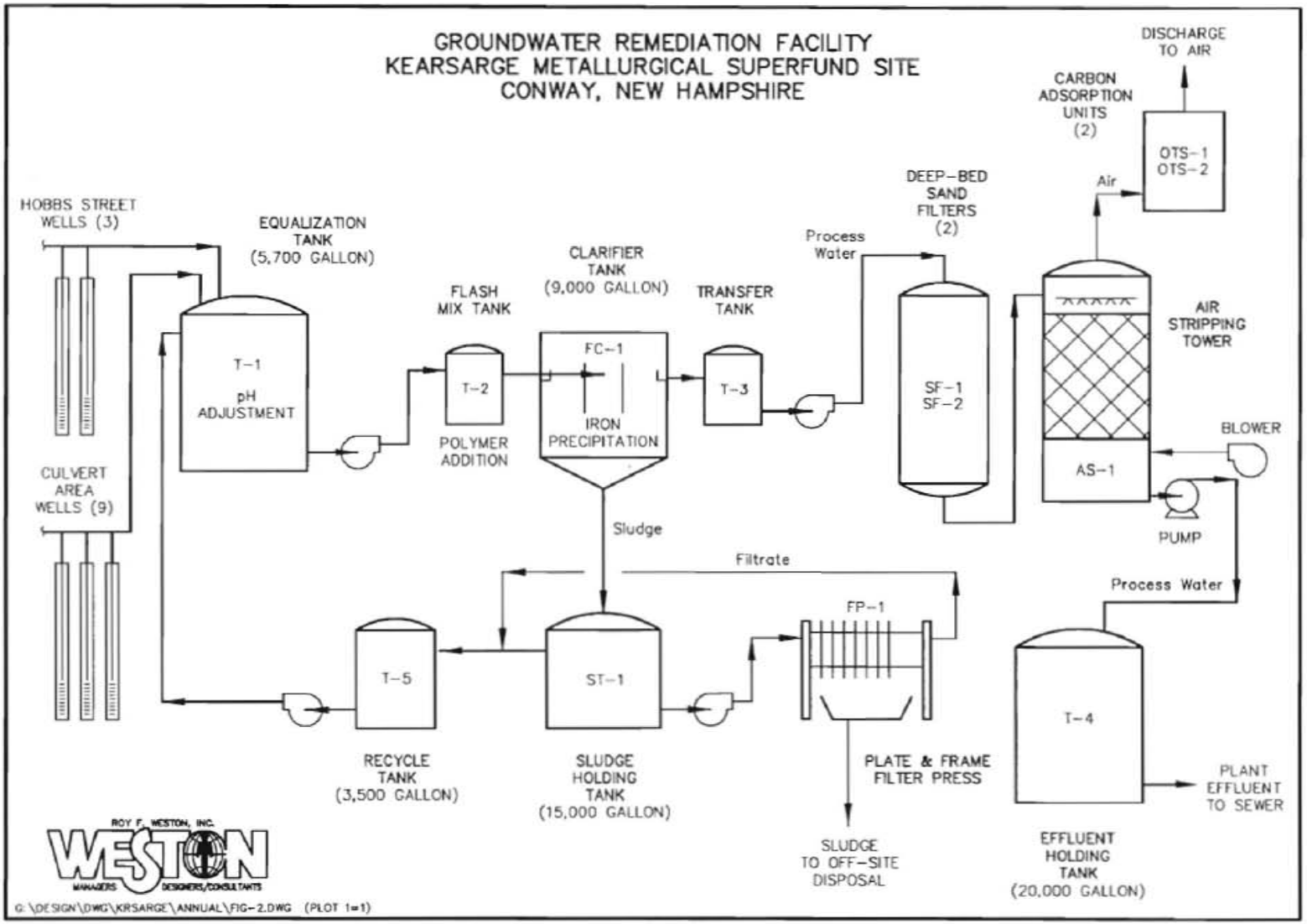
- Installation of a ground water extraction system from four extraction wells (EW-01, EW-02, EW-03, and EW-04) located west of the Ground Water Treatment Plant (GWTP) known as Hobbs Street Area wells, and ten extraction wells (EW-5 through EW-14) located southeast of the GWTP known as the Culvert Area wells. Treatment of the extracted ground water by filtration to remove suspended solids, air stripping to remove VOCs and activated carbon treatment of the contaminated off gas from the air stripper and long term ground water monitoring.
- Chemical Precipitation and clarification to remove chromium, nickel, iron, manganese and suspended solids.

The treatment plant as illustrated in Figure 5 consists of:

- Equalization tank (T-1).
- Metals removal processes, including chemical precipitation with polymer and caustic, clarification, and filtration.
- Organics removal, including air stripping with treatment of the stripper off-gas via vapor phase carbon.
- Sludge storage.
- Discharge of the treated ground water to the local publicly owned treatment plant.

A Permit was provided to Weston to operate the discharge with water quality analysis to be carried out monthly, with results reported to the CVFD and Town of Conway. Discharge quality was to be equivalent to the discharge water quality standards in effect at the time, equivalent to those provided in the ROD. They are both the same as the drinking water standards. (Note the discharge limit for 1, 1-DCA (4 µg/L) in the approved permit does not appear to have been corrected to the recalculated 3650 ppb limit.) A fee of $25,000 per year was assessed for a maximum discharge of 63,000 gallons per day (gpd). Letter communications (June 23/July 14, 2004) between Weston and the CVFD resulted in a modification in fee structure, in effect on July 1, 2004, because the flow had been reduced to an average of 8,700 gpd. Monitoring was to be reduced from monthly to quarterly, and resubmission of a Notice of

Figure 5 Ground Water Treatment Plant



Intent to Extend (operations and effluent discharge) on an annual basis, and that the fee would be at the rate of $2.42/1000 gallons discharged in 2004. An approximate 70% reduction in annual discharge fees was thus obtained. No monthly discharge compliance reports submitted to the Town of Conway or the CVFD were available at the plant on the day of the visit. The revised rate established for 2005 was not provided during the plant visit. CVFD was required to monitor the effluent discharged to the sewer on a quarterly basis with reports copied to Weston and Town of Conway. Records were not available on the day of the Site visit. Discharge limits are as follows (abstracted from Permit Document):

DISCHARGE LIMITS FOR THE GROUNDWATER TREATMENT PLANT
AT THE
KEARSARGE METALLURGICAL CORPORATION SITE

Parameter	Concentration ug/l
Copper	400
Lead	15
Chromium*	100
Nickel*	100
Trichloroethene*	5
1,1,1 Trichloroethane*	200
1,1 Dichloroethane*	4
1,2 Dichloroethane*	5
1,1 Dichloroethene*	7
1,2 Dichloroethene* (total)	70

* Site related contaminant as reported in the Record of Decision

(Ground water Treatment and Discharge Agreement, 1995).

The chemical precipitation process in the ground water treatment plant stopped being used in 1995 because suspended solids and metals concentrations were low. Chromium and nickel did not exceed their cleanup goals in the ground water treatment plant influent or monitoring wells since the startup of the remediation system in 1993.

Two of the extraction wells, EW-04 (Hobbs Street) and EW-10 (Culvert Area), were taken off-line in 1996 once ground water cleanup goals were attained in the vicinity of these wells. In October 2000, Culvert Area well EW-13 was replaced with a 120-foot long collection trench and extraction well EW-13A to increase the volume of ground water extracted from the Culvert Area and improve capture of the contaminant plume. Electric submersible pumps in each of the Hobbs Street wells yielded a total of 40 gpm (on average). Pneumatic pumps were used in the lower yielding Culvert Area wells (USEPA, 2003c).

A total of 2 to 3 gpm was typically pumped from all nine of the Culvert Area wells in 2003. Since start up of the ground water treatment system in 1993, through the summer of 2003, an average of 788,400 gallons per year (1.5 gpm) was extracted from wells in the Culvert Area versus an average of 21,024,000 gallons per year (40 gpm) extracted from the Hobbs Street wells. The average daily total was thus approximately 59,670 gpd, well within the revised Permit Document limit.

4.2.4 Modifications to the OU2 System

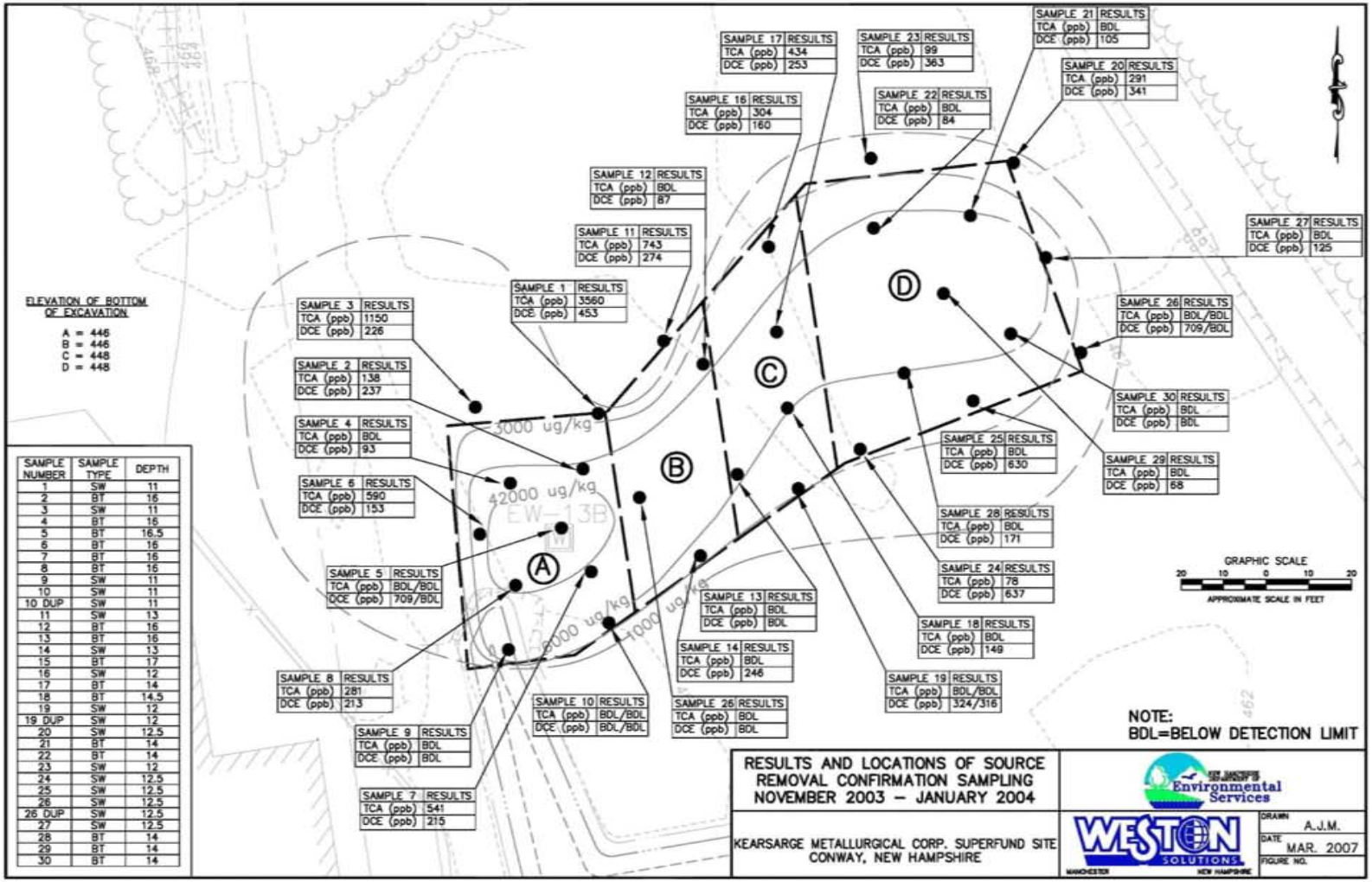
During investigations in 2002, it was discovered that a concentrated mass of chlorinated solvents continued to exist in low permeability soils in the saturated zone downgradient of the former leach field for the KMC facility. This concentrated mass acted as a continuing source of ground water contamination, for both the Hobbs Street and Culvert Areas of the Site and it was determined that the ground water remedial activities being performed at that time would not be effective in obtaining the ROD mandated cleanup goals within the 10 year allotted time frame. In September 2003, an ESD was issued by the EPA to authorize removal of additional contaminated soils from the Site. To expedite attainment of ground water cleanup goals, approximately 5,670 tons of chlorinated solvent impacted soils were excavated and removed from the Site for off-site disposal.

As a result of the excavation activities, the configuration of the ground water extraction system used for the pump and treat remedy was altered. The nine extraction wells and one small extraction trench that constituted the previous Culvert Area ground water extraction system were replaced with one large extraction trench that was installed in the center of the excavation. A newly installed well (EW-13B) was installed in the low point of the trench for extraction of ground water. Figure 6 illustrates the limits of excavation and the location of the new extraction well EW-13B. The expanded ground water extraction trench produced a yield that was twice that of the previously configured ground water extraction system in the Culvert Area.

In recent years, ground water in the Hobbs Street wells has attained cleanup goals. As a result, pumping from the Hobbs Street wells was discontinued in February 2004, following completion of the additional Source Removal Actions in 2003. No detections of VOCs have been observed in either the Hobbs Street extraction wells or nearby monitoring wells since shutdown of EW-01, EW-02, and EW-03 in February 2004. Although trichloroethene (TCE) had exceeded cleanup goals in the Hobbs Street wells in the past, TCE has not been detected in any wells since 2002.

New Hampshire Department of Environmental Services (NHDES) has monitored VOC concentrations, water levels, and natural attenuation parameters in the effluent from EW-13B and in surrounding monitoring wells from 2004 through the present. When the concentrations of VOCs in EW-13B fell below cleanup goals for three sampling rounds conducted in October and November 2005, NHDES decided to stop pumping from EW-13B, temporarily shut down the treatment plant, and continue monitoring (Weston 2007a). Presently, no ground water extraction is occurring at the Site, and the treatment plant is still shutdown while ground water monitoring continues.

Figure 6 Results and Locations of Source Removal Confirmation Sampling November 2003 – January 2004 (Weston Solutions, 2007a).



SAMPLE NUMBER	SAMPLE TYPE	DEPTH
1	SW	11
2	BT	16
3	SW	11
4	BT	16
5	BT	16.5
6	BT	16
7	BT	16
8	BT	16
9	SW	11
10	SW	11
10 DUP	SW	11
11	SW	13
12	BT	16
13	BT	16
14	SW	13
15	BT	17
16	SW	12
17	BT	14
18	BT	14.5
19	SW	12
19 DUP	SW	12
20	SW	12.5
21	BT	14
22	BT	14
23	SW	12
24	SW	12.5
25	SW	12.5
26	SW	12.5
26 DUP	SW	12.5
27	SW	12.5
28	BT	14
29	BT	14
30	BT	14

4.3 Systems Operation

The treatment plant operated between September 1993 and December 2005.

The primary components of system operation associated with the selected Management of Migration alternative include:

- Extraction of contaminated ground water via extraction wells or trenches.
- Treatment of extracted water via dissolved metals pretreatment, air stripping and carbon polishing.
- Discharge of treated ground water to the POTW.
- Long-term ground water monitoring.

See Figure 5 and the photos of the treatment plant which follow.

4.3.1 Operation and Maintenance

The LTRA activities associated with the selected remedy include major maintenance, repair, modification and/or upgrade of extraction, treatment or discharge system components on an as needed basis, as detailed in the annual Operation and Maintenance (O&M) reports. In addition, routine maintenance/monitoring activities have been performed on weekly, monthly, quarterly or at a manufacturer's specified frequency (i.e., after a specified number of hours of equipment operations, etc.). These routine activities include but are not limited to:

- Inspection of Culvert Area well pumps and recording of pump cycle totalizer readings.
- Collection of grab samples throughout the treatment process for hydrogen ion concentration (pH) and iron testing.
- Cleaning and calibration of T-1 pH probe.
- Equipment rotation (pumps, blowers, etc.).
- Collection of plant influent and effluent samples and delivery to an Environmental Laboratory for analysis.
- Air compressor oil and air filter replacement.
- Removal, dismantling, and cleaning of extraction well pumps.
- Lubrication of pumps, motors, mixers, blowers.
- Cleaning of paddle wheel influent flow meter.
- Outside maintenance including snow blowing, and mowing of grass and weeds around plant and wells.
- Clarifier tank cleaning and residual sludge removal.
- Removal and cleaning of building sump pump/P-30.
- Replacement of belts on exhaust blower.
- Inspection of interior of sand filters and leveling of media.
- Replacement of activated carbon in vapor phase carbon units.

Findings associated with these maintenance activities have been documented in the annual O&M reports, several of which were provided electronically by Weston after the Site visit. Several efficiency improvements have been made to the O&M procedures over the years, including:

- Discontinuing the addition of caustic and polymer for metals removal because influent concentrations of metals did not exceed the cleanup goals and pretreatment for iron and manganese was not necessary for treatment of the Hobbs Street wells and the original Culvert Area extraction wells.
- Replacement of blowers and pumps with more suitably sized, energy efficient models.
- Modifications to well heads and pumps to facilitate easier sampling and pump servicing.
- Re-piped blower intake for air stripper to combine tank ventilation system with the air stripper intake. This eliminated the need for a tank ventilation blower, reducing power costs, and allowed unheated air from outside to be used for air stripping instead of heated air from within the plant, thus reducing heating costs.
- Modified compressor controls to decrease compressor operating time, saving significant power costs(USEPA, 2003c).

On the day of the Site visit, tanks were confirmed to have water present but no water has been pumped through the plant since the shutdown – not a customary practice since pumps, motors, seals, etc. need operating fluid transfer to ensure preserving functionality. No chemicals for precipitation of metals had been used since the early days after the original startup (to avoid sludge production). The chemical pumps (caustic/ polymer) had been used to treat the extracted ground water from EW-13B, adding a sequestering agent (chelant) to maintain reduced (soluble) iron and manganese in solution. The added chemical was a phosphate type (FeRemede) marketed for this purpose by Remede Corp of Vermont. It was apparent that the functional part of this plant was the sand filtration, air stripper and vapor phase adsorbent GAC. If the plant is to be restarted, the flow could continue to be sequestered at the plant entrance but routed directly to the sand filters, air stripper and vapor phase GAC.

Annual O&M costs and total gallons processed per year for the years since the last Five-Year Review, not including costs for additional studies described in Section 5, are shown in Table 2 as follows.

Table 2. Annual System O&M Costs.

Year	Gallons Per Year	Annual O&M Cost
1998	20,964,877	$180,013
1999	21,241,615	$189,996
2000	16,449,500	$227,889
2001	19,476,668	$232,728
2002	13,473,517	$281,600
2003	20,000,000 (estimated)	$476,146
2004	2,600,000 *	$299,922
2005	2,400,000 *	$191,475

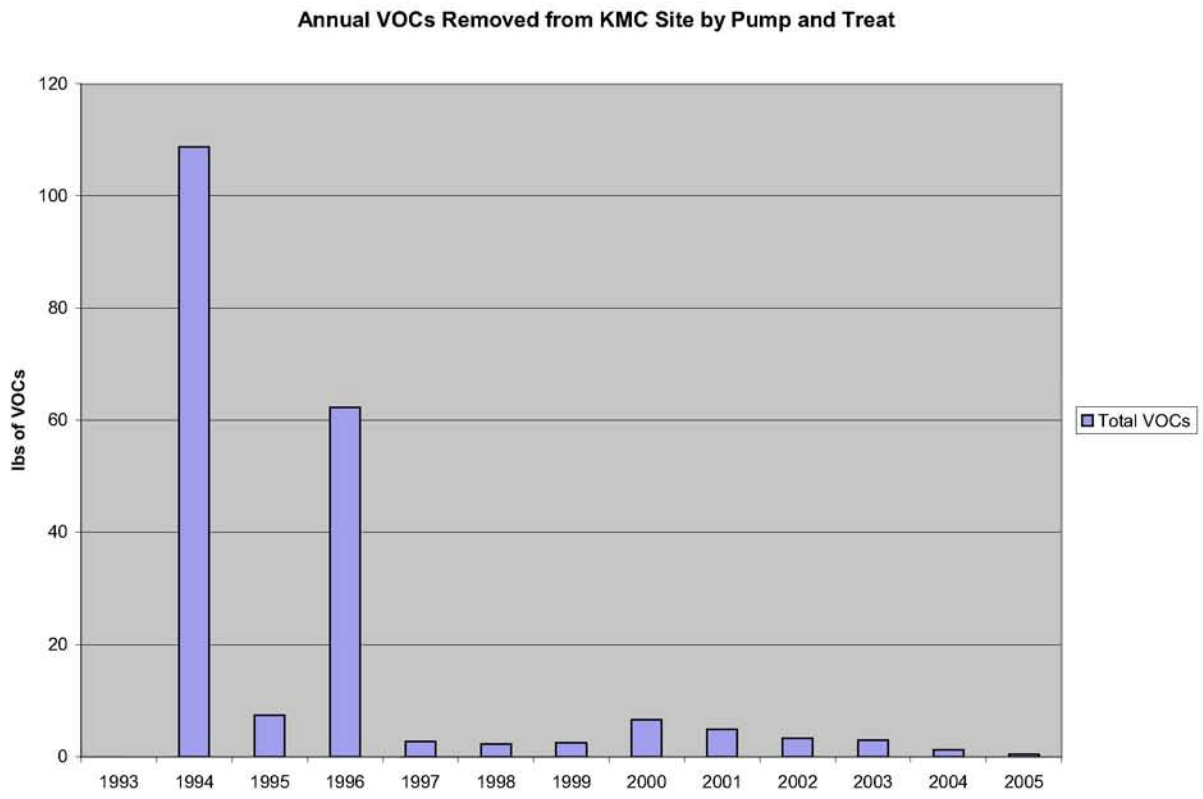
* Assumptions: Pumping 5 gallons per minute continuously in 2004 through December 1, 2005 (only one extraction pump running during this timeframe.

As of May 31, 2004, O&M became the responsibility of NHDES in accordance with the EPA Fact Sheet, Transfer of Long-Term Response Action (LTRA) Projects to States (EPA, July 2003). The following tasks were completed prior to turnover of the LTRA to NHDES.

- Change out of granular carbon in exhaust system.
- Removal and disposal of sludge in the sludge holding tank.
- Change out of packing media in air stripper tower.
- Letter from EPA to NHDES regarding future equipment disposal (USEPA, 2003c).

The Ground water Treatment Plant was shut down in December of 2005. This system shutdown was contingent on continued ground water monitoring to assess the response of the ground water plume to changed conditions and to assess whether MNA would provide an appropriate alternative. The chart below shows the mass of VOCs removed for each year that the ground water treatment plant was running.

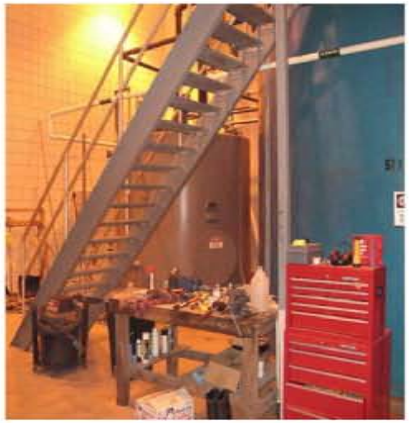
Chart 1 Annual VOCs Removed from KMC Site by Pump and Treat (Weston Solutions, 2007a).



Ground Water Treatment Plant Photos

FC-1 Iron Precipitation Tank

ST-1 Sludge Holding Tank



T-5 Recycle Tank

SF-1 and SF-2 Sand Filters

AS-1 Air Stripping Tower

T-4 Effluent Holding Tank

Blower

5.0 PROGRESS SINCE THE LAST FIVE-YEAR REVIEW

The following provides an update on progress since the second Five Year Review in 2003.

5.1 Protectiveness Statements from Last Review

- The remedy at OU 1 is protective of human health and the environment.
- The remedy at OU 2 currently protects human health and the environment since a ground water extraction and treatment remedy is operating at the Site. However, in order for the remedy to be protective in the long term, additional source control and optimized ground water extraction actions need to be taken to ensure long term protectiveness.

Because the remedial action at all OUs is protective, the Site is protective of human health and the environment. (USEPA, 2003c.).

Since the second five-year review, several activities and reports have been completed and documented as follows:

- Explanation of Significant Differences: Kearsarge Metallurgical Corp. EPA ID: NHD062002001 OU 01 Conway, NH. September 29, 2003.
- Source Removal Action Completion Report, June 2004 by Weston Solutions for NHDES.
- Kearsarge Metallurgical Corporation Reuse Assessment prepared by USEPA in September 2004.
- Shutdown of the Ground water Treatment Plant. December 2005.
- Preliminary Draft Post-Source Removal Data Evaluation Report Kearsarge Metallurgical Corporation Superfund Site Conway, New Hampshire. March 29, 2007. This includes a proposed ground water management zone.
- Final Sampling and Analysis Plan for Ground water Monitoring at the Kearsarge Metallurgical Corporation Superfund Site Conway, New Hampshire (Revision 1.0), prepared by Weston Solutions, Inc., Manchester, New Hampshire. December 2007.
- Ground water Supply Assessment Conway Village Fire District Production Wells CVD-1 and CVD-2 Eight-Day Pumping Test and Water Quality Analyses Conducted for the Conway Village Fire District Conway, New Hampshire, presented to: Underwood Engineers, inc., and Mr. Thom Steele Conway Village Fire District by Emery & Garrett Groundwater, Inc. 56 Main Street, P.O. Box 1578 Meredith, New Hampshire 03253. January 2008.

5.1.1 2003 Explanation of Significant Differences

The 2003 Explanation of Significant Differences (ESD) was signed on September 29, 2003, just before the second Five-Year Review Report was completed (September 30, 2003). The NHDES and USEPA Region 1 evaluated 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. It was concluded that the contaminant concentrations in the ground water had stabilized at levels significantly above cleanup goals in the eastern portion of the KMC Site. This was based on no significant decrease of VOC concentrations since 1997 in many of the wells in the eastern portion of the Site. Investigations performed including soil gas surveys, vertical profiling and a geoprobe

investigation indicated a concentrated source of VOCs in the eastern portion of the Site, also referred to as the Culvert Area

EPA revised the remedy for the Site by modifying the source control and management of migration portions of the ROD. This included removing additional source materials that were acting as a continuing source of ground water contamination at the KMC Site, improving the extraction system by installing a new extraction trench in the source area and by correcting the site-specific ground water cleanup goal for 1,1-DCA consistent with current toxicity data (USEPA, 2003b).

The detailed modifications to the source control and management of migration remedies are outlined in section 5.1.2 below. The ROD for the Site established soils and ground water clean up goals for COCs based on the ARARs and the most current toxicity data available at that time. The ground water 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. At the time of the ESD, the USEPA reevaluated the toxicity data associated with all of the COCs. Based upon this reevaluation, the clean up goal for 1,1-DCA was revised from 4 µg/L to 3650 µg/L.

5.1.2 Source Removal Action Completion Report

The source removal and modifications to the extraction system on the eastern side of the Site was performed by contractors for the NHDES. An outline of the source area excavation is indicated on Figure 6. Figures 9-12 also include an outline of the source area excavation. The ESD outlined plans to remove soils with greater than 6 mg/kg total VOCs which accounted for 68.2% of the remaining contaminant mass. 1,1,1-TCA makes up 90% of the total VOC concentration. At the time of the source removal activities soils with total VOC concentrations greater than 3 mg/kg were actually excavated. All confirmation samples contained less than 3 mg/kg of total VOCs with the exception of one soil sample that contained 3.56 mg/kg of 1,1,1-TCA and 0.453 mg/kg of 1,1-DCA (Weston Solutions, 2004). This is sample 1 on Figure 6. A total of approximately 5,670 tons of chlorinated solvent impacted soils were excavated and disposed off-site (Weston Solutions, 2007a).

The nine extraction wells and one small extraction trench (created in 2000) that constituted the previous Culvert Area ground water extraction system were replaced with one large extraction trench that was installed in the center of the excavation. A newly installed well (EW-13B) was placed in the low point of the trench for extraction of ground water. The expanded ground water extraction trench produced a yield that was twice that of the previously configured ground water extraction system in the Culvert Area (Weston Solutions, 2007a). From the time of the ESD activities on, EW-13B served as the only ground water extraction point for the eastern portion (Culvert Area) of the Site.

5.1.3 Reuse Assessment

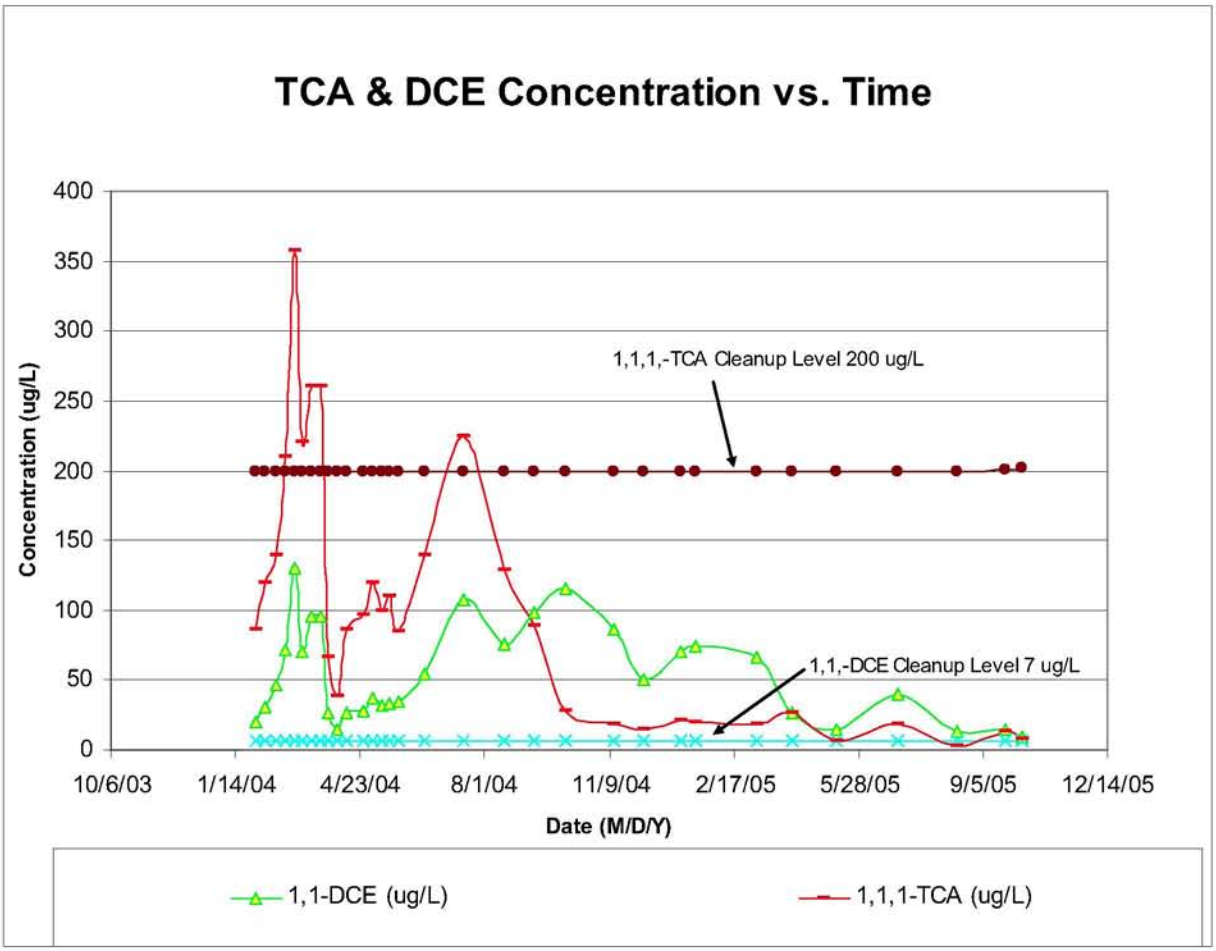
The Reuse Assessment Report discusses current use of the Site and potential future uses. Reuse of the KMC property is included as an objective in the Town's Master Plan which states that the town should "Develop a plan for the redevelopment and eventual reuse of the Kearsarge Metallurgical brownfield site for passive recreational uses that provides connections to the surrounding neighborhoods." (NOTE: The use of the word "brownfield" should not be interpreted that this is an EPA Brownfield site.) The town of Conway is interested in putting the KMC property and nearby properties back into productive use (USEPA, 2004). Most recently, the town of Conway indicated in July 2008 that it will not take

ownership of the property as a component of a reuse plan. Thus, any reuse of the Site would likely come from a private party. See letter from the town of Conway in Appendix D.

5.1.4 Shutdown of GWTP

The Ground water Treatment Plant was shut down in December of 2005 following three sampling rounds conducted in October and November 2005 when VOC concentrations in the extraction well, EW-13B, were below cleanup goals. This system shutdown was contingent on continued ground water monitoring to assess the response of the ground water plume to changed conditions and to assess whether MNA would provide an appropriate alternative. The chart below shows the concentrations of 1,1,1-TCA and 1,1-DCE relative to their cleanup levels of 200 µg/L and 7 µg/L, respectively, indicated as 1,1,1-TCA ICL and 1,1-DCE ICL.

Chart 2 Trichloroethane and Dichloroethene Concentrations in EW-13B 2004 – 2005 (Weston Solutions, 2007a).



5.1.5 Ground water Supply Assessment CVFD wells CVD-1 and CVD-2

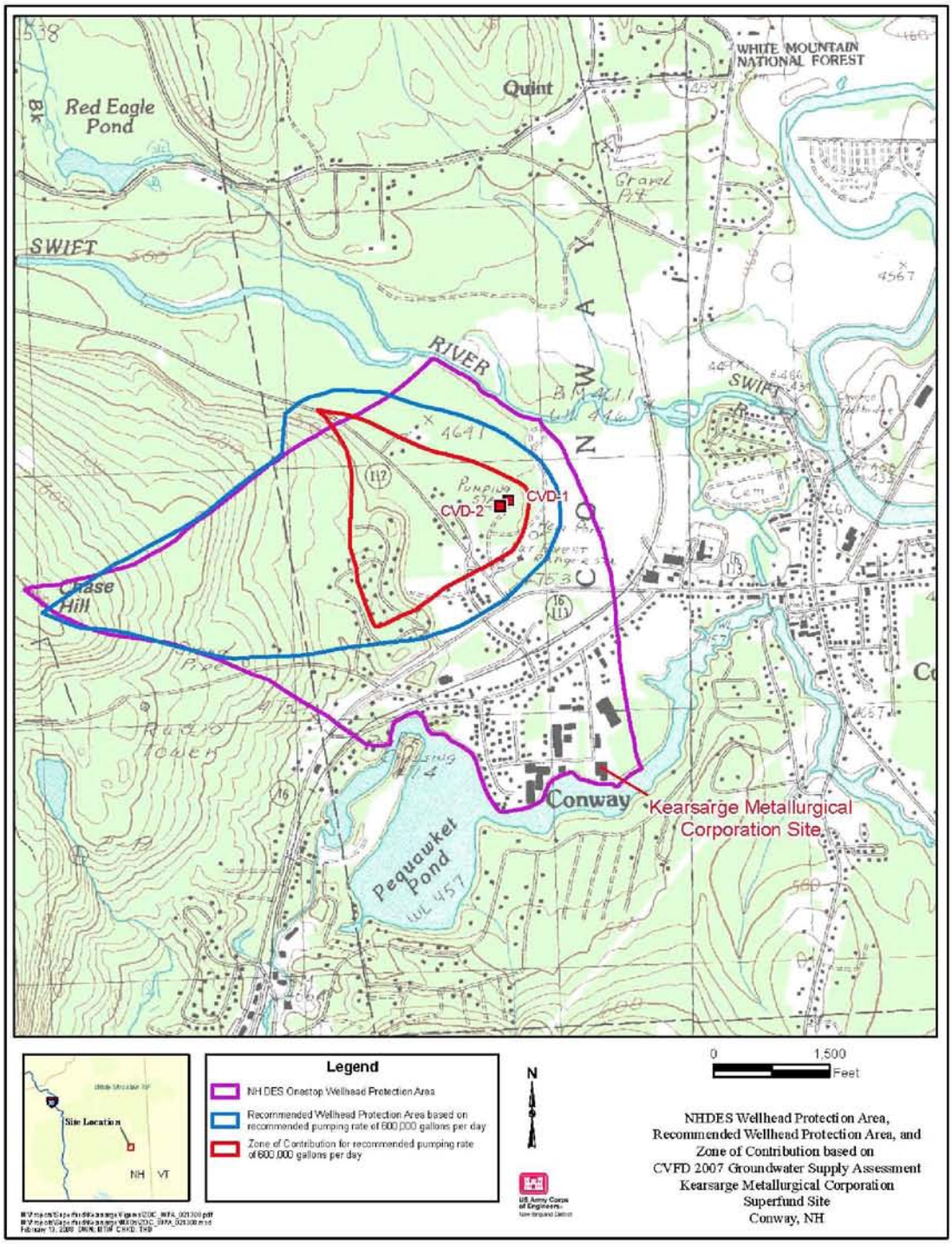
The Conway Village Fire District Supply Wells CVD-1 and CVD-2 supply Conway's public water system. See Figure 7 for the location of these wells. They are screened at 69 and 70 feet below ground surface in a highly productive stratified glacial outwash sand and gravel aquifer lying within the Saco River Valley. These wells are identified by the NHDES as Public Supply Wells 0511010-001 and 0511010-002 and together are capable of yielding more than one million gallons of water per day. The current town piping distribution system is unable to deliver the maximum yield of these combined wells and currently restricts maximum production from the wells, although historic demand has not reached this level.

Due to low level detections of methyl-tert-butyl-ether (MTBE) and trichloroethylene (TCE) during the early to mid 1990's and uncertainty regarding the potential sources of contamination which could affect these supply wells, the CVFD contracted a Ground water Supply Assessment (Emery & Garrett, 2008) to determine the sustainable yield of the production wells, the potential for adverse impacts from adjacent land use, the recharge contribution area and resulting Wellhead Protection Area for these wells. This effort included installation of additional monitoring wells and piezometers as well as surface water monitoring locations which were all instrumented with pressure transducers and data loggers for long-term automated water level measurements collected prior to, during and after execution of an eight day pump test. Wells at the KMC Site including KMC-MW12, MHD-107, located south of the KMC building adjacent to Pequawket Pond and KMC-217 near the northern end of Hobbs St. were monitored during this test. None of these wells or the surface water in Pequawket Pond showed any response directly related to the pumping stresses.

Analytical and numerical ground water models were generated for the Conway aquifer utilizing the direct observations from the pumping test and analytical sampling. Hydrogeologic parameter adjustments were made to the 4 layer model during calibrations and sensitivity analyses to fine tune the model and determine the most significant controlling factors for the aquifer. Twelve steady-state pumping scenarios were modeled ranging from pumping both wells at a combined rate of 400,000 gallons per day (gpd) to simulate recent demand conditions to a maximum of 4,010,000 gpd combined rate which represents the maximum potential rate that each well can produce water based on the specific capacity, screen setting and available drawdown. Model scenario 8 was determined to represent the maximum sustained combined yield that maintains a "very low (or no) risk of capturing potential ground water contaminants from known or suspected contaminant sources."(Emery & Garrett, 2008). Scenario 8 represents a sustained combined pumping rate of 600,000 gpd under normal recharge and stream levels. Zones of contribution were calculated for each pumping scenario and the Scenario 8 Zone of Contribution and recommended Wellhead Protection Area are compared to the NHDES One-Stop Wellhead Protection Area as shown previously in Figure 7.

Analytical samples were collected from the monitoring wells and supply wells CVD-1 and CVD-2 during the pump test activities. The combined data set including the direct water level measurements, the resulting ground water model including particle backtracking, and analytical sampling indicates that the aquifer at the KMC Site is poorly connected to the sand and gravel aquifer to the north and that a divide may exist even at much higher pumping rates than proposed in scenario 8 which "indicates that it is unlikely that ground water contamination from the KMC Site will ever reach the Production Wells" (Emery & Garrett, 2008)

Figure 7 NHDES Wellhead Protection Area, Recommended Wellhead Protection Area, and Zone of Contribution based on CVFD 2007 Ground water Supply Assessment Kearsarge Metallurgical Corporation Superfund Site Conway, NH.



5.1.6 Final Sampling and Analysis Plan

The Final Sampling and Analysis Plan describes the plan for conducting routine ground water monitoring at the KMC Site beginning in June 2007. It is based on the Cleanup Decision Framework Report by Weston dated July 2004 with additional wells included in the monitoring program as requested by the EPA. Wells were selected that are screened at a depth interval immediately overlying the grey silt and clay aquitard, where the highest concentrations are observed. Wells with screen interval depths too shallow, too deep or too long were removed from the program.

Table 3 List of Wells in the Sampling and Analysis Plan Dated December 2007.

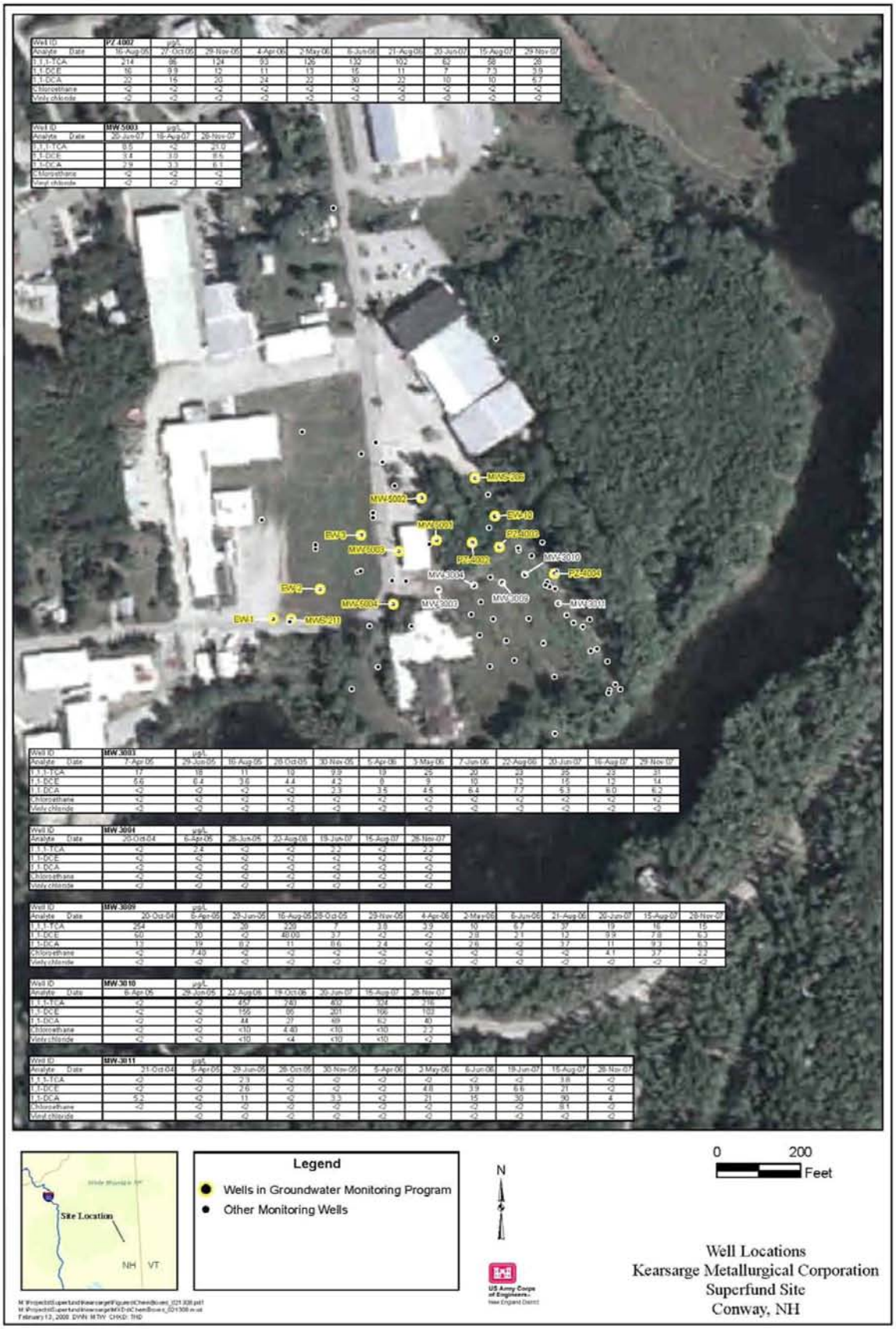
Wells
EW-01
EW-02
EW-03
PZ-4002
PZ-4004
MW-5001
MW-5002
MW-5003
MW-5004
EW-10
MW-206
MW-211
Additional wells requested for inclusion
MW-3003
MW-3004
MW-3009
MW-3010
MW-3011

The following is a list of reasons for choosing wells.

- EW-01, EW-02, EW-03 and MWS-211 were included to confirm that there are no longer any exceedances of cleanup goals west of Hobbs Street.
- Piezometers PZ-4002 and PZ-4003 were included in the monitoring plan to measure the maximum concentrations in the ground water since they are located in the center of the plume. PZ-4004 was included to demonstrate that the contaminant plume does not extend past the gravel driveway to the east.
- EW-10 was added to the sampling plan to replace MW-8 which was screened too deep.
- MW-206 was added to the plan to ensure the plume is bounded to the northeast.
- MW-5001, MW-5002, MW-5003 and MW-5004 were added to the plan to monitor the plume boundary to the north and west. Data from these wells is important to the evaluation of the NHDES proposal to change the remedy to MNA and establish a GMZ.

Refer to Figure 8 for a map showing all of the well locations. The wells currently in the Sampling and Analysis Plan are highlighted.

Figure 8 Well Locations, Kearsarge Metallurgical Corporation Superfund Site Conway, New Hampshire



Well ID	PZ-4002	µg/L									
Analyte Date	16-Aug-05	27-Oct-05	29-Nov-05	4-Apr-06	2-May-06	6-Jun-06	21-Aug-06	20-Jun-07	15-Aug-07	29-Nov-07	
1,1,1-TCA	214	86	124	93	126	132	102	62	58	28	
1,1-DCE	16	9.9	12	11	13	16	11	7	7.3	3.6	
1,1-DCA	22	15	20	24	22	30	22	10	10	5.7	
Chloroethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Vinyl chloride	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	

Well ID	MW-5003	µg/L	
Analyte Date	20-Jun-07	16-Aug-07	28-Nov-07
1,1,1-TCA	8.5	<2	21.0
1,1-DCE	3.4	3.0	8.5
1,1-DCA	2.9	3.1	6.1
Chloroethane	<2	<2	<2
Vinyl chloride	<2	<2	<2

Well ID	MW-3003	µg/L											
Analyte Date	7-Apr-05	29-Jun-05	16-Aug-05	28-Oct-05	30-Nov-05	5-Apr-06	3-May-06	7-Jun-06	22-Aug-06	20-Jun-07	16-Aug-07	29-Nov-07	
1,1,1-TCA	17	18	11	10	9.9	19	25	20	23	25	23	31	
1,1-DCE	5.6	6.4	3.6	4.4	4.2	6	9	10	12	16	12	14	
1,1-DCA	<2	<2	<2	<2	2.3	3.5	4.5	6.4	7.7	5.3	8.0	6.2	
Chloroethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
Vinyl chloride	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	

Well ID	MW-3004	µg/L					
Analyte Date	20-Oct-04	6-Apr-05	28-Jun-05	22-Aug-06	19-Jun-07	15-Aug-07	28-Nov-07
1,1,1-TCA	<2	2.4	<2	<2	2.3	<2	2.2
1,1-DCE	<2	<2	<2	<2	<2	<2	<2
1,1-DCA	<2	<2	<2	<2	<2	<2	<2
Chloroethane	<2	<2	<2	<2	<2	<2	<2
Vinyl chloride	<2	<2	<2	<2	<2	<2	<2

Well ID	MW-3009	µg/L												
Analyte Date	20-Oct-04	6-Apr-05	29-Jun-05	16-Aug-05	28-Oct-05	29-Nov-05	4-Apr-06	2-May-06	6-Jun-06	21-Aug-06	20-Jun-07	15-Aug-07	28-Nov-07	
1,1,1-TCA	254	70	28	320	7	3.9	3.9	10	6.7	37	19	16	15	
1,1-DCE	60	20	<2	40.00	3.7	<2	<2	2.8	2.1	12	9.4	7.8	6.3	
1,1-DCA	13	19	8.2	11	8.6	2.4	<2	2.6	<2	3.7	11	9.3	6.3	
Chloroethane	<2	7.40	<2	<2	<2	<2	<2	<2	<2	<2	4.1	3.7	3.2	
Vinyl chloride	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	

Well ID	MW-3010	µg/L						
Analyte Date	6-Apr-05	28-Jun-05	22-Aug-06	19-Oct-06	20-Jun-07	15-Aug-07	28-Nov-07
1,1,1-TCA	<2	<2	67	240	60	324	216
1,1-DCE	<2	<2	155	95	201	106	103
1,1-DCA	<2	<2	44	27	49	62	40
Chloroethane	<2	<2	<10	4.40	<10	<10	2.2
Vinyl chloride	<2	<2	<10	<4	<10	<10	<2

Well ID	MW-3011	µg/L										
Analyte Date	21-Oct-04	6-Apr-05	29-Jun-05	28-Oct-05	30-Nov-05	5-Apr-06	2-May-06	6-Jun-06	19-Jun-07	15-Aug-07	28-Nov-07	
1,1,1-TCA	<2	<2	2.9	<2	<2	<2	<2	<2	<2	3.6	<2	
1,1-DCE	<2	<2	2.6	<2	<2	<2	4.8	3.9	6.6	21	<2	
1,1-DCA	5.2	<2	11	<2	3.3	<2	31	35	30	90	4	
Chloroethane	<2	<2	<2	<2	<2	<2	<2	<2	<2	8.1	<2	
Vinyl chloride		<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	

5.1.7 Preliminary Draft Post-Source Removal Data Evaluation Report

A preliminary draft Post Source Removal Data Report was prepared by Weston Solutions for the NHDES. Its purpose was to evaluate progress toward the attainment of cleanup goals following modifications to the source control and management of migration remedies in 2003 and to provide a basis for deciding upon a future course of action for the Site (Weston Solutions, 2007a).

The report summarized the activities in the Source Removal Action Completion Report discussed in Section 5.1.2. It describes the Hobbs Street wells and the Culvert Area wells with respect to clean up levels and the decision to turn off the ground water treatment plant. It contains a Conceptual Model for the Site, describes ground water flow while the GWTP system was on and off. The report also discusses the contaminant plume as well as contaminant trends in the individual wells. It discusses natural attenuation as a potential remedy and a proposed ground water management zone around the Site.

The following subsections are summaries from this report.

5.1.7.1 Hobbs Street and Culvert Area wells reaching cleanup goals.

Pumping from the Hobbs Street wells was discontinued in February 2004, following the completion of the Source Removal Actions. No VOCs have been detected in either the Hobbs Street extraction wells or the nearby monitoring wells since the shutdown of EW-01, EW-02 and EW-03 in February 2004 (Weston Solutions, 2007a). Analytical results for the Hobbs Street wells from 2003 through 2007, including the most recent sampling in November, 2007, are provided in Table 4 below.

Table 4 Hobbs Street Wells 1,1,1-TCA and 1,1-DCE Concentrations 2003-2007.

Well	DATE	1,1,1-TCA		1,1-DCE	
		Reporting Limit	Result	Reporting Limit	Result
		µg/L		µg/L	
EW01	4/22/2003	2	U	2	U
	8/5/2003	2	U	2	U
	4/13/2004	2	U	2	U
	10/22/2004	2	U	2	U
	4/5/2005	2	U	2	U
	8/23/2006	2	U	2	U
	06/20/2007	2	U	2	U
	08/15/2007	2	U	2	U
	11/29/2007	2	U	2	U
EW02	4/22/2003	2	U	2	U
	8/5/2003	2	U	2	U
	4/13/2004	2	U	2	U
	10/22/2004	2	U	2	U
	4/5/2005	2	U	2	U
	6/28/2005	2	U	2	U
	8/23/2006	2	U	2	U
	06/20/2007	2	U	2	U
	08/15/2007	2	U	2	U
EW03	4/22/2003	2	U	2	U

Well	DATE	1,1,1-TCA		1,1-DCE	
		Reporting Limit	Result	Reporting Limit	Result
		µg/L		µg/L	
	8/5/2003	2	U	2	U
	4/13/2004	2	U	2	U
	10/22/2004	2	U	2	U
	6/28/2005	2	U	2	U
	8/22/2006	2	U	2	U
	06/20/2007	2	U	2	U
	08/15/2007	2	U	2	U
	11/29/2007	2	U	2	U
MW211	4/23/2003	2	U	2	U
	8/6/2003	2	U	2	U
	4/13/2004	2	U	2	U
	4/28/2004	2	U	1	U
	10/22/2004	2	U	2	U
	4/7/2005	2	U	2	U
	6/29/2005	2	U	2	U
	8/22/2006	2	U	2	U
	06/20/2007	2	U	2	U
	08/15/2007	2	U	2	U
	11/28/2007	2	U	2	U
MW213	4/23/2003	2	U	2	U
	8/5/2003	2	U	2	U
	4/13/2004	2	U	2	U
	10/22/2004	2	U	2	U
MW213	4/7/2005	2	U	2	U
	U = Analyte was not detected at the shown reporting limit.				

5.1.7.2 Conceptual Model

The conceptual model for contamination was summarized in the preliminary draft Post-Source Removal Data Evaluation report in the following way. The vertical profiling and Geoprobe investigations performed in 2002 delineated the area of the Site where high concentrations of chlorinated hydrocarbons were present in the saturated overburden. In retrospect, the Geoprobe characterization may have been insufficient in the area covered.

The highest VOC concentrations were observed in the low permeability layers underlying the upper sand layer in the Culvert Area of the Site. These low permeability layers had been acting as a continuing source of ground water contamination, as the VOCs diffused out of the silt and clay into the upper sand. In October through December 2003, the soils with total VOC concentrations greater than 3 mg/kg were excavated and disposed of off-site. After excavation of these soils, a "halo" of contaminated soils at concentrations less than 3,000 µg/kg at a depth of approximately 8 to 10 ft below ground surface (bgs) appears to remain. This "halo" of contaminated soils is thought to be in the top 4 to 5 ft of the low permeability silt and clay layer (Weston Solutions, 2007a).

5.1.7.3 Ground water Flow Patterns under Pumping and Non-Pumping Conditions

After the excavation was completed, a new extraction well, EW-13B, was installed in the excavation as it was backfilled with a 5-ft thick layer of crushed stone, overlain by geotextile, and permeable fill. The area of the former excavation functioned as a large ground water collection trench for EW-13B. Pumping from EW-13B began in February 2004. Ground water potentiometric surface maps were generated from water level data collected April 5, 2005 and 1 December 2005, and when ground water was being extracted from EW-13B. Based on the potentiometric surface contours, it appears that during pumping of EW-13B, the "halo" of contamination was contained within the capture zone of the pumping well.

Once pumping was discontinued in early December 2005, a radial pattern of ground water flow was established, with a ground water mound forming over a significant portion of the contaminated soil "halo". Based on the potentiometric surface maps from December 2005, it appears that contaminants are diffusing out of the contaminated soil "halo" and into the ground water in the upper sand unit and migrating in a northerly, easterly, and westerly direction (Weston 2007a). This appears to still be the case based on the most recent potentiometric surface contour map from late November 2007. This indicates a partial ground water divide oriented north – south with steep horizontal hydraulic gradient to the west towards Hobbs St. and a less steep gradient to the east and the drainage culvert. This creates a divergent ground water flow pattern as shown on Figure 3. This pattern is more or less subdued seasonally and is likely affected by the surface water elevation of Pequawket Pond which is controlled by raising and lowering the spillway of the downstream dam. It is also affected by the difference in hydraulic conductivities of the shallow overburden and dramatic transmissivities of the thicker sand unit beneath the western portion of the Site compared to the thin sand unit over the thick silt and clay aquitard underlying the eastern portion of the Site.

5.1.7.4 Contaminant Plume

Excavation and pumping activities have clearly had a significant impact on the ground water plume in the source area. Figures 9 and 10 respectively show total VOCs for sampling rounds conducted in August 2005 (under pumping conditions) and August 2006 (8 months after pumping from EW-13B was discontinued) respectively. Both Figures 9 and 10 also show the areas of the Site where ground water contaminant levels exceed the cleanup goals of 200 μg/L for 1,1,1-TCA and 7 μg/L for 1,1-DCE. It appears that a shift in the plume shape is beginning to be shown from 2005 to 2006.

The preliminary draft Weston Report concluded that total contaminant mass at the Site has been reduced significantly, and the aerial extent of the plume has decreased since the soil excavation. Between August 2005 and August 2006, maximum concentrations for total VOCs in the center of the plume have decreased, but the aerial extent of the ground water with contaminant levels exceeding the cleanup goals has expanded slightly to the northwest and southeast. The center of the plume has also shifted slightly to the east. The only two contaminants that continue to exceed the cleanup goals at the Site are 1,1,1-TCA, and 1,1-dichloroethene. Figures 11 and 12 show the approximate extent of the August 2006 1,1,1-TCA and 1,1-DCE plumes where they exceed their respective cleanup goals (Weston, 2007a).

The more recent evaluation of the contaminant plume is in Section 6.4, the Data Review section of this Five-Year Review Report

Figure 9 Total VOC Concentrations in Ground water August 2005 (Weston Solutions, 2007a).

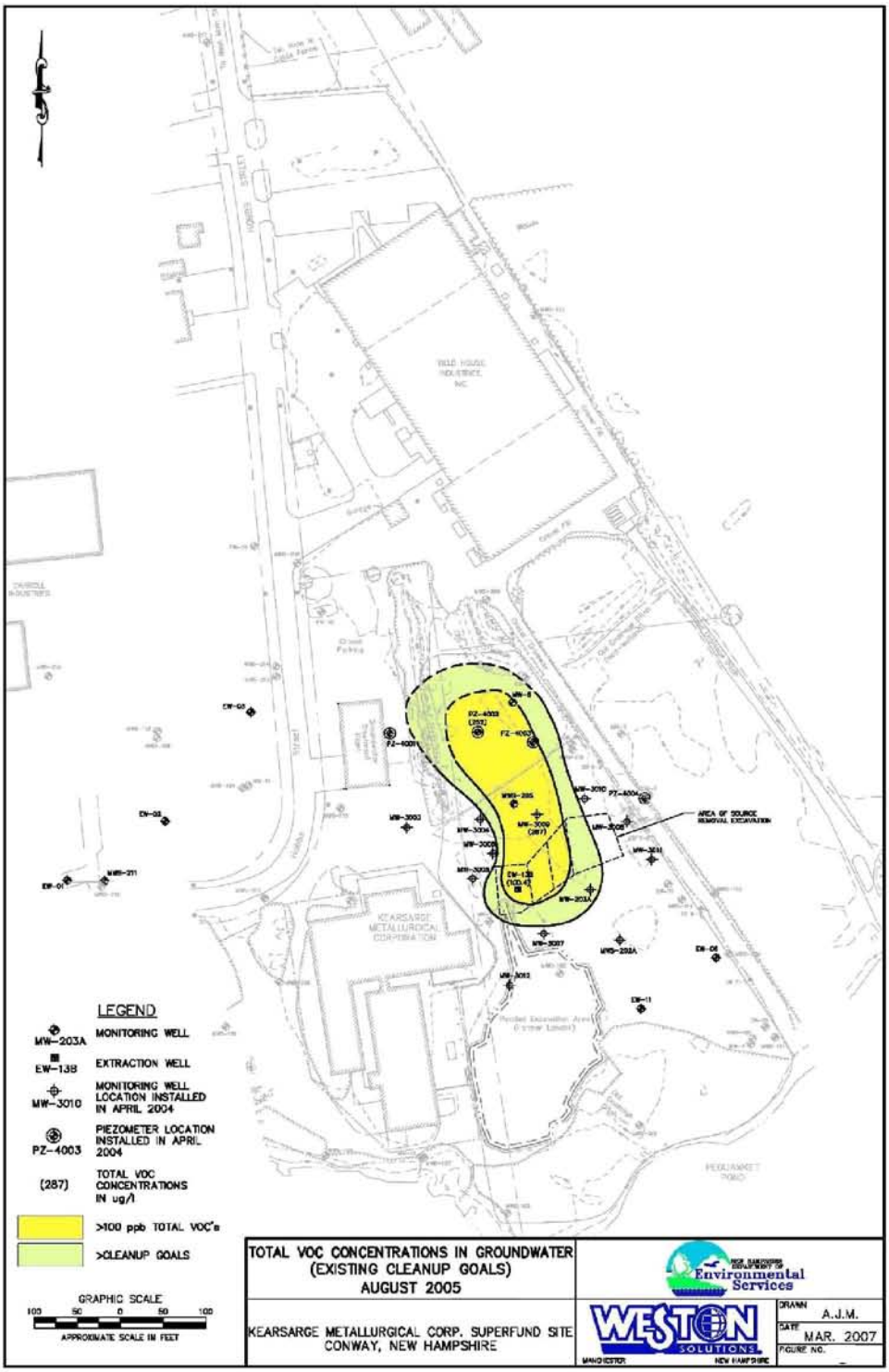


Figure 10 Total VOC Concentrations in Ground water August 2006 (Weston Solutions, 2007a).

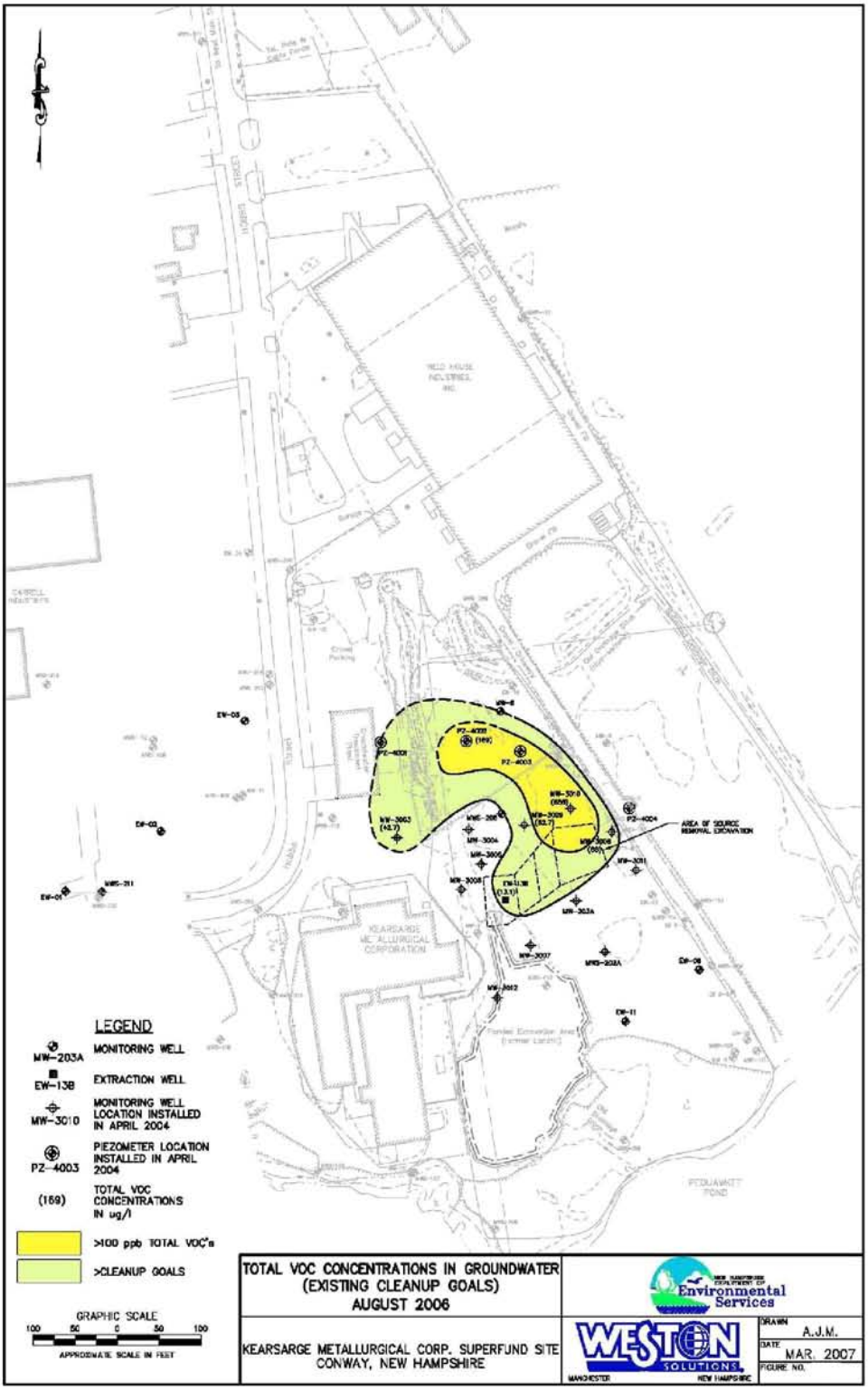


Figure 11 Contaminant Distribution 1,1-DCE August 2006 (Weston Solutions, 2007a).

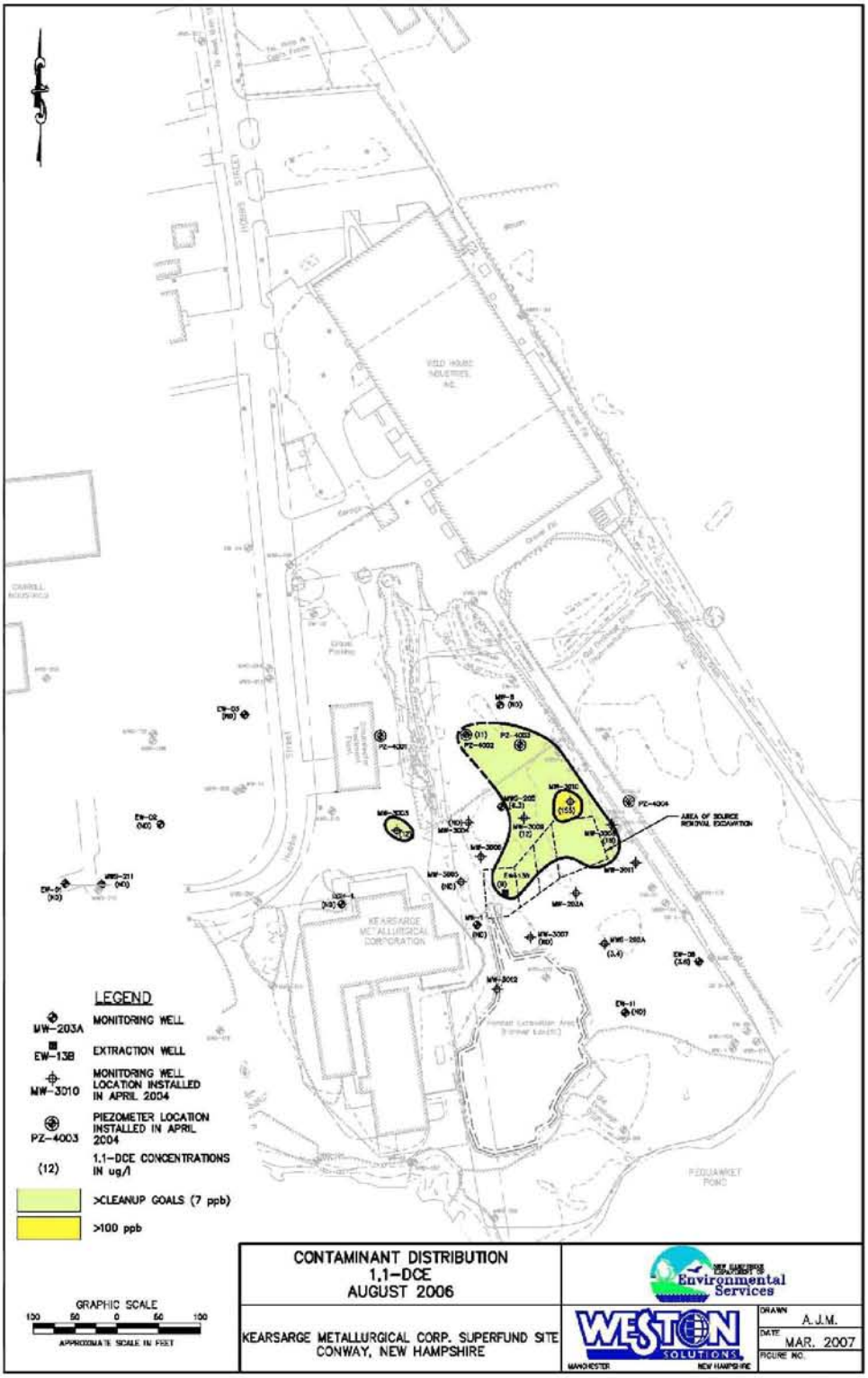
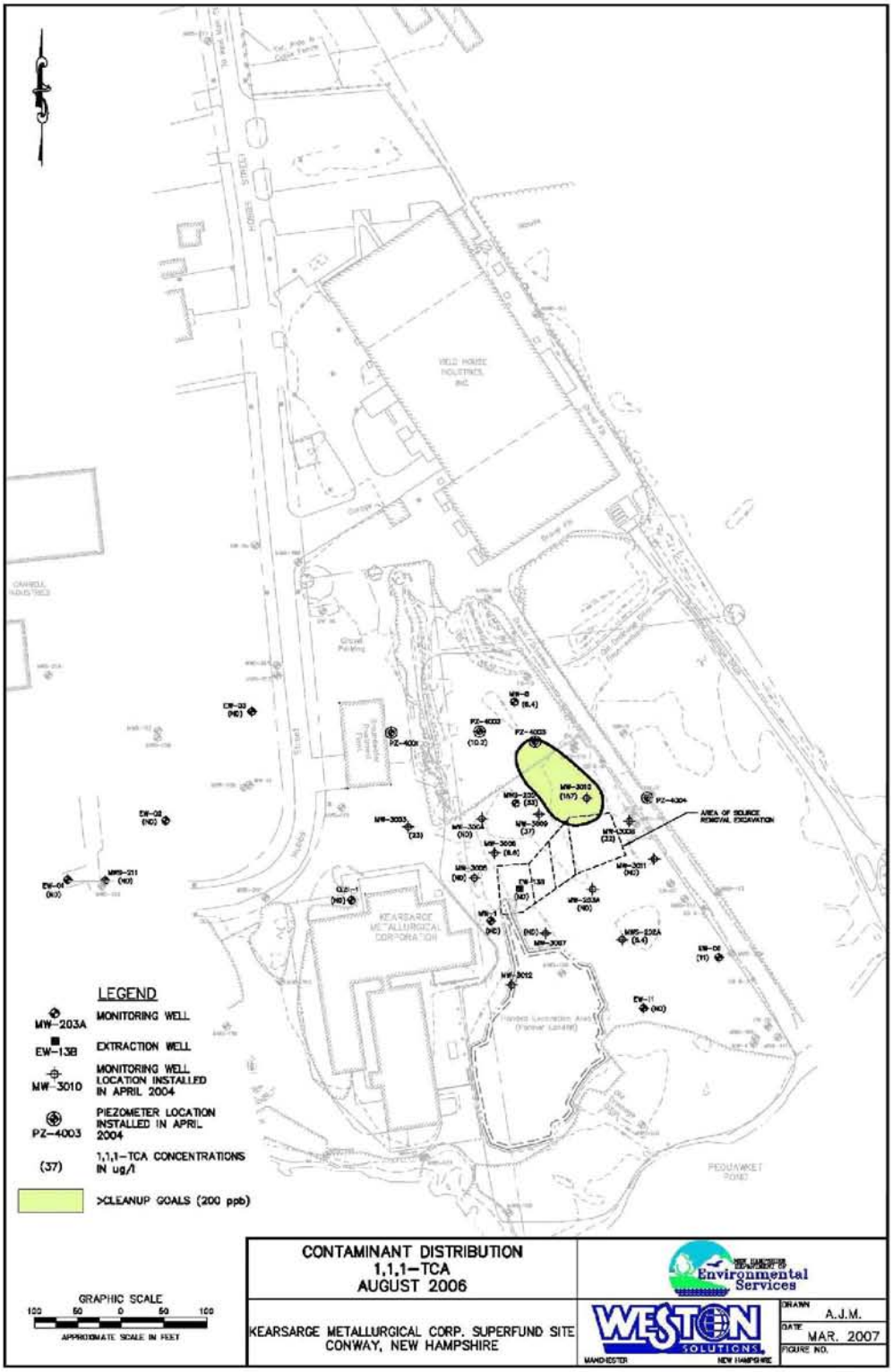


Figure 12 Contaminant Distribution 1,1,1-TCA August 2006 (Weston Solutions, 2007a).

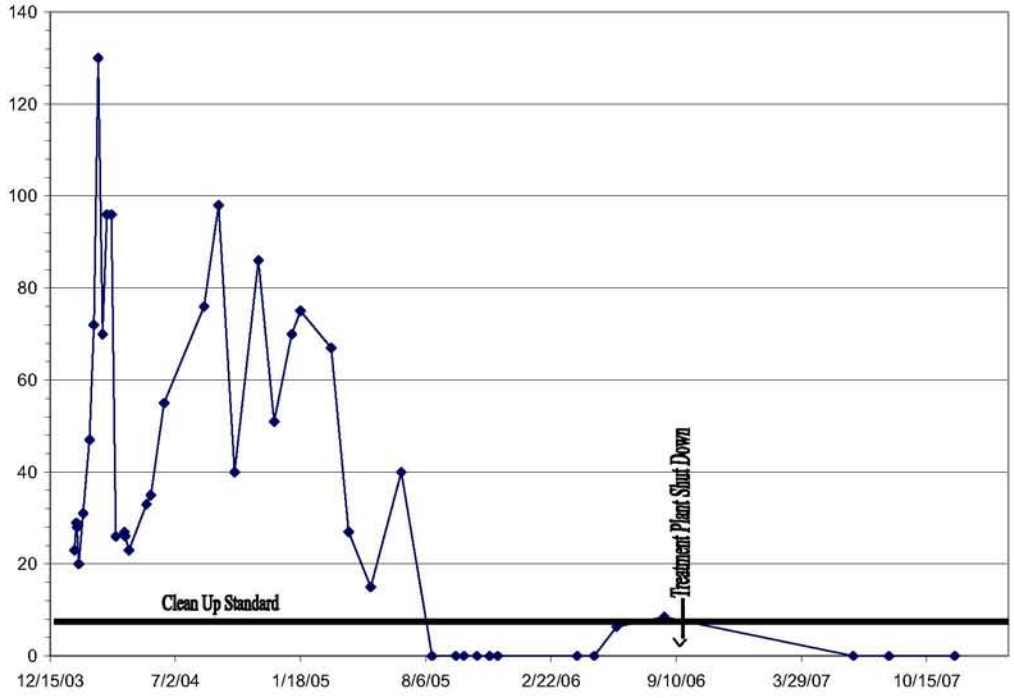


5.1.7.5 Contaminant Trends in Individual Wells

Laboratory results for ground water samples collected from select monitoring points across the Site during August, October, and November 2005 indicated that all compounds analyzed were below laboratory reporting limits, for VOCs this was generally 2 µg/L, prompting the temporary shutdown of the ground water treatment facility in December 2005, and the monitoring of plume characteristics under natural (non-pumping) conditions. Monitoring data under these conditions would help to determine whether continued operation of the treatment plant will be necessary for protection of human health and the environment.

Following the shutdown of the treatment plant, sampling events were performed in April, May, June, August, and October of 2006. Laboratory analytical results for ground water samples collected during the first of these three monitoring rounds indicated that concentrations of 1,1,1-TCA remained below the applicable standards in all monitoring wells and 1,1-DCE exceeded the applicable standard in four monitoring points, which included MW-205, PZ-4002, MW-3003, and MW-3008. Two rounds of ground water sampling performed in August and October 2006 indicated that concentrations of 1,1-DCE exceeded its applicable standard of 7 µg/L in monitoring wells MW-3003, MW-3008, MW-3009, MW-3010, EW-9, EW-13B (Chart 3), and PZ-4002 and that concentrations of 1,1,1-TCA exceeded its applicable standard of 200 µg/L in MW-3010. The increase in concentrations noted during the August 2006 sampling round may be at least partially attributable to seasonal variation since historically contaminant concentrations tend to be higher during the summer months.

Chart 3 Most Recent 1,1-DCE Concentrations in EW-13B (Weston Solutions, 2007a).



Monitoring well MW-3010, located hydraulically down-gradient from the source removal area, exhibited the highest concentrations at the Site for both 1,1-DCE and 1,1,1-TCA at 82 μg/L and 233 μg/L respectively, during the sample round performed in October 2006. These concentrations are slightly lower than laboratory analytical results from the August 2006 sampling round. Prior to the shut down of the treatment plant, concentrations of all VOCs in MW-3010 were below laboratory reporting limits. See Figure 8 for data for MW-3010 from 2005 – 2007.

Monitoring well EW-13B, installed directly in the source removal excavation, exhibited concentrations of 1,1,1-TCA as high as 350 μg/L immediately following excavation activities. Concentrations of 1,1,1-TCA in EW-13B have been below laboratory reporting limits since August 2005. Concentrations of 1,1-DCE in EW-13B were as high as 130 μg/L shortly after the excavation and declined until falling below laboratory reporting limits from August 2005 through May 2006. Concentrations of 1,1-DCE may have rebounded slightly in June and August 2006 to 6.4 μg/L and 8.5 μg/L, respectively.

The area of the Site where 1,1,1-TCA exceeds the cleanup goal is much smaller in extent than the area of 1,1-DCE exceedances as shown on Figures 11 and 12. This is primarily due to the much lower cleanup goal for 1,1-DCE. Both the 1,1,1-TCA and 1,1-DCE plumes originate near the source area excavation and trend toward the north. The storm drains and culvert in the gravel road to the northeast of the source area have historically limited the migration of contaminants further east.

WESTON utilized the August 2006 total VOC concentrations plume map to estimate the contaminant mass in ground water at the Site. Concentrations of contaminants in ground water and the pore volume of ground water within the plume were used to estimate the total mass of VOCs remaining in the ground water in the upper sand unit. By extrapolating available data, WESTON calculated that the total mass of contaminants in the ground water in the upper sand unit at the KMC Site to be approximately 2.97 grams. No recent soil data is available to estimate the mass of contaminants remaining in the contaminant "halo" in the low permeability silt and clay layers. Also, no data is available to estimate the rate of diffusion of the contaminants from the silt and clay into the upper sand.

To further evaluate the plume of contamination at the Site, WESTON generated graphs of contaminant concentrations over time for 1,1-DCE and 1,1,1-TCA in monitoring wells. Depending upon the sampling schedule for each well, each graph includes available analytical data from as early as immediately prior to the source removal activities in 2003, until as recent as October 2006 (Weston Solutions, 2007a). Additional discussions of recent contaminant concentrations in wells are in the data review section of this five-year review report. (See Section 6.4).

5.1.7.6 Natural Attenuation as a Remedy

NHDES has recently introduced natural attenuation as a possible remedy for the Site. It is not currently included as a remedy for the Site. According to NHDES's Guidelines for Selection of Natural Attenuation for Ground water Restoration, October 1999, NHDES encourages the use of monitored natural attenuation for remediation of dissolved phase contaminated ground water at sites where:

1. It is demonstrated to be protective of human health and the environment;
2. It is demonstrated to present no additional risk to receptors;
3. Evidence of a stable or receding plume is provided;
4. Biodegradation or other destructive processes are demonstrated to be occurring;
5. Remedial goals will be achieved within a reasonable period of time including reduction of ground water contaminant concentrations below the applicable standards.

Monitoring of ground water quality conditions indicates that concentrations of 1,1,1-TCA and 1,1-DCE are the only compounds that violate applicable standards of 200 µg/L and 7 µg/L respectively. At the time that the ground water treatment plant was turned off in December 2005, contaminant concentrations were low and the plume maps generated for the Site illustrate that contaminants had not migrated beyond the property lines of the Kearsarge Metallurgical Corporation property on the north and west, and the OCR property on the north and east.

As referenced previously, the total VOC concentration maps indicate that the plume of contamination had dramatically decreased in magnitude and size since the source removal actions performed in late 2003. Current exceedances at the Site for 1,1,1-TCA were limited to the Culvert Area east of the former KMC building location and at that time, there were no exceedances west of Hobbs Street.

According to the Preliminary Draft Post-Source Removal Data Evaluation Report, the presence of 1,1-DCE at the Site, a breakdown product of 1,1,1-TCA, indicates the possible occurrence of abiotic degradation at the Site. In August 2006, six wells (MW-3003, MW-3008, MW-3009, MW-3010, PZ 4002 and EW-13B) exhibited exceedances of the standard for 1,1-DCE. In November 2007, six wells (MW-3003, MW-3008, MW-3009, MW-3010, MWS-203A and MW-5003) exhibited exceedances of the standard for 1,1 DCE, while the ground water sample collected from MW-3010 was the only sample in either year to exceed the applicable standard for 1,1,1-TCA. (NHDES, 2008c) Although 1,1-DCE has a higher toxicity than its parent compound, and consequently has a much lower cleanup goal, the limited and consistently decreasing concentrations of 1,1,1-TCA in the ground water at the Site indicates that if degradation is in fact occurring, there should be a limited amount of 1,1-DCE released to the ground water aquifer as a result of this breakdown process.

In an effort to evaluate if degradation is occurring at the Site, recent sampling events have included the analysis for dissolved oxygen, redox potential, iron, manganese, and methane as well as including an analysis for fatty acids at select wells. Laboratory analytical results thus far have indicated the presence of relatively high levels of methane in some site monitoring wells, but the presence of fairly low concentrations of other natural attenuation parameters. Current concentrations of these parameters do not confirm or refute the occurrence of degradation at the Site (Weston, 2007a). Additional evaluation of MNA is in Section 6.4.3 of this report.

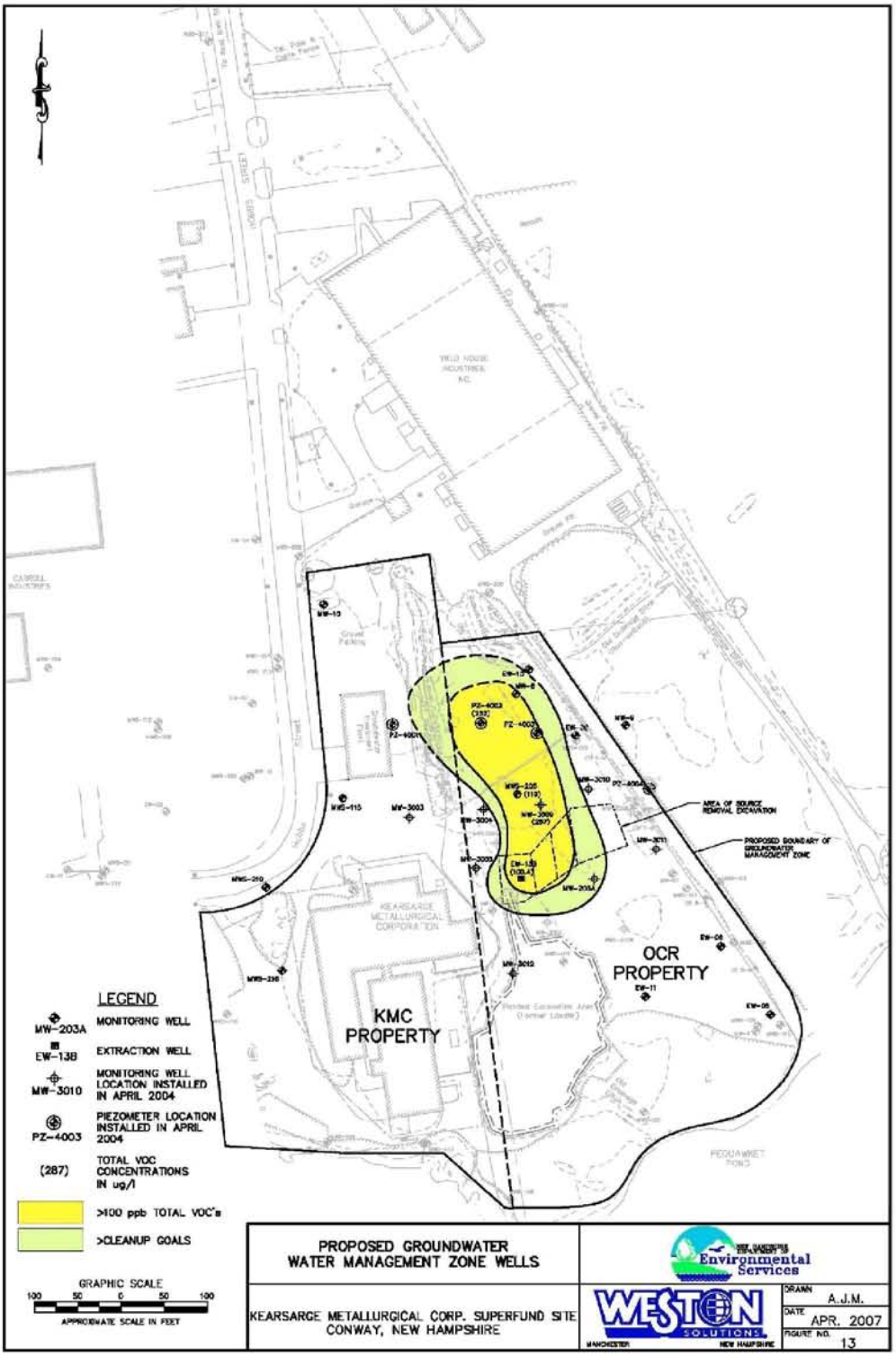
5.1.7.7 Proposed Ground water Management Zone

A proposed ground water management zone shown in Figure 13 was presented in the Preliminary Draft Post-Source Removal Data Evaluation Report. The GMZ would encompass the properties under which the entire contaminant plume exists. The GMZ would be the ground water institutional control for the Site until the ground water is restored to drinking water standards and no further risks are present at the Site. Under current conditions, the contaminant plume does not appear to have reached equilibrium, however insufficient data has been collected to make a final determination. The location of the plume has shifted slightly following shutdown of the treatment plant and new exceedances of the cleanup goals for 1,1,1-TCA and 1,1-DCE have been observed in monitoring wells MW-3003, MW-3008, and MW-3010. The expansion of the current monitoring network at the KMC Site to include the MW-5000 series wells (see Figure 8) installed in 2007 may be used to monitor the ground water management zone (GMZ).

Over the past year's sampling (2007) exceedances of the cleanup goals for either 1,1,1-TCA or 1,1-DCE have been observed in the following wells, MW-3003, MW-3008, MW-3009, MW-3010, MW-3011,MW-203A, PZ-4002, EW-9 and MW-5003.

Figure 13 Proposed Ground Water Management Zone

(Based on August 2005 Total VOC plume)



5.1.8 Fence Installation

A perimeter fence around the KMC building 1 was installed in March 2003 to prevent access to the building which is structurally unsafe.

5.2 Status of Recommendations and Follow-Up Actions from the Last Review

The following provides a summary of the issues and recommendations from the last five-year review and their current status:

Issue	Recommendation/Follow-up Action	Party Responsible	Oversight Agency	Milestone Date	Disposition from current Five-Year Review
Changes to cleanup goal for 1,1-DCA in ground water	Addressed in the ESD along with additional source excavation activities.	N/A	NHDES/EPA	September 2003	Completed
Recalcitrant contamination in monitoring well MW-211	Determine cause and remedy, potentially by optimizing extraction from well EW-1.	N/A	NHDES/EPA	May 2004	The well was redeveloped and there were no further detections of TCE from fall 2003 on.
Continuing source of VOCs contaminating ground water.	Source area excavation is addressed in the ESD. Soils with total VOC concentrations greater than 6 mg/kg will be excavated and disposed off-site.	N/A	NHDES/EPA	October 2003	Source Removal activities occurred in 2003
Further optimize removal of contaminant mass from Site ground water	Install new, expanded ground water extraction trench in Culvert Area. Addressed in the ESD along with source excavation activities.	N/A	NHDES/EPA	October 2003	Completed
Certain non-routine maintenance items are in need of being addressed.	Replace primary carbon vessel with secondary carbon vessel. Acid wash or replace packing in the air stripper.	N/A	NHDES/EPA	July 2004	Completed

(USEPA, 2003c).

6.0 FIVE YEAR REVIEW PROCESS

This five-year review was conducted in accordance with USEPA's most current five year review (USEPA, 2001). Tasks completed as part of this five-year review include review of pertinent site-related documents, interviews with parties associated or familiar with the Site, an inspection of the Site, and a review of the current status of regulatory or other relevant standards.

6.1 Administrative Components

USEPA notified members of the Town of Conway, NH and NHDES of the initiation of the Five-Year Review in 2007. The Five Year Review Team was led by Richard Goehlert, EPA Remedial Project Manager (RPM), and included members from the USACE with expertise in geology, chemistry, remedial process engineering, and risk assessment. Andrew Hoffman of NHDES and Bette Nowak of Weston Solutions, Inc. assisted in the review as the representative for the support agency. The official start date of the third Five-Year review was November 6, 2007.

In November 2007, the review team established the review schedule whose components included:

- A review of site background, land use, history of contamination and response actions.
- A site visit
- Review of remedy selections and implementation.
- Interviews with local officials and interested parties.
- Review of changes to toxicity values and Applicable or Relevant and Appropriate Requirements (ARARs) since the previous Five Year Review.
- Review of progress since the last Five Year Review
- Review of historic LTRA operations, maintenance and monitoring data.
- Technical assessment of the remedy.
- Determination of Remedy Protectiveness.

During the course of the third Five-Year Review, the Review Team completed the following tasks:

- Collected information from local officials.
- Reviewed monitoring reports and other data and reports to evaluate whether cleanup levels were being met.
- Conducted a site visit to inspect remedy components and effectiveness.
- Interviewed local officials, and other interested parties, including nearby property owners.
- Assessed select historical data and reports.
- Facilitated community involvement.
- Submitted the Draft Five-Year Review Report.
- Addressed comments from the EPA and NHDES to the Draft Five-Year Review, and revised the document

6.2 Community Notification and Involvement

Community involvement in the Five-Year Review process for the KMC Site was initiated by the EPA RPM via a press release following the November 28, 2007 site visit (Appendix B). The release informed the public of the upcoming review and provided contact and schedule information. No one responded to the notice with any comments or concerns. It was published in The Mountain Ear, Thursday, December 6, 2007 and The Conway Daily Sun, November 29, 2007 and December 1, 2007 (see advertisements in Appendix B).

Once this document has been finalized, a public notice will be published on the EPA website at www.epa.gov/ne/ra/gb indicating that the third Five-Year Review has been completed and that copies are available at the EPA-New England headquarters in Boston, Massachusetts, as well as in the information repository located in the Conway Public Library located on Main Street in Conway, New Hampshire. Following the site visit on November 28, 2007 the USACE contacted the Conway Town Library to verify that information for the site is available there for the public to review. They confirmed that this was the case.

6.3 Document Review

This Five-Year Review consisted of a review of relevant documents located in the EPA-New England files in Boston, Massachusetts, as well as other files and documents made available from the files of NHDES and WESTON, the NHDES contractor responsible for O&M at the Site. Applicable or Relevant and Appropriate Requirements, as listed in the ROD and on state and federal websites were also reviewed.

6.3.1 Background Documents Review

Site-related documents reviewed as part of this effort are listed in Section 12.

6.3.2 Review of ARARs

Applicable or Relevant and Appropriate Requirements (ARARs) for the KMC Superfund Site were identified in the ROD (1990) and include the following:

- Chemical-Specific Federal Standards
  - Safe Drinking Water Act (SDWA)
  - Federal Ambient Water Quality Criteria
  - National Ambient Air Quality standards
  - Groundwater Protection – RCRA Subtitle C, 40 CFR Part 264 (F)

- Chemical-Specific State Standards
  - New Hampshire Surface Water Quality Standards (WS 430)
  - New Hampshire Air Quality Rules (RSA Chapter 125-C)
  - New Hampshire Drinking Water Standards

- Location-Specific Federal Standards
  - Clean Water Act (CWA)
  - Fish and Wildlife Coordination Act
  - Executive Order 11990 (Protection of Wetlands)

- Executive Order 11888 (Floodplains Restrictions)
- 40 CFR Part 6 Appendix A

➢ Location-Specific State Standards
- New Hampshire Solid Waste regulations (HE-P 1901)
- New Hampshire Wetlands Regulations (WS 300 and 400)
- New Hampshire Hazardous Waste Regulations (HE-P 1905)
- New Hampshire Hazardous Waste Regulations

➢ Action-Specific Federal Standards
- Resource Conservation and Recovery Act (RCRA)(1)
- OSHA General Industry Standards
- OSHA Safety and Health Standards
- OSHA Record Keeping, Reporting and Related Regulations
- DOT Rules for Transportation of Hazardous Materials

Additionally, the ROD identifies the following as "To-Be Considered" criteria:

➢ To Be Considered (TBC) Federal
- EPA Risk Reference Doses
- EPA Carcinogen Assessment Group Potency Factors
- Threshold Limit Values
- USEPA Offsite Policy
- Land Disposal Requirements (LDRAS) (40 CFR 268)

➢ To Be Considered (TBC) State
- New Hampshire Protection of Groundwater (WS 410)
- New Hampshire Groundwater Quality Criteria (WS 410.05)
- New Hampshire Groundwater Discharge Criteria (WS 410.09)
- New Hampshire Boundary Criteria (WS 410.13)
- New Hampshire Regulations for VOC's (ENVA 1200)

Many of these requirements are applicable to the removal actions for soil stipulated under the source control operable unit, while many others are applicable for the active ground water treatment falling under the management of migration operable unit. Further, the action-specific requirements are applicable during all construction and operation activities that may occur under activities related to either operable unit. As of February 27, 2006 New Hampshire is a RCRA Authorized State Program, which means that action-specific requirements falling under RCRA must comply with authorized State requirements instead of the equivalent Federal requirements. New Hampshire now has enforcement responsibilities, with EPA retaining authority to perform inspections, require monitoring, tests, analyses or reports, suspend or revoke permits, and take enforcement actions.

The ROD notes that N.H. Code WS 420 (state ground water discharge limits) is not applicable to the selected remedy for management of migration since the formerly treated ground water (active treatment operations stopped in 2005) was of drinking water quality and was discharged to the publicly owned treatment works (POTW) rather than back to the aquifer.

Most pertinent to this review are the chemical and location-specific requirements and TBC factors that relate to the short and long-term effectiveness of the remedy, such as standards and criteria for relevant environmental media, rules for preserving the wetland, and toxicity values that may affect the cleanup goals as set in the ROD.

Since the finalization of the ROD, no changes were implemented that affect any of the existing state or federal ARARs for the contaminants of concern identified in the ROD under the selected remedy for management of migration. The 2003 ESD provided the following clarification concerning 1,1-DCA.

> *The modified cleanup criteria of 3,650 µg/L for 1,1-dichloroethane is not consistent with the current AGQS listed in Env-WM 1403 (currently 81µg/L).. At the time of the ROD was signed, the State had not yet promulgated a standard for 1,1-dichloroethane. Whereas EPA cannot incorporate newly promulgated standards through an ESD (i.e., in accordance with the 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 of NH regulations governing the well drilling industry and noise generation are applicable during the installation of additional monitoring wells. At this time there are no plans for such activities. Therefore, requirements associated with these regulations are not applicable at this time.

The SDWA was last amended in 1996. With respect to site-related contaminants of concern (COCs) in ground water, no changes have been promulgated since 1997 in the Federal Maximum Contaminant Concentrations (MCLs) under the SDWA.

State of NH Hazardous Waste Management Requirements were subject to revisions finalized on June 25, 2002. None of these changes impact the remedy being implemented at the Site. Notable changes to the regulations include: (1) changes to the standards for used oil generators, transporters, processors, re-refiners, burners and marketers; (2) the universal waste rule, which established reduced management requirements for hazardous waste batteries, thermostats, pesticides and lamps; and (3) the addition of used electronics to the State's universal waste rule. None of these changes impact the remedy being implemented at the Site

6.3.3 Toxicity and Chemical Characteristics

Examination of the EPA's Integrated Risk Information System (www.epa.gov/iris), provisional toxicity values from the National Center for Environmental Assessment, and other sources indicates that there has been only one change to the toxicity values assigned to COCs identified in the 1990 Record of Decision and the revised remedy in the ESD dated 2003. Although some changes occurred during prior review periods, Table 5 includes all changes for the timeframe beginning at the signing of the ROD.

Table 5. Evaluation of Changes to Oral Toxicity Values For Human Health

Contaminant Of Concern	Mode of Effect	Chronic Toxicity Value Per RI Circa 1990	Chronic Toxicity Value Circa 2008	Evaluated on IRIS	Any Change?	Implication for Remedy
Acetone	Noncancer	0.1 mg/kg/day	0.09 mg/kg/day	7/31/03	Yes	Less stringent than before so remedy remains protective.
	Cancer	NA	NA	7/31/03	No	NA
Chloroform	Noncancer	0.01 mg/kd/day	0.01 mg/kd/day	10/19/01	No	--
	Cancer	0.0061 mg/kg/day^{-1}	Use RfD	10/19/01	Yes	Less stringent than before so remedy remains protective.
Chromium (as VI)	Noncancer	0.005 mg/kg/day	0.003 mg/kg/day	09/03/98	Yes	Slightly more stringent than before; remedy remains protective.
	Cancer	NA	NA	09/03/98	No	--
1,1-Dichloroethane	Noncancer	0.1 mg/kg/day	NA	NA	No	--
	Cancer	0.091 mg/kg/day^{-1}	NA	12/01/96	No	--
1,2-Dichloroethane	Noncancer	NA	NA	1/1/91	No	NA
	Cancer	(0.091 mg/kg/day)$^{-1}$	(0.091 mg/kg/day)$^{-1}$	1/1/91	No	--
1,1-Dichloroethene	Noncancer	0.009 mg/kg/day	0.05 mg/kg/day	08/13/02	Yes	Less stringent than before so remedy remains protective.
	Cancer	0.6 mg/kg/day^{-1}	NA	08/13/02	Yes	Uncertain with no current toxicity value but remedy remains protective.
1,2-Dichloroethene	Noncancer	0.02 mg/kg/day	0.01 mg/kg/day (cis)	03/01/06	Yes	Slightly more stringent than before; remedy remains protective.
			0.02 mg/kg/day (trans)	01/01/89	No	--
	Cancer	NA	NA (cis)	02/01/95	No	--
			NA (trans)	NA	No	--
Nickel	Noncancer	0.02 mg/kg/day	0.02 mg/kg/day	12/01/96	No	--
	Cancer	NA	NA	08/01/94	No	--
1,1,1-TCA	Noncancer	0.09 mg/kg/day	2 mg/kg/day	09/28/07	Yes	Less stringent than before so remedy remains protective.
	Cancer	NA	NA	09/28/07	No	--
Trichloroethylene	Noncancer	NA	0.0003 mg/kg/day	08/01/92	Yes	Stringent toxicity value now exists in draft form, but is pending approval for use.
	Cancer	0.011 mg/kg/day^{-1}	0.4 mg/kg/day^{-1}	07/01/89	Yes	More stringent draft toxicity value is not yet approved for use.

ROD based on oral reference doses (mg/kg/day) and oral cancer slope factors (mg/kg/day^{-1})
NA – Not Available
RI Report assumed 1, 2-Dichloroethene was in trans form due to lack of toxicity values for the cis form.
RI Report assumed chromium was in VI valence state.

6.4 Data Review

Since the second Five-Year Review, additional ground water data were collected as part of routine ground water monitoring for the Site. The compliance sample data for the CVFD supply wells were also reviewed. All site specific ground water data were reviewed as part of the Third Five-Year Review for the Site.

6.4.1 CVFD Supply Wells

The two supply wells were sampled by CVFD personnel at a minimum annually in compliance with New Hampshire State regulations. There were no detections of VOCs from 2003 through 2007. See Figure 7 for the location of the wells in relation to the KMC Site.

6.4.2 Ground Water Monitoring Data

The ground water results from 2003 to 2007 were reviewed utilizing the electronic Kearsarge database created by Weston for all sampling rounds except the most recent in November 2007. The November 2007 data was reviewed in an electronic spreadsheet also provided by Weston. Figure 14 shows the November 2007 ground water plume for 1,1-DCE.

Ground water monitoring data and influent and effluent samples for the treatment plant have been collected routinely (generally three times per year in March, August, and December) since the startup until the treatment plant was shutdown in 2005 when only ground water sampling continued. These data have been complied in annual O&M monitoring reports. Relevant data from these reports were also reviewed in support of this Five-Year Review. Figure 8 depicts the locations of the monitoring wells as well as monitoring data representative of the source area and the plume boundaries.

Site ground water concentrations vary seasonally and are likely related to precipitation events and the water level of Pequawket Pond which is controlled by the dam. Increased VOC concentrations in various on-site wells correlate with low water levels in the summer.

6.4.2.1 Source Area Wells

Monitoring wells MW-3003, MW-3004, MW-3009, MW-3010 and MW-3011 (Figure 8) were used to evaluate source area contamination levels in the ground water. The concentration of VOCs in the source area wells have been fluctuating during this review period, especially since the treatment plant was shutdown in 2005. There is a general gradual increasing trend for VOCs in MW-3003 which lies within the ground water flow pathway from the source area to MW-5003. The observed concentrations may be a result of redistribution due to source removal, but clearly the plume is currently not stable. See the Chart 4 below showing the concentrations of 1,1-DCE in MW-3003 from 2005 through 2007.

Chart 4 Concentrations of 1,1-DCE in µg/L in MW-3003 from prior to GWTP shutdown to present (Weston 2007a)

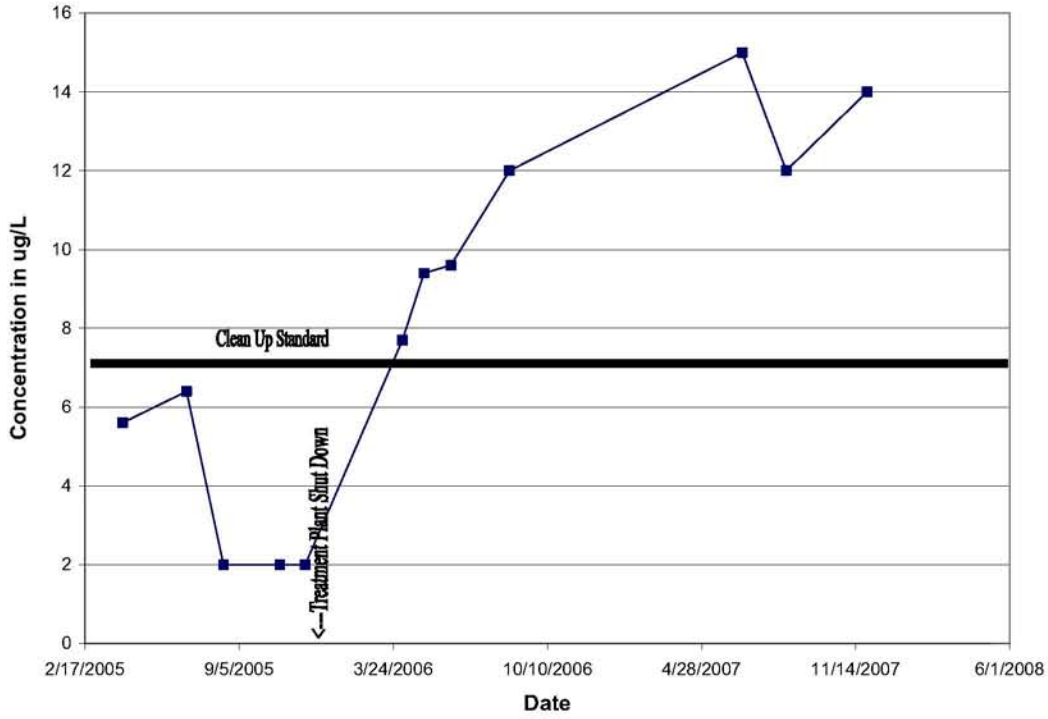
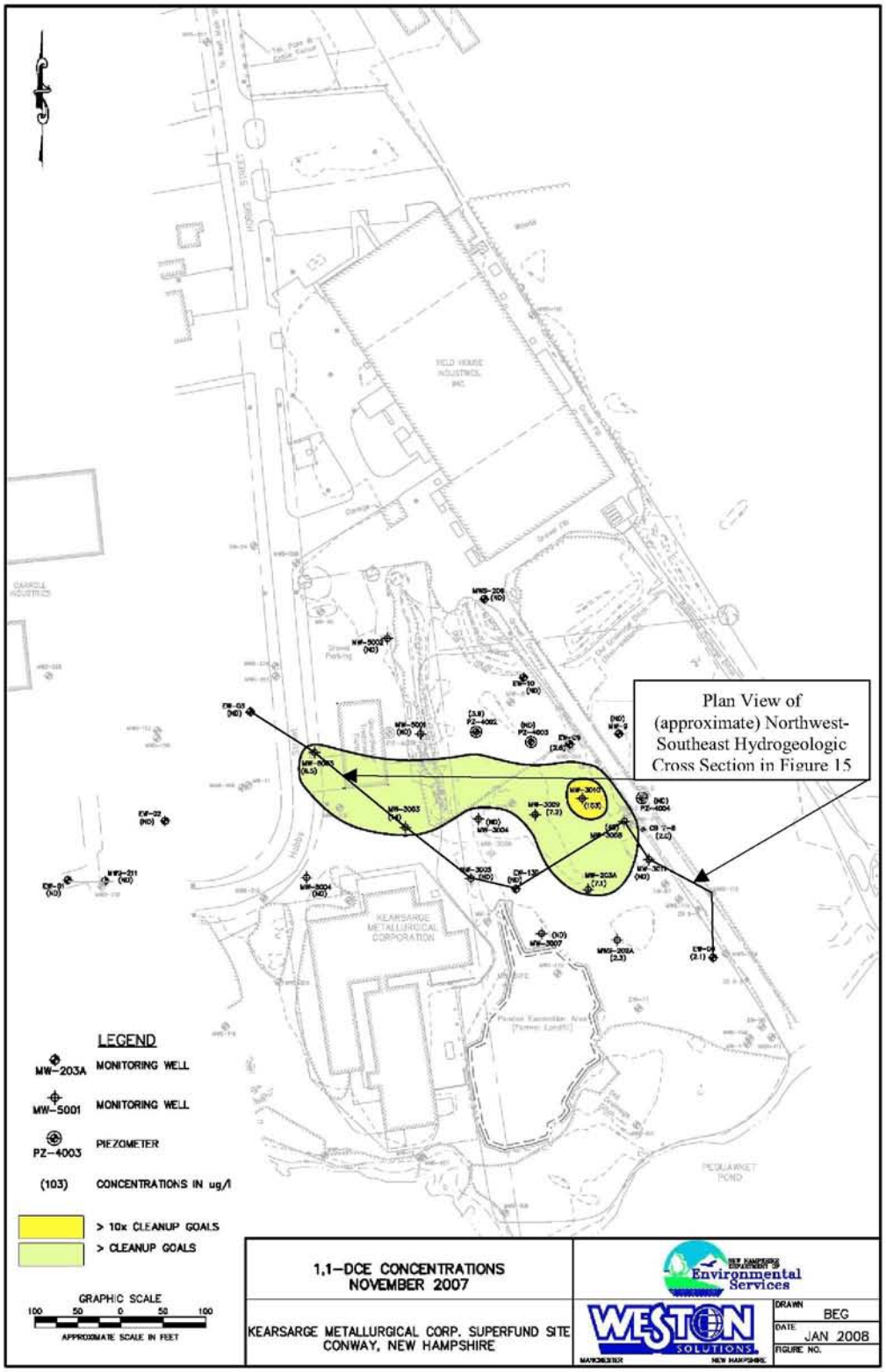


Figure 14 Contaminant Distribution 1,1 – DCE November 2007.



6.4.2.2 Boundary Wells

On the western portion of the KMC Site (western side of Hobbs Street), it appears that the extraction wells have been very effective in continually reducing ground water contamination levels. Ground water samples from all of the previously operating extraction wells (EW-1, EW-2, and EW-3) west of Hobbs Street currently have COCs (metals and VOCs) concentrations below the cleanup goals. As a result, pumping from the Hobbs Street wells was discontinued in February 2004, following the completion of the Source Removal Actions. No detections of VOCs have been observed in the Hobbs Street extraction wells since shutdown of EW-01, EW-02, and EW-03 in February 2004. Although trichloroethene had exceeded cleanup goals in the Hobbs Street wells in the past, TCE has not been detected in any of these wells since 2003.

Four new monitoring wells were installed in the summer of 2007 on the eastern side of Hobbs Street as potential sentinel wells. When Monitoring well MW-5003 located immediately east of Hobbs Street was initially sampled in June 2007 it had concentrations of 1,1,1-TCA, 1,1-DCE and 1,1-DCA of 8.5 µg/L, 3.4 µg/L and 2.9 µg/L respectively. Additionally monitoring showed an increase of 1,1-DCE above the cleanup level (7 µg/L) at 8.5 µg/L in November 2007. Refer to Figure 14 for the plume contour map of 1,1-DCE updated after the November 2007 sampling round. A confirmation sample was taken in January 2008 and the result was 12 µg/L(NHDES, 2008).

MW-5001 and MW-5002 were installed to monitor the northern and northwestern plume boundary. To date there have been no detections of VOCs in either well. Piezometer 4002 (PZ-4002) began being utilized in 2005 as a monitoring well. It is located southeast of MW-5001. The concentration of 1,1,1-TCA has been decreasing since 2005 and has been below the cleanup goal of 200 µg/L since October 2005. The concentration of 1,1-DCE has also been decreasing and has only recently dropped below the cleanup goal in November 2007.

MW-5004 is due south, approximately 150 feet, of MW-5003 and has a history of no VOC detections since its installation in summer 2007. It further defines the southwestern boundary.

MW-3011 is located in the southeast corner of the Site. The concentration of 1,1-DCE has fluctuated from October 2004 to November 2007, ranging from nondetect in 2004, low levels in 2005 and 2006, followed by its highest concentration in August 2007 at 21 µg/L and then nondetect again in November 2007.

Refer to Figures 9 and 10 for total VOC, 1,1,1-TCA and 1,1-DCE concentration contours.

6.4.3 Ongoing MNA Evaluation

NHDES has recently introduced natural attenuation as a possible remedy for the Site rather than continuing to pump and treat the ground water. According to NHDES's Guidelines for Selection of Natural Attenuation for Ground water Restoration, October 1999, NHDES encourages the use of monitored natural attenuation for remediation of dissolved phase contaminated ground water at sites where:

1. It is demonstrated to be protective of human health and the environment;
2. It is demonstrated to present no additional risk to receptors;
3. Evidence of a stable or receding plume is provided;

4. Biodegradation or other destructive processes are demonstrated to be occurring; and
5. Remedial goals will be achieved within a reasonable period of time including reduction of ground water contaminant concentrations below the applicable standards.

Monitoring of ground water quality conditions indicates that concentrations of 1,1,1-TCA and 1,1-DCE are the only compounds that violate applicable standards of 200 μg/L and 7 μg/L respectively. Contaminant concentrations are low and the plume maps generated for the Site illustrate that contaminants have not yet migrated beyond the property lines of the Kearsarge Metallurgical Corporation property on the north and west, and the OCR property on the north and east. Most recent data obtained from monitoring well MW-5003 in November 2007 indicates that the 1,1 DCE plume may have reached or is closely approaching the western boundary at Hobbs Street.

As referenced previously, and prior to the most recent sampling round conducted in November 2007, the total VOC concentration maps shown in Figures 9 and 10 for August 2005 and August 2006 indicated that the plume of total VOC contamination had dramatically decreased in magnitude and size since the source removal actions.. Exceedances through 2006 at the Site for 1,1,1 TCA were limited to the Culvert Area east of the former KMC building location and there were no exceedances of 1,1,1 TCA west of Hobbs Street.

The presence of 1,1-DCE at the Site, a degradation product of 1,1,1-TCA, indicates the possible occurrence of degradation at the Site. Since 1,1,1-TCA readily degrades abiotically by elimination of hydrochloric acid to form 1,1- DCE or by hydrolysis to acetic acid and hydrochloric acid it should decrease steadily in concentration over time. However, because it is a straight chain hydrocarbon with single carbon-carbon linkage bonds, it does not readily degrade microbially as one would anticipate with double bond molecules such as PCE, TCE, 1,2 DCE, etc. Microbes have to use substantially more energy to break these single bonds during reductive dehalogenation. Other conditions such as ORP and the virtual absence of DO and other electron acceptors required for dehalogenation to occur (highly anaerobic conditions) have not been established at the Site. The presence of dissolved forms of iron and manganese, which may also indicate reducing conditions, are present but not necessarily sufficient at the Site for dehalogenation. 1,1,1 -TCA can degrade biologically under anaerobic conditions to 1,1-DCA and subsequently to chloroethane but these are not contaminants found at the Site.

In August 2006, six wells exhibited exceedances of the standard for 1,1-DCE (Figure 11) and in November 2007, six wells exhibited exceedances of the standard for 1,1 DCE (Figure 14). At the same time, the ground water sample collected from MW-3010 was the only sample in either year to exceed the applicable standard for 1,1,1-TCA. Comparison of plume contour maps between Figures 11 and 14 indicates that the 1,1,DCE plume is not necessarily contracting (data from the monitoring well MW-5003 was not available in 2006) and that it is approaching the western Site boundary at Hobbs Street if it has not actually reached it. Although 1,1-DCE has a higher toxicity than its parent compound, and consequently has a much lower cleanup goal, the limited and consistently decreasing concentrations of 1,1,1-TCA in the ground water at the Site indicate that if degradation is in fact occurring, there should be a limited amount of 1,1-DCE released to the ground water aquifer over time as a result of this breakdown process.

In an effort to evaluate if degradation is occurring at the Site, recent sampling events have included the analysis for dissolved oxygen, redox potential, iron, manganese, and methane as well as including an analysis for fatty acids at select wells. Laboratory analytical results thus far have indicated the presence of relatively high levels of methane in some monitoring wells, but the presence of fairly low concentrations

of other natural attenuation parameters. Current concentrations of these do not confirm or refute the occurrence of degradation at the Site (Weston, 2007a).

Of more significance (at this time) to an assessment of MNA at this Site is the fact that the plumes are neither stable nor contracting. In fact at least one contaminant of concern, 1,1-DCE appears to have migrated to the location of a sentinel well, MW-5003, apparently traveling in a direction towards a portion of the Site formerly considered remediated by the original extraction system specified in the ROD. The plume of 1,1-DCE which appeared to have been significantly reduced in size by operating the trench extraction well EW-13B, may not actually have been contracting in the westerly direction as further discussed below.

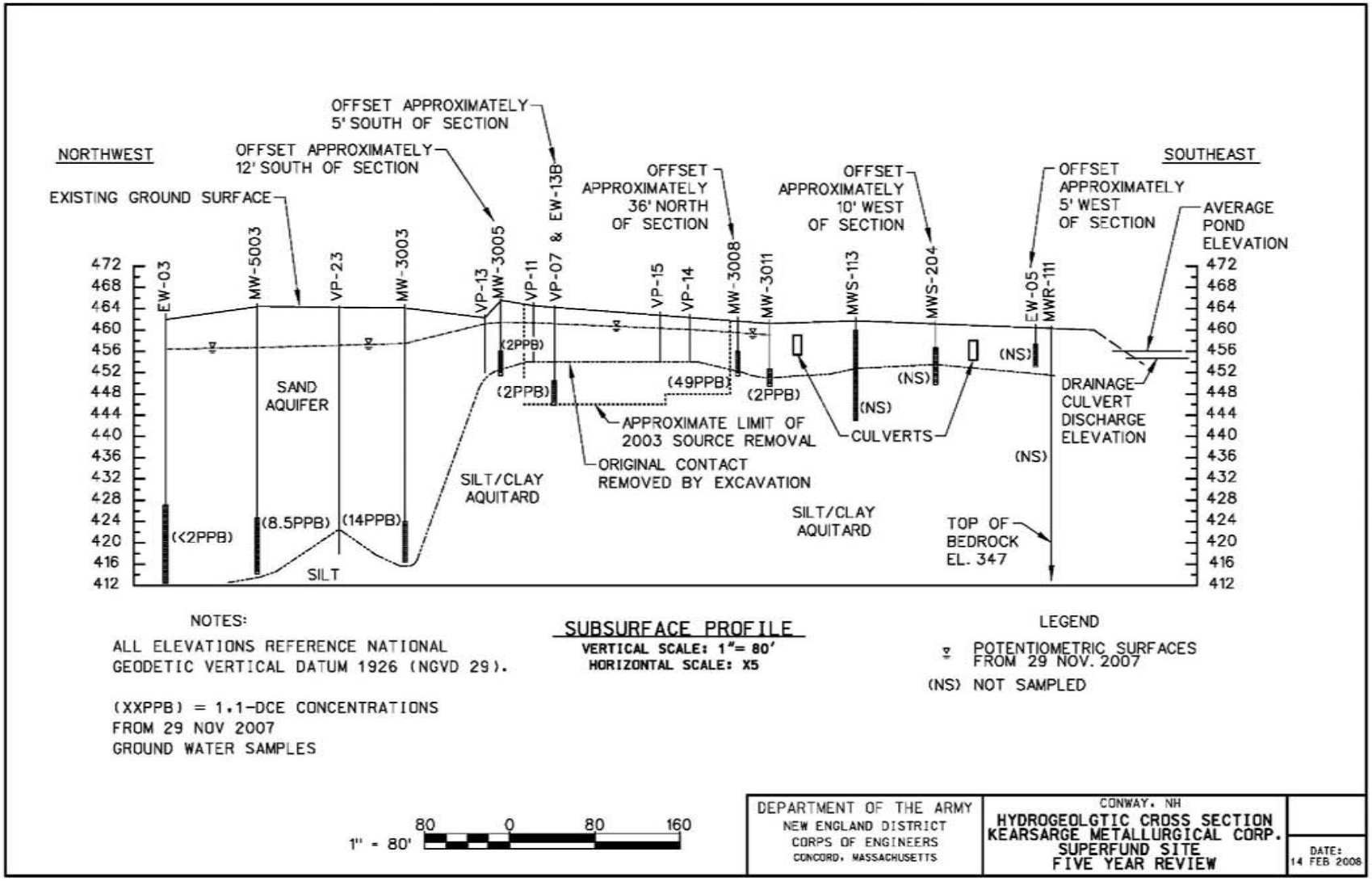
6.4.4 Evaluation of Cross Section of Site

Figure 15 provides a cross section running roughly northwest to southeast across the Site and is a combination of data from Appendix C of the Post Removal Data Evaluation Report (WESTON, 2007a) vertical ground water profiling data that predated the second soil removal effort, as well as soil boring and well data from monitoring and extraction wells. The November 2007 ground water elevation contours and the November 2007 1,1 DCE concentrations are presented where available. The approximate limit of excavation for the 2003 source removal effort is indicated as well as the drainage culvert and Pequawket Pond. This cross section is a composite image from numerous sources and provides a useful presentation of the physical Site conditions. From this figure it is clear that the drainage culvert at the eastern edge of the contaminant plume is intercepting ground water and is a likely preferential pathway directly into the Pond. The ground water gradient on the eastern and southern edge of the Site is likely modified and controlled by the Pond levels which form the local controlling datum. The cross section also highlights the ground water divide and predominant westward gradient towards Hobbs St.

The north – south divide consistently noted in the potentiometric surface contours provides the hydraulic gradient which seems to be expanding the contaminant plume geometry to the west. Diffusion of the remaining contaminant sorbed to the finer grained sediments into the sand aquifer, combined with the migration of contaminant driven by the strong westward gradients, likely explains the expanding 1,1-DCE plume geometry westward as indicated in Figure 14.

The drainage culvert in the gravel road bounding the eastern edge of the source area has historically limited the migration of contaminants toward the east and continues to perform this function. Under ambient conditions (since shutdown of the pump and treat system) the culvert and backfill acts as a preferential pathway that appears to redirect ground water flow directly into Pequawket Pond.

Figure 15 Hydrogeologic Cross Section



6.5 Site Inspection

A Site Inspection was conducted on 28 November 2007 which included visual inspection of the building and well locations, a tour of the ground water treatment plant, and gathering GPS data for well and building locations in order to create a site map. Attendees included Richard Goehlert, Drew Hoffman, Bette Nowak (WESTON Project Manager), Scott Hayes (WESTON O&M Site Manager), Tracy Dorgan (USACE Geologist), Katherine Miller (USACE Chemist) and Ian Osgerby (USACE Remedial Process Engineer). A Site Inspection Checklist is included as Appendix A. Site Inspection activities included the following:

- A meeting at the town hall with the town manager, Earl Sires; Thomas Steele and Heather Shaw of the Conway Village Fire District; NHDES and EPA regulators and interested citizens/business owners including Carl Thibodoeu.
- Collection of information required by the checklist (See Appendix A).
- Tour of the facility, including the treatment plant, the remediation system outdoor areas, the extraction well and monitoring well networks, the outside of the remaining KMC manufacturing building (Building No. 1), the Culvert Area, and the portion of the shoreline of Pequawket Pond abutting the Site.
- Interviews with individuals listed on the Interview Documentation Form in Appendix B.

6.6 Local Interviews

As required in the EPA Five-Year Review Guidance Document, interviews were conducted with representatives of the EPA, the New Hampshire Department of Environmental Services (NHDES) and its contractor, Weston Solutions, Inc., the Town of Conway, NH and representatives of town businesses. Interview Record Forms are provided in Appendix B.

The overall impression of the Site is positive and that all entities involved with the Site are handling it very well. Two actions were cited as contributing to the success of the project; the removal of the remnant soil contamination and securing the old KMC building through the placement of a fence. There is a positive feeling from the local business community that the area is headed in the right direction with the addition of new tenants in buildings that were previously vacant. The new tenants themselves seem to be a positive addition by bringing in jobs and improving the aesthetics of the areas adjacent to the Site.

From the interviews the main issues were: concern about the contamination leaving the Site and entering the pond or the town's ground water supply, the length of time before cleanup goals would be reached, potential damage to the GWTP since the time it was shutdown and re-use options for the Site. The issues are briefly discussed below.

Mr. Sutton Marshall, owner of Abbotts Premium Ice Cream expressed the following three concerns about the Site:

- Contamination entering the pond.
- Contamination entering the town's ground water.
- A long period of time (which he indicated as 10 years) before the Site can be re-used.
- Potential re-use options for the Site.

In addition to Mr. Marshall, the State and EPA also expressed the need to determine how long it will take to reach cleanup goals.

Scott Hayes brought up the possibility of potential unknown damage to the GWTP. He said that there is a security and fire alarm on the plant. When there was a loss of power in February 2007 the drop in temperature caused the alarm to go off. The alarm company didn't call Scott on the low temperature alarm and turned it off. The domestic water froze, but he said that no other damage was apparent. Although it may become apparent if the plant were re-started.

The topic of re-using the Site was a reoccurring one throughout almost all of the interviews. The State, EPA, the Town and business owners in the town particularly Carl Thibodeau and Sutton Marshall expressed an interest in the future re-use options for the Site.

7.0 TECHNICAL ASSESSMENT

7.1 Technical Assessment Questions

This section addresses the three technical assessment questions identified in the EPA's Five-Year Review guidance document as noted below:

Question A: *Is the remedy functioning as intended by the decision documents?*

Question B: *Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of remedy selection still valid?*

Question C: *Has any other information come to light that could call into question the protectiveness of the remedy?*

The following discussion details how each question has been answered based on the findings of this five-year review.

Question A: Is the remedy functioning as intended by the decision documents?

No. The remedy is not functioning as intended by the ROD since the condition of the ground water has still not achieved the required cleanup goals. During the 12 years of active ground water extraction and treatment, a reduction in ground water concentrations and plume size was observed. Recently, the NHDES has been performing two years of ground water monitoring following shutdown of the system in 2005. These recent data reveal a redistribution and loss of hydraulic control of the contaminant plume and re-expansion along primary flow paths, to the west, east and to the north. However the concentrations are low, near cleanup levels, and there is some question by the NHDES as to the cost effectiveness of restarting the extraction and treatment system. The current two year data set may not be sufficient to determine at this time if the mass diffusing from the aquitard into the upper aquifer is increasing, decreasing, or has reached equilibrium. Additional studies are being performed and information is being obtained to determine if further source material should be remediated or if MNA can be considered a potential remedy change.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of remedy selection still valid?

Yes. With a few exceptions, the exposure assumptions, toxicity data, clean up levels, and the RAOs used at the time of the remedy selection are generally still valid.

However, the existing RAOs for the Site may need to include protecting human health using institutional controls in the form of deed notifications restricting the use of ground water and addressing the potential future vapor intrusion pathway. These use restrictions for the Site will require the NHDES to obtain the appropriate institutional controls. If the GWTP building is occupied by a full time worker, then the vapor intrusion pathway needs to be evaluated.

Table 5 in Section 6 provides a comparison of toxicity data used in the risk assessment in support of the remedy selection versus current values reported in the Integrated Risk Information System and other

EPA sources. As mentioned previously, the 2003 ESD already addressed the following clarification concerning the cleanup level for 1,1-DCA.

> *The modified cleanup criteria of 3,650 µg/L for 1,1-dichloroethane is not consistent with the current AGQS listed in Env-WM 1403 (currently 81µg/L). At the time of the ROD was signed, the State had not yet promulgated a standard for 1,1-dichloroethane. Whereas EPA cannot incorporate newly promulgated standards through an ESD (i.e., in accordance with the 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.*

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

Yes. Information that has come to light that calls into question the protectiveness of the remedy includes: the recent detection of VOCs in the monitoring well, MW-5003 on the Hobbs Street side of the Site in November 2007.

Additionally, the plume underneath the treatment plant building may be an issue in the future from vapor intrusion if the plant is occupied.

None of the new information increases the short term risk to human health at the Site. This finding is primarily based on the conclusion that no one is currently being exposed to the contaminants in the ground water or occupying the treatment plant building.

7.2 Summary of the Technical Assessment

VOCs, in particular 1,1 DCE, in a narrow and focused plume continue to persist at the Site and have recently reached Hobbs Street (which is at the western most edge of the proposed ground water management zone). This is likely due to the lack of hydraulic control since the December 2005 shut down of the Pump and Treat System. The observed increases in contaminant concentrations may be attributed to seasonal fluctuation or may be the result of progressive plume expansion across formerly clean wells. The plume does not appear to be stable and the highest concentrations have shifted slightly to the north and east and have migrated to the nearby drainage culvert. This drainage culvert has been known to intercept the water table aquifer since the RI/FS and was a factor in the placement of a line of extraction wells immediately upgradient of the culvert. There is a consistent pattern of ground water potentiometric surface contours and VOC concentration contours which indicate that the culvert is intercepting the ground water at the Site.

8.0 ISSUES

This Five-Year Review has identified several issues listed in Table 4.

Table 4. Issues at the KMC Superfund Site, Town of Conway, State of NH.

Issues	Affects Current Protectiveness	Affects Future Protectiveness
Since shutdown of the ground water treatment facility, initial improvements to the ground water quality may not be continuing as expected and that the contaminated ground water plume may not be stable.	No	Yes
Land ownership by defunct corporations may limit ability to implement and monitor institutional controls	No	Yes
The ROD does not include potential for MNA or institutional controls in the remedy.	No	Yes
There is potential for contaminant migration into the treatment plant building via vapor intrusion from VOCs in ground water. Inhalation of VOCs could occur if any building above the ground water plume is occupied.	No	Yes.

9.0 RECOMMENDATIONS AND FOLLOW-UP ACTIONS

In response to the issues noted above, the following recommended actions are listed in Table 5:

Table 5. Recommendations and Follow-up Actions for the KMC Superfund Site, Town of Conway, State of NH.

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness	
					Current	Future
Since shutdown of the ground water treatment facility, initial improvements to the ground water quality may not be continuing as expected and the contaminated ground water plume may not be stable.	Completion of MNA Evaluation Study including additional delineation of the contaminant mass, modeling, and evaluation of MNA criteria.	NHDES	EPA	Sept. 2009	No	Yes
Land ownership by defunct corporations may limit ability to implement and monitor institutional controls.	Evaluate options to implement institutional controls on appropriate properties.	NHDES	EPA	Sept 2009	No.	Yes
ROD does not include potential for MNA or institutional controls in the remedy.	Issue future decision document with public meeting and comment period to include MNA, if appropriate and ICs in the remedy..	NHDES	EPA	May 2010	No	Yes
There is a potential for migration into the treatment plant building via vapor intrusion from VOCs in ground water. Inhalation of VOCs could occur if any building above the ground water plume is occupied.	Evaluate the vapor intrusion pathway and determine if it is a concern using appropriate guidance.	NHDES	EPA	March 2009	No.	Yes.

10.0 PROTECTIVENESS STATEMENT

Operable Unit 1:

The remedy at OU1 is protective of human health and the environment because the waste piles and contaminated leach field soils that could contribute to direct exposure contact have been removed.

Operable Unit 2:

A protectiveness determination of the remedy at OU2 can not be made at this time and must be deferred until further information is obtained. Further information will be obtained by taking the following actions:

(1) Completion of an MNA Evaluation Study including additional delineation of the contaminant concentrations in the aquitard to determine the remaining mass, modeling of the ground water, and evaluation of MNA criteria applicable to the Site and timeframes till cleanup standards are met;

(2) Evaluation of the ability to implement and the implementation of institutional controls;

(3) Potential remedy change to MNA, if appropriate, through future decision document with a public meeting and comment period, and;

(4) Evaluation of the vapor intrusion pathway using appropriate guidance.

Overall, the protectiveness determination for the remedy at the KMC Site has been deferred until further information is obtained.

11.0 NEXT REVIEW

An Addendum to this Five Year Review will document the conclusions of the MNA Evaluation and the basis for a change to the remedy, if appropriate. This additional data will be analyzed over the next 15 months (by approximately December 2009), at which time the addendum to this report will be issued and a protectiveness determination will be made for the entire Site. If a change in the remedy to MNA is not acceptable further active remedial measures will likely need to be initiated.

The next Five Year Review should include a complete review of data generated under the long-term monitoring program to determine if contaminant concentration trends are consistent with those projected in the ROD. The next review should also include an evaluation of any of the issues identified in this five year review and any improvements to Site access control features and the effectiveness of institutional controls for the Site once they are finalized. The next Five-Year Review for the KMC Site is required by September 2013, five years from the approval date of this review.

12.0 REFERENCES

Camp Dresser & McKee Inc., 1990. Remedial Investigation/Feasibility Study Kearsarge Metallurgical Corporation Hazardous Waste Site Conway, New Hampshire. June 1990.

Emery &Garrett Groundwater, Inc., 2008. Groundwater Supply Assessment Conway Village Fire District Production Wells CVD-1 and DVD-2 Eight-Day Pumping Test and Water Quality Analyses Conducted for the Conway Village Fire District Conway, New Hampshire. January 2008.

NHDES, 1993. An Examination of Certain Water Quality Characteristics of Pequawket Pond, Conway, New Hampshire. January 26, 1993.

NHDES, 2008a. NHDES One Stop Website. http://www2.des.state.nh.us/OneStop/onestop.htm

NHDES, 2008b. January 2008 Groundwater Sampling Report Kearsarge Metallurgical Corporation Superfund Site. February 5, 2008.

NHDES, 2008c. Excel Data Tables received from Drew Hoffman. September 22.

USEPA, 1990. EPA Superfund Record of Decision: Kearsarge Metallurgical Corp. EPA ID: NHD062002001 OU 01 Conway, NH. September 28, 1990.

USEPA, 1992. EPA Superfund Explanation of Significant Differences: Kearsarge Metallurgical Corp. EPA ID: NHD062002001 OU 01 Conway, NH. August 1992.

USEPA, 2001. Comprehensive Five-Year Review Guidance. EPA-540-R-01-007, prepared by the Office of Emergency and Remedial Response (5204G), USEPA, Washington DC, June 2001.

USEPA, 2003a. Transfer of Long-Term Response Actions (LTRA) to States. July 2003.

USEPA, 2003b. EPA Superfund Explanation of Significant Differences: Kearsarge Metallurgical Corp. EPA ID: NHD062002001 OU 01 Conway, NH. September 29, 2003.

USEPA, 2003c, Five-Year Review Report Second Five-Year Review Report for The Kearsarge Metallurgical Corporation Superfund Site Town of Conway Carroll County, New Hampshire. September 30, 2003.

USEPA, 2004. Kearsarge Metallurgical Corporation Reuse Assessment. September 2004.

USEPA, 2008. Memorandum KMC Site, 1999 Sampling Data for Culvert. March 17.

Weston Solutions, Inc., 2004. Source Removal Action Completion Report Kearsarge Metallurgical Corporation Superfund Site Conway, New Hampshire. Prepared for: New Hampshire Department of Environmental Services. June 2004.

Weston Solutions, Inc., 2007a. Preliminary Draft Post-Source Removal Data Evaluation Report Kearsarge Metallurgical Corporation Superfund Site Conway, New Hampshire. March 29, 2007.

Weston Solutions, Inc., 2007b. Final Sampling and Analysis Plan for Groundwater Monitoring at the Kearsarge Metallurgical Corporation Superfund Site Conway, New Hampshire (Revision 1.0), Prepared by Weston Solutions, Inc., Manchester, New Hampshire. December 2007.

Weston Solutions, Inc., 2008a. Overburden Potentiometric Surface Map November 28, 2007. January 2008.

Weston Solutions, Inc., 2008b. 1,1-DCE Concentrations November 2007 Figure. January 2008.

USEPA, 2008. National Priorities List website. http://www.epa.gov/superfund/sites/npl/npl.htm

APPENDIX A – PUBLIC NOTICE

The United States Environmental Protection Agency
Starts the Third Five-Year Review of
Kearsarge Metallurgical Corporation Superfund Site in Conway, New Hampshire

Boston-- The United States Environmental Protection Agency (EPA) is beginning its third Five-Year Review of the Kearsarge Metallurgical Corporation (KMC) Superfund site in Conway, New Hampshire. Five –Year reviews are required by law to determine if the cleanup at a site is protective of human health and the environment. This Five-Year review is being conducted for EPA by the U.S. Army Corp of Engineers, New England District and will be completed by September 2008 or earlier. The results will be publicly available.

The Kearsarge Metallurgical Corporation manufactured precision stainless steel castings from 1964 through 1982 and was put on the National Priorities List in 1984 after investigations showed that groundwater under the site was contaminated with volatile organic compounds and industrial wastes. In 1990, a cleanup plan was issued requiring that the on-site waste piles be removed and that groundwater be treated. Subsequently, the waste pile was removed in 1992 and a groundwater pump & treat facility was constructed and has been operational since autumn of 1993. An additional removal of contaminated soil was completed in 2004.

The review will provide the current status of the KMC site, review its operational status, identify any deficiencies and make recommendations for corrective measures; and, determine if the cleanup is protective of human health and the environment.

More information about the cleanup can be found on-line at www.epa.gov/region1/superfund. Questions should be directed to:

Richard Goehlert, Remedial Project Manager
US EPA Region 1
One Congress Street
Boston, MA 02114-2023
Phone: 617-918-1335
Email: goehlert.dick@epa.gov

Andrew Hoffman, Remedial Project Manager
New Hampshire Department of Environmental Services
P.O. Box 95
Concord, NH 03302-0095
Phone: 603-271-6778
Andrew.Hoffman@des.nh.gov

EPA technical reports and documents about cleanup activities are available for review at the site repositories at

Conway Public Library
15 Main Street
Conway, NH 03813
Phone: 603-447-5552

EPA New England Records Center
One Congress Street
Boston, MA 02114
Phone: 617-918-1440

PUBLIC NOTICE

THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY STARTS THE THIRD FIVE-YEAR REVIEW OF KEARSARGE METALLURGICAL CORPORATION SUPERFUND SITE IN CONWAY, NEW HAMPSHIRE

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THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY STARTS THE THIRD FIVE-YEAR REVIEW OF KEARSARGE METALLURGICAL CORPORATION SUPERFUND SITE IN CONWAY, NEW HAMPSHIRE

Boston -- The United States Environmental Protection Agency (EPA) is beginning its third Five-Year Review of the Kearsarge Metallurgical Corporation (KMC) Superfund site in Conway, New Hampshire. Five-Year reviews are required by law to determine if the cleanup at a site is protective of human health and the environment. This Five-Year review is being conducted for EPA by the U.S. Army Corp of Engineers, New England District and will be completed by September 2008 or earlier. The results will be publicly available.

The Kearsarge Metallurgical Corporation manufactured precision stainless steel castings from 1964 through 1982 and was put on the National Priorities List in 1984 after investigations showed that groundwater under the site was contaminated with volatile organic compounds and industrial wastes. In 1990, a cleanup plan was issued requiring that the on-site waste piles be removed and that groundwater be treated. Subsequently, the waste pile was removed in 1992 and a groundwater pump and treat facility was constructed and has been operational since autumn of 1993. An additional removal of contaminated soil was completed in 2004.

The review will provide the current status of the KMC site, review its operational status, identify any deficiencies and make recommendations for corrective measures; and, determine if the cleanup is protective of human health and the environment.

More information about the cleanup can be found on-line at www.epa.gov/region1/superfund. Questions should be directed to:

Richard Goehlert, Remedial Project Manager
US EPA Region 1
One Congress Street
Boston, MA 02114-2023
Phone: 617-918-1335
Email: goehlert.dick@epa.gov

Andrew Hoffman, Remedial Project Manager
New Hampshire Department of Environmental Services
P.O. Box 95
Concord, NH 03302-0095
Phone: 603-271-6778
E-mail: Andrew.Hoffman@des.nh.gov

EPA technical reports and documents about cleanup activities are available for review at the site repositories at:

Conway Public Library
15 Main Street
Conway, NH 03813
Phone: 603-447-5552

EPA New England Records Center
One Congress Street
Boston, MA 02114
Phone: 617-918-1440

APPENDIX B – SITE INSPECTION CHECKLIST

Five-Year Review Site Inspection Checklist
Kearsarge Metallurgical Corporation Site, Conway, New Hampshire

("N/A" refers to "not applicable")

I. SITE INFORMATION	
Site name: Kearsarge Metallurgical Corporation Superfund Site	**Date of inspection:** 28 November 2007
Location and Region: Conway, New Hampshire, USEPA Region I	**EPA ID:** NHD062002001
Agency, office, or company leading the five-year review: United States Army Corps of Engineers New England District	**Weather/temperature:** Sunny, ~30°F

Remedy Includes: (Check all that apply)

- ☐ Landfill cover/containment
- ☐ Access controls
- ☐ Institutional controls
- ■ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ■ Other__Source Control_____
- ☐ Monitored natural attenuation
- ☐ Groundwater containment
- ☐ Vertical barrier walls

Attachments: ■ Inspection team roster attached ■ Site map attached

II. INTERVIEWS (Check all that apply)

1. **O&M site manager** __Scott Hayes____ __O&M Site Manager____ 28 November 2007
   Name Title Date
   Interviewed ■ at site ☐ at office ☐ by phone Phone no. 603-656-5400
   Problems, suggestions; ■ Report attached
   There is a security and fire alarm in the GWTP. When there was a loss of power in Feb. 2007, the drop in temperature caused the alarm to go off. The alarm company didn't call Scott on the low temperature alarm. They identified why it went off and turned it off.. The domestic water froze, but no other damage was apparent.

2. **O&M staff** _____ _____ _____
   Name Title Date
   Interviewed ☐ at site ☐ at office ☐ by phone Phone no. _____
   Problems, suggestions; ☐ Report attached _____

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency NHDES
Contact Andrew (Drew) Hoffman Remedial Project Manager 11-28-07 603-271-6778
Name Title Date Phone no.
Problems; suggestions; ■ Report attached MNA is being evaluated as a more cost effective long term remedy. Drew is interested in how long it may take to reach clean up goals.

Agency USEPA, Region 1
Contact Richard Goehlert Remedial Project Manager 11-28-07 617-918-1335
Name Title Date Phone no.
Problems; suggestions; ■ Report attached He questioned whether or not (the Site) can change from an active to a passive remedy. He said the remedy is not functioning. The plan is in down mode.

Agency Town of Conway
Contact Earl Sires Town Manager 11-28-07 603-447-3811
Name Title Date Phone no.
Problems; suggestions; ■ Report attached Mr. Sires had to leave his office before we could interview him, but he suggested an interview via email later. Interview is attached to the FYR report.

Agency Conway Village Fire District (CVFD)
Contact Thomas Steele Chief 11-28-07 603-447-5470
Name Title Date Phone no.
Problems; suggestions; ■Report attached Mr. Steele and Heather Shaw, also of CVFD were both interviewed at the same time. There was discussion of the upcoming Groundwater Capture Zone Analysis Report, expected within 1-2 weeks.

4. **Other interviews** (optional) ■ Reports attached.

Bette Nowak Project Manager (WESTON)

Carl Thibodeau (Owner of Tee Enterprises)

*Tom Mullen (Owner of Conway Business Park)

* Sutton Marshal (Owner of Abbotts Ice Cream)

* Phone interviews

III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)				
1.	**O&M Documents**			
	■ O&M manual	☐ Readily available	☐ Up to date	☐ N/A
	☐ As-built drawings	☐ Readily available	☐ Up to date	☐ N/A
	■ Maintenance logs	☐ Readily available	☐ Up to date	☐ N/A
	Remarks Scott says Weston has annual reports that they produced from his report. He kept weekly reports up until the end of 2005. Before 2005 there were daily/weekly reports. Drew said that NHDES may be able to provide copies of the O&M reports. The last report that Drew is aware of was for 2003 in PDF format.			
2.	**Site-Specific Health and Safety Plan**	☐ Readily available	☐ Up to date	■ N/A
	☐ Contingency plan/emergency response plan	☐ Readily available	☐ Up to date	■ N/A
	Remarks Plant is no longer operating.			
3.	**O&M and OSHA Training Records**	☐ Readily available	☐ Up to date	■ N/A
	Remarks Plant is no longer operating.			
4.	**Permits and Service Agreements**			
	☐ Air discharge permit	☐ Readily available	☐ Up to date	☐ N/A
	■ Effluent discharge	☐ Readily available	☐ Up to date	☐ N/A
	☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	☐ N/A
	☐ Other permits_____	☐ Readily available	☐ Up to date	☐ N/A
	Remarks N/A since plant is in shutdown mode. Received a copy of 1995 permit.			
5.	**Gas Generation Records**	☐ Readily available	☐ Up to date	■ N/A
	Remarks_____			
6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	■ N/A
	Remarks_____			
7.	**Groundwater Monitoring Records**	■ Readily available	☐ Up to date	☐ N/A
	Remarks Available from the State or Weston. Drew and/or Bette can provide GW monitoring reports.			
8.	**Leachate Extraction Records**	☐ Readily available	☐ Up to date	■ N/A
	Remarks_____			
9.	**Discharge Compliance Records**			
	☐ Air	☐ Readily available	☐ Up to date	☐N/A
	■ Water (effluent)	☐ Readily available	☐ Up to date	■ N/A
	Remarks Weston has results.			
10.	**Daily Access/Security Logs**	☐ Readily available	☐ Up to date	■ N/A
	Remarks_____			

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ■ Contractor for State
☐ PRP in-house ☐ Contractor for PRP
☐ Federal Facility in-house ☐ Contractor for Federal Facility
☐ Other_____

2. **O&M Cost Records**

■ Readily available ■ Up to date
■ Funding mechanism/agreement in place
Original O&M cost estimate_____ ☐ Breakdown attached

Total annual cost by year for review period if available

	Date		Date	Total Cost	
From	1 Jan 03	To	31 Dec 03	$ 476,146	☐ Breakdown attached
From	*1 Jan 04	To	31 Dec 04	$299,922	☐ Breakdown attached
From	*1 Jan 05	To	Dec 05	$191,475	☐ Breakdown attached
From					☐ Breakdown attached
From					☐ Breakdown attached

3. **Unanticipated or Unusually High O&M Costs During Review Period**

Describe costs and reasons: * only one extraction well utilized in 2004 and 2005. High contractor costs in 2003 due to source removal action that year. Info from an email from Drew Hoffman.

V. ACCESS AND INSTITUTIONAL CONTROLS ☐ Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map ■Gates secured ☐N/A

Remarks Fence surrounding KMC Building is in good condition, relatively new.

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☐ N/A

Remarks. Access restriction sign posted along fence _____

C. Institutional Controls (ICs)

1. **Implementation and enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☐ No ☐ N/A
Site conditions imply ICs not being fully enforced ☐ Yes ☐ No ☐ N/A

Type of monitoring (*e.g.*, self-reporting, drive by) Local police monitor area.
Frequency _____
Responsible party/agency NHDES
Contact Drew Hoffman Remedial Project Manager
Name Title Date Phone no.

Reporting is up-to-date ■ Yes ☐ No ☐ N/A
Reports are verified by the lead agency ■ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☐ No ☐ N/A
Violations have been reported ☐ Yes ☐ No ☐ N/A
Other problems or suggestions: ☐ Report attached

2. **Adequacy** ■ ICs are adequate ☐ ICs are inadequate ☐ N/A

Remarks Since fence was installed, trespassing has been reduced.

D. General

1. **Vandalism/trespassing** ■ Location shown on site map ☐ No vandalism evident

Remarks The light outside the front door of the GWTP was broken a few days before the site visit.

2. **Land use changes on site** ☐ N/A

Remarks No

3. **Land use changes off site** ☐ N/A

Remarks Yes, there are many new businesses in the industrial park around the site (see report).

VI. GENERAL SITE CONDITIONS

A. Roads ☐ Applicable ☐ N/A

1. **Roads damaged** ☐ Location shown on site map ■ Roads adequate ☐ N/A

Remarks Hobbs Street in good condition.

B. Other Site Conditions
Remarks _____

VII. LANDFILL COVERS ☐ Applicable ■ N/A
A. Landfill Surface
1. **Settlement** (Low spots) ☐ Location shown on site map ☐ Settlement not evident Areal extent_____ Depth_____ Remarks_____
2. **Cracks** ☐ Location shown on site map ☐ Cracking not evident Lengths_____ Widths_____ Depths_____ Remarks_____
3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident Areal extent_____ Depth_____ Remarks_____
4. **Holes** ☐ Location shown on site map ☐ Holes not evident Areal extent_____ Depth_____ Remarks_____
5. **Vegetative Cover** ☐ Grass ☐ Cover properly established ☐ No signs of stress ☐ Trees/Shrubs (indicate size and locations on a diagram) Remarks_____
6. **Alternative Cover (armored rock, concrete, etc.)** ■ N/A Remarks_____
7. **Bulges** ☐ Location shown on site map ☐ Bulges not evident Areal extent_____ Height_____ Remarks_____

8.	**Wet Areas/Water Damage**	☐ Wet areas/water damage not evident	
	☐ Wet areas	☐ Location shown on site map	Areal extent_____
	☐ Ponding	☐ Location shown on site map	Areal extent_____
	☐ Seeps	☐ Location shown on site map	Areal extent_____
	☐ Soft subgrade	☐ Location shown on site map	Areal extent_____
	Remarks_____		
9.	**Slope Instability** ☐ Slides	☐ Location shown on site map	☐ No evidence of slope instability
	Areal extent_____		
	Remarks_____		
B. Benches	☐ Applicable	■ N/A	
	(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)		
1.	**Flows Bypass Bench**	☐ Location shown on site map	☐ N/A or okay
	Remarks_____		
2.	**Bench Breached**	☐ Location shown on site map	☐ N/A or okay
	Remarks_____		
3.	**Bench Overtopped**	☐ Location shown on site map	☐ N/A or okay
	Remarks_____		
C. Letdown Channels	☐ Applicable	■ N/A	
	(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)		
1.	**Settlement**	☐ Location shown on site map	☐ No evidence of settlement
	Areal extent_____	Depth_____	
	Remarks_____		
2.	**Material Degradation**	☐ Location shown on site map	☐ No evidence of degradation
	Material type_____	Areal extent_____	
	Remarks_____		
3.	**Erosion**	☐ Location shown on site map	☐ No evidence of erosion
	Areal extent_____	Depth_____	
	Remarks_____		

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____
_____

5. **Obstructions** Type_____ ☐ No obstructions
☐ Location shown on site map Areal extent_____
Size_____
Remarks_____
_____

6. **Excessive Vegetative Growth** Type_____
☐ No evidence of excessive growth
☐ Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent_____
Remarks_____
_____

D. Cover Penetrations ☐ Applicable ■ N/A

1. **Gas Vents** ☐ Active ☐ Passive
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance
☐ N/A
Remarks_____
_____

2. **Gas Monitoring Probes**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

3. **Monitoring Wells** (within surface area of landfill)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

4. **Leachate Extraction Wells**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs Maintenance ☐ N/A
Remarks_____
_____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A
Remarks_____
_____

E. Gas Collection and Treatment	☐ Applicable	■ N/A
1.	**Gas Treatment Facilities** ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse ☐ Good condition ☐ Needs Maintenance Remarks_____	
2.	**Gas Collection Wells, Manifolds and Piping** ☐ Good condition ☐ Needs Maintenance Remarks_____	
3.	**Gas Monitoring Facilities** (*e.g.*, gas monitoring of adjacent homes or buildings) ☐ Good condition ☐ Needs Maintenance ☐ N/A Remarks_____	
F. Cover Drainage Layer	☐ Applicable	■ N/A
1.	**Outlet Pipes Inspected** ☐ Functioning ☐ N/A Remarks_____	
2.	**Outlet Rock Inspected** ☐ Functioning ☐ N/A Remarks_____	
G. Detention/Sedimentation Ponds	☐ Applicable	■ N/A
1.	**Siltation** Areal extent_____ Depth_____ ☐ N/A ☐ Siltation not evident Remarks_____	
2.	**Erosion** Areal extent_____ Depth_____ ☐ Erosion not evident Remarks_____	
3.	**Outlet Works** ☐ Functioning ☐ N/A Remarks_____	
4.	**Dam** ☐ Functioning ☐ N/A Remarks_____	

H. Retaining Walls	☐ Applicable ■ N/A
1.	**Deformations** ☐ Location shown on site map ☐ Deformation not evident Horizontal displacement_____ Vertical displacement_____ Rotational displacement_____ Remarks_____
2.	**Degradation** ☐ Location shown on site map ☐ Degradation not evident Remarks_____
I. Perimeter Ditches/Off-Site Discharge	☐ Applicable ■ N/A
1.	**Siltation** ☐ Location shown on site map☐ Siltation not evident Areal extent_____ Depth_____ Remarks_____
2.	**Vegetative Growth** ☐ Location shown on site map ☐ N/A ☐ Vegetation does not impede flow Areal extent_____ Type_____ Remarks_____
3.	**Erosion** ☐ Location shown on site map ☐ Erosion not evident Areal extent_____ Depth_____ Remarks_____
4.	**Discharge Structure** ☐ Functioning ☐ N/A Remarks_____
VIII. VERTICAL BARRIER WALLS	☐ Applicable ■ N/A
1.	**Settlement** ☐ Location shown on site map ☐ Settlement not evident Areal extent_____ Depth_____ Remarks_____
2.	**Performance Monitoring** Type of monitoring_____ ☐ Performance not monitored Frequency_____☐ Evidence of breaching Head differential_____ Remarks_____

IX. GROUNDWATER/SURFACE WATER REMEDIES ■ Applicable ☐ N/A	
A. Groundwater Extraction Wells, Pumps, and Pipelines ■ Applicable ☐ N/A	
1.	**Pumps, Wellhead Plumbing, and Electrical** ☐ Good condition ■ All required wells properly operating ☐ Needs Maintenance ☐ N/A Remarks Weston was on site on the day of the site visit sampling wells.
2.	**Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances** ☐ Good condition ☐ Needs Maintenance Remarks Extraction system not currently operating.
3.	**Spare Parts and Equipment** ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided Remarks System may require parts and/or maintenance if the plant is re-started.
B. Surface Water Collection Structures, Pumps, and Pipelines ☐ Applicable ■ N/A	
1.	**Collection Structures, Pumps, and Electrical** ☐ Good condition ☐ Needs Maintenance Remarks Drainage Culvert has significant erosion.
2.	**Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances** ☐ Good condition ☐ Needs Maintenance Remarks N/A
3.	**Spare Parts and Equipment** ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided Remarks N/A

C. Treatment System ■ Applicable ☐ N/A	
1.	**Treatment Train** (Check components that apply) ■ Metals removal ☐ Oil/water separation ☐ Bioremediation ■ Air stripping ■ Carbon adsorbers ■ Filters___sand_____ ☐ Additive (*e.g.*, chelation agent, flocculent)_____ ☐ Others_____ ☐ Good condition ☐ Needs Maintenance ☐ Sampling ports properly marked and functional ☐ Sampling/maintenance log displayed and up to date ☐ Equipment properly identified ☐ Quantity of groundwater treated annually_____ ☐ Quantity of surface water treated annually_____ Remarks System has been shut down. It may need repairs if it is re-started. Some of the system can be by-passed it is utilized again. See Report.
2.	**Electrical Enclosures and Panels** (properly rated and functional) ■ N/A ☐ Good condition ☐ Needs Maintenance Remarks_____
3.	**Tanks, Vaults, Storage Vessels** ■ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs Maintenance Remarks_____
4.	**Discharge Structure and Appurtenances** ■ N/A ☐ Good condition ☐ Needs Maintenance Remarks_____
5.	**Treatment Building(s)** ☐ N/A ■ Good condition (esp. roof and doorways) ☐ Needs repair ☐ Chemicals and equipment properly stored Remarks_____
6.	**Monitoring Wells** (pump and treatment remedy) ☐ Properly secured/locked ■ Functioning ■Routinely sampled ☐ Good condition ■ All required wells located ☐ Needs Maintenance ☐ N/A Remarks Both Weston and USACE took GPS readings of the GWTP building and some wells on 11/28/07. _____
D. Monitoring Data	
1.	Monitoring Data ■ Is routinely submitted on time ■ Is of acceptable quality
2.	Monitoring data suggests: plume is starting to migrate since shutdown. ☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)

■ Properly secured/locked ☐ Functioning ■ Routinely sampled ☐ Good condition

■ All required wells located ☐ Needs Maintenance ☐ N/A

Remarks Weston maintains the wells in good condition. On the day of the site visit MWS-206 looked as though it may have been hit by a snow plow or during paving activities (it is adjacent to the parking lot for Tee Enterprises). It was not badly damaged, but was slightly tilted. See photos below.

Monitoring well MWS – 206 November 28, 2007

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

The remedy (GWTP) is not currently functioning as originally intended in the ROD since the GWTP is in shutdown mode. NHDES and EPA agreed to shutdown and monitor the ground water plume as it stabilizes. The plan is for MNA of residual contamination remaining on site since the source removal in 2003.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

The GWTP has been shut down for 2 years. In that time it has not been started as part of a maintenance program for the equipment. Typically a system will be turned on ~ once a month to move the oil through the pumps etc. to protect against rust and corrosion. Without this 'bumping the pumps' there may be a collection of rust in the system that causes it not to work properly once restarting it is attempted. Additionally if the gaskets are not maintained or replaced they may dry out and crack creating leaky pipes and/or pumps within the system.

Restarting the GWTP would help with both the short-term and long-term protectiveness of the remedy.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

See previous sections.

D. Opportunity for Optimization

Optimize the extraction well system to intercept the contaminated ground water flow without drawing the contaminated water further toward the already clean extraction wells along Hobbs Street if the ground water treatment remedy becomes operational.

APPENDIX C – INTERVIEW FORMS

INTERVIEW DOCUMENTATION FORM

The following is a list of individual interviewed for this five-year review. See the attached contact record(s) for a detailed summary of the interviews.

Name	Title/Position	Organization	Date
Andrew Hoffman	Project Manager	NHDES	11-28-2007
Richard Goehlert	Remedial Project Manager	EPA, Region I	11-28-2007
Earl Sires	Town Manager	Conway, NH	11-30-2007
Scott Hayes	Plant Operator	WESTON Solutions	11-28-2007
Bette Nowak	Project Manager	WESTON Solutions	11-28-2007
Thomas Steele	Chief	Conway Village Fire District	11-28-2007
Carl Thibodeau	Owner	Tee Enterprises	11-28-2007
Tom Mullen	Owner	Conway Business Park, LLC	01-07-2008
Sutton Marshall	Owner	Abbotts Premium Ice Cream	01-07-2008

INTERVIEW RECORD 1

Site Name: Kearsarge Metallurgical Corporation Superfund Site	**EPA ID No.: NHD062002001**	
Subject: Third Five-Year Review	**Time:**	**Date: 11-28-07**
Type: Telephone **X** Visit Other **Location of Visit:**	☐Incoming ☐ Outgoing	

Contact Made By:

Name: Dick Goehlert	**Title: Remedial Project Manager**	**Organization: EPA, Region I**

Individual Contacted:

Name: Andrew Hoffman	**Title: Project Manager**	**Organization: NHDES**

Telephone No: 603-271-6778 **Fax No: 603 271-2456** **E-Mail Address: ahoffman@des.state.nh.us**	**Street Address: New Hampshire Department of Environmental Services Waste Management Division Hazardous Waste Remediation Bureau** **P.O. Box 95, 29 Hazen Drive** **City, State, Zip: Concord, NH 03302-0095**

Summary Of Conversation

Q1: What is your overall impression of the project and site?
A1: Very positive overall. Significant progress has been made since 2003 including the identification and remediation of remnant source soils and securing the Site though fence installation.

Q2: Are you aware of any issues the five-year review should focus on?
A2: How long Monitored Natural Attenuation (MNA) may take to reach clean up goals? Vapor Intrusion has not been evaluated for the site and should be although the yield house is greater than 100 feet from the contaminated areas and the treatment building is ventilated and not occupied as a residence. There have been no ARAR changes made during the past 5 year period to focus on.

Q3: Who should USACE speak to in the community to solicit local input?
A3: Other than the town officials and individuals interviewed previously, two new businesses in the immediate area surrounding the site are the Daycare facility and Tuckerman Brewery.

Q4: Is the remedy functioning as expected?
A4: MNA is being evaluated as a more cost effective long term remedy and is expected to contain the post excavation spike in concentrations.

Q5: Is the Town actively involved in the site or do they show an active interest?
A5: A bit of both. The Fire/water/sewer departments are definitely interested in the Site and potential re-use. There has been increased town interest and positive interactions with the town supporting NH DES efforts.

Q6: Have there been any changes in the site or surrounding property in the last 5 years, or are changes planned?

- A6: There have been tenant changes to the commercial properties: Conway business Park property may potentially be de-listed due to the cleanup. The Yield House tenant has changed; the daycare and brewery noted in Q3 are also fairly recent changes.
- The ground water treatment plant was shut down in December 2005.
- The addition of Site fence and warning signage surrounding the former Kearsarge Metallurgical Plant within the past five years.
- There has been minor vandalism (such as a broken light on the treatment building)
- Prior to 2007 the ground water monitoring work was conducted by NHDES personnel, beginning in 2007 the NHDES has hired a contractor (Weston) to perform all state operated Superfund Site Sampling and analytical work with oversight and QA review by NHDES personnel and labs.

Q7: Will there be a winter ground water sampling event this December?
A7: The schedule was moved up to avoid weather impacts and the sampling effort is ongoing at the Site currently.

Q8: Are the plans for the site outlined in the memo dated September 24, 2007 still the state's planned approach?
A8: The plan originally called for additional Geoprobe sampling to delineate the horizontal extent of contaminated soils remaining at the Site, but now that is considered not needed and will rely on existing data alone.

Q9: What are your thoughts on the EPA response dated October 12, 2007?
Q9: The State agrees with EPA's response & sees this as the first time EPA has given approval of the States approach for the Site.

Q10: Is there a CSM for the site? Other than the paragraph 'Conceptual Model' in the Preliminary Draft Post-source Removal Data Evaluation Report' dated 29 March 2007?
A10: No, but it could be added/considered for a finalized Report.

Q11: Are there annual O&M reports available, for the years that the plant was operating?
A11: Sharron at NHDES may be able to provide copies of the O&M reports. The last report was for 2003 in PDF format that Drew is aware of.

Q12: If yes to Q11, have O&M remedy evaluation checklists been completed?
A12: Uncertain. These may not have been completed but there has been no periodic maintenance performed on the treatment plant since shutdown two years ago.

Q13: Was the decision to turn off the treatment plan (~2 years ago) documented anywhere other than the Preliminary Draft Post-Source Removal Data Evaluation Report (for example in an ESD?)
A13: This plan was discussed in a series of meetings between USEPA and NHDES in late 2005 and summarized in follow up memorandum. EPA agreed to the system shutdown with follow on sampling and data evaluation at that time.

Q14: Does the state (or Weston) have real coordinates for the extraction & monitoring wells on the site?
A14: Weston has a GPS unit onsite today and will be surveying some locations. The newly installed 5000 series wells were surveyed. These wells were installed to increase the confidence of the plume delineation drawings. There has been no other well maintenance at the Site.

Q15: Is the NHDES Superfund Sampling and Analysis QAPP, dated 2001, revised in 2005, still in the process of being re-written? Can the state provide USACE a copy of the QAPP?
A15: Yes, the State should be able to provide a copy of the updated QAPP.

Q16: Does the NH DES Environmental Monitoring Database contain the data from KMC site?
A16: Yes, the onestop online database should have the KMC analytical data.

Q17: Is there a Report for the Capture Zone Analysis done by USEPA?
A17: This was not a NH DES effort and it is not readily available. Check with Dick Goehlert at EPA for a copy.

INTERVIEW RECORD 2

Site Name: Kearsarge Metallurgical Corporation Superfund Site	**EPA ID No.: NHD062002001**	
Subject: Third Five-Year Review	**Time:**	**Date: 11-28-07**
Type: Telephone **X** Visit Other **Location of Visit:**	☐Incoming ☐ Outgoing	

Contact Made By:

Name: Dick Goehlert	**Title: Remedial Project Manager**	**Organization: EPA, Region I**

Individual Contacted:

Name: Dick Goehlert	**Title: Remedial Project Manager**	**Organization: EPA, Region I**

Telephone No: (617) 918-1335 **Fax No: (617) 918-1291** **E-Mail Address: Goehlert.Dick@epamail.epa.gov**	**Street Address: EPA- New England, Region 1** **1 Congress Street** **Suite 1100** **Boston, MA 02114-2023**

Summary Of Conversation

Q1: What is your overall impression of the project and site?
A1: The project is very successful.

Q2: Are you aware of any issues the five-year review should focus on?
A2: Whether or not it can change from active to passive remedy. If it (passive remedy) occurs, the disposition of the plant and the speed of it.

Q3: Who should USACE speak to in the community to solicit local input?
A3: The town manager. And any responses from the ads in the newspaper. Both Dick's and Drew's names and numbers are in the ads and he will let us know if he hears anything.

Q4: Is the remedy functioning as expected?
A4: Remedy is not functioning. Plant is in down mode. Not operational.

Q5: Is the Town actively involved in the site or do they show an active interest?
A5: Yes, when necessary, especially when there is discussion of re-use.

Q6: Have there been any changes in the site or surrounding property in the last 5 years, or are changes planned?
A6: Process changes and an excavation and disposal. New extraction well. Poplar trees planted for phytoremediation.

Q7: Have there been any negotiations with the PRP in the last 5 years?
A7: No, not for a long time. There are no viable PRPs. Nothing since the access agreement in the early 1990s.

Q8: Was the decision to turn off the treatment plan (~2 years ago) documented anywhere other than the Preliminary Draft Post-Source Removal Data Evaluation Report (for example in an ESD?)
A8: Dick and Scott both said they did not know. It was discussed over phone conversations.

Q9: Is there a Conceptual Site Model (CSM) for the site? Other than the paragraph 'Conceptual Model' in the Preliminary Draft Post-source Removal Data Evaluation Report' dated 29 March 2007?
A9: Weston has made proposals, but there is no formal report. Only a verbal CSM. Documentation for a change of remedy will include a CSM.

INTERVIEW RECORD 3

Site Name: Kearsarge Metallurgical Corporation Superfund Site	**EPA ID No.:NHD062002001**	
Subject: Third Five-Year Review	**Time: 0823**	**Date: 11/30/07**
Type: Telephone Visit X Other **Location of Visit: Interview done via email**	☐Incoming ☐ Outgoing	

Contact Made By:		
Name: Dick Goehlert	**Title: Remedial Project Manager**	**Organization: EPA, Region I**

Individual Contacted:		
Name: Earl Sires	**Title: Town Manager**	**Organization: Town of Conway**

Telephone No: 603-447-3811 **Fax No: 603-447-1348** **E-Mail Address: esires@conwaynh.org**	**Street Address: 1634 East Main Street** **City, State, Zip: Center Conway, NH 03818-0070**

Summary Of Conversation

Q1: What is your overall impression of the project and site?
A1: I think that overall the remediation and management of the cleanup has been handled very well.

Q2: Are you aware of any issues the five-year review should focus on?
A2: No.

Q3: Who should USACE speak to in the community to solicit local input?
A3: I believe you have covered the bases.

Q4: Is the remedy functioning as expected?
A4: As far as I can tell.

Q5: Is the Town actively involved in the site or do they show an active interest?
A5: The town is not actively involved however, we are very interested in seeing the property put to use in the future.

Q6: Have there been any changes in the site or surrounding property in the last 5 years, or are changes planned?
A6: Not that I am aware of.

Q7: What are the town's current re-use plans for the site?
A7: More than likely the property will be offered fro sale in its entirety although a portion adjacent to the pond may be retained as open space.

INTERVIEW RECORD 4

Site Name: Kearsarge Metallurgical Corporation Superfund Site	**EPA ID No.:NHD062002001**	
Subject: Third Five-Year Review	**Time:**	**Date: 11-28-07**
Type: Telephone **X** Visit Other **Location of Visit:**	☐Incoming ☐ Outgoing	

Contact Made By:

Name: Dick Goehlert	**Title: Remedial Project Manager**	**Organization: EPA, Region I**

Individual Contacted:

Name: Scott Hayes	**Title: Plant Operator**	**Organization: WESTON**

Telephone No: 603-656-5400 **Fax No:** **E-Mail Address:**	**Street Address: 1 Wall St. Suite 201** **City, State, Zip: Manchester, NH 03101**

Summary Of Conversation

Q1: What is your overall impression of the project and site?
A1: Good. He was here during the excavation and that was successful.

Q2: Are you aware of any issues the five-year review should focus on?
A2: No, but his responsibility was only O&M.

Q3: Who should USACE speak to in the community to solicit local input?
A3: No one other than Conway Fire District, the town and Carl (Thibodeau).

Q4: Is the remedy functioning as expected?
A4: Doesn't know.

Q5: Is the Town actively involved in the site or do they show an active interest?
A5: Other than the tax bill, no. Fire District has access to building for emergency purposes.

Q6: Have there been any changes in the site or surrounding property in the last 5 years, or are changes planned?
A6: Excavation, landscape and new extraction well. Went from 10 wells down to 1 well. December 2005 turned off the plant. Running for 8 years and 3 years before Scott got there.

Q7: Are there annual O&M reports available, for the years that the plant was operating?
A7: Weston's annual reports. Weston produced reports from Scott's report. Weekly reports up until the end of 2005. Before 2005 daily/weekly.

Q8: If yes to Q7, have O&M remedy evaluation checklists been completed?
A8: Don't know. Bryce Fletcher at WESTON did a process evaluation in 2004. Upgrades were done based on his evaluation.

Q9: Was the decision to turn off the treatment plan (~2 years ago) documented anywhere other than the Preliminary Draft Post-Source Removal Data Evaluation Report (for example in an ESD?)
A9: Dick and Scott both said they did not know. It was discussed over phone conversations.

Q10: Is there any one else at WESTON who you think should be interviewed, or who can provide any additional information concerning the site?
A10: Scott answered, Bette, the project manager and POC for 5-6 years.

Q11: In your opinion has the fence that was erected around the building mitigated the safety situation concerning access to a dilapidated building + other physical hazards identified by WESTON in the last FYR?
A11: Yes, for that portion of the site. It was a hot spot for 15 years for kids, so fence is good. For recent vandalism, there was the light knocked out by a rock.

Q12: What is the current condition of the plant?
A12: Shut down.

Q13: Have all of the issues with respect to O&M from the last FYR been resolved?
A13: Scott said both issues identified under number 5 in the 2003 Five-Year Review Summary Form were done. Number 5 reads "Certain non-routine maintenance items are in need of being addressed, including change out of carbon vessels and cleaning or replacement of air stripper media." Scott said there were three carbon vessels and now there is one. There was minor break through from first one. When asked about the non routine maintenance (number 4 under Recommendations and Follow-up Actions in the 2003 Five-Year Review Summary Form), Scott said the piping system, etc. was done.

Additional notes: There is a security and fire alarm. When there was a loss of power in February 2007 the drop in temperature caused the alarm to go off. The alarm company didn't call Scott on the low temperature alarm. They identified why it went off and fixed it. The domestic water froze, but no other damage was apparent.

INTERVIEW RECORD 5

Site Name: Kearsarge Metallurgical Corporation Superfund Site		**EPA ID No.:NHD062002001**
Subject: Third Five-Year Review	**Time:**	**Date: 11-28-07**
Type: Telephone **X** Visit Other **Location of Visit:**	☐Incoming ☐ Outgoing	
Contact Made By:		
Name: Dick Goehlert	**Title: Remedial Project Manager**	**Organization: EPA, Region I**
Individual Contacted:		
Name: Bette Nowak	**Title: Project Manager**	**Organization: WESTON**
Telephone No: 603-656-5400 **Fax No:** **E-Mail Address:**	**Street Address: 1 Wall St. Suite 201** **City, State, Zip: Manchester, NH 03101**	

Summary Of Conversation

Bette Nowak and Drew Hoffman were interviewed simultaneously by USACE.

Q1: What is your overall impression of the project and site?
A1: Great progress. Not involved in the first site investigation, the source below the GW table was not considered at that time. A lot of progress has been made in the last five years after source removal.

Q2: Are you aware of any issues the five-year review should focus on?
A2: How long will it take with natural attenuation and without? The answer will require modeling or calculations. Limiting factor is the diffusion rate from the silt layer. Pumping out at that point would not speed up the process.

Q3: Who should USACE speak to in the community to solicit local input?
A3: Drew answered: Tom Mullen and Bette agreed.

Q4: Is the remedy functioning as expected?
A4: Pump and treat is no longer being utilized as it was not decreasing risk, therefore why spend the money? Changed the remedy once extraction well 13B was producing non-detect results. Tracy asked about pump pulse as an option. Bette responded that it is harder to control.

Q6: Is the Town actively involved in the site or do they show an active interest?
A6: Scott Hayes and Tom Steele have a good, positive, relationship.

Q8: Have there been any changes in the site or surrounding property in the last 5 years, or are changes planned?
A8: Bette mentioned Carl Tibodeau (the new owner of the Yield House property, also interviewed the same day). The brewery was new within the last 2 years, although not an immediate abutter. Bette thinks day care was already there.
Bette also brought up the poplars. They like shallow ground water. Drew added that the trees do not do well in standing water. The poplars are a special hybrid designed to remediate VOCs. Poplars were Dick's idea at the end of the source removal timeframe. Drew said that in May after the source removal, at the end of LTRA, Dick suggested that they plant the poplars. He added that the ones on southern site of site may be established enough to help somewhat. Bette said they were relatively inexpensive, but not sure whether or not they've contributed to clean-up. Drew said, "they can't hurt."
In December 2005 the plant was shut down.
When asked about vandalism, Bette said that before the fence was put up, school books were found in the building, probably due to proximity of the site to the High School.
Weston does the sampling now, they started in June. The analytical goes to NH. The State did sampling up until 2007. Sharon did oversight in August, none in November.

Q9: Is a copy of the "Filed Sampling and Analysis Plan for Ground water Monitoring at the KMC Site Conway, NH" dated June 2007 available for review?
A9: Yes and there is a modified version since comments in June.

Q10: Are Justin Warrington and Andrew Fuller at Weston and/or other field samplers available to be interviewed within the timeframe of the 5-year review period?
A10: Yes. Andy could answer questions.

Q11: Can Weston provide copies of the well sampling sheets showing low-flow sampling and field water quality parameters?
A11: In state reports. Weston has balance. Not summarized anywhere. Bette has electronically for 2 years. Drew will ask Sharon for past 5 years.

Q12: Can Weston also provide water level measurements?
A12: Maybe. At MW-1 the roof runoff may contribute to higher water level.

INTERVIEW RECORD 6

Site Name: Kearsarge Metallurgical Corporation Superfund Site	**EPA ID No.:NHD062002001**	
Subject: Third Five-Year Review	**Time:**	**Date: 11-28-07**
Type: Telephone **X** Visit Other **Location of Visit:**	☐Incoming ☐ Outgoing	
Contact Made By:		
Name: Dick Goehlert	**Title: Remedial Project Manager**	**Organization: EPA, Region I**
Individual Contacted:		
Name: Thomas Steele (& Heather Shaw-assistant)	**Title: Chief**	**Organization: Conway Village Fire District (CVFD)**
Telephone No: 603-447-5470 **Fax No:** **E-Mail Address:**	**Street Address: 128 West Main Street** **City, State, Zip: Conway, NH 03818**	

Summary Of Conversation

Q1: What is your overall impression of the project and site?
A1: It seems adequately managed and that there has been great coordination with the Site treatment plant Operators. In the past there were sporadic problems related to delayed communications but this was quickly resolved.

Q2: Are you aware of any issues the five-year review should focus on?
A2: None beyond the comments noted during today's meeting/presentation.

Q3: Who should USACE speak to in the community to solicit local input?
A3: Consider contacting the Swift River Advisory Board, a group of concerned citizens whose focus is the Swift River, which receives the flow from the Pequawket Pond. Another less likely to be interested organization we may want to consider is the Conway Conservation Commission.

Q4: Is the Town actively involved in the site or do they show an active interest?
A4: Yes, there is active interest. The potential reuse of the Pump and Treatment building and its systems to treat other unrelated offsite sources of VOC contaminated water are of interest.

Q5: Have there been any changes in the site or surrounding property in the last 5 years, or are changes planned?
A5: The Yield House has changed & expanded its tenants and there are more renters in the area than during the previous 5 year period.

Q6: Have there been detections of TCA and/or MTBE in the CVPD wells 1 & 2 in the past five years?
A6: No, there have been no detections at all in at least six to seven years.

Q7: Did you ever receive a copy of the Ground water Capture Zone Analysis Report that was discussed in the previous 5 Year Review and in your previous interview?
A7: There was some controversy related to the assumptions used in that effort and personnel at NHDES did not fully agree with its results. The CVFD has hired their own consultant, Dr. John Brooks with Emery & Garrett, to produce a Capture Zone Analysis Report for the District well field and it is expected within 1-2 weeks. Mr. Steele agreed to provide a copy of this new Report to USACE for review once they receive it. Mr. Steele mentioned that EPA allowed the town's contractor to install pressure transducers in new wells located between the KMC Site and the town wells for water level monitoring during pumping tests conducted by the contractor.

Q8: What is the capacity of the CVFD wells?
A8: The current average annual usage is approx. 285,000 gallons/day. The two wells are capable of producing a peak discharge of 1.8 million gallons/day but that the distribution piping network is the restriction and cannot handle this rate.

Q9: Who is responsible for collecting and analyzing the ground water samples from the CVFD wells/system?
A9: CVFD staff members typically collect the samples which are analyzed by either Granite State Analytical or A&L Labs. Occasionally the lab personnel will also collect the sample prior to analysis.

INTERVIEW RECORD 7

Site Name: Kearsarge Metallurgical Corporation Superfund Site	**EPA ID No.: NHD062002001**	
Subject: Third Five-Year Review	**Time:**	**Date: 11-28-07**
Type: Telephone **X** Visit Other **Location of Visit:**	☐Incoming ☐ Outgoing	
Contact Made By:		
Name: Katherine Miller	**Title: Chemist**	**Organization: USACE**
Individual Contacted:		
Name: Carl Thibodeau	**Title: Business Owner**	**Organization: Owner of the former Yield House, currently Tee Enterprises (machine shop).**
Telephone No: 603-447-5662 **Fax No: 603-447-1717** **E-Mail Address: Carl@Teeenterprises.com**	**Street Address: 71 Hobbs Street** **City, State, Zip: Conway, NH 03818**	

Summary Of Conversation

Q1: What is your overall impression of the project and site?
A1: Fine, the State/WESTON/EPA have done a good job.

Q2: Are you aware of any issues the five-year review should focus on?
A2: No. It is headed in the right direction. All that can be done.

Q3: Who should USACE speak to in the community to solicit local input?
A3: CVFD, Board, abutters, Tom Mullen and Sutton Marshall, the owner of Abbots Ice Cream on East Conway Road. He owns the condos.

Q4: Is the Town actively involved in the site or do they show an active interest?
A4: Yes, now within the past 1-2 years. Now that re-use is an option. Carl is interested and others in the town of Conway.

Q5: Have there been any changes in the site or surrounding property in the last 5 years, or are changes planned?
A5: Carl has changed his property that he pointed out on the map. His company is new. They make vet machine parts for blood analysis. Yield House was bought in 1995, manufactured pine furniture, went out of business ~ end of 2003. Dec. 21, 2006 Carl bought the building. There was an Environmental Level 2 site assessment. He got a copy of the site assessment from the Yield House at the time of purchase, indicating contamination from them. Carl pointed out the wells on his property; MWR110 and MWS 206 are on his property and monitored regularly as part of the LTM.

Brownfields is applicable since Carl is abutter to KMC. Carl does not have a more updated map, but he indicated on the existing map, the changes he made to his property. The sawdust collection system is gone, the lacquer recovery system is gone (concentrated VOCs from the pine furniture finishing business). Note: Additional changes indicated on map.

INTERVIEW RECORD 8

Site Name: Kearsarge Metallurgical Corporation Superfund Site		**EPA ID No.:NHD062002001**
Subject: Third Five-Year Review		**Time: 1050** / **Date: 01-07-08**
Type: **X** Telephone Visit Other **Location of Visit:**		☐Incoming ☐ Outgoing
Contact Made By:		
Name: Katherine Miller	**Title: Chemist**	**Organization: USACE**
Individual Contacted:		
Name: Tom Mullen	**Title: Owner**	**Organization: Conway Business Park, LLC**
Telephone No: 603-726-3076 **Fax No:** **E-Mail Address:**	**Street Address: Owl's Nest Golf Club** **40 Clubhouse Lane** **City, State, Zip: Campton, NH 03223**	

Summary Of Conversation

Q1: What is your overall impression of the project and site?
A1: He is far removed from what's going on there. His main concern is about the test wells and when they will be removed. He purchased the site after mitigation with the test wells already there.

Q2: Are you aware of any issues the five-year review should focus on?
A2: No.

Q3: Who should USACE speak to in the community to solicit local input?
A3: No one that he is aware of. He is about 70 miles away from the site so he cannot say.

Q4: Is the Town actively involved in the site or do they show an active interest?
A4: He would expect that they would be actively involved, but can't say first hand.

Q5: Have there been any changes in the site or surrounding property in the last 5 years, or are changes planned?
A5: No.

Q6: Do you have any new tenants since 2003 and has any of your tenants expressed concern about the site?
A6: No, and he does not think that most of them even have a sense that a superfund site exists. If they asked he would tell them, but no one has asked.

Q7: Is the daycare center, Child's Place of Center Conway, one of your tenants?
A7: The owner of that business is recently deceased. When asked if there is still a daycare there he explained that he didn't know because some one else handles the tenant relations. He said he can call his property manager and check. He called the property manager, Dana Gagnon, on the other line and reported that there is a new tenant who has purchased, or is in the process of purchasing, the daycare business. The new owner is Nancy Killam and the new name is Growing Trees Children Center. He said he will try to get the phone number but is unhappy about the idea of contacting them. He is concerned it would cause them to be alarmed. He said if there was any reason for concern for the health of anyone there due to the site he would call them right away and meet with them tomorrow about it, but if not he would prefer if they were not contacted.

Q8: Were the questions you had from the last FYR (interview dated May 7, 2003) answered?
A8: He said yes. His main concern was the wells and when they would be removed. His understanding is that there is not a lot of active testing going on. He would like to know the duration of time that the wells will be there, but said the monitoring was not interfering.

INTERVIEW RECORD 9

Site Name: Kearsarge Metallurgical Corporation Superfund Site		**EPA ID No.: NHD062002001**
Subject: Third Five-Year Review		**Time: 1125** / **Date: 01-07-08**
Type: **X** Telephone Visit Other **Location of Visit:**		☐Incoming ☐ Outgoing
Contact Made By:		
Name: Katherine Miller	**Title: Chemist**	**Organization: USACE**
Individual Contacted:		
Name: Sutton Marshall	**Title: Owner**	**Organization: Abbotts Premium Ice Cream**
Telephone No: 603-356-2344 **Fax No:** **E-Mail Address:**	**Street Address: 230 East Conway Road** **City, State, Zip: Conway, NH 03818**	

Summary Of Conversation

Q1: What property near the KMC site do you own?
Mr. Sutton has owned property near the site, for about 8-9 years. He purchased the warehouse across from the site from Tom Mullen. He owns two acres and one building within a group of 2-3 buildings, all owned by Tom Mullen. The driveway that leads to his building is 64 Hobbs Street.

Q1: What is your overall impression of the project and site?
A1: To be honest, out of site out of mind. He uses horse drawn wagons to deliver the ice cream and when he travels the road near the site he usually turns the wagon off of the road before getting to the site. His impression is that the work at the site has been tidy and well done. The buildings look good, except for the original wooden building. He thinks it is unfortunate that the site was contaminated in the first place and that it should not have happened.

Q2: Are you aware of any issues the five-year review should focus on?
A2: His main concern is monitoring of the site. He hopes that the contamination is really watched so that it does not get into the pond or the town ground water. He would like to see the site cleaned up enough to be re-used and hopes it is not a long process, another 10 years, for this to happen.

Q3: Who should USACE speak to in the community to solicit local input?
A3: Tom Mullen. Carl Thibodeau who has really revitalized his property. He rents to the Department of Health and Human Services. He purchased the property and spent a lot of money, created jobs and put in a new parking area. He cleaned up the building and made it more attractive.

Q4: Have there been any changes in the site or surrounding property in the last 5 years, or are changes planned?
A4: The biggest change is the sale of the building where Tuckerman Brewing Company is now located. That building was vacant and now it has tenants. He sees this as a positive change and said it is so good to see young, nice people like Kirsten and Nick, doing business there.
Mr. Marshall mentioned Green Mountain Rifle Barrel Company. He said it is behind Tuckerman Brewery, but it is kind of removed from the site. It is in a building not owned by Tom Mullen.

Mr. Marshall reiterated that it would be tragic if the site was not monitored and it took a turn for the worse. He sees that the area is headed in the right direction with new businesses and growth and would like to see that continue. He said that the area used to be dead and now there is activity there again and he seems positive about the current condition of the area. He would like to learn more about the potential for re-use of the site for additional business, not necessarily for him, but in general.

APPENDIX D – LETTER FROM TOWN OF CONWAY, NEW HAMPSHIRE

#1981080002

TOWN OF CONWAY

1634 EAST MAIN ST. • CTR. CONWAY, NEW HAMPSHIRE 03813
(603) 447-3811
FAX (603) 447-1348
WWW.CONWAYNH.ORG

PM - COPY

July 11, 2008

RECEIVED
JUL 15 2008
ELM
DEPARTMENT OF ENVIRONMENTAL SERVICES

Andrew Hoffman, M.Sc., P.E.
NH Department of Environmental Services
Waste Management Division
Hazardous Waste Remediation Bureau
P.O. Box 95, 6 Hazen Drive
Concord, NH 03302-0095

Re: Kearsarge Metallurgic Site

Dear Mr. Hoffman:

The Conway Board of Selectmen would like to thank you for taking the time to meet with us concerning the reuse of the Kearsarge Metallurgical and OCR site here in Conway. We appreciated the information that you presented concerning the current state of the property and how the Town might be involved in facilitating the re-use of the site.

While the board is in favor of the eventual reuse of the site, after considering the matter, the Board has voted that the Town of Conway will not take ownership of the property as a component of a reuse plan.

If you would like additional information, please do not hesitate to contact our office.

Sincerely,

TOWN OF CONWAY

Lawrence L. Martin, Chair
Board of Selectmen

cc: Dick Goehlert, EPA