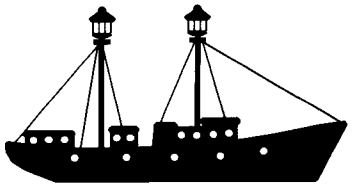

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August 25, 2003

RDMS DocID 00100103

RCRA RECORDS CENTER
FACILITY Jones Environmental Services NE Inc
I.D. NO. MAD047075734
FILE LOC. R-13
OTHER

Mr. Raphael J. Cody
U.S. Environmental Protection Agency – Region 1
Corrective Action Section
Office of Site Remediation and Restoration
Suite 1100 – HBT
One Congress Street
Boston, Massachusetts 02114-2023

RE: Revised Environmental Indicator Evaluation
Jones Environmental Services (Northeast), Inc.
263 Howard Street
Lowell, Massachusetts
DEP RTN 3-00601
EPA Identification No. MAD047075734
Lightship Eng. Project No. 542.1

Dear Mr. Cody:

Lightship Engineering, LLC ("Lightship Engineering") on behalf of Jones Environmental Services (Northeast), Inc., ("Jones") is pleased to submit this Resource Conservation and Recovery Act ("RCRA") Corrective Action ("CA") Environmental Indicator ("EI") Resource Conservation and Recovery Information System ("RCRIS") Code CA 750 update for the Jones' facility in Lowell, Massachusetts ("Site"). The U.S. Environmental Protection Agency ("EPA") has requested an updated EI as a result of the installation of an air sparging and soil vapor extraction ("AS/SVE") remediation system at the Site. Environmental Indicator RCRIS Code CA 750 is attached at Attachment A and supporting documents that included URS Figure 6 - Surface Water & Air Sampling Plan, Figure 1 – SVE/AS System Layout, Table 1- Volatile Organic Compounds detected in Groundwater and URS Table 8 - Summary of Surface Water Analytical Data are attached at Attachment B.

This EI is intended to supplement and amend the CA 725 EI submitted by URS Corporation on March 7, 2002 and taken together should be considered a complete EI submittal for the Site.

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North Shore Office: P.O. Box 517 • North Andover Massachusetts 01845 • Phone (978) 557-5888
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BACKGROUND

Tetra-Tech EM – January 2000

On January 14, 2000, Tetra Tech EM Inc. ("Tetra") updated the EI evaluation for the former site operator, Jet-Line/Geochem. Tetra evaluated available reference data and recommended that the EI determination of **"NO"** be listed for **"Current Human Exposure,"** and **"Unacceptable Migration of Contaminated Groundwater is Observed or Expected."**

URS Corporation, March 2002

On March 7, 2002, URS has revised the EI for CA 725 to include **"YES" – Current Human Exposure Under Control**." The revised EI determination for CA 725 is a result of indoor air monitoring results for volatile organic compounds ("VOCs") from October 2000 and March 2001 and corresponding human health risk analysis of these data by Ms. Susan Sundstrom, Ph.D., D.A.B.T. of Groton, Massachusetts. URS is recommended that **"NO"** be listed in CA 750 to state that, **"Unacceptable Migration of Contaminated Groundwater is Observed or Expected."**

SITE INVESTIGATION AND REMEDIATION 2003

Lightship Engineering, LLC – July 2003

On June 19, 2002, Lightship Engineering on behalf of Jones, completed a Phase III Identification, Evaluation and Selection of Comprehensive Remedial Action ("Phase III") and Phase IV Implementation of Selected Remedial Alternative ("Phase IV") reports pursuant to the Massachusetts Contingency Plan ("MCP"). The Phase III report identified AS/SVE as the recommended remedial action alternative for the Site. The Phase IV was initiated based on the concentration of hazardous material detected in groundwater above MCP Upper Concentration Limits ("UCLs"). Lightship Engineering and Jones completed the installation of the AS/SVE remedial system consistent with the Phase IV report in April of 2003, as indicated on Figure 1, Attachment B. The AS/SVE remediation system has been in continuous operation since April 25, 2003 with minor short term duration shut downs for maintenance. Based on the operation of the AS/SVE remediation system and historical groundwater sampling results, Lightship Engineering has revised form CA 750 as set forth below.

Migration of Contaminated Groundwater – CA 750 Form

A revised CA 750 form is included in Attachment A, and a summary of form CA 750 is set forth below.

1.) Lightship Engineering reviewed reasonable available information in preparation of this EI including the Phase II Comprehensive Site Assessment ("Phase II") prepared by URS.

2.) Groundwater samples that exceeded applicable Method 1 GW-2 and GW-3 Groundwater Cleanup Standards are set forth in Table 1, Attachment B. The source of the release of oil and/or hazardous material ("OHM") is located within and adjacent to monitoring well MW-4.

3.) On April 25 and July 8, 2003, Lightship Engineering collected quarterly groundwater samples from monitoring wells MW-4, MW-5, WE-3, GZA-4, URS-1, URS-2 and URS-3 as indicated on Figure 6, Attachment B. Monitoring wells were purged using the low flow method consistent with DEP *Standard References for Monitoring Wells* and samples were collected using disposable polyethylene bailers. Groundwater samples were submitted to a Commonwealth of Massachusetts certified analytical laboratory for VOCs EPA Method 8260B analysis. Based on the laboratory analytical results, significant decreases in the concentrations of 1,1-dichloroethane ("DCA"), 1,1-dichlroethene ("DCE"), cis 1,2-dichloroethene ("cis DCE"), 1,1,1-trichloroethane ("TCA") and trichloroethene ("TCE"), were detected at the source area (MW-4) as set forth in Table 1, Attachment B. In addition, the concentrations of TCA and toluene have decreased below Massachusetts Contingency Plan ("MCP") Method 3 Upper Concentration Limits ("UCLs") at the Site.

The concentrations of vinyl chloride, DCE, DCA, cis-DCE, TCA decreased at the downgradient monitoring well GZA-4. The concentration of DCA, cis-DCE, TCA, TCE also decreased at downgradient monitoring well WE-3. Concentrations of VOCs detected in the downgradient monitoring wells GZA-4 and WE-3 are below Method 1 GW-3 Groundwater Cleanup Standards.

Based on the historical and quarterly groundwater sampling results, the concentration of VOCs detected in groundwater has reduced as a result of the AS/SVE remediation system. The depth to groundwater at the Site ranges from 8.83 feet to 12.72 feet below grade. Groundwater flow direction is to the northwest (towards River Meadow Brook).

The source of the release of OHM is within and adjacent to monitoring well location MW-4.

Based upon the location of the source of OHM, groundwater flow direction and historical groundwater analytical results, the extent of the VOC plume appears limited to the property and the extent of the VOC plume appears to have stabilized. In addition, based on the significant decrease of VOCs detected in groundwater at the source area and in downgradient monitoring wells, it is anticipated that future groundwater monitoring events will likely demonstrate a contraction of the plume.

4.) As set forth in the Phase II, on September 12, 2000, URS collected surface water samples SW-1 (downstream of the Site) and SW-2 (upstream of the Site) from the River Meadows Brook located hydraulically downgradient of the Site as indicated on URS Figure 6, Attachment B. Based on the laboratory analytical results, concentrations of VOCs detected in both the upstream and downstream surface water samples were below MCP fresh water chronic and acute toxicity values as set forth in URS Table 8, Attachment B. In addition, the concentration of OHM detected in groundwater samples collected from monitoring wells outside of the source area (MW-4) do not exceed Method 1 GW-3 Groundwater Cleanup Standards that are protective of surface water.

7.) Quarterly groundwater samples are scheduled to be collected from monitoring wells MW-4, MW-5, WE-3, GZA-4, URS-1, URS-2 and URS-3 and three rounds of post-remediation groundwater sampling are proposed to confirm clean closure.

8.) Lightship Engineering has revised the EI for CA 750 to include **"YES"** – **"Migration of Contaminated Groundwater Under Control."** The revised EI determination for CA 750 is a result of the significant reduction of VOCs in groundwater at the source area as a result of the operation of the AS/SVE remediation system and the decrease of VOCs historically at the downgradient monitoring wells below Method 1 GW-3 Groundwater Cleanup Standards.

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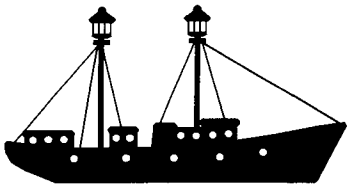

If you have any questions, please call Michael J. Pierdinock or Joseph B. O'Brien at (508) 830-3344, extensions 110 and 130 respectively.

Very truly yours,

Lightship Engineering, LLC

Joseph B. O'Brien, P.E.
Senior Project Manager

Michael J. Pierdinock, LSP, CHMM
President

cc: Mr. Jim Green, Jones Environmental Services (Northeast), Inc.

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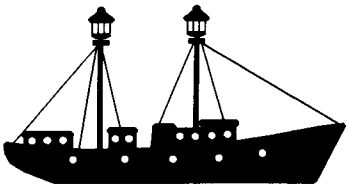

ATTACHMENT A

Environmental Indicator RCRIS code CA 750

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DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: Jones Environmental Services (Northeast), Inc.
Facility Address: 263 Howard Street, Lowell, Massachusetts
Facility EPA ID #: MAD047075734

1. Has all available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been considered in this EI determination?

   _X_ If yes - check here and continue with #2 below.

   _____ If no - re-evaluate existing data, or

   _____ if data are not available, skip to #8 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is groundwater known or reasonably suspected to be "contaminated"[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

_X_ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

____ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): See attached Letter

Footnotes:

[1]"Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[2] as defined by the monitoring locations designated at the time of this determination)?

__X__ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[2]).

_____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and
Reference(s): See attached Letter

[2] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

4. Does "contaminated" groundwater discharge into surface water bodies?

____ If yes - continue after identifying potentially affected surface water bodies.

_X_ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): See attached Letter

5. Is the discharge of "contaminated" groundwater into surface water likely to be "insignificant" (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

_____ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s): Not Applicable

[3] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the discharge of "contaminated" groundwater into surface water be shown to be "currently acceptable" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR
2) providing or referencing an interim-assessment,[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

____ If no - (the discharge of "contaminated" groundwater can not be shown to be "currently acceptable") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

____ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s): Not Applicable

[4] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[5] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater monitoring / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

__X__ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

_____ If no - enter "NO" status code in #8.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s): See attached Letter

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

__X__ YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the Jones Environmental Services (Northeast), Inc. facility, EPA ID #MAD047075734, located at 263 Howard St., Lowell, MA. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

_____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

_____ IN - More information is needed to make a determination.

Completed by (signature) _____ Date Aug. 1, 2003
(print) Joseph B. O'Brien, P.E.
(title) Senior Project Manager

Supervisor (signature) _____ Date _____
(print) Michael J. Pierdinock, LSP, CHMM
(title) President
(EPA Region or State) Region 1

Locations where References may be found:

EPA Region 1 - Mr. Ralph Cody - Records Center
Lightship Engineering, LLC - Plymouth, Massachusetts

Contact telephone and e-mail numbers

(name) Joseph B. O'Brien
(phone #) (508) 830-3344 X130
(e-mail) jo'brien@lightshipengineering.com

Matthew R. Haagland
Chief RCRA Corrective Action Section
EPA Reg. I
8/26/03

Ralph J. Cody
RALPH J. CODY
RFM 8-26-03

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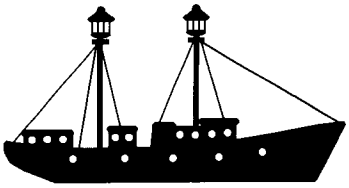

ATTACHMENT B

SUPPORTING DOCUMENTS

URS Figure 6 – Site Plan
Figure 1 – SVE/AS System Layout
Table 1 – Volatile Organic Compounds Detected in Groundwater
URS Table 8 – Summary of Surface Water Analytical Data

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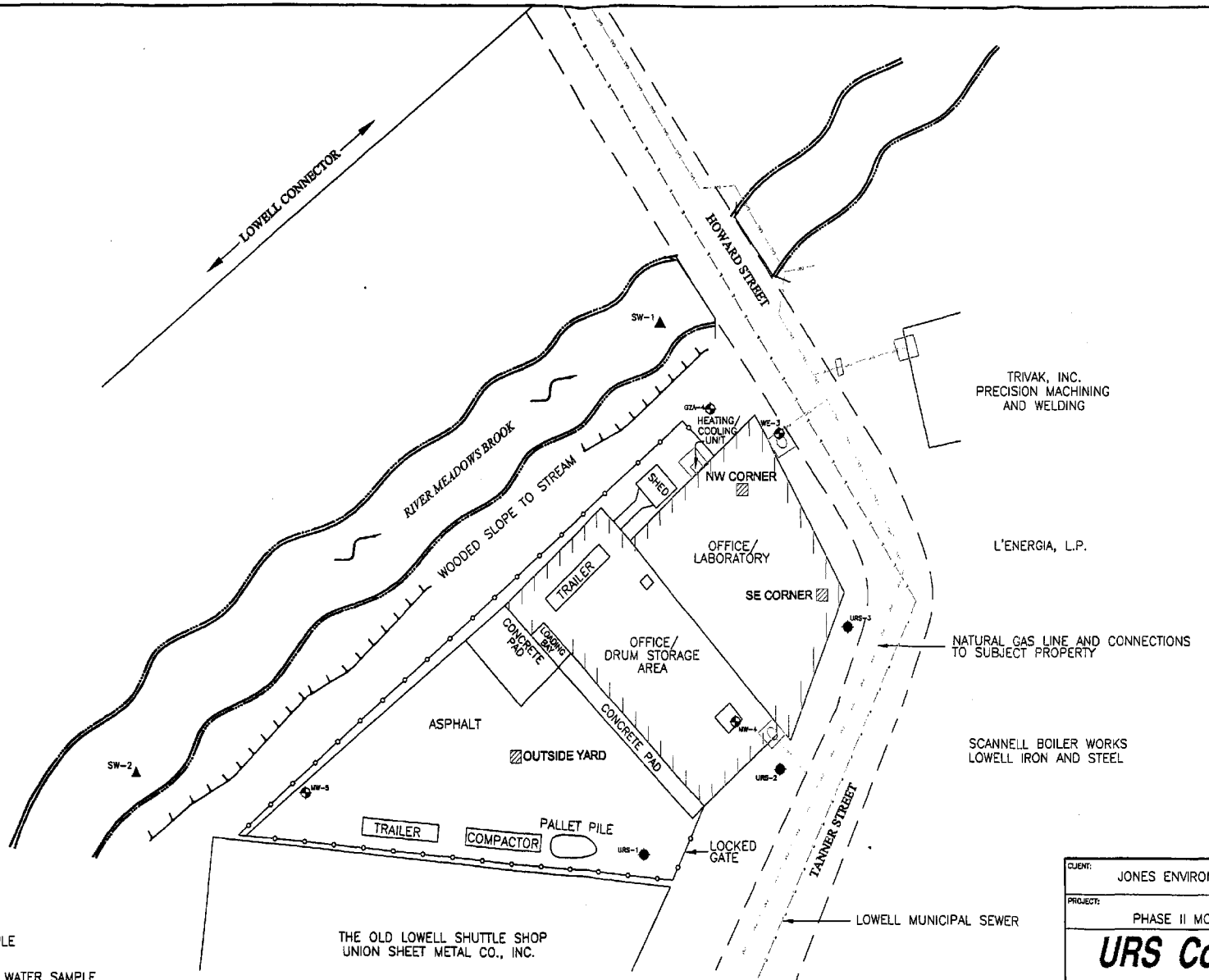


LEGEND:

OUTSIDE YARD — LOCATION OF AIR SAMPLE

SW-2 — LOCATION OF SURFACE WATER SAMPLE

CHAIN LINK FENCE AND PROPERTY BOUNDARY

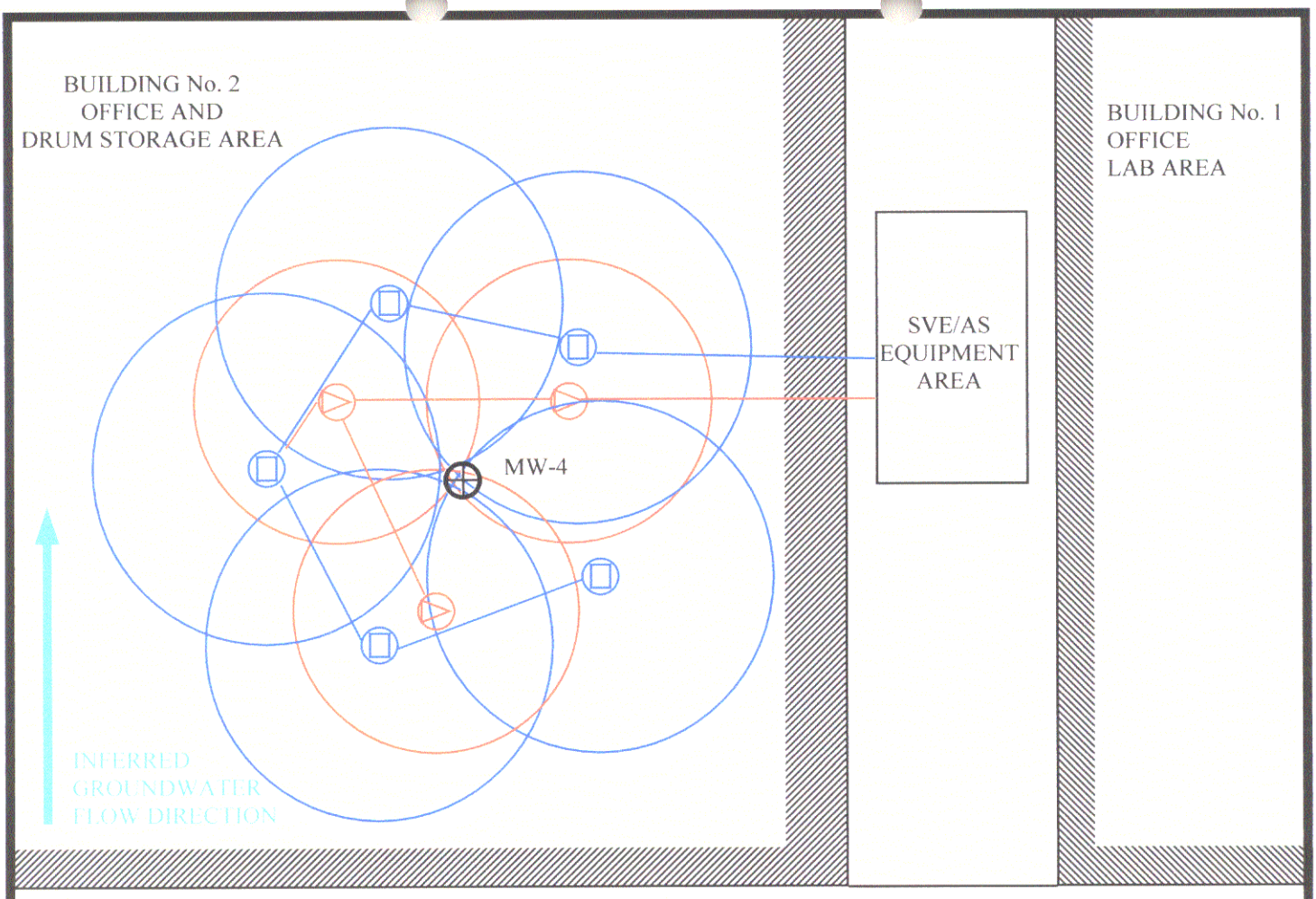
SOURCE:

URS FIELD MEASUREMENTS SEPTEMBER 2000 AND OCTOBER 2000. SITE PLAN DETAILS FROM PREVIOUS REPORTS BY TRC AND BOSTON GAS COMPANY.

0 40 60 80

SCALE, FEET

CLIENT:	JONES ENVIRONMENTAL SERVICES, INC.
PROJECT:	PHASE II MCP SITE INVESTIGATION
	URS Corporation
TITLE:	SURFACE WATER & AIR SAMPLING PLAN
PROJECT NO:	46019-002
DESIGN: MLS	SCALE: 1"=40'
APPROVED: GJG	DATE: 6/5/01
DRAWN: MLS	FILE NO: P031
FIGURE NO:	6



LEGEND

⊕ Monitoring Well Location (MW-4)

SVE Well Location and Radius of Influence

AS Well Location and Radius of Influence

N

NOT-TO-SCALE

FIGURE 1

SVE/AS SYSTEM LAYOUT

263 Howard Street Lowell, Massachusetts

Prepared for:

Jones Environmental Services (northeast), Inc.

LIGHTSHIP ENGINEERING

ENVIRONMENTAL & LAND-USE CONSULTANTS

36 Cordage Park Circle, Suite 312, Plymouth, MA 02360

TABLE 1
Volatile Organic Compounds Detected in Groundwater
263 Howard Street
Lowell, Massachusetts

(ug/L)

Sample Identification Number	Date Sampled	Vinyl Chloride	Chloroethane	1,1-Dichloroethene	1,1,2-Trichlorotrifluoroethane	1,1-Dichloroethane	cis-1,2-Dichloroethene	1,1,1-Trichloroethane	Trichloroethene	Toluene	Tetrachloroethene	Total Xylenes	1,2-Dichlorobenzene	Naphthalene
GZA-4	7/1/85	NA	NA	ND	NA	ND	ND	***270,000***	***39,000***	**14,000**	ND	ND	NA	NA
GZA-4	9/1/00	**190**	900	**160**	NA	1,800	1,500	2,200	62	690	ND	71	NA	NA
GZA-4	4/25/03	**130**	510	**170**	730	2,000	1,500	2,400	52	45	BRL<25	26	30	BRL<25
GZA-4	7/8/03	**26**	100	**15**	BRL<10	290	170	200	56	45	BRL<10	19	BRL<10	BRL<10
URS-2	9/1/00	ND	ND	**56**	NA	78	110	1,100	**530**	ND	38	ND	NA	NA
URS-2	4/25/03	**BRL<5**	BRL<5	**BRL<5**	110	6	5	300	290	BRL<5	51	BRL<10	BRL<5	BRL<5
URS-2	7/8/03	**BRL<10**	BRL<10	**11**	BRL<100	BRL<10	BRL<10	370	270	BRL<10	44	BRL<10	BRL<10	BRL<10
MW-4	7/1/87	NA	NA	**7,400**	NA	2,400	7,200	***490,000***	**5,900**	***140,000***	***7,200***	**7,600**	NA	NA
MW-4	9/1/00	ND	ND	ND	NA	**24,000**	11,000	***360,000***	***84,000***	***120,000***	***6,700***	ND	NA	NA
MW-4	4/25/03	**BRL<2500**	BRL<2500	**BRL<2500**	28,000	2,900	11,000	***120,000***	***24,000***	***77,000***	***6,800***	5,000	BRL<2500	BRL<2500
MW-4	7/8/03	**BRL<2500**	BRL<2500	**BRL<2500**	BRL<2500	BRL<2500	BRL<2500	**38,000**	**14,000**	***75,000***	***7,200***	5,600	BRL<2500	BRL<2500
URS-1	9/1/00	ND	ND	**43**	NA	190	ND	160	ND	ND	ND	ND	NA	NA
URS-1	4/25/03	**BRL<10**	BRL<10	**100**	BRL<100	260	BRL<10	800	BRL<10	BRL<10	BRL<10	BRL<20	BRL<10	BRL<10
URS-1	7/8/03	**BRL<10**	BRL<10	**120**	BRL<100	290	BRL<10	590	BRL<10	BRL<10	BRL<10	BRL<20	BRL<10	BRL<10
MW-5	7/1/87	NA	NA	**160**	NA	400	ND	3,200	**740**	100	ND	ND	NA	NA
MW-5	9/1/00	ND	ND	ND	NA	ND	ND	30	1	ND	ND	1	NA	NA
MW-5	4/25/03	BRL<0.5	BRL<0.5	BRL<0.5	BRL<5	BRL<0.5	BRL<0.5	6	BRL<0.5	BRL<0.5	BRL<0.5	BRL<1	BRL<0.5	BRL<0.5
MW-5	7/8/03	BRL<0.5	BRL<0.5	BRL<0.5	BRL<5	BRL<0.5	BRL<0.5	9	1	BRL<0.5	BRL<0.5	BRL<1	BRL<0.5	BRL<0.5
WE-3	7/1/87	NA	NA	2	NA	1	ND	81	26	ND	10	ND	NA	NA
WE-3	9/1/00	ND	ND	ND	NA	ND	ND	56	70	ND	19	ND	NA	NA
WE-3	4/25/03	BRL<2.5	BRL<2.5	**BRL<2.5**	BRL<25	6	3	72	130	BRL<2.5	74	BRL<5	BRL<2.5	BRL<2.5
WE-3	7/8/03	BRL<1	BRL<1	BRL<1	BRL<1	BRL<1	BRL<1	26	70	BRL<1	54	BRL<1	BRL<1	BRL<2.5
URS-3	9/1/00	ND	ND	ND	NA	ND	ND	2	2	ND	ND	ND	ND	ND
URS-3	4/25/03	BRL<0.5	BRL<0.5	BRL<0.5	BRL<5	BRL<0.5	BRL<0.5	5	2	BRL<0.5	1	BRL<1	BRL<0.5	1
URS-3	7/8/03	BRL<0.5	BRL<0.5	BRL<0.5	BRL<5	BRL<0.5	BRL<0.5	4	3	BRL<0.5	2	BRL<1	BRL<0.5	1
Method 1 Groundwater Cleanup Standards (310 CMR 40.0974(2)); 10/29/99														
GW-2		2	NS	1	NS	9,000	30,000	4,000	300	6,000	3,000	6,000	10,000	6,000
GW-3		40,000	NS	50,000	NS	50,000	50,000	50,000	20,000	50,000	5,000	50,000	8,000	6,000
Method 3 Upper Concentration Limit (310 CMR 40.0996(7)); 10/29/99														
UCL		100,000	NS	100,000	NS	100,000	100,000	100,000	100,000	100,000	50,000	100,000	100,000	60,000

Notes:
ug/L - micrograms per liter.
BRL < 10 Indicates concentration, if any, is below reporting limit for analyte.
NA - sample not analyzed for this analyte.
ND - not detected by previous consultant.
Bold indicates concentration exceeds Method 1 GW-2 Groundwater Cleanup Standard.
Italic indicates concentration exceeds Method 1 GW-3 Groundwater Cleanup Standard.
Underline indicates concentration exceeds Method 3 UCL.
NS - no standard available.

TABLE 8
SUMMARY OF SURFACE WATER ANALYTICAL DATA
JONES ENVIRONMENTAL SERVICES, INC.
LOWELL, MASSACHUSETTS

Parameter	Fresh Water Acute [1] (ug/l)	Fresh Water Chronic [1] (ug/l)	Concentration (ug/l) RDL (ug/l)	SW-1 [2] Sep-00	SW-2 [2] Sep-00
Volatile Organic Compound					
1,1-Dichloroethene	NP	NP	1.5	ND	ND
1,1-Dichlorocthane	NP	NP	1.5	2.7	ND
1,1,1-Trichloroethane	NP	NP	1.0	4.7	ND
Trichloroethene	45,000	21,900	1.0	4.4	5.4
Methylene Chloride	NP	NP	5.0	ND	ND
Trans-1,2-Dichloroethene	NP	NP	1.5	ND	ND
1,2-Dichloroethane	118,000	20,000	1.0	ND	ND
Tetrachloroethene	5,280	840.0	1.0	1.2	1.4
Trichlorofluoromethane	NP	NP	5.0	UJ	U
Toluene	17,500	NP	1.5	ND	ND
Ethylbenzene	32,000	NP	1.0	ND	ND
Xylenes	NP	NP	1.0	ND	ND
Acetone	NP	NP	10.0	ND	ND
Chloroethane	NP	NP	2.0	ND	ND
cis-1,2-Dichloroethene	NP	NP	1.0	4	2.5
Vinyl Chloride	NP	NP	2.0	ND	ND
2-Butanone	NP	NP	10.0	ND	ND
All other compounds	-	-	-	ND	ND

Notes

[1] = Source of toxicity values is referenced from the MCP 310 CMR Environmental Toxicity Values Table for Fresh Water Acute and Chronic values.

[2] = SW-1 collected down stream of Jones Facility, while SW-2 was collected up stream of the Jones Facility.

ug/l = micrograms per liter

UJ = Qualified as estimated non detected during data validation review.

ND = Not detected

NP = Not Published

NA = Not analyzed

RDL = Reported Detection Limits.

March 7, 2002 46019-002-213

Mr. Raphael J. Cody, B.S., M.B.A., J.D.
U.S. Environmental Protection Agency – Region 1
Corrective Action Section
Office of Site Remediation and Restoration
Suite 1100 - HBT
One Congress Street
Boston, Massachusetts 021114-2023

Re: Draft Updated Environmental Indicator Evaluation
Jones Environmental Services (Northeast), Inc.
Lowell, Massachusetts
EPA Identification Number: MAD047075734

Dear Mr. Cody:

URS Corporation (URS) is pleased to submit a draft Resource Conservation and Recovery Act (RCRA) Corrective Action (CA) Environmental Indicator (EI) Resource Conservation and Recovery Information System (RCRIS) Code CA 725 and CA 750 update for the Jones Environmental Services (Northeast), Inc. (Jones) facility in Lowell, Massachusetts. The U.S. Environmental Protection Agency (EPA) has requested an update of EI information for the Jones facility. Supporting documents included with this summary letter report include; Attachment A – EI CA725 and CA750; and Attachment B – Supporting Documents.

EI Background

Environmental Indicator information for the subject site was most recently updated by Tetra Tech EM Inc. (Tetra) for the EPA on January 14, 2000. Tetra completed the EI evaluation for the former site operator, Jet-Line/Geochem. Tetra evaluated available reference data and recommended that the EI determination of "NO" be listed for "Current Human Exposure", indicating that current human exposure was not under control at the site. Tetra based its determination on concentrations of volatile organic compounds (VOCs) in groundwater at the site and application of the Johnson and Ettinger Model; concluding that a potential indoor air vapor exposure from VOCs to workers was a potential risk. In regards to migration of contaminated groundwater (CA 750), Tetra again evaluated reference data and recommended that the EI determination of "NO" be listed for "Unacceptable Migration of Contaminated Groundwater is Observed or Expected". Tetra concluded that groundwater contamination at the site was above regulatory standards and no monitoring wells were present off site to determine whether contamination had spread offsite.

In January 2000, Tetra recommended that indoor air monitoring be conducted at the facility to determine if indoor air concentrations of VOCs are at unacceptable levels. Tetra also recommended that an additional round of groundwater samples be collected in the area around monitoring well MW-4 and downgradient of the former catch basin associated with monitoring well MW-4. Tetra recommended that a comparison of groundwater data with historic results should be done to evaluate the stabilization of groundwater

contamination across the site. Furthermore, Tetra recommended that offsite groundwater samples be collected to further evaluate whether groundwater impacts had stabilized at the site.

Updated EI Analysis

URS recently completed a Phase II Comprehensive Site Investigation (Phase II) at the Jones facility. The Phase II was completed to satisfy requirements pertaining to Massachusetts Contingency Plan (MCP) regulations. URS is assisting Jones with complying with MCP requirements for the site and a Phase II was required to be completed in 2001. Included with URS' scope of work for the Phase II was a site wide groundwater sampling round in September 2000 and two rounds of indoor air sampling at the Jones facility which was completed in October 2000 and March 2001. Based on the groundwater and air sampling data and the completion of a MCP Method 3 Risk Assessment (Risk Assessment), URS has updated the CA EI information for the Jones facility.

Human Exposure Potential – CA 725 Form

URS has concluded in the Phase II report (risk assessment) that no current substantial human health and environmental risks exists at the site. URS has revised the EI for CA 725 to indicate "YES – Current Human Exposure Under Control". The revised EI determination for CA 725 is a result of indoor air monitoring results for VOCs from October 2000 and March 2001 and corresponding human health risk analysis of these data by Ms. Susan Sundstrom, Ph.D., D.A.B.T. of Groton, Massachusetts. A revised CA 725 form reflecting this new air sampling data is provided in Attachment A. Included in Attachment B as Table 1 is a summary of VOC results for air samples collected in the Jones building during the Phase II.

As shown in Table 1, a maximum of 13 VOCs were detected in two indoor air samples collected in October 2000, while air sample results from two indoor air samples in March 2001 detected a maximum of 5 VOCs. Based on the results from the initial round of air sampling, Ms. Sundstrom completed an Imminent Hazard evaluation of the Jones facility pertaining to human health concerns and determined that an Imminent Hazard did not exist at the property and immediate remedial measures were not warranted. Subsequent to the initial indoor air sampling event, Jones installed vents in the crawl space foundation beneath the office building. It was thought that the vents would act to reduce VOCs in the building, if groundwater beneath the building was a source. The reduced VOC concentrations in the Jones building from the March 2001 indoor air sampling indicate that this assumption was correct. Based on the Risk Assessment completed as part of the Phase II, Ms. Sundstrom concluded that no current significant human health risk exists at the site. A conclusive determination pertaining to future human health risks at the site could not be made due to concentrations of 1,1,1-trichloroethene and toluene in groundwater in monitoring well MW-4 which exceed upper concentration limits established in MCP regulations.

Migration of Contaminated Groundwater – CA 750 Form

In September 2000, groundwater samples were collected from four existing site monitoring wells (installed by others) and three new monitoring wells installed by URS as part of the Phase II. VOC results from groundwater sampling show a general decrease in contaminant concentrations across the site in comparison to the most recent historical groundwater results from 1987. In addition, the trend in VOCs detected in site groundwater indicates natural attenuation is occurring at the site. VOCs detected in groundwater include increased concentrations of 1,1-dichloroethane, cis-1,2-dichloroethene and vinyl chloride which are transformation products resulting from degradation of tetrachloroethene, trichloroethene, and 1,1,1-trichloroethane. The highest VOC concentrations in groundwater were identified at monitoring well MW-4. The majority of VOCs detected in monitoring well MW-4 are lower than historical data from 1987. However, the concentrations of 1,1-dichloroethene, and toluene have increased in comparison to the most recent historical groundwater results from 1987.

Although most groundwater results show a decreasing trend in VOC concentrations, groundwater samples have yet to be collected in downgradient offsite locations to verify the stabilization of the groundwater plume. Therefore, as previously reported by Tetra, URS is recommending that "NO" be listed in CA 750 to state that, "Unacceptable Migration of Contaminated Groundwater is Observed or Expected". However, it should be noted that no off-site receptors of the impacted groundwater have been identified. Attachment A includes a completed CA 750 and Attachment B includes a Figure 1 Site Plan showing site monitoring well locations sampled in September 2000 and Table 2 summarizing groundwater analytical results for VOCs from September 2000.

Summary/Conclusions

URS is working with Jones to conduct limited groundwater remediation in the area of the former sump at monitoring well MW-4. Jones anticipates completing Release Abatement Measure (RAM) activities this Spring as defined by MCP regulations to reduce VOC concentrations in groundwater at the source area. The completion of limited groundwater remediation near MW-4 is anticipated to help stabilize the groundwater contamination plume and reduce the potential for future human health risks from diffusion of VOCs in shallow groundwater to indoor air in the Jones facility. Furthermore, in order to update future EI 750 reporting to the EPA, URS anticipates completing future offsite groundwater sampling downgradient of the site.

URS appreciates the opportunity to provide the EPA with updated EI information pertaining to the Jones facility. Please call either of the undersigned with any questions or comments.

Sincerely,
URS CORPORATION

George J. Giese
Project Geologist

Thomas P. Woodard, L.S.P.
Principal

Attachment

cc: James F. Green

46019\002\EnvironmentalIndicatorUpdateLetter.doc

References

- Phase II Comprehensive Site Assessment Report for Jones Environmental Services (Northeast), Inc., URS Corporation, August 14, 2001.
- Environmental Indicator (EI) Evaluation for the Jet-Line Services/Geochem Facility, EPA Identification No. MAD047075734. Tetra Tech EM, Inc., January 14, 2000;
- Phase I Initial Site Investigation Report, 263 Howard Street, Lowell, Massachusetts. Phoenix Environmental Services, Inc., February 1999;
- Environmental Site Assessment, 237 Howard Street, Lowell, Massachusetts. TRC Environmental, July 1998;
- LSP Evaluation Opinion {310 CMR 40.0610} Geochem, Inc., John R. Davey, LSP, June 1996;
- Final Assessment Report, Geochem, Inc. Site. Jet-Line Environmental Services, Inc., February 23, 1995.
- March 31, 1994 Sampling of Lowell Wells. Jet-Line Environmental Services, Inc., April 20, 1994;

- Final Preliminary Assessment Plus Report, Jet-Line Services, Inc. Roy F. Weston, Inc., May 15, 1992;
- Report on Subsurface Investigation at the Geochem, Inc. Site in Lowell, Massachusetts. Wehran Engineering Consulting Engineers, July 15, 1985; and
- Environmental Site Assessment, Geochem Facility. Goldberg-Zoino & Associates, Inc., January 1985.

ATTACHMENT A

ENVIRONMENTAL INDICATOR CA 725 AND CA 750

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA725)

Current Human Exposures Under Control

Facility Name: Jones Environmental Services (Northeast), Inc.
Facility Address: 263 Howard Street, Lowell, Massachusetts
Facility EPA ID #: MAD047075734

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   __X__ If yes - check here and continue with #2 below.

   _____ If no - re-evaluate existing data, or

   _____ if data are not available skip to #6 and enter" IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of " Current Human Exposures Under Control" EI

A positive " Current Human Exposures Under Control" EI determination (" YE" status code) indicates that there are no "unacceptable" human exposures to " contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all " contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The " Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program" s overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e.,

RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be **" contaminated"** [1] above appropriately protective risk-based " levels " (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

	Yes	No	?	Rationale / Key Contaminants
Groundwater	X			**See Attached Letter**
Air (indoors)[2]		X		
Surface Soil (e.g., <2 ft)		X		
Surface Water		X		
Sediment		X		
Subsurf. Soil (e.g., >2 ft)		X		
Air (outdoors)		X		

_____ If no (for all media) - skip to #6, and enter " YE," status code after providing or citing appropriate " levels," and referencing sufficient supporting documentation demonstrating that these " levels " are not exceeded.

__X__ If yes (for any media) - continue after identifying key contaminants in each " contaminated" medium, citing appropriate " levels " (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

_____ If unknown (for any media) - skip to #6 and enter " IN" status code.

Rationale and Reference(s): **See Attached Letter**

Footnotes:

[1] " Contamination" and " contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based " levels " (for the media, that identify risks within the acceptable risk range).

[2] Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be

reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)

3. Are there **complete pathways** between " contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

	Potential **Human Receptors** (Under Current Conditions)						
" Contaminated" Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food[3]
Groundwater	No	No	No No			No	
Air (indoors)	___	___	___				
Soil (surface, e.g., <2 ft)	___	___	___	___	___	___	___
Surface Water	___	___		___	___	___	
Sediment	___	___			___	___	___
Soil (subsurface e.g., >2 ft)			___			___	
Air (outdoors)	___	___	___	___	___		

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors" spaces for Media which are not " contaminated") as identified in #2 above.

2. enter " yes" or " no" for potential " completeness" under each " Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential " Contaminated" Media - Human Receptor combinations (Pathways) do not have check spaces (" ___ "). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

__X__ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter " YE" status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

_____ If yes (pathways are complete for any " Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

_____ If unknown (for any " Contaminated" Media - Human Receptor combination) - skip to #6 and enter " IN" status code

Rationale and Reference(s): **See Attached Letter**

[3] Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)

4 Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be "**significant**" [4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

_____ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

____ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

_____ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

Rationale and Reference(s): **Not Applicable**

[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)

5 Can the " significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

_____ If yes (all " significant" exposures have been shown to be within acceptable limits) - continue and enter " YE" after summarizing and referencing documentation justifying why all " significant" exposures to " contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

_____ If no (there are current exposures that can be reasonably expected to be " unacceptable")- continue and enter " NO" status code after providing a description of each potentially " unacceptable" exposure.

_____ If unknown (for any potentially " unacceptable" exposure) - continue and enter " IN" status code

Rationale and Reference(s): **Not Applicable**

Current Human Exposures Under Control
Environmental Indicator (EI) RCRIS code (CA725)

6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

___X___ YE - Yes, " Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, " Current Human Exposures" are expected to be " Under Control" at the Jones Environmental Services (Northeast), Inc. facility, EPA ID # MADo47075734, located at 263 Howard Street in Lowell, Massachusetts under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

_____ NO - " Current Human Exposures" are NOT " Under Control."

_____ IN - More information is needed to make a determination.

Completed by (signature) _____ Date 2-19-02
(print) George J. Giese
(title) Project Manager for URS Corporation

Supervisor (signature) _____ Date 2-19-02
(print) Thomas P. Woodard
(title) Principal and LSP for URS Corporation
(EPA Region or State) EPA Region 1, Massachusetts

Raphael J. Cody, RPM
8-26-03

Matthew R. Haas land
Chief, RCRA Corrective Action Section
8/26/03

Locations where References may be found:

EPA Region 1 – Mr. Raphael Cody, EPA Region 1 – Records Center.
Documents are also available at URS Corporation offices located at 477 Congress Street, Suite 3A, Portland, ME 04101

Contact telephone and e-mail numbers

(name) George J. Giese, URS Corporation
(phone #) 207-879-7686
(e-mail) George_Giese@URSCorp.com

FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR

RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: Jones Environmental Services (Northeast), Inc.
Facility Address: 463 Howard Street, Lowell, Massachusetts
Facility EPA ID #: MADO47075734

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   ___X___ If yes - check here and continue with #2 below.

   _____ If no - re-evaluate existing data, or

   _____ if data are not available, skip to #8 and enter" IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of " Migration of Contaminated Groundwater Under Control" EI

A positive " Migration of Contaminated Groundwater Under Control" EI determination (" YE" status code) indicates that the migration of " contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original " area of contaminated groundwater" (for all groundwater " contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The " Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e.,

RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)

2. Is **groundwater** known or reasonably suspected to be " **contaminated**" [1] above appropriately protective " levels " (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

__X__ If yes - continue after identifying key contaminants, citing appropriate " levels," and referencing supporting documentation.

_____ If no - skip to #8 and enter " YE" status code, after citing appropriate " levels," and referencing supporting documentation to demonstrate that groundwater is not " contaminated."

_____ If unknown - skip to #8 and enter " IN" status code.

Rationale and Reference(s): **See Attached Letter**

Footnotes:

[1] " Contamination" and " contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate " levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within " existing area of contaminated groundwater" [2] as defined by the monitoring locations designated at the time of this determination)?

_____ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the " existing area of groundwater contamination" [2]).

__X__ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the " existing area of groundwater contamination" [2]) - skip to #8 and enter " NO" status code, after providing an explanation.

_____ If unknown - skip to #8 and enter " IN" status code.

Rationale and Reference(s): **See Attached Letter**

[2] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)

4. Does " contaminated" groundwater **discharge** into **surface water** bodies?

_____ If yes - continue after identifying potentially affected surface water bodies.

_____ If no - skip to #7 (and enter a " YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater " contamination" does not enter surface water bodies.

_____ If unknown - skip to #8 and enter " IN" status code.

Rationale and Reference(s): **Not Applicable**

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be "**insignificant**" (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

_____ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s): **Not Applicable**

[3] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)

6. Can the **discharge** of " contaminated" groundwater into surface water be shown to be " **currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site" s surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment,[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment " levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of " contaminated" groundwater can not be shown to be " **currently acceptable**") - skip to #8 and enter " NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter " IN" status code.

Rationale and Reference(s): **Not Applicable**

[4] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[5] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the " existing area of contaminated groundwater?"

_____ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the " existing area of groundwater contamination."

_____ If no - enter " NO" status code in #8.

_____ If unknown - enter " IN" status code in #8.

Rationale and Reference(s): **Not Applicable**

Migration of Contaminated Groundwater Under Control
Environmental Indicator (EI) RCRIS code (CA750)

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

_____ YE - Yes, " Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the " Migration of Contaminated Groundwater" is " Under Control" at the Jones Environmental Services (Northeast), Inc. facility , EPA ID # MAD047075734 , located at 463 Howard Street in Lowell, Massachusetts . Specifically, this determination indicates that the migration of " contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the " existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

__X__ NO - Unacceptable migration of contaminated groundwater is observed or expected.

_____ IN - More information is needed to make a determination.

Completed by (signature)_____ Date 2-19-02
(print) George J. Giese
(title) Project Manager, URS Corporation

Supervisor (signature)_____ Date 2-19-02
(print) Thomas P. Woodard
(title) Principal and LSP, URS Corporation
(EPA Region or State) EPA Region 1, Massachusetts

Locations where References may be found:

EPA Region 1 – Mr. Raphael Cody, EPA Region 1 – Records Center.
Documents are also available at URS Corporation offices located at 477 Congress Street, Suite 3A, Portland, ME 04101

Contact telephone and e-mail numbers

(name) George J. Giese, URS Corporation
(phone #) 207-879-7686
(e-mail) George_Giese@URSCorp.com

File Designation: P/Project/46019/002/EIUpdate/CA725&CA750

ATTACHMENT B

SUPPORTING DOCUMENTS

TABLE 1
SUMMARY OF AIR ANALYTICAL DATA
JONES ENVIRONMENTAL SERVICES, INC.
LOWELL, MASSACHUSETTS

Compound	Detection Limit (ppbv)	Detection Limit (ug/m^3)	SE Corner Oct-00 (ppbv)	SE Corner Oct-00 (ug/m^3)	NW Corner Oct-00 (ppbv)	NW Corner Oct-00 (ug/m^3)	SE Corner Mar-01 (ppbv)	SE Corner Mar-01 (ug/m^3)	NW Corner Mar-01 (ppbv)	NW Corner Mar-01 (ug/m^3)	Outside Yard Mar-01 (ug/m^3)	Outside Yard Mar-01 (ug/m^3)
1,1,1-Trichloroethane	0.88	4.8	28	150	24	140	9.1	51	6.9	38	ND	ND
1,1-Dichloroethane	0.88	3.6	1.7	7.2	1.5	6.3	ND	ND	ND	ND	ND	ND
2-Butanone	3.5	10	5.7	17	7.3	22	ND	ND	ND	ND	ND	ND
Acetone	3.5	8.4	29	71	29	71	13	31	11	26	4.1	10
Benzene	0.88	2.8	2.4	8	2.3	7.4	ND	ND	ND	ND	ND	ND
Ethylbenzene	0.88	3.9	1.8	7.7	1.8	8.1	ND	ND	ND	ND	ND	ND
Freon	0.78	4.4	ND	ND	ND	ND	ND	ND	ND	ND	0.99	5.7
Methylene chloride	0.88	3.1	5.8	20	5.3	19	ND	ND	ND	ND	ND	ND
m,p-Xylenes	0.88	3.9	6.2	27	6.1	27	1.5	6.6	1.7	7.5	ND	ND
o-Xylene	0.88	3.9	2.2 J	9.8 J	1.8 J	8.1 J	ND	ND	ND	ND	ND	ND
Styrene	0.88	3.8	1.2 J	5.2 J	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	0.88	6	2.5	17	2.2	16	ND	ND	ND	ND	ND	ND
Toluene	0.88	3.4	11	41	10	39	2	7.8	1.9	7.2	ND	ND
Trichloroethene	0.88	4.8	22	120	20	110	4.8	26	3.6	20	ND	ND
All other compounds	-	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
ppbv = parts per billion volume
ug/m^3= micrograms per cubic meter
ND = Not Detected
J = Qualified as estimated during data validation review

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL DATA
JONES ENVIRONMENTAL SERVICES, INC.
LOWELL, MASSACHUSETTS

Parameter	Solubility [1] (mg/l)	UCL (mg/l)	Concentration (mg/l) GZA-4,GZA-4DUP RDL	GZA-4 Sep-00	GZA-4Dup Sep-00	WE-3 RDL	WE-3 Sep-00	MW-4 RDL	MW-4 Sep-00	MW-5 RDL	MW-5 Sep-00	URS-1 RDL	URS-1 Sep-00
Volatile Organic Compound													
1,1-Dichloroethene	400	100	0.075	0.16	0.1	0.0015	ND	7.5	ND	0.0015	ND	0.0038	0.043
1,1-Dichloroethane	5,500	100	0.075	1.8 J	1.4 J	0.0015	ND	7.5	24	0.0015	ND	0.0038	0.19
1,1,1-Trichloroethane	720	100	0.05	2.2 J	1.6 J	0.001	0.056	5	360	0.001	0.03	0.0025	0.16
Trichloroethene	1,100	100	0.05	0.062	0.054	0.001	0.07	5	84	0.001	0.0011	0.0025	ND
Methylene Chloride	20,000	100	0.25	0.29 J	UJ	0.005	ND	25	ND	0.005	ND	0.012	ND
Trans-1,2-Dichloroethene	600	100	0.075	ND	ND	0.0015	ND	7.5	ND	0.0015	ND	0.0038	ND
1,2-Dichloroethane	8,690	100	0.05	ND	ND	0.001	ND	5	ND	0.001	ND	0.0025	ND
Tetrachloroethene	200	50	0.05	ND	ND	0.001	0.019	5	6.7	0.001	ND	0.0025	ND
Trichlorofluoromethane	1,100	NP	0.25	UJ	UJ	0.005	UJ	25	UJ	0.005	UJ	0.012	UJ
Toluene	530	100	0.075	0.69 J	0.47 J	0.0015	ND	7.5	120	0.0015	ND	0.0038	ND
Ethylbenzene	150	100	0.05	ND	ND	0.001	ND	5	ND	0.001	ND	0.0025	ND
Xylenes	200	100	0.05	0.071 J	0.051 J	0.001	ND	5	ND	0.001	0.001	0.0025	ND
Acetone	1,000,000	100	0.5	ND	ND	0.01	ND	50	ND	0.01	ND	0.025	ND
Chloroethane	5,700	NP	0.1	0.9	0.71	0.002	ND	50	ND	0.002	ND	0.005	ND
cis-1,2-Dichloroethene	3,500	100	0.05	1.5 J	1.1 J	0.001	ND	5	11	0.001	ND	0.0025	ND
Vinyl Chloride	2.7	0.6	0.1	0.19	0.16	0.002	ND	10	ND	0.002	ND	0.005	ND
2-Butanone	270,000	100	0.5	ND	ND	0.01	ND	50	ND	0.01	ND	0.0025	ND
All other compounds	-	-	-	ND	ND	-	ND	-	ND	-	ND	-	ND

Notes

[1] = Source of Solubility values is Schwille, 1988. *Dense Chlorinated Solvents in Porous and Fractured Media Model Experiments*, Lewis Publishers, Chelsea, Michigan 48118 and The Massachusetts Contingency Plan, 1995.

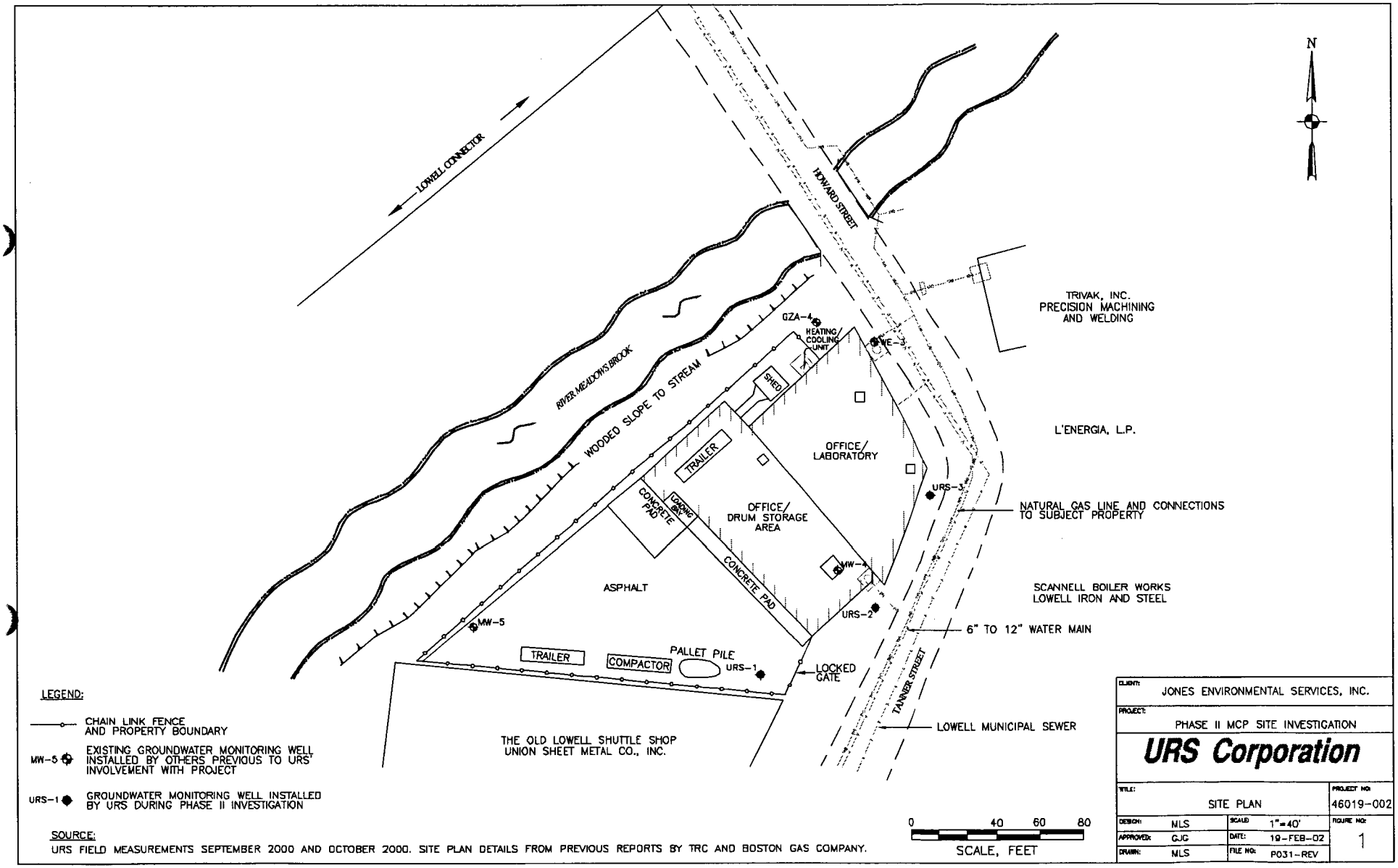
mg/l = milligrams per liter
J = Qualified as estimated during data validation review.
UJ = Qualified as estimated non detected during data validation review.
UCL = Upper Concentration Limits.
ND = Not Detected
NP = Not Published
NA = Not Analyzed
RDL = Reported Detection Limits.

TABLE 2
SUMMARY OF GROUNDWATER ANALYTICAL DATA
JONES ENVIRONMENTAL SERVICES, INC.
LOWELL, MASSACHUSETTS

Parameter	Solubility [1] (mg/l)	UCL (mg/l)	Concentration (mg/l)			
			URS-2 RDL	URS-2 Sep-00	URS-3 RDL	URS-3 Sep-00
Volatile Organic Compound						
1,1-Dichloroethene	400	100	0.03	0.056	0.0015	ND
1,1-Dichloroethane	5,500	100	0.03	0.078	0.0015	ND
1,1,1-Trichloroethane	720	100	0.02	1.1	0.001	0.0022
Trichloroethene	1,100	100	0.02	0.53	0.001	0.0022
Methylene Chloride	20,000	100	0.1	ND	0.005	ND
Trans-1,2-Dichloroethene	600	100	0.03	ND	0.0015	ND
1,2-Dichloroethane	8,690	100	0.02	ND	0.001	ND
Tetrachloroethene	200	50	0.02	0.038	0.001	ND
Trichlorofluoromethane	1,100	NP	0.1	UJ	0.005	UJ
Toluene	530	100	0.03	ND	0.0015	ND
Ethylbenzene	150	100	0.02	ND	0.001	ND
Xylenes	200	100	0.02	ND	0.001	ND
Acetone	1,000,000	100	0.2	ND	0.01	ND
Chloroethane	5,700	NP	0.4	ND	0.002	ND
cis-1,2-Dichloroethene	3,500	100	0.02	0.11	0.001	ND
Vinyl Chloride	2.7	0.6	0.04	ND	0.002	ND
2-Butanone	270,000	100	0.2	ND	0.01	ND
All other compounds	-	-	0.2	ND	-	ND

Notes

[1] = Source of Solubility values is Schwille, 1988. *Dense C*
Solvents in Porous and Fractured Media Model Expe
Lewis Publishers, Chelsea, Michigan 48118 and The N
Contingency Plan, 1995.
mg/l = milligrams per liter
J = Qualified as estimated during data validation review.
UJ = Qualified as estimated non detected during data valid
UCL = Upper Concentration Limits.
ND = Not Detected
NP = Not Published
NA = Not Analyzed
RDL = Reported Detection Limits.


N
LOWELL CONNECTOR
HOWARD STREET
TRIVAK, INC.
PRECISION MACHINING
AND WELDING
GZA-4
HEATING/
COOLING
UNIT
VE-3
SHED
RIVER MEADOWS BROOK
WOODED SLOPE TO STREAM
L'ENERGIA, L.P.
OFFICE/
LABORATORY
TRAILER
URS-3
CONCRETE
PAD
LOADING
DOCK
OFFICE/
DRUM STORAGE
AREA
NATURAL GAS LINE AND CONNECTIONS
TO SUBJECT PROPERTY
MW-4
CONCRETE PAD
ASPHALT
SCANNELL BOILER WORKS
LOWELL IRON AND STEEL
URS-2
MW-5
6" TO 12" WATER MAIN
TRAILER
COMPACTOR
PALLET PILE
URS-1
LOCKED
GATE
TANNER STREET
LOWELL MUNICIPAL SEWER
THE OLD LOWELL SHUTTLE SHOP
UNION SHEET METAL CO., INC.
LEGEND:
CHAIN LINK FENCE
AND PROPERTY BOUNDARY
MW-5
EXISTING GROUNDWATER MONITORING WELL
INSTALLED BY OTHERS PREVIOUS TO URS'
INVOLVEMENT WITH PROJECT
URS-1
GROUNDWATER MONITORING WELL INSTALLED
BY URS DURING PHASE II INVESTIGATION
SOURCE:
URS FIELD MEASUREMENTS SEPTEMBER 2000 AND OCTOBER 2000. SITE PLAN DETAILS FROM PREVIOUS REPORTS BY TRC AND BOSTON GAS COMPANY.
0
40
60
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SCALE, FEET
CLIENT: JONES ENVIRONMENTAL SERVICES, INC.
PROJECT: PHASE II MCP SITE INVESTIGATION
URS Corporation
TITLE: SITE PLAN
PROJECT NO: 46019-002
DESIGN: MLS
SCALE: 1"=40'
FIGURE NO: 1
APPROVED: GJC
DATE: 19-FEB-02
DRAWN: MLS
FILE NO: P031-REV