

EXHIBIT 10

Phase I Initial Site Investigation Report and Tier Classification

Release of #6 Fuel Oil

DEP Release Tracking Numbers: 3-20799, 3-20984, 3-21162

Pennoni Associates

June 13, 2002



**TIER CLASSIFICATION, TIER II EXTENSION &
TIER II TRANSFER TRANSMITTAL FORM**

Pursuant to 310 CMR 40.0510 and 40.0560 (Subpart E)

Release Tracking

3 - 20799

A. DISPOSAL SITE LOCATION:

Disposal Site Medfield State Hospital
Street: 45 Hospital Road Location Aid: Power Plant Facility
City/Town: Medfield ZIP 02052-0000
Related Release Tracking Numbers That This Submittal Will _____

B. THIS FORM IS BEING USED TO: (check all that apply)

- Submit a new or revised Tier Classification Submittal for a Tier I Site, including a Numerical Ranking Scoresheet (complete Sections A, B, C, I, J, K and L).
- Submit a new or revised Tier Classification Submittal for a Tier II Site, including a Numerical Ranking Scoresheet (complete Sections A, B, C, F, G, I, J, K and L).
- Submit a Notice that an additional Release Tracking Number(s) is (are) being linked to this Tier Classified Site and rescoring is not required at this time (complete Sections A, B, J, K and L). If this submittal is for a Tier I Site, you must also submit a Minor Permit Modification Transmittal Form (BWSC-109).

List Additional Release Tracking 3-20984 3-21162

- Submit a Phase I Completion Statement supporting a Tier Classification Submittal (complete Sections A, B, I, J, K and L).
- Submit a Tier II Extension Submittal for Response Actions at a Tier II Site (complete Sections A, B, D, F, G, I, J, K and L).
- Submit a Tier II Extension Submittal for Response Actions taken after expiration of a Waiver, pursuant to 310 CMR 40.0630(4) (complete Sections A, B, D, F, J, K and L, and also complete Sections G and I or Section H).*
- Submit a Tier II Transfer Submittal for a change in person(s) undertaking Response Actions at a Tier II Site (complete Sections A, B, E, F, G, I, J, K, L, M, N and O).
- Submit a Tier II Transfer Submittal for a change in person(s) undertaking Response Actions at a Waiver Site, pursuant to 310 CMR 40.0630(6) (complete Sections A, B, E, F, J, K, L, M, N and O, and also complete Sections G and I or Section H).*

You must attach all supporting documentation required for each use of form indicated, including copies of any Legal Notices and Notices to Public Officials required by 310 CMR 40.1400.

*NOTE: The Waiver expires on the effective date of this submittal and all further Response Actions must be taken as a Tier II Site.

C. TIER CLASSIFICATION SUBMITTAL:

Numerical Ranking Score for Disposal Site: (from Numerical Ranking 1.68

Proposed Tier Classification of Disposal Site: (check one) Tier IA Tier IB Tier IC Tier II

Check which, if any, of the Tier I inclusionary criteria are met by the Disposal Site, pursuant to 310 CMR 40.0520:

- Groundwater is located within an Interim Wellhead Protection Area or a Zone II, and there is evidence of groundwater contamination by an Oil or Hazardous Material at the time of Tier Classification at concentrations equal to or exceeding the applicable RCGW-1 Reportable Concentration set forth in 310 CMR 40.0360.
- An Imminent Hazard is present at the time of Tier Classification
- Check here if this Tier Classification revises a previous submittal for this Disposal Site. You must include a revised Numerical Ranking Scoresheet with this submittal. If a Tier I Permit has been issued, you may also need to submit a Major Permit Modification Application (BWSC 10).

If incorporating additional Release(s) into the Disposal Site, list Release Tracking _____

D. TIER II EXTENSION SUBMITTAL

State the expiration date of the Tier II Classification or Waiver for the Disposal Site, whichever is _____

Attach a statement summarizing why a Permanent or Temporary Solution has not been achieved at the Disposal Site. A Tier II Extension is effective for a period of one year beyond the current expiration date of the Tier II Classification or Waiver.

E. TIER II TRANSFER SUBMITTAL REQUIREMENTS:

State the proposed effective date of the change in person(s) undertaking Response Actions at the Disposal _____

Attach a statement summarizing the reasons for the proposed change in person(s) undertaking the Response Actions. All Response Actions must be completed by the deadline applicable to the person who first filed either a Tier Classification Submittal for the Disposal Site or received a Waiver of Approvals.



**TIER CLASSIFICATION, TIER II EXTENSION &
TIER II TRANSFER TRANSMITTAL FORM**

Pursuant to 310 CMR 40.0510 and 40.0560 (Subpart E)

Release Tracking
Number

3 - 20799

F. DISPOSAL SITE COMPLIANCE HISTORY SUMMARY:

- > If providing either a Tier Classification Submittal for a Tier II Site or a Tier II Extension Submittal for a Waiver Site the person named in Section J must provide a Compliance History.
- > If providing a Tier II Extension Submittal for a Tier II Site the person named in Section J must update their Compliance History since the effective date of the Tier II Classification.
- > If providing a Tier II Transfer Submittal for a Tier II or Waiver Site the person named in Section M must provide a Compliance History.

Compliance History for (provide only one name per Medfield State Hospital)

Check here if there has been no change to the Compliance History of the person named above (Extension Submittal for a Tier II Site ONLY).

List all permits or licenses that have been issued by the Department that are relevant to this Disposal Site:

PROGRAM:	PERMIT NUMBER:	PERMIT CATEGORY:	FACILITY ID:
Air Quality	None		
Hazardous Waste (M.G.L. c. 21C)	None		
Solid Waste	None		
Industrial Wastewater Management	None		
Water Supply	None		
Water Pollution Control/Surface Water	None		
Water Pollution Control/Groundwater	None		
Water Pollution Control/Sewer Connection	None		
Wetland & Waterways	None		

List all other Federal, state or local permits, licenses, certifications, registrations, variances, or approvals that are relevant to this Disposal Site:

ISSUING AUTHORITY OR PROGRAM, OR DOCUMENTATION TYPE:	IDENTIFICATION NUMBER:	DATE ISSUED:

If needed, attach to this Transmittal Form a statement further describing the Compliance History of this Disposal Site. This statement must describe the compliance history of the person named above with the following:

- (1) DEP regulations; and
- (2) other laws for the protection of health, safety, public welfare and the environment administered or enforced by any other government agency.

Such a statement should identify information such as:

- (1) actions relevant to the Disposal Site taken by the Department to enforce its requirements including, but not limited to, a Notice of Noncompliance (NON), Notice of Intent to Assess Civil Administrative Penalty (PAN), Notice of Intent to Take Response Action (NORA), and an administrative enforcement order;
- (2) administrative consent orders;
- (3) judicial consent judgements;
- (4) similar administrative actions taken by other Federal, state or local agencies;
- (5) civil or criminal actions relevant to the Disposal Site brought on behalf of the DEP or other Federal, state, or local agencies; and
- (6) any additional relevant information.

- (1) name of the issuing authority, type of action, identification number and date issued;
- (2) description of noncompliance cited;
- (3) current status of the matter; and
- (4) final disposition, if any.



**TIER CLASSIFICATION, TIER II EXTENSION &
TIER II TRANSFER TRANSMITTAL FORM**

Pursuant to 310 CMR 40.0510 and 40.0560 (Subpart E)

Release Tracking Number

3 - 20799

G. CERTIFICATION OF ABILITY AND WILLINGNESS:

- > If providing either a **Tier II Classification Submittal** or a **Tier II Extension Submittal**, the person who signs this certification **MUST** be the person named in **Section J**, or that person's agent.
- > If providing a **Tier II Transfer Submittal**, the person who signs this certification **MUST** be the person named in **Section M**, or that person's agent.

I attest under the pains and penalties of perjury that (i) I/the person(s) or entity(ies) on whose behalf this submittal is made has/have personally examined and am/is familiar with the requirements of M.G.L. c. 21E and 310 CMR 40.0000; (ii) based upon my inquiry of the/those Licensed Site Professional(s) employed or engaged to render Professional Services for the disposal site which is the subject of this Transmittal Form and of the person(s) or entity(ies) on whose behalf this submittal is made, and my/that person's(s') or entity's(ies') understanding as to the estimated costs of necessary response actions, that/those person(s) or entity(ies) has/have the technical, financial and legal ability to proceed with response actions for such site in accordance with M.G.L. c. 21E, 310 CMR 40.0000 and other applicable requirements; and (iii) that I am fully authorized to make this attestation on behalf of the person(s) or entity(ies) legally responsible for this submittal. I/the person(s) or entity(ies) on whose behalf this submittal is made is aware of the requirements in 310 CMR 40.0172 for notifying the Department in the event that I/the person(s) or entity(ies) on whose behalf this submittal is made learn(s) that I/they is/are unable to proceed with the necessary response actions.

By: [Signature] Title: Dpt. V. Comm. Man & Budget
(signature)

For: Department of Mental Health Date: 6/21/02
(print name of person or entity recorded in Section J or M, as appropriate)

If you are submitting either a Tier II Extension Submittal for a Waiver Site or a Tier II Transfer Submittal for a Waiver Site, you may choose to sign the alternative Ability and Willingness Certification found in Section H in place of providing the certification in Section G and the LSP Opinion in Section I.

H. ALTERNATIVE CERTIFICATION OF ABILITY AND WILLINGNESS:

- > If providing a **Tier II Extension Submittal for a Waiver Site**, the person who signs this certification **MUST** be the person named in **Section J**, or that person's agent
- > If providing a **Tier II Transfer Submittal for a Waiver Site**, the person who signs this certification **MUST** be the person named in **Section M**, or that person's agent.

I attest under the pains and penalties of perjury that (i) I/the person(s) or entity(ies) on whose behalf this submittal is made has/have personally examined and am/is familiar with the requirements of M.G.L. c. 21E and 310 CMR 40.0000; (ii) based upon my inquiry of the Consultant-of-Record for the disposal site which is the subject of this Transmittal Form and of the person(s) or entity(ies) on whose behalf this submittal is made, and my/that person's(s') or entity's(ies') understanding as to the estimated costs of necessary response actions, that/those person(s) or entity(ies) has/have the technical, financial and legal ability to proceed with response actions for such site in accordance with M.G.L. c. 21E, 310 CMR 40.0000 and other applicable requirements; and (iii) that I am fully authorized to make this attestation on behalf of the person(s) or entity(ies) legally responsible for this submittal. I/the person(s) or entity(ies) on whose behalf this submittal is made is aware of the requirements in 310 CMR 40.0172 for notifying the Department in the event that I/the person(s) or entity(ies) on whose behalf this submittal is made learn(s) that I/they is/are unable to proceed with the necessary response actions.

By: _____ Title: _____
(signature)

For: _____ Date: _____
(print name of person or entity recorded in Section J or M, as appropriate)

I. LSP OPINION:

I attest under the pains and penalties of perjury that I have personally examined and am familiar with this transmittal form, including any and all documents accompanying this submittal. In my professional opinion and judgment based upon application of (i) the standard of care in 309 CMR 4.02(1), (ii) the applicable provisions of 309 CMR 4.02(2) and (3), and (iii) the provisions of 309 CMR 4.03(5), to the best of my knowledge, information and belief,

> if Section B of this form indicates that a **Tier I or Tier II Classification Submittal** which relies upon a previously submitted Phase I Completion Statement is being submitted, this Tier Classification Submittal has been developed in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000;

> if Section B of this form indicates that a **Phase I Completion Statement** or a **Tier I or Tier II Classification Submittal** which does not rely upon a previously submitted Phase I Completion Statement is being submitted, the response action(s) that is (are) the subject of this submittal (i) has (have) been developed and implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and (iii) complies(y) with the identified provisions of all orders, permits, and approvals identified in this submittal;

SECTION I IS CONTINUED ON THE NEXT PAGE



**TIER CLASSIFICATION, TIER II EXTENSION &
TIER II TRANSFER TRANSMITTAL FORM**

Pursuant to 310 CMR 40.0510 and 40.0560 (Subpart E)

Release Tracking

Number

3 - 20799

I. LSP OPINION: (continued)

> if Section B of this form indicates that a Tier II Extension Submittal or a Tier II Transfer Submittal is being submitted, the response action(s) that is (are) the subject of this submittal (i) is (are) being implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and (iii) complies(y) with the identified provisions of all orders, permits, and approvals identified in this submittal.
I am aware that significant penalties may result, including, but not limited to, possible fines and imprisonment, if I submit information which I know to be false, inaccurate or materially incomplete.

Check here if the Response Action(s) on which this opinion is based, if any, are (were) subject to any order(s), permit(s) and/or approval(s) issued by DEP or EPA. If the box is checked, you MUST attach a statement identifying the applicable provisions thereof.

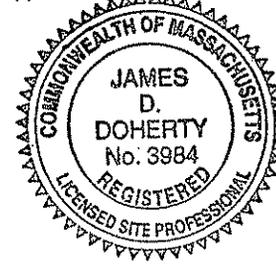
LSP Name: James Doherty LSP #: 3984 Stamp:

Telephone: 508-435-8080 Ext.: _____

FAX: 508-435-4351

Signature: [Handwritten Signature]

Date: 6/5/02



J. PERSON MAKING SUBMITTAL: (For Transfer Submittals describe person currently undertaking response actions, not transferee)

Name of Department of Mental Health

Name of Jeff McCue Title: Dpty. Comiss. Man & Budget

Street: 25 Staniford St

City/Town: Boston State: MA ZIP Code: 02114-0000

Telephone: 617-626-8000 Ext.: _____ FAX: _____

K. RELATIONSHIP TO DISPOSAL SITE OF PERSON MAKING SUBMITTAL: (check one)

RP or PRP Specify Owner Operator Generator Transporter Other RP or PRP: _____

Fiduciary, Secured Lender or Municipality with Exempt Status (as defined by M.G.L. c. 21E, s. 2)

Agency or Public Utility on a Right of Way (as defined by M.G.L. c. 21E, s. 5(j))

Any Other Person Making Submittal Specify _____

L. CERTIFICATION OF PERSON MAKING SUBMITTAL:

I, Jeff McCue, attest under the pains and penalties of perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form, (ii) that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained in this submittal is, to the best of my knowledge and belief, true, accurate and complete, and (iii) that I am fully authorized to make this attestation on behalf of the entity legally responsible for this submittal. I/the person or entity on whose behalf this submittal is made am/is aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

By: [Handwritten Signature] Title: Dpty. Comiss. Man & Budget
(signature)

For: Department of Mental Health Date: 6/05/02
(print name of person or entity recorded in Section J)

Enter address of the person providing certification(s), including Ability and Willingness Certification where applicable, if different from address recorded in Section J:

Street: _____

City/Town: _____ State: _____ ZIP Code: _____

Telephone: _____ Ext.: _____ FAX: _____

YOU MUST COMPLETE ALL RELEVANT SECTIONS OF THIS FORM OR DEP MAY RETURN THE DOCUMENT AS INCOMPLETE. IF YOU SUBMIT AN INCOMPLETE FORM, YOU MAY BE PENALIZED FOR MISSING A REQUIRED DEADLINE, AND YOU MAY INCUR ADDITIONAL COMPLIANCE FEES.



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC-103

Release Tracking Number

RELEASE NOTIFICATION & NOTIFICATION RETRACTION FORM
Pursuant to 310 CMR 40.0335 and 310 CMR 40.0371 (Subpart C)

-
If assigned by DEP

A. RELEASE OR THREAT OF RELEASE LOCATION:

Street: 45 Hospital Road Location Aid: Power Plant Facility
City/Town: Medfield ZIP Code: 02052

B. THIS FORM IS BEING USED TO: (check one)

- Submit a Release Notification (complete all sections of this form).
 Submit a Retraction of a Previously Reported Notification of a Release or Threat of Release (complete Sections A, B, E, F and G of this form). You MUST attach the supporting documentation required by 310 CMR 40.0335.

C. INFORMATION DESCRIBING THE RELEASE OR THREAT OF RELEASE (TOR):

Date and time you obtained knowledge of the Release or TOR. Date: 6/14/01 Time: _____ Specify: AM PM

The date you obtained knowledge is always required. The time you obtained knowledge is not required if reporting only 120 Day Conditions.

IF KNOWN, record date and time release or TOR occurred. Date: _____ Time: _____ Specify: AM PM

Check here if you previously provided an Oral Notification to DEP (2 Hour and 2 Hour Reporting Conditions only).
Provide date and time of Oral Notification. Date: _____ Time: _____ Specify: AM PM

Check all Notification Thresholds that apply to the Release or Threat of Release: (for more information see 310 CMR 40.0310 - 40.0315)

- | 2 HOUR REPORTING CONDITIONS | 72 HOUR REPORTING CONDITIONS | 120 DAY REPORTING CONDITIONS |
|--|---|--|
| <input type="checkbox"/> Sudden Release | <input type="checkbox"/> Subsurface Non-Aqueous Phase Liquid (NAPL) Equal to or Greater than 1/2 Inch | <input type="checkbox"/> Release of Hazardous Material(s) to Soil or Groundwater Exceeding Reportable Concentration(s) |
| <input type="checkbox"/> Threat of Sudden Release | <input type="checkbox"/> Underground Storage Tank (UST) Release | <input checked="" type="checkbox"/> Release of Oil to Soil Exceeding Reportable Concentration(s) and Affecting More than 2 Cubic Yards |
| <input type="checkbox"/> Oil Sheen on Surface Water | <input type="checkbox"/> Threat of UST Release | <input type="checkbox"/> Release of Oil to Groundwater Exceeding Reportable Concentration(s) |
| <input type="checkbox"/> Poses Imminent Hazard | <input type="checkbox"/> Release to Groundwater near Water Supply | <input type="checkbox"/> Subsurface Non-Aqueous Phase Liquid (NAPL) Equal to or Greater than 1/8 Inch and Less than 1/2 Inch |
| <input type="checkbox"/> Could Pose Imminent Hazard | <input type="checkbox"/> Release to Groundwater near School or Residence | |
| <input type="checkbox"/> Release Detected in Private Well | | |
| <input type="checkbox"/> Release to Storm Drain | | |
| <input type="checkbox"/> Sanitary Sewer Release (Imminent Hazard Only) | | |

List below the Oils or Hazardous Materials that exceed their Reportable Concentration or Reportable Quantity by the greatest amount. If necessary, attach a list of additional Oil and Hazardous Material substances subject to reporting.

Name and Quantities of Oils (O) and Hazardous Materials (HM) Released:

O or HM Released	O HM (check one)	CAS # (if known)	Amount or Concentration	Units	Reportable Concentrations Exceeded, if Applicable (RCS-1, RCS-2, RCGW-1, RCGW-2)
C9-C18 Aliphatics	<input checked="" type="checkbox"/> <input type="checkbox"/>		1,370	mg/kg	RCS-1, RCGW-2
C19-C36 Aliphatics	<input checked="" type="checkbox"/> <input type="checkbox"/>		5,490	mg/kg	RCS-1, RCGW-2
C11-C22 Aromatics	<input checked="" type="checkbox"/> <input type="checkbox"/>		5,790	mg/kg	RCS-1, RCGW-2

D. ADDITIONAL INVOLVED PARTIES:

- Check here if attaching names and addresses of owners of properties affected by the Release or Threat of Release, other than an owner who is submitting this Release Notification (required).
 Check here if attaching Licensed Site Professional (LSP) name and address (optimal).

You may write in names and addresses on the bottom of the second page of this form.



RELEASE NOTIFICATION & NOTIFICATION RETRACTION FORM Pursuant to 310 CMR 40.0335 and 310 CMR 40.0371 (Subpart C)

-
If assigned by DEP

E. PERSON REQUIRED TO NOTIFY:

Name of Organization: Department of Mental Health
Name of Contact: William Corliss Title: Director of Facilities Management
Street: 25 Staniford Street
City/Town: Boston State: MA ZIP Code: 02114
Telephone: 617-626-8049 Ext.: _____ FAX: (optional) _____

F. RELATIONSHIP OF PERSON REQUIRED TO NOTIFY TO RELEASE OR THREAT OF RELEASE: (check one)

- RP or PRP Specify: Owner Operator Generator Transporter Other RP or PRP: _____
- Fiduciary, Secured Lender or Municipality with Exempt Status (as defined by M.G. c. 21E, s. 2)
- Agency or Public Utility on a Right of Way (as defined by M.G.L. c. 21E, s. 5j)
- Any Person Otherwise Required to Notify Specify Relationship: _____

G. CERTIFICATION OF PERSON REQUIRED TO NOTIFY:

I, William Corliss, attest under the pains and penalties of perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form, (ii) that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained in this submittal is, to the best of my knowledge and belief, true, accurate and complete, and (iii) that I am fully authorized to make this attestation on behalf of the entity legally responsible for this submittal. I/the person or entity on whose behalf this submittal is made/am/is aware that there are significant penalties, including, but not limited to possible fines or imprisonment, for willfully submitting false, inaccurate, or incomplete information.

By: *William Corliss* Title: Director of Facilities Management
(signature)
For: William Corliss Date: 10/4/01
(print name of person or entity recorded in Section E)

Enter address of the person providing certification, if different from address recorded in Section E:
Street: _____
City/Town: _____ State: _____ ZIP Code: _____
Telephone: _____ Ext.: _____ FAX: (optional) _____

YOU MUST COMPLETE ALL RELEVANT SECTIONS OF THIS FORM OR DEP MAY RETURN THE DOCUMENT AS INCOMPLETE. IF YOU SUBMIT AN INCOMPLETE FORM, YOU MAY BE PENALIZED FOR MISSING A REQUIRED DEADLINE.

NAMES and QUANTITIES of OILS RELEASED:

2-Methylnaphthalene	53.3 mg/kg	RCS-1, RCGW-2
C9-C10 Aromatics	240 mg.kg	RCS-1, RCGW-2
Naphthalene	20.8 mg/kg	RCS-1, RCGW-2



PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS

82 South Street

Hopkinton, MA 01748-2205

Tel: 508•435•8080

Fax: 508•435•4351

**PHASE I INITIAL SITE INVESTIGATION REPORT
AND
TIER CLASSIFICATION**

RELEASE OF #6 FUEL OIL

DEP RELEASE TRACKING NUMBERS: 3-20799, 3-20984, 3-21162

**MEDFIELD STATE HOSPITAL
45 HOSPITAL ROAD
MEDFIELD, MASSACHUSETTS**

Pennoni Project # DOMH0201.01

Prepared For:

The Commonwealth of Massachusetts
Department of Mental Health
25 Staniford Street
Boston, MA 02114

Prepared By:

Pennoni Associates Inc.
82 South Streets
Hopkinton, MA 01748

June 13, 2002

Wm. Gardner Warr
Project Scientist

James Doherty, P.E., L.S.P.
Senior Engineer

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1.0 INTRODUCTION

1.1 General Introduction

Pennoni Associates Inc. (Pennoni) was retained by the Department of Mental Health to conduct a Phase I Initial Site Investigation (Phase I ISI) relative to a release of #6 fuel oil in the vicinity of the Power Plant facility at the Medfield State Hospital (MSH) facility in Medfield, Massachusetts (the subject property). The Massachusetts Department of Environmental Protection (DEP) has issued release tracking numbers 3-20799, 3-20984, and 3-21162 to track reportable conditions at the subject property. The disposal site location is shown on Figure 1 (Site Location Map). The area of the former release, herein after referred to as the disposal site, is shown on Figure 2 (Disposal Site Plan).

This Phase I ISI Report was prepared in support of Tier Classification, and in accordance with the requirements presented in the Massachusetts Contingency Plan (MCP), 310 CMR 40.0000. Preparation of this document was authorized by the Department of Mental Health, 25 Staniford Street, Medfield, MA 02114. The Department of Mental Health assumed responsibility for completion of the Phase I ISI.

The results of this Phase I ISI indicate that: (1) a release of oil and petroleum related hazardous materials, as defined by the MCP, has occurred at the disposal site, (2) further investigation is necessary to evaluate the extent of soil and groundwater contamination, (3) oil contaminated soil exists in the vicinity of the three 30,000-gallon underground storage tanks (USTs). A Conceptual Scope of Work has been included in accordance with the MCP, Section 310 CMR 40.0510(1)(e).

1.2 Summary of Release Incident

In late May 2001, closure of two underground storage tanks (USTs), identified as Tank #2 and Tank #3, was conducted under the oversight of Pennoni. The original scope of work included removal of tank sludge, triple-rinsing the tank interiors, and filling the tanks with concrete slurry. On June 1, 2001, during UST closure activities, soil samples were collected from the pea gravel beneath Tank#2 and Tank#3 and analyzed for volatile petroleum hydrocarbons (VPH - DEP, 1998) and extractable petroleum hydrocarbons (EPH - DEP, 1998). Analytical results indicate that petroleum hydrocarbons, specifically: petroleum aliphatics and aromatics; 2-methylnaphthalene; and naphthalene were detected in soil samples collected beneath the tanks at levels which exceeded DEP Reportable Concentrations. A written notification for this release was provided to DEP on October 3, 2001. Release Tracking Number 3-21162 was assigned to this release.

On June 15, 2001, Pennoni gauged eight previously installed monitoring wells located along the perimeter of the USTs utilizing dedicated disposable bailers. Inspection of the observation well located at the west end of Tank #2 indicated the presence of viscous non-aqueous phase liquid (NAPL) (i.e. No.6 fuel oil), approximately 14 inches in thickness at a depth of about 11 feet. While two other wells had 3 to 4 inches of water, no other wells indicated the presence of free product. Well gauging results are presented in Table 1.

In accordance with the MCP, verbal notification of the release was submitted to Chris Bresnahan of the DEP at 12:08 p.m. on June 15, 2001. At that time, Release Tracking Number 3-20799 was assigned to the release. The time of the release and the quantity of the release are not known. An IRA Plan, dated August 13, 2001, was submitted to the DEP for assessment actions to be completed in the vicinity of the release (RTN 3-20799).

On August 6, 2001, Pennoni performed a tank tightness test on Tank #1. This tank failed the tightness test. In accordance with the MCP, verbal notification of the threat of release was submitted to Brad Stewart of the DEP at 2:45 p.m. on August 8, 2001. At that time, Release Tracking Number 3-20984 was assigned to the tank tightness test failure.

On July 24, 2001, the DMH directed the closure of Tank #2 and Tank #3 be completed, pursuant to 527 CMR 9.00 *Tanks and Containers*. Both tanks were filled in-place with concrete slurry. Closure activities were completed on August 3, 2001. An IRA Plan, dated October 3, 2001, was submitted to the DEP for assessment actions to be completed around Tanks #2 and #3 (RTN 3-20984).

1.3 Tier Classification

As discussed in Section 11, a Numerical Ranking System Score Sheet was completed for the disposal site, and a score of 168 was calculated. Thus, pursuant to 40.0530 (5) the disposal site is classified as a Tier II disposal site.

2.0 SCOPE OF WORK

The objectives of the Phase I ISI were to investigate the release of oil and/or hazardous material (OHM), to make an initial determination of the extent and magnitude of contamination, to collect sufficient information to Tier Classify the site and to address any additional requirements of the MCP. Subsurface investigation activities included the collection of soil and groundwater samples for laboratory analysis of EPH and VPH. Groundwater monitoring well locations and tank observation well locations had been previously installed by Corporate Environmental Engineering during the investigation of an earlier release as detailed in Section 4. Pennoni gauged the wells for depths to water and NAPL, and analysis of piezometric head elevations across the disposal site to determine the direction of shallow groundwater flow. Pennoni has summarized our findings in this Phase I ISI.

3.0 GENERAL DISPOSAL SITE INFORMATION

DEP Site Numbers addressed by this Phase I ISI: 3-20799, 3-20984, and 3-21162

Address and Geographic Location:

- Property and Disposal Site Address: 45 Hospital Road, Medfield, Massachusetts

- Latitude (NAD 27): N 42° 12' 48" Longitude: W 71° 20' 21"
- UTM(NAD 27): 4,675,883 m N 19 306,925 m E
- County: Norfolk
- Property Owner: Commonwealth of Massachusetts
- Zoning: Exempt - State Land
- USGS Topographic Quadrangle: Medfield, Massachusetts (1987, 1:25,000)

Subject Property Description: The Medfield State Hospital property consists of approximately 400 acres of land. The main hospital complex, including the disposal site, contains approximately 75 acres of developed land occupied by 42 brick buildings and associated roadways, paved parking, and landscaped areas. Most of these buildings are unoccupied. The remaining area consists of undeveloped land including forested areas, wetlands, grass meadow areas, and abandoned agricultural land. The MSH is located approximately 2 miles north of the center of Medfield near the Sherborn town line. The subject property is located on the north side of Hospital Road and is accessed from Route 27.

The Power Plant consists of a two-story brick building which houses four decommissioned oiled-fired boilers that historically were used to produce steam for the Hospital. In September 2001, two boilers were emplaced over the location of the abandoned UST's. Prior to this, one temporary boiler had been providing steam to the facility since the boiler inside the power plant had been structurally condemned.

The steam is used to heat the buildings, laundry, and kitchens on the MSH facility. This Power Plant building has a variety of other ancillary equipment including, but not limited to, electric switch gears, drums of chemicals for the boiler lines, machine shop equipment, and recording and monitoring equipment. The drums of chemicals consist of antiscaling agents used to keep the boiler lines clear. There have been no reports of releases of hazardous materials from the Power Plant building.

On November 5, 2001, a 12,000-gallon capacity above ground storage tank was installed adjacent to the UST pad area. This tank was installed by the Department of Mental Health under the direction of the Department of Capital Asset Management, Commonwealth of Massachusetts.

Disposal Site Description: The disposal site is located on the Medfield State Hospital grounds, northwest of the power house building (see Figure 2). The presence of #6 fuel oil in the subsurface material surrounding three 30,000-gallon USTs was detected after two of the tanks failed tightness tests. The USTs stored oil that was used originally by the oil fired burners housed in the power plant facility. The disposal site includes any subsurface soil and groundwater containing petroleum related OHM resulting from the subsurface release of petroleum related OHM.

The disposal site is located on the northwest portion of the MSH facility grounds near the topographical lowest elevation of the facility. The topography of the site slopes downward from the south to the north and west toward the Charles River which is approximately 500 feet to the north of

the Power Plant. Low brush, vegetation, and trees cover the ground between the site and the Charles River.

Based on the results of the soil and groundwater sampling the extent of petroleum contamination at the site is quite limited. Thus, although comprehensive wetland delineation has not been performed for this site, it is unlikely that any wetlands are located within 100 feet of the site. A concrete slab covers the portion of the disposal site where the release occurred. Areas adjacent to the concrete slab which may contain petroleum-related OHM are covered with asphalt pavement. Land surrounding the disposal site to the north, east, and south is unpaved and includes lawn and wooded land. Land immediately to the west of the disposal site is paved, and further is wooded and open field.

Estimated Number of On-Site Workers: MSH Staff is typically on the property between 8:00 AM and 5:00 PM Monday through Friday, and has an 8-hour workday, 5 days per week. Facility personnel would also be considered frequent visitors to the disposal site. Based on information available from MSH, the Power Plant is staffed with 8 full time employees and one part time employee. Hospital patients are not located within 500 feet of the disposal site. The disposal site is primarily used as a steam generation facility, parking lot and UST installation, and thus no persons are present on a full time basis.

Estimated Residential Population: The estimated population within a one-half mile radius of the disposal site is less than 200 persons. This estimate is based on the U.S. Geological Survey Map for Medfield (USGS, 1987) assuming 3 individuals per residence.

Surrounding Properties: The Power Plant is located within the MSH complex. As such, the properties in the surrounding vicinity are institutional in nature. The power plant facility personnel utilize the building adjacent to the disposal site. Several residences are located on Evergreen way and Longmeadow Road to the east of the hospital facility in an upgradient direction. In general, the Medfield State Hospital is located in an undeveloped portion of Medfield.

Institutions: The disposal site is located on the Medfield State Hospital property, which is an institution. There are no other known institutions located within 500 feet of the disposal site.

Surface Water Bodies: The nearest surface water body is the Charles River, which is located approximately 500 feet to the northwest of the disposal site. According to the MassGIS Site Scoring Map for the location of the disposal site, dated July 17, 2001 (included as Figure 3), wetlands are located near the disposal site to the west and southwest.

Water Supplies: According to the MassGIS Site Scoring Map dated July 17, 2001, one public water supply well is located approximately 2/3 of a mile west of the disposal site. The boundary of the Approved Zone 2 area for this well is approximately 350 feet from the disposal site. According to Ms. Mary Luciano of the Town of Medfield Water and Sewer Department, this well is currently in use as a public water supply well for the Town of Medfield.

Other Environmental Resources: According to the MassGIS Site Scoring Map, the border of an area of Protected Open Space is located approximately 100 feet from the disposal site. The MassGIS Site Scoring Map indicates the disposal site is located within a Potentially Productive Aquifer. There are no Areas of Critical Environmental Concern located within a ½ mile radius of the disposal site.

4.0 DISPOSAL SITE HISTORY

A review of the property and disposal site histories was conducted using the following sources: on-site inspection of the property, review of Commonwealth of Massachusetts regulatory agency file information, municipal file information, and interviews with Medfield Power Plant personnel.

Pennoni also referenced a Phase I Report prepared by Corporate Environmental Engineering, Inc., dated May, 1997 and the Response Action Outcome Completion Statement by Camp Dresser & McKee, Inc., dated December 28, 1998. These documents were produced as part of investigations related to an earlier release in the area (RTN-3-0001684).

4.1 Owner/Operator and Operations History

According to the Phase I Site Investigation report prepared by Corporate Environmental Engineering (CEE) in 1997, the property was operated as a psychiatric treatment center which was known as the Medfield Insane Asylum since May 1896. Previously, the land that the hospital facility now occupies was farm land known as "Castle Hill".

The current Power Plant was originally built in 1930. At the time of its construction the power plant housed three coal-fired boilers that produced steam. In 1957, the boilers were converted to burn #6 fuel oil and one 30,000 gallon steel fuel oil UST was installed. The other two of the original three 30,000 gallon steel UST's were installed in 1961. The three original #6 oil USTs remained in place until 1990.

In 1990, the three original USTs were removed and replaced with three double-walled steel 30,000-gallon "STI-P3" USTs with cathodic protection systems, high volume alarms, spill prevention devices and interstitial leak monitors.

In May 2001, abandonment, in place of two of the three UST's was initiated following the tank tightness failures of both tanks (Tank 2 and Tank 3). Prior to abandonment, the two tanks were evacuated of all liquid petroleum and sludge, cleaned, and filled with concrete slurry. In November 2001, the third UST (Tank 1) was abandoned in place by the same methods following a tank tightness test failure.

4.2 Release History

In late May 2001, closure of two USTs, identified as Tank #2 and Tank #3, was conducted under the oversight of Pennoni. The original scope of work included removal of tank sludge, triple-rinsing the

tank interiors, and filling the tanks with concrete slurry. On June 1, 2001, during UST closure activities, soil samples were collected from the pea gravel beneath Tank#2 and Tank#3 and analyzed for VPH and EPH by the DEP methods. Analytical results indicated that aliphatic and aromatic hydrocarbons, 2-methylnaphthalene, and naphthalene, were detected in soil samples collected beneath the tanks at levels which exceeded DEP Reportable Concentrations. A written notification was provided to DEP on October 3, 2001. Release Tracking Number 3-21162 was assigned to this release.

On June 15, 2001, Pennoni gauged eight previously installed monitoring wells located along the perimeter of the USTs utilizing dedicated disposable bailers. Inspection of the observation well located at the west end of Tank #2 indicated the presence of viscous non-aqueous phase liquid (NAPL) (i.e. No.6 fuel oil), approximately 14 inches in thickness at a depth of about 11 feet. While two other wells had 3 to 4 inches of water, no other wells indicated the presence of free product. Well gauging results are presented in Table 1.

In accordance with the MCP, verbal notification of the release was submitted to Chris Bresnahan of the DEP at 12:08 p.m. on June 15, 2001. At that time, Release Tracking Number 3-20799 was assigned to the release. The time of the release and the quantity of the release are not known. An IRA Plan, dated August 13, 2001, was submitted to the DEP for assessment actions to be completed in the vicinity of the release (RTN 3-20799).

On August 6, 2001, Pennoni performed a tank tightness test on Tank #1. This tank failed the tightness test. In accordance with the MCP, verbal notification of the threat of release was submitted to Brad Stewart of the DEP at 2:45 p.m. on August 8, 2001. At that time, Release Tracking Number 3-20984 was assigned to the tank tightness test failure.

On July 24, 2001, the DMH directed the closure of Tank #2 and Tank #3 be completed, pursuant to 527 CMR 9.00 *Tanks and Containers*. Both tanks were filled in-place with concrete slurry. Closure activities were completed on August 3, 2001. An IRA Plan, dated October 3, 2001, was submitted to the DEP for assessment actions to be completed around Tanks #2 and #3 (RTN 3-20984).

IRA Completion statements were submitted for both IRAs on April 18, 2002. Among the IRAs conclusions were that:

- No imminent hazards have been identified per 310 CMR 40.0320.
- No critical exposure pathways were identified.
- Groundwater sampling results over a 5-month period indicate groundwater petroleum concentrations have stabilized.

As indicated on the Transmittal Form accompanying this report, (BWSC 107A), this Phase I is being used to combine 3 site related RTN's into a single tracking number and schedule. Future response

actions will be performed under RTN 3-20799, the other two RTN's will be identified as related tracking numbers in future submittals.

4.3 Oil and/or Hazardous Material Use and Storage History

No additional information regarding OHM use and storage on or in the vicinity of the disposal site has been identified at the Town of Medfield Fire Department, or other municipal offices. However, based on information obtained from the MSH facility personnel, small amounts of hazardous materials (e.g. cleaning agents, solvents, and lubrication oils) may be stored and used in the Power Plant building which is situated next to the disposal site. Petroleum fuels including #2 fuel oil and #6 fuel oil have been stored and used at, and in the immediate vicinity of, the disposal site since 1957. Currently there is a 10,000-gallon #2 fuel oil aboveground storage tank (AST) located on the concrete pad directly above the closed USTs.

4.4 Waste Management History

Information on file with the Northeastern Regional Office of the DEP in Wilmington indicates that there have been at least two reported releases of #6 fuel oil. According to limited information from copies of correspondence on file, there were two oil spills in the late 1970's. These releases were cleaned up and the oil-impacted debris placed in clay lined burial pits located on the MSH property under the supervision of the Commonwealth of Massachusetts Water Resources Commission. According to facility personnel, these burial pits were closed by plastic coverings and additional clay lining over the plastic. Based on available information, the clay burial pits are still located on the property, and have been undisturbed since their completion. A 1978 letter from the Massachusetts Water Resources Commission to the Medfield State Hospital indicating Final Conditions for Closure of this disposal site is included in Appendix A.

During UST removal and replacement activities in 1990, approximately 3,669 tons of petroleum-contaminated soil was excavated from the vicinity of the Power Plant. According to the LSP Evaluation Opinion Report prepared by Corporate Environmental Engineering Inc., dated May 1997, all of the contaminated soil removed from the Power Plant area was recycled on site for use as asphalt pavement by United Retek Corp. utilizing a batch pugmilling process.

One drum of oily wastes was generated during NAPL thickness investigation and groundwater sampling activities performed by Pennoni in 2001. The drum was transported by Cyn Oil Corporation and disposed as oily wastes at their licensed facility in Stoughton, Massachusetts. During the closure and abandonment activities for Tank 1, approximately 1,200 gallons of #2 fuel oil, sludge and water (including rinse water) was transferred from Tank #1 to a tanker truck for off-site disposal at Cyn's TSD facility in Stoughton, MA.

4.5 Environmental Permits and Compliance History

The most recent oil releases involved the discovery of product loss from one of the USTs in 1988.

This discovery led to the removal and replacement of all three of the tanks. The DMH received a Notice of Responsibility (NOR) letter from the DEP dated April 20, 1989. This NOR letter addressed contamination attributed to the former USTs. The next DEP action involved placing the site on the Location to be Investigated (LTBI) List in January 15, 1990. In 1997 the site was placed on the LTBI Default List and Classified as Tier 1B. The RTN was subsequently closed by CDM with a Response Action Outcome Submittal dated December 28, 1998.

5.0 SUBSURFACE INVESTIGATION

Subsurface investigation activities conducted on the disposal site have included advancement of test borings, installation of groundwater monitoring wells, collection and analysis of soil and groundwater samples, and evaluation of shallow groundwater flow characteristics. A majority of the subsurface investigations were conducted by CEE in 1997, including the test boring advancement and monitoring well installation activities. For the purposes of this Phase I ISI, Pennoni utilized the existing monitoring wells to evaluate current groundwater conditions, and to evaluate groundwater flow characteristics. In addition, pea-stone backfill samples collected through the bottom of the USTs during closure activities were utilized for source characterization purposes.

5.1 Test Boring Advancement and Soil Sampling

On March 17 and 18, 1997, CEE conducted a test boring investigation of the disposal site. TDS Drilling Services of Leominster, Massachusetts advanced a total of (9) test borings in downgradient locations around the UST area utilizing a truck mounted hollow-stem auger drill rig. Split-spoon samples were collected from each boring at two-foot intervals beginning at depths of 3 to 5 feet below existing grade, and continued to the bottom of each boring which ranged from 9 to 14 feet below existing grade. Soil samples were classified by CEE for lithologic purposes, using a modified Burmister Soil Classification System. The borings ranged from 12 to 22 feet below ground surface (bgs). Copies of the CEE test boring logs and monitoring well installation details are included in Appendix B.

On April 29, 1997, CEE conducted a supplemental test boring investigation of the disposal site. TDS Drilling Services advanced a total of (2) test borings in downgradient locations around the UST area utilizing a truck mounted hollow-stem auger drill rig. Split-spoon samples were collected from each boring at two-foot intervals beginning at depths of 3 to 5 feet below existing grade, and continued to the bottom of each boring which ranged from 9 to 14 feet below existing grade. Soil samples were classified by CEE for lithologic purposes, using a modified Burmister Soil Classification System. The borings ranged from 21 to 24 feet bgs.

Fill materials consisting of coal ash and broken brick intermixed with gravelly sands were encountered in each of the borings from the ground surface to a depth of approximately 15 feet bgs. Natural soil encountered below the fill material consisted mainly of silt with trace amounts of clay to a depth of 18 feet bgs. Underlying the fine sand and silt in most of the borings was a layer of cobbles to a depth of approximately 22 feet bgs. Upon completion of the drilling activities soil borings in

which monitoring wells were not installed were backfilled with soil cuttings.

Split spoon soil samples collected during soil boring advancement were field screened for volatile organic compounds (VOC) using a photoionization detector (PID) and the jar-headspace screening method. Based on review of the field screening data, PID readings ranged from non-detect to 14.7 parts per million by volume (ppmv). Field headspace screening results are included on the CEE test boring logs and monitoring well completion details included in Appendix B.

5.2 UST Decommissioning Soil Sampling and Analysis

On June 1, 2001, during the closure of Tanks #2 and #3, soil samples were collected from the materials below the two USTs by Pennoni and screened for the presence of volatile compounds using a PID. The instrument was calibrated to isobutylene as a benzene standard for the measurement of volatile vapors on a ppmv basis. The screening was performed in accordance with the DEP Headspace Screening Protocol. Headspace gas concentrations detected from soil samples collected ranged from <1.0 ppmv to 28.0 ppmv.

A total of three soil samples were collected from these locations and analyzed for EPH and VPH by the DEP method. The material encountered below the USTs was pea gravel, which was saturated with fuel oil. Analytical results indicated that aliphatic hydrocarbons, aromatic hydrocarbons, 2-methylnaphthalene, and naphthalene were detected in the soil beneath the tanks at concentrations exceeding DEP Reportable Concentrations.

Between November 26 and 28, 2001, the UST closure activities were conducted for Tank 1 at the site by Cyn Environmental (Cyn) of Stoughton, Massachusetts. Environmental oversight and soil testing during the closure activities were conducted by Pennoni in accordance with the Massachusetts MCP.

During the closure activities, Pennoni gauged nearby wells and determined that groundwater ranged from 13.4 to 13.9 feet below grade. The inside depth to the bottom of the tank was measured at 12.4 feet. Thus, the water level measured in the observation wells was below the bottom of the tank. Approximately one foot of water was identified within the interstitial space (between the inner and outer walls) of the tank. Thus, it appears the water in the interstate space was water that infiltrated into the tanks from above.

During the closure of Tank #1, Cyn cut through the end caps on the east and west end of the tanks, soil samples were collected from the materials outside of the UST. A total of two soil samples were collected and analyzed for Extractable Petroleum Hydrocarbons (EPH) and Volatile Petroleum Hydrocarbons (VPH) by DEP methods. The material (pea stone) encountered below the west end of the UST was saturated with fuel oil. No obvious contamination was observed in the sample collected from the east end of the tank. Table 2 presents a summary of the soil analytical results. A copy of the laboratory analytical results are included Appendix C.

5.3 Monitoring Well Installation

On March 18, 1997, CEE oversaw the installation of (4) monitoring wells in selected test boring locations. Monitoring wells were installed in the following test borings: MW-1 in B-2, MW-2 in B-3, MW-3 in B-5, and MW-4 in B-7. Monitoring wells were installed topographically downgradient of the UST area for monitoring purposes. Groundwater was encountered in the monitoring wells at depths ranging from 7 to 15 feet bgs.

On April 29, 1997, CEE oversaw the installation of (2) monitoring wells in selected test boring locations. Monitoring wells were installed in the following test borings: MW-5 in B-10, and MW-6 in B-11. Monitoring wells were installed topographically downgradient of the UST area for monitoring purposes.

The CEE Report provides the following details regarding completion of the wells. Monitoring wells are constructed of 2-inch diameter, schedule 40, threaded PVC materials. A 10-foot length of 0.01-inch machine slotted well screen was set at the bottom of each borehole across the observed water table. Solid PVC riser extends to the ground surface. The annular space around the screen section was backfilled with #1 sand to a depth of 1-foot above the top of the screen section. A 1-foot thick bentonite seal was placed above the sand pack. The remaining annular space was grouted with a cement/bentonite mixture. Each well was completed with a valve box set flush with the pavement.

On June 8, 2000, wellhead (top of PVC riser) elevations were surveyed by Pennoni relative the NGVD, using standard survey and leveling methods.

5.4 Monitoring Well Gauging and Groundwater Flow Direction

On June 15, 2001, Pennoni gauged all eight wells with a bailer. Inspection of the observation well located at the west end of Tank #2 (OW-2) indicated the presence of non-aqueous phase liquid (NAPL) (i.e. No.6 fuel oil), approximately 14 inches in thickness at a depth of about 11 feet.

On June 21, 2001, Pennoni gauged and collected groundwater samples from all monitoring wells, MW-1 through MW-6. Depth to water and NAPL thicknesses were measured to the nearest 0.01 feet at the six groundwater monitoring wells and the three tank observation wells. The locations of the wells are shown on Figure 2 (Site Plan).

On November 7, 2001, Pennoni gauged monitoring wells, MW-2, MW-4 and MW-5 and all observation wells. NAPL was observed in three of the observation wells, OW-1, OW-2, and OW-3. The NAPL observed in wells OW-1, and OW-3 consisted of small amounts of black viscous oil coating portions of the oil/water indicator probe and was measured at depths of 12.35 feet and 11.99 feet below ground surface, respectively. Due to the nature of the NAPL and the small amount

present, it was not possible to measure the NAPL thickness in the wells, however, based on the field observations, the thickness of NAPL in the wells was estimated to be 0.02 feet.

The NAPL observed in well OW-2 (at a depth of 12.5 feet below ground surface, at a thickness of approximately 0.75 feet) was also black viscous oil, which coated the entire oil/water indicator probe. Water and NAPL gauging measurements are presented in Table 1. NAPL was detected in observation wells, OW-1 and OW-3 for the first time during this sampling event. These observations may indicate continuing migration of NAPL #6 fuel oil near the tanks. NAPL was not detected in any of the other observation or monitoring wells.

5.5 Groundwater Sampling and Analysis

On June 21, 2001, Pennoni collected groundwater samples from all monitoring wells, MW-1 through MW-6, and submitted for laboratory analysis of VPH and EPH. Concentrations of aliphatic hydrocarbons, aromatic hydrocarbons and ethylbenzene were detected in the groundwater sample collected from monitoring well MW-2 at concentrations well below the applicable Method 1 GW-2 and GW-3 standards. Groundwater analytical results are summarized in Figure 4 and Table 3. A copy of the laboratory report is provided in Appendix D.

On November 7, 2001, Pennoni attempted to collect a round of groundwater samples from monitoring wells in the vicinity of the disposal site. Monitoring wells MW-4 and MW-5 did not have sufficient water volume for sample collection. Groundwater was purged from monitoring well MW-2 utilizing a disposable polyethylene bailer. Due to low recharge rates, it was necessary to allow MW-2 to recharge for approximately 24 hours after standing water in the well was removed. On November 8, 2001, Pennoni returned to the site and collected a groundwater sample from MW-2.

The groundwater sample was delivered under chain of custody to Con-Test Analytical Laboratories for analysis of VPH and EPH by the DEP Methods.

The results of the EPH analysis of groundwater sample MW-2 indicate C19-C36 aliphatics and C11-C22 aromatics were detected at concentrations of 550 micrograms per liter (ug/L) and 416 ug/L, respectively. The results of the VPH analysis indicate ethylbenzene was detected at a concentration of 1.3 ug/L. These results are very similar to the results of the same analyses of the groundwater sample collected from MW-2 on June 21, 2001. The analytical results of the most recent round of groundwater sampling are presented in Table 3 and the laboratory analytical report is presented in Appendix D.

5.7 Quality Assurance/Quality Control

Laboratory analytical data and the laboratory Quality Assurance/Quality Control (QA/QC) parameters were reviewed to assess data quality and suitability for the intended use. Pennoni's review typically involves examination of method blank data, matrix spike and matrix spike duplicate

recoveries, Relative Percent Difference (RPD) calculations, surrogate recovery and control sample data. Laboratory analysis used as part of this Phase I ISI included the DEP EPH and VPH methods.

Analytical data and QA/QC reports are included in Appendix D. A review of the laboratory QA/QC parameters collected by Pennoni indicated that the laboratory performance criteria for the methods were met in most cases. The following is a synopsis of QA/QC deficiencies noted in the laboratory data:

Con Test:

LIMS No. 56079:

Full QA/QC analysis could not be performed on EPH analysis.
Sample matrix consisted entirely of peastone gravel.
C19-C36 aliphatics – 6.9 mg/kg detected in method blank

LIMS No. 56155:

Sample T-3E did not meet QA/QC acceptance standards.
Surrogate concentrations below detection limit due to dilution required.
C19-C36 aliphatics – 7.0 mg/kg detected in method blank

LIMS No. 56545:

C5-C8 aliphatics – 182 ug/L detected in method blank
C11-C22 aromatics – 151.4 ug/L detected in method blank

The above-described QA/QC deficiencies do not present a significant alteration in the validity of the laboratory data, and do not affect the outcome of the Phase I ISI.

6.0 SITE HYDROGEOLOGICAL CHARACTERISTICS

6.1 Site Topography

The MSH property is located within the Charles River Basin. The MSH facility occupies a relatively flat plateau adjacent to the Charles River. The river course flows around the MSH property on the northwest and northern sides. Stormwater discharge from the site area is direct runoff from paved and developed areas. Stormwater surface runoff flows directly into the adjacent Charles River wetlands. The Power Plant disposal site is located on the topographically downgradient side of the facility.

6.2 Geologic and Stratigraphic Conditions

Overburden Deposits. The overlying fill materials that comprise the immediate subsurface soils on the disposal site consist of varying layers of fill placement over the years. Coarse sands and gravel intermixed with coal, coal ash, and pieces of broken brick were observed in all the borings from

surface level to approximately 13 feet below grade. The natural surficial geology for this location is typical New England post-glacial outwash deposition. These materials were then overlain by river deposits. Surficial deposits observed in the drill cuttings and split-spoon samples generally consists of glacial melt-water outwash deposits and intermixed fine sands, silt, and clay.

Bedrock. According to the Bedrock Geologic Map of Massachusetts (Zen, 1983), the site is located in an area identified as the Dedham Granite in the Milford-Dedham Zone. Bedrock outcrops were not observed on site and bedrock was not sampled in any of the borings advanced on site for this investigation.

6.3 Piezometric Head Elevations and Direction of Groundwater Flow

The depth to groundwater across the disposal site ranges between approximately 6 and 7 feet below surface grade. A Piezometric Head elevation Plan is presented in Figure 4. Based on the data, the hydraulic gradient appears to be to the west and northwest at a magnitude of approximately 0.1 foot/foot. Groundwater is expected to be flowing to the Charles River, located west and south of the disposal site.

7.0 NATURE AND EXTENT OF CONTAMINATION

Evidence of Release. NAPL (#6 fuel oil) was encountered during closure of (3) fuel oil USTs located on the property.

Spill Volume. The volume of the release is unknown, but, at this time, appears to have been limited to the backfill around the tanks.

Maximum and Minimum Contaminant Concentrations. The maximum and minimum contaminant concentrations in soil and groundwater are summarized in Tables 2 and 3.

Horizontal and Vertical Extent of Contamination. "Contaminated soil" is defined as soil containing detectable concentrations of OHM. Concentrations of OHM have been detected in locations immediately adjacent to the USTs in the vicinity of the Power Plant. Field PID screening measurements are relatively low. The complete horizontal extent of soil contamination is unknown at this time. However, based on the result of the subsurface investigations performed during UST closure activities fuel oil contaminated tank bedding appears to be present on the disposal site in the vicinity of the (3) closed 30,000-gallon USTs.

Significant concentrations of dissolved-phase contamination do not appear to be present outside the immediate vicinity of the closed USTs. Concentrations of C11-C22 aromatics were detected at levels which exceed the MCP Reportable Concentrations for Groundwater Category RCGW-1 but appear to be stable.

Non-Aqueous Phase Liquids. NAPL is present in the observation monitoring wells located in the immediate vicinity of the closed USTs located on the disposal site.

8.0 MIGRATION PATHWAYS AND EXPOSURE POTENTIAL

A conceptual site model is presented in Figure 5 and summarizes migration pathways and exposure potential.

8.1 Evidence and Potential for Oil and/or Hazardous Material Migration

Air Migration. The potential for significant ambient air migration is none to low. The maximum PID reading was 14.7 ppmv. Most PID readings were very low. In addition, the entire disposal site is covered either by asphalt pavement or a concrete pad.

Soil. The potential for contaminant migration via soil movement or erosion is low. Contamination is located at depth. The disposal site is asphalt-paved and has only a slight slope. The potential for subsurface vapor migration through vadose zone soil is none to low.

Groundwater. The potential for migration of contaminants in groundwater is low. OHM concentrations in groundwater are very low. Based on groundwater sampling results, no increases in groundwater petroleum concentrations were observed over a 5-month period. In addition, based on the observed soil type, the hydraulic conductivity of the shallow saturated zone aquifer is anticipated to be moderate to moderately low. The hydraulic gradient is moderate. In addition, due to the chemical characteristics of the contaminant of concern (i.e. #6 fuel oil), the potential for significant migration of NAPL #6 fuel oil through the vadose zone is none to low.

Surface Water. The potential for OHM migration via surface water is none to low. The nearest surface water body, the Charles River, is located approximately 500 feet northwest of the disposal site. Calculations presented in the IRA Completion Statements indicate the contamination at the site will not reach the Charles River prior to completion of Comprehensive Response Actions.

8.2 Potential Human Exposure

Under current disposal site use, there is little to no potential for human exposure to OHM. The only realistic receptor under current use would be utility workers working near the USTs. Groundwater on or in the vicinity of the disposal site is not used for any direct purpose. OHM contaminated soil is located at depth and beneath pavement. In general, OHM concentrations in groundwater are low outside of the release area and are unlikely to discharge to surface waters. A large volume of highly contaminated groundwater does not appear to be present on the disposal site. Under future use, there is some potential for utility or construction workers to have contact with contaminated soil in the vicinity of the (3) closed 30,000-gallon USTs. Also there is the possibility of future residential use of the area.

8.3 Potential Impacts to Environmental Receptors

It is very unlikely that the site will impact environmental receptors (wetlands or surface water).

9.0 EVALUATION FOR IMMEDIATE RESPONSE ACTION

Immediate Response Action (IRA) activities were initiated during closure of the USTs in 2001. On April 18, 2002, Pennoni submitted an IRA Plan Modification and IRA Completion Statements associated with the response actions currently being conducted on the disposal site. No Immediate Response Actions are required for the disposal site at this time. No Imminent Hazards were identified, and no Substantial Release Migration (SRM) conditions were identified.

10.0 CONCLUSIONS

A release of petroleum related OHM to the environment, subject to the notification requirements of 310 CMR 40.0300, was investigated during this Phase I Initial Site Investigation. EPH and/or VPH analytes were detected in soil samples at concentrations exceeding respective Reportable Concentrations. Past response actions, which included the excavation and on-site recycling of approximately 3,669 cubic yards of oil contaminated soil, appear to have been successful in limiting the impact of previous releases to groundwater.

The Phase I subsurface investigation included collection of five samples of the UST bedding material to characterize the source area and collecting two rounds of groundwater samples from six monitoring wells. Concentrations of dissolved-phase OHM in groundwater downgradient of the release area are all below respective RCGW-1 Standards. Although contaminated soil appears to remain on the disposal site, the soil does not appear to represent a condition of significant risk to human health or the environment under current use. Additional assessment actions are required to evaluate the extent of the disposal site. Additional remedial action may be required.

11.0 PHASE I COMPLETION STATEMENT

An Tier Classification Transmittal Form (BWSC-107A) is attached. The Licensed Site Professional (LSP) Opinion, Section I of BWSC-107A, and this report, which is an integral part of the opinion, constitute the Phase I Completion Statement and are subject to the Limitation and Conditions presented in the following section.

Section I of BWSC-107A indicates that the site has been subject to "... order(s), permit(s) and/or approval(s) issued by the DEP or EPA." This box is checked because an interim deadline of 10 months was established as part of the approval of the IRA Workplan for RTN 3-20799.

12.0 TIER CLASSIFICATION

This Phase I ISI Report is submitted in support of Tier Classification. A Numerical Ranking System Scoresheet, prepared in accordance with 310 CMR 40.1511, is included in Appendix E. Based on current conditions, the disposal site is classified as Tier II with a score of 168. Conditions at this disposal site do not satisfy any of the Tier I inclusionary criteria.

In accordance with 310 CMR 40.0510(1)(e), a Conceptual Scope of Work has been prepared. The Conceptual Scope of Work describes a general plan for assessing the extent of soil and groundwater contamination. The plan includes the approach to be used along with a forecast schedule and cost estimate. The Conceptual Scope of Work can be found in Appendix F.

13.0 PUBLIC INVOLVEMENT

In accordance with 310 CMR 40.1403(3), notice has been provided to the Chief Municipal Officer and Board of Health in the Town of Medfield. A copy of the notification letter is provided in Appendix G. A legal notice for the Phase I ISI and Tier Classification will be published in the Medfield Press, Medfield, MA.

14.0 LIMITATIONS

STATEMENT OF LIMITATIONS AND CONDITIONS, ATTACHMENT TO OPINION OF MASSACHUSETTS LICENSED SITE PROFESSIONAL

Pennoni Associates Inc.

Name of Licensed Site Professional:	James D. Doherty
LSP Registration Number:	3984
Date of Opinion:	June 13, 2002
Client to Whom Opinion was Rendered:	Medfield State Hospital
Site Number:	3-20799, 3-20984, 3-21162

This Statement of Limitations and Conditions is an integral part of, and is incorporated by reference into, the Opinion of Massachusetts Licensed Site Professional (LSP) referenced above.

LIMITATIONS

1. Purpose of Opinion

A. This Opinion is being provided in compliance with the requirements set forth in the Massachusetts Contingency Plan ("MCP"), 310 CMR 40.0000 et seq. Specifically, the LSP has prepared an Opinion at the request of the Client identified above as part of a Phase I Initial Site Investigation and Tier Classification for a release of #6 fuel oil to soil and groundwater. This stated purpose has been a significant factor in determining the scope and level of services required to render this Opinion.

B. Should the purpose for which this Opinion is to be used change, this Opinion shall no longer be valid.

2. General

This Opinion was prepared for the sole and exclusive use of the Client and the DEP, subject to the provisions of the MCP. No other party is entitled to rely in any way on the conclusions, observations, specifications, or data contained herein without the express written consent of Pennoni Associates Inc. and the LSP who rendered this Opinion. Any use of this Opinion by anyone other than Client, or any use of this Opinion by Client or others for any purpose other than the stated purpose set forth above, without the LSP's review and the written authorization of Pennoni Associates Inc. and the LSP, shall be at the user's sole risk, and neither Pennoni Associates Inc. nor the LSP shall have any liability or responsibility thereof.

3. Scope of Service

The observations and conclusions described in this Opinion are based solely on the Services provided pursuant to the Agreement with the Client and any approved additional services authorized by Client.

Without limitation of any other applicable limitations or conditions, neither Pennoni Associates Inc. nor the LSP shall be liable for the existence of any condition, the discovery of which would have required the performance of services not authorized under the Agreement. To the best knowledge and belief of Pennoni Associates Inc. and the LSP who signed this Opinion, no inquiry of an attorney-at-law having being made, no laws, regulations, orders, permits or approvals are applicable to the response actions to which this opinion relates except, if and to the extent applicable, M.G.L. c 21A, Sections 19-19J, 309 CMR, M.G.L. c. 21 E and 310 CMR 40.0000. Accordingly, this opinion is not intended to and does not address compliance with any other laws, regulation, orders, permits or approvals.

4. Changed Circumstances

The passage of time may result in changes in technology, economic conditions or regulatory standards, manifestations of latent conditions, or the occurrence of future events which would render this Opinion inaccurate or otherwise inapplicable. Neither Pennoni Associates Inc. nor the LSP shall be liable or responsible for the consequences of any such changed circumstances or conditions on the

accuracy of this Opinion. In addition, under no circumstances shall the Client nor any other person or entity rely on the information or conclusions contained in this Opinion after six months from its date of submission without the express written consent of Pennoni Associates Inc. and the LSP. Reliance on the Opinion after such period of time shall be at the user's sole risk.

5. Use by Others

Should Pennoni Associates Inc. or the LSP be required or requested to review or authorize others to use this Opinion after its date of submission, Pennoni Associates Inc. shall be entitled to additional compensation at then existing rates or such terms as may be agreed upon between Pennoni Associates Inc. and the Client. Nothing herein contained shall be deemed to require Pennoni Associates Inc. or the LSP to undertake any such review or authorize others to use this Opinion.

6. The conclusions stated in this Opinion are based upon

- ▶ Visual inspection of existing physical conditions;
- ▶ Review and interpretation of Site history and Site usage information which was made available or obtained within the scope of work authorized by the Client;
- ▶ Information provided by the Client;
- ▶ Information and/or analyses for designated substances or parameters provided by an independent testing service or laboratory on a limited number of samples;
- ▶ a limited number of subsurface explorations made on dates indicated in documentation supporting the Opinion;

upon which the LSP has relied and presumed accurate, and upon which the LSP is entitled to reasonably rely. The LSP was not authorized and did not attempt to independently verify the accuracy or completeness of information or materials received from the Client and/or from laboratories and other third parties during the performance of its services. Neither Pennoni Associates Inc. nor the LSP shall be liable for any condition, information, or conclusion, the discovery of which required information not available to the LSP or for independent investigation of information provided to the LSP by the Client and/or independent third parties.

7. Purpose

This Opinion is rendered for the limited purpose stated above, and should not be deemed to be an opinion concerning the compliance of any past or present owner or operator of the site with any federal, state or local law or regulation. NO WARRANTY OR GUARANTEE, WHETHER EXPRESS OR IMPLIED, IS MADE BY THIS OPINION, AND ANY IMPLIED WARRANTIES

OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY DISCLAIMED. Without limiting the generality of the foregoing, no warranty or guarantee is made that all contamination at a site or sources of contamination has been detected or identified, that any action or recommended action will achieve all of its objectives, or that this Opinion or any action as to which this Opinion relates will be upheld by any audit conducted by the DEP or any other party.

15.0 REFERENCES

Corporate Environmental Engineering, Inc., 1997, Licensed Site Professional Evaluation Opinion, Supported by Phase I Site Investigation and Tier Classification, RTN 3-0001684. May, 1997

Response Action Outcome Statement Submittal, 1998, Camp Dresser & McKee, Inc., dated December 28, 1998.

Massachusetts Department of Environmental Protection, 1998, Method for the Determination of Extractable Petroleum Hydrocarbons (EPH), January 1998.

Massachusetts Department of Environmental Protection, 1998, Method for the Determination of Volatile Petroleum Hydrocarbons (VPH), January 1998.

United States Geological Survey, 1987, Medfield Massachusetts, 1:25,000 Scale Metric Topographic Map. 42071-B3-TM-025.

Zen, E., 1983, Bedrock Geology of Massachusetts, Map 2 of 2. United States Geological Survey.

TABLE 1

Well Gauging and Piezometric Head Elevation Data
 Medfield State Hospital Power Facility
 45 Hospital Road, Medfield, Massachusetts

WELL ID	DATE	WELL ELEVATION	DEPTH TO NAPL	DEPTH TO WATER	NAPL THICKNESS	PIEZOMETRIC HEAD ELEVATION
MW-1	6/15/2001	90.56	NE	13.79	0.00	76.77
	8/28/2001	90.56	NE	> 15.07	0.00	Dry
MW-2	6/15/2001	95.46	NE	16.28	0.00	79.18
	8/28/2001	95.46	NE	17.29	0.00	78.17
	11/7/2001	95.46	NE	17.74	0.00	77.72
MW-3	6/15/2001	92.14	NE	9.88	0.00	82.26
	8/28/2001	92.14	NE	11.21	0.00	80.93
MW-4	6/15/2001	92.16	NE	15.38	0.00	76.78
	8/28/2001	92.16	NE	17.83	0.00	74.33
	11/7/2001	92.16	NE	> 19.00	0.00	Dry
MW-5	6/15/2001	95.99	NE	19.23	0.00	76.76
	8/28/2001	95.99	NE	19.99	0.00	76.00
	11/7/2001	95.99	NE	> 20.39	0.00	Dry
MW-6	6/15/2001	98.07	NE	19.81	0.00	78.26
	8/28/2001	98.07	NE	20.40	0.00	77.67
OW-1	6/15/2001	96.68	NE	13.2	0.00	83.5
	8/28/2001	96.68	NE	12.09	0.00	84.59
	11/7/2001	96.68	12.35	12.37	0.02	84.33
OW-2	6/15/2001	96.52	11.00	NA	1.2	85.52
	8/28/2001	96.52	11.95	NA	1.75	84.57
	11/7/2001	96.52	12.50	13.25	0.75	84.02
OW-3	8/28/2001	96.26	NE	11.69	0.00	84.57
	11/7/2001	96.26	11.99	12.01	0.02	84.27
OW-4	8/28/2001	96.95	NE	> 12.32	0.00	Dry
	11/7/2001	96.95	NE	> 12.32	0.00	Dry
OW-5	6/15/2001	97.45	NE	13.7	0.00	83.8
	8/28/2001	97.45	NE	12.86	0.00	84.59
	11/7/2001	97.45	NE	13.19	0.00	84.26
OW-6	8/28/2001	97.37	NE	> 12.11	0.00	Dry
	11/7/2001	97.37	NE	> 12.11	0.00	Dry
OW-7	8/28/2001	97.33	NE	12.79	0.00	84.54
	11/7/2001	97.33	NE	13.11	0.00	84.22
OW-8	8/28/2001	97.17	NE	12.61	0.00	84.56
	11/7/2001	97.17	NE	12.93	0.00	84.24

Note 1. All measurements are in feet. Elevations are relative to an arbitrary datum of 100.00' defined on top of a bolt set in the concrete at the northwest corner of the retaining wall which abuts the UST pad to the south
 2. NAPL elevation is not corrected for NAPL specific gravity.

NAPL Non Aqueous Phase Liquid

NE NAPL was not encountered in the well on this date

NA Not Available

> Well dry at measured depth

TABLE 2

Soil Samples - Summary of Analytical Results
 Medfield State Hospital Power Facility
 45 Hospital Road, Medfield, Massachusetts

Sample Identification	Sample Date Sample Depth	Tank #1-1 11/28/2001 see note 1	Tank #1-2 11/28/2001 see note 1	Tank #2 West 06/01/01 see note 1	Tank #3 West 06/01/01 see note 1	Tank #3 East 06/01/01 see note 1	Minimum Detected Concentration	Maximum Detected Concentration	Method 1 Risk Characterization Standards	
									Category S-1/GW-2	Category S-1/GW-3
Extractable Petroleum Hydrocarbons (EPH)										
by DEP Method										
C9-C18 Aliphatics		< 18.70	171	< 372	428	1370	171	1370	1,000	1,000
C19-C36 Aliphatics		< 2.00	1080	1310	1990	5490	1080	5490	2,500	2,500
C11-C22 Aromatics		< 10.50	1420	1750	2220	5790	1420	5790	800	800
Acenaphthene		< 0.50	< 2.5	< 10.3	< 10.2	< 25.9	--	--	1,000	1,000
Acenaphthylene		< 0.50	2.7	< 10.3	< 10.2	< 25.9	2.7	2.7	100	100
Anthracene		< 0.50	< 2.5	< 10.3	< 10.2	< 25.9	--	--	1,000	1,000
Benzo(a)anthracene		< 0.50	< 2.5	< 10.3	< 10.2	< 25.9	--	--	0.7	0.7
Benzo(a)pyrene		< 0.50	< 2.5	< 10.3	< 10.2	< 25.9	--	--	0.7	0.7
Benzo(b)fluoranthene		< 0.50	< 2.5	< 10.3	< 10.2	< 25.9	--	--	1,000	1,000
Benzo(g,h,i)perylene		< 0.50	< 2.5	< 10.3	< 10.2	< 25.9	--	--	7	7
Benzo(k)fluoranthene		< 0.50	< 2.5	< 10.3	< 10.2	< 25.9	--	--	7	7
Chrysene		< 0.50	< 2.5	< 10.3	< 10.2	< 25.9	--	--	7	7
Dibenz(a,h)anthracene		< 0.50	< 2.5	< 10.3	< 10.2	< 25.9	--	--	0.7	0.7
Fluoranthene		< 0.50	< 2.5	< 10.3	< 10.2	< 25.9	2.6	2.6	1,000	1,000
Fluorene		< 0.50	< 2.5	< 10.3	< 10.2	< 25.9	--	--	0.7	0.7
Indeno(1,2,3-cd)pyrene		< 0.50	7.7	< 10.3	17.1	53.3	7.7	53.3	500	500
2-Methylnaphthalene		< 0.50	2.5	< 10.3	< 10.2	< 25.9	2.5	2.5	100	100
Naphthalene		< 0.50	2.6	< 10.3	10.6	30.6	2.6	30.6	1,000	1,000
Phenanthrene		< 0.50	5.2	< 10.3	< 10.2	< 25.9	5.2	5.2	700	700
Pyrene		< 0.50								
Volatile Petroleum Hydrocarbons (VPH)										
by DEP Method										
C5-C8 Aliphatics		< 1.50	7.26	< 61.3	< 60.8	62.0	7.26	62.0	100	100
C9-C12 Aliphatics		< 0.50	33.10	159.0	160.0	334.0	33.10	334.0	1,000	1,000
C9-C10 Aromatics		< 0.50	29.00	79.7	106.0	240.0	29.00	240.0	100	100
Benzene		< 0.50	< 0.50	< 0.11	< 0.11	< 0.11	--	--	40	40
Toluene		< 0.50	< 0.50	< 0.33	< 0.32	< 0.32	--	--	500	500
Ethylbenzene		< 0.50	< 0.50	0.11	0.31	1.00	0.11	1.00	500	500
Total Xylenes		< 1.00	2.90	1.06	2.51	8.10	1.06	8.10	500	500
Methyl Tertiary Butyl Ether (MTBE)		< 0.25	< 0.25	< 0.27	< 0.27	< 0.27	--	--	100	100
Naphthalene		< 1.00	5.06	1.25	6.83	20.80	1.25	20.80	100	100

All results are in milligrams per kilogram (mg/kg).
 1 - Samples collected from soil beneath specified underground storage tank.
 -- Not Applicable

TABLE 3

Groundwater Samples - Minimum and Maximum Detected Concentrations
 Medfield State Hospital Power Facility
 45 Hospital Road, Medfield, Massachusetts

Sample Identification Sample Date	MW-1 6/21/2001		MW-2 6/21/2001 11/8/2001		MW-3 6/21/2001		MW-4 6/21/2001 11/8/2001		MW-5 6/21/2001 11/8/2001		MW-6 6/21/2001		Minimum Detected Concentration	Maximum Detected Concentration	Reportable Concentration RCGW-2	Method 1 Risk Characterization Standards Category GW-2 Category GW-3	
	ND	154	ND	548	ND	ND	ND	ND	ND	ND	ND	ND				154	1000
Extractable Petroleum Hydrocarbons (EPH) by DEP Method	ND	154	ND	548	ND	ND	ND	ND	ND	ND	ND	ND	154	1000	1,000	20,000	
C9-C18 Aliphatics	ND	548	ND	550	99	128	DRY	DRY	DRY	DRY	DRY	DRY	99	20000	NS	20,000	
C19-C36 Aliphatics	ND	574	ND	416	86.4	61.4	DRY	DRY	DRY	DRY	DRY	DRY	61.4	30000	50,000	30,000	
C11-C22 Aromatics	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	5000	NS	5,000	
Acenaphthene	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	3000	NS	3,000	
Acenaphthylene	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	600	NS	3,000	
Anthracene	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	3000	NS	3,000	
Benzo a anthracene	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	3000	NS	3,000	
Benzo a pyrene	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	3000	NS	3,000	
Benzo b fluoranthene	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	3000	NS	3,000	
Benzo k fluoranthene	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	3000	NS	3,000	
Benzo g,h,i perylene	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	3000	NS	3,000	
Benzo k fluoranthene	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	3000	NS	3,000	
Chrysene	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	0.5	NS	3,000	
Dibenz a,h anthracene	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	200	NS	200	
Fluoranthene	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	3000	NS	3,000	
Fluorene	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	3000	NS	3,000	
Indeno 1,2,3-cd pyrene	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	3000	NS	3,000	
2-Methylanthralene	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	3000	10,000	3,000	
Naphthalene	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	6000	6,000	6,000	
Phenanthrene	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	50	NS	50	
Pyrene	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	3000	NS	3,000	
Volatile Petroleum Hydrocarbons (VPH) by DEP Method	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	1000	1,000	4,000	
C5-C8 Aliphatics	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	1000	1,000	20,000	
C9-C12 Aliphatics	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	4000	5,000	4,000	
C9-C10 Aromatics	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	2000	2,000	7,000	
Benzene	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	6000	6,000	50,000	
Toluene	ND	3.8	ND	1.6	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	4000	30,000	4,000	
Ethylbenzene	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	3.8	6000	6,000	50,000	
Total Xylenes	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	50000	50,000	50,000	
Methyl Tertiary Butyl Ether MTBE	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	6000	6,000	6,000	
Napthalene	ND	ND	ND	ND	ND	ND	DRY	DRY	DRY	DRY	DRY	DRY	ND	6000	6,000	6,000	

All results are in micrograms per liter ug/L

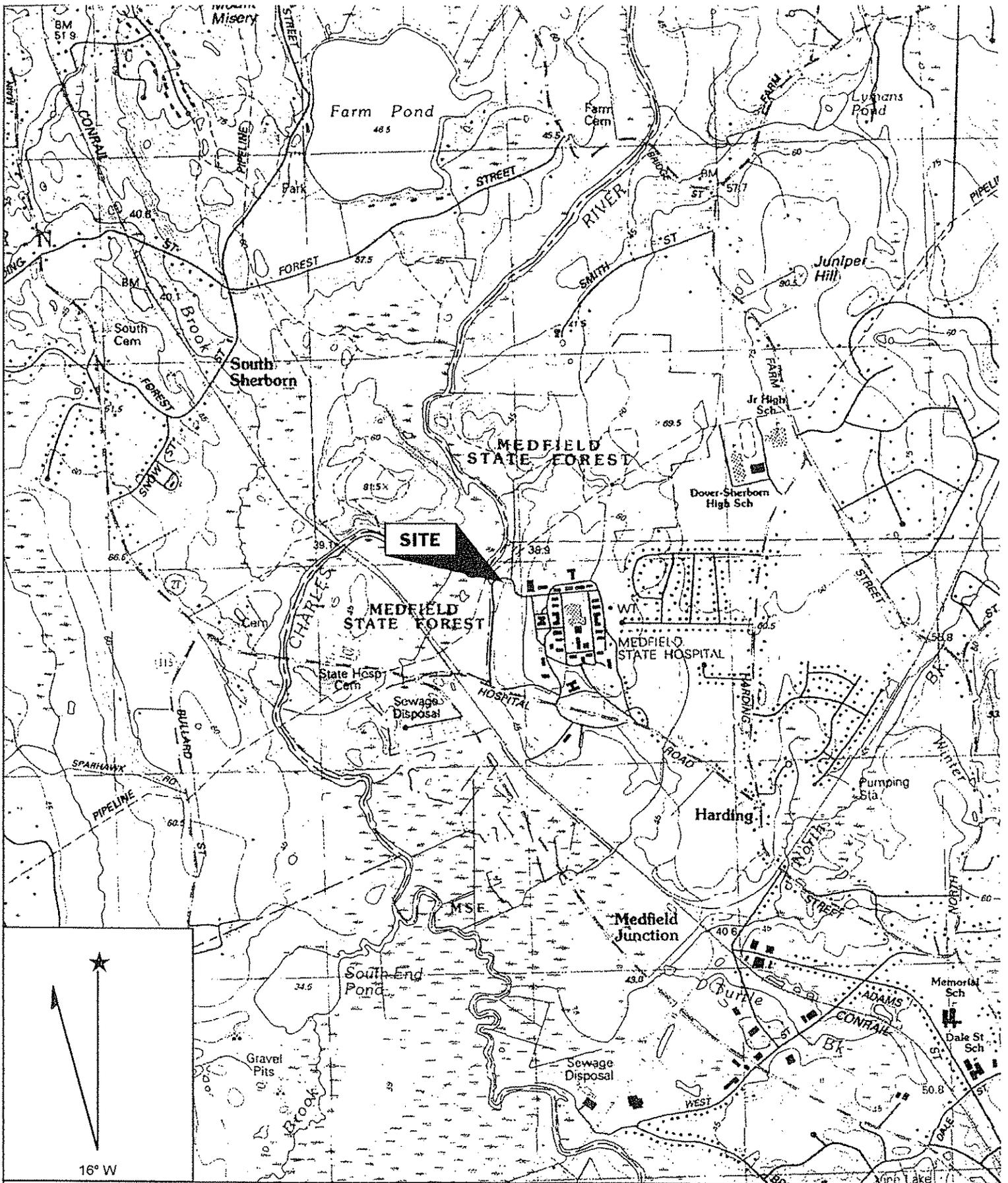
NS No Standard has been established for this compound

ND Not detected above laboratory detection limit

DRY Insufficient recharge to sample well

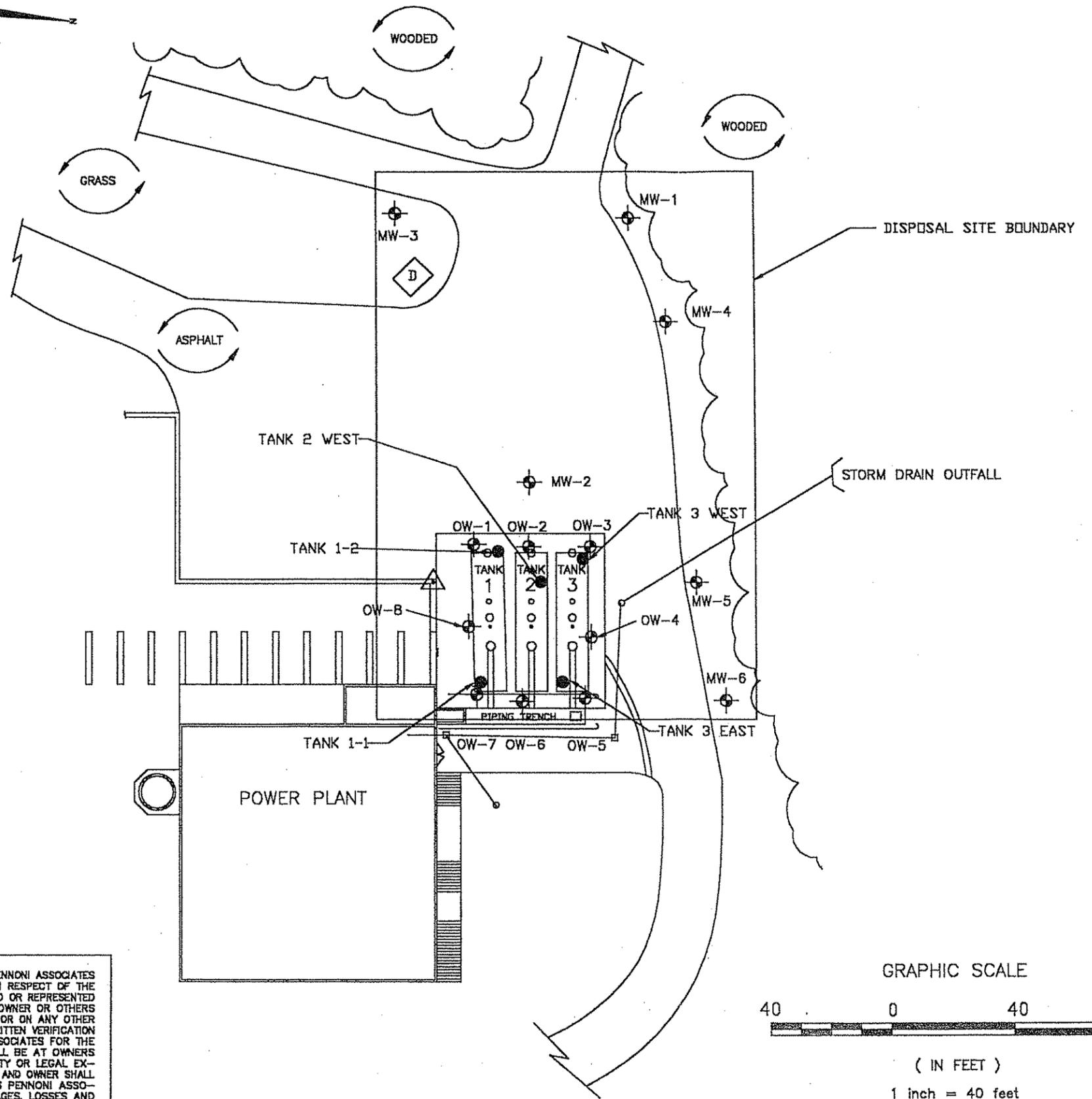
-- Exceeds Method 1 - Risk Characterization Category GW-2

-- Not Applicable



Name: MEDFIELD
 Date: 5/15/2002
 Scale: 1 inch equals 2000 feet

Location: 042° 12' 46.9" N 071° 20' 20.7" W
 Caption: Figure 1 - Disposal Site Location Map
 Medfield Hospital Power Plant
 Medfield, Massachusetts



- LEGEND:
- OBSERVATION WELL
 - MONITORING WELL
 - MW-1 WELL IDENTIFICATION
 - SOIL SAMPLE LOCATION
 - TANK 3 WEST SOIL SAMPLE IDENTIFICATION
 - DUMPSTER
 - CATCH BASIN
 - BENCH MARK
- ALL ELEVATIONS ON THIS PLAN ARE RELATIVE TO AN ASSUMED ELEVATION OF 100.00 FEET MEASURED AT THE TOP OF A BOLT SET INTO THE TOP OF THE CONCRETE RETAINING WALL AT THE LOCATION SHOWN

DISPOSAL SITE PLAN

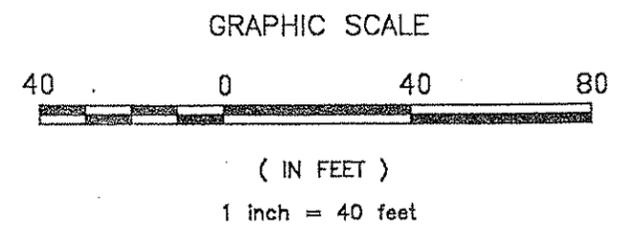
LOCATION
45 HOSPITAL ROAD, MEDFIELD, MA

CLIENT
MASSACHUSETTS DEPARTMENT OF MENTAL HEALTH

SCALE 1" = 40'	SHEET 1/1	PAJ PROJECT NO. DOMH 0101	FIGURE 2
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DRAWN BY PWL	APPROVED BY JMcC	DATE 5/15/02	DRAW NO. FIG 2 DSP
-----------------	---------------------	-----------------	-----------------------

PENNONI ASSOCIATES INC.
THE CONCORD CENTER, SUITE 434, 10 FERRY ST.
UNIT 6, CONCORD, NH 03301



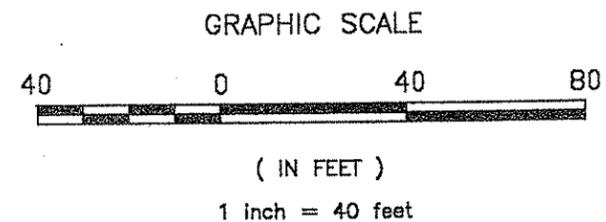
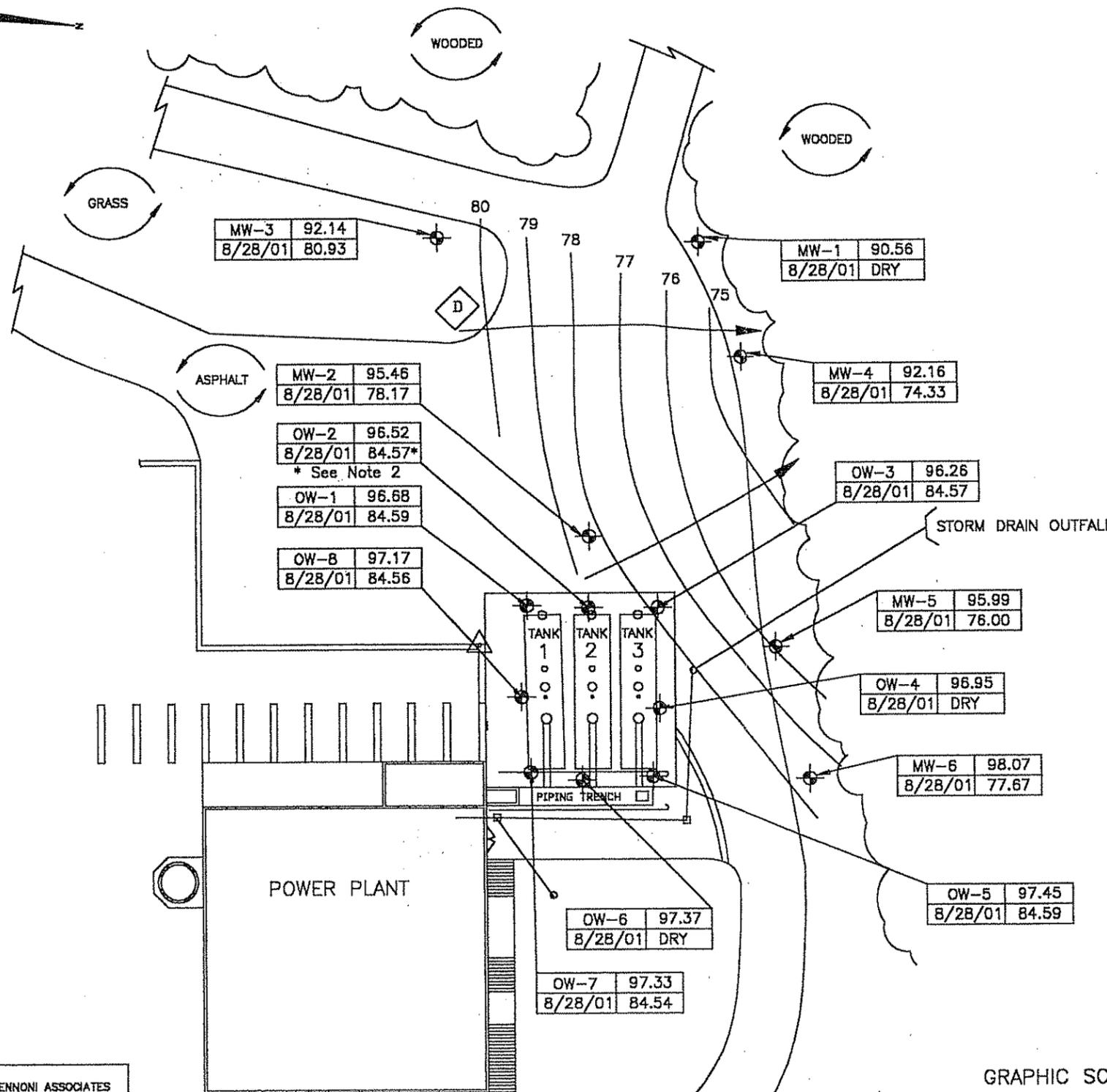
ALL DOCUMENTS PREPARED BY PENNONI ASSOCIATES ARE INSTRUMENTS OF SERVICE IN RESPECT OF THE PROJECT. THEY ARE NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR REUSE BY OWNER OR OTHERS ON EXTENSIONS OF THE PROJECT OR ON ANY OTHER PROJECT. ANY REUSE WITHOUT WRITTEN VERIFICATION OR ADAPTATION BY PENNONI ASSOCIATES FOR THE SPECIFIC PURPOSE INTENDED WILL BE AT OWNERS SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO PENNONI ASSOCIATES; AND OWNER SHALL INDEMNIFY AND HOLD HARMLESS PENNONI ASSOCIATES FROM ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM



LEGEND:

- OBSERVATION WELL
 - MONITORING WELL
 - DUMPSTER
 - CATCH BASIN
 - WELL IDENTIFICATION
 - TOP OF CASING ELEVATION (FEET)
(SURVEYED BY PENNONI ON 8/28/2001)
 - GROUND WATER SURFACE ELEVATION (FEET)
 - DATE OF MEASUREMENT
 - INFERRED GROUND WATER FLOW DIRECTION
 - EQUIPOTENTIAL LINE WITH ELEVATION IN FEET
 - BENCH MARK
- ALL ELEVATIONS ON THIS PLAN ARE RELATIVE TO AN ASSUMED ELEVATION OF 100.00 FEET MEASURED AT THE TOP OF A BOLT SET INTO THE TOP OF THE CONCRETE RETAINING WALL AT THE LOCATION SHOWN

- NOTES: 1. ALL LOCATIONS ARE APPROXIMATE.
 2. THE ELEVATION PRESENTED AT OW-2 IS AT THE TOP OF A LAYER OF NON-AQUEOUS PHASE LIQUID (NAPL) WITH A MEASURED THICKNESS OF 1.75 FEET.
 3. THE GROUND WATER SURFACE ELEVATIONS MEASURED IN THE OBSERVATIONS WELLS INDICATE A PERCHED WATER TABLE THAT IS NOT CONNECTED TO THE WATER TABLE. THESE ELEVATIONS ARE NOT INCORPORATED INTO THE PIEZOMETRIC HEAD ELEVATION PLAN



PIEZOMETRIC HEAD ELEVATION PLAN
AUGUST 28, 2001

LOCATION 45 HOSPITAL ROAD, MEDFIELD, MA			
CLIENT MASSACHUSETTS DEPARTMENT OF MENTAL HEALTH			
SCALE 1" = 40'	SHEET 1/1	PAJ PROJECT NO. DOMH0101	FIGURE 4
DRAWN BY PWL	APPROVED BY JMCC	DATE 3/27/02	DRAW NO. FIG 4 PHEP

PENNONI ASSOCIATES INC.
THE CONCORD CENTER, SUITE 434, 10 FERRY ST.
UNIT 6, CONCORD, NH 03301

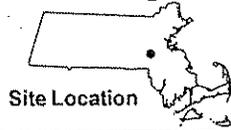
ALL DOCUMENTS PREPARED BY PENNONI ASSOCIATES ARE INSTRUMENTS OF SERVICE IN RESPECT OF THE PROJECT. THEY ARE NOT INTENDED OR REPRESENTED TO BE SUITABLE FOR REUSE BY OWNER OR OTHERS ON EXTENSIONS OF THE PROJECT OR ON ANY OTHER PROJECT. ANY REUSE WITHOUT WRITTEN VERIFICATION OR ADAPTATION BY PENNONI ASSOCIATES FOR THE SPECIFIC PURPOSE INTENDED WILL BE AT OWNERS SOLE RISK AND WITHOUT LIABILITY OR LEGAL EXPOSURE TO PENNONI ASSOCIATES; AND OWNER SHALL INDEMNIFY AND HOLD HARMLESS PENNONI ASSOCIATES FROM ALL CLAIMS, DAMAGES, LOSSES AND EXPENSES ARISING OUT OF OR RESULTING THEREFROM

MA DEP - Bureau of Waste Site Cleanup

Site Scoring Map: 500 feet & 0.5 Mile Radii

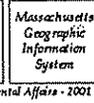
SITE NAME:

Medfield State Hospital
45 Hospital Road
Medfield, MA
421247n 712022ew



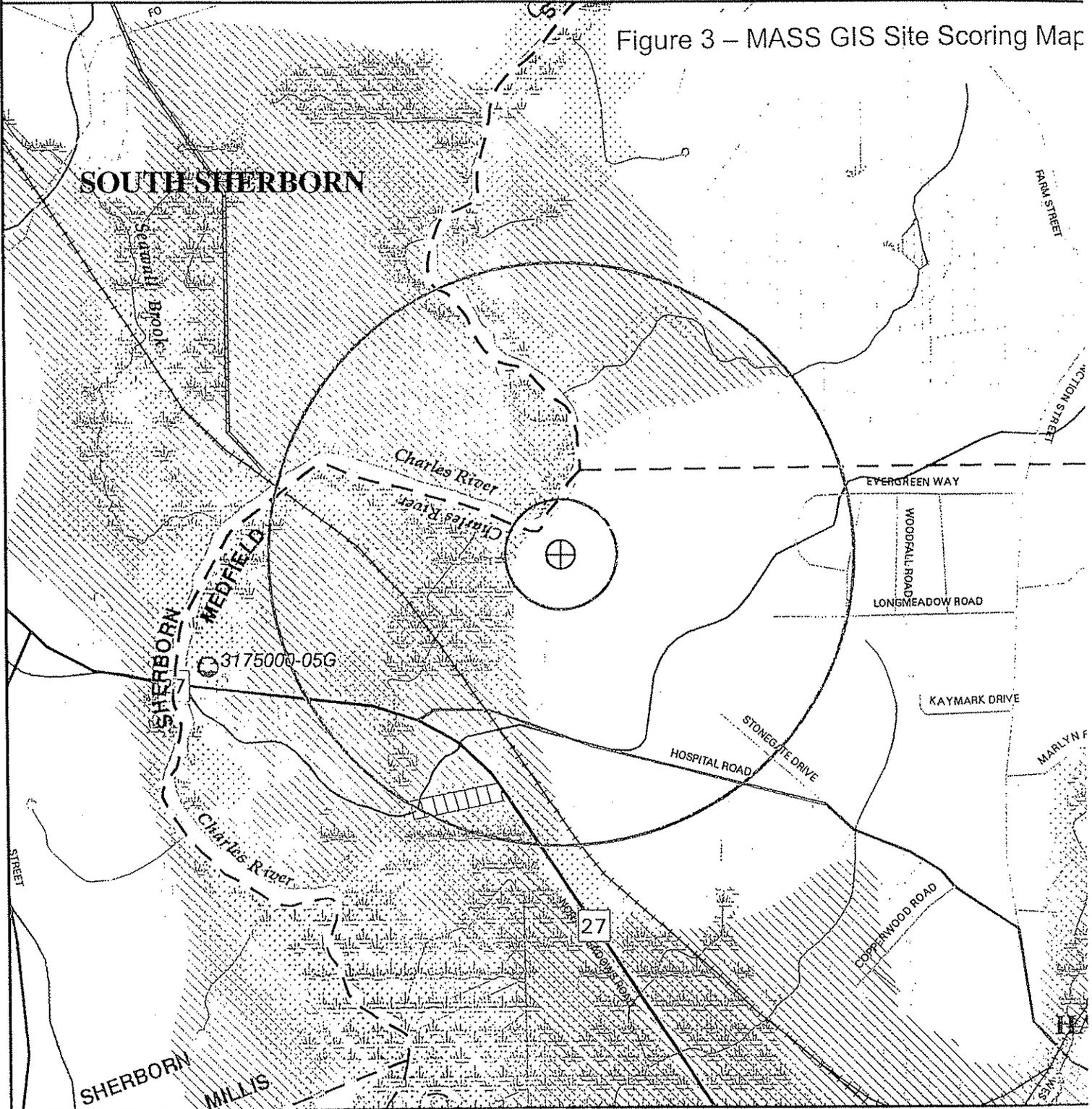
Site Location

The information shown on this map is the best available at the date of printing. Please refer to the data source descriptions document.



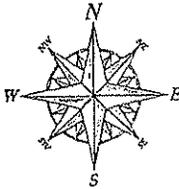
Massachusetts Executive Office of Environmental Affairs - 2001

Figure 3 – MASS GIS Site Scoring Map



- Roads: Limited Access, Divided, Major Road, Connector, Street, Track, Trail
- Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct
- Basins: Major, Sub; Streams: Perennial, Intermittent, Man Made Shore, Dams
- Potentially Productive Aquifers: Medium, High Yield
- Non-Potential Drinking Water Source Area: Medium, High Yield

- EPA Sole Source Aquifer; FEMA 100-year floodplain
- Public Water Supplies: Ground, Surface, Non Community Approved Zone 2; IWPA; Surface Water Supply Zone A
- Hydrography: Water Features, Public Surface Water Supply
- Wetlands: Fresh, Salt, NHESP Wetlands Habitat
- Protected Open Space; ACEC
- DEP Permitted Solid Waste Facilities; Certified Vernal Pools



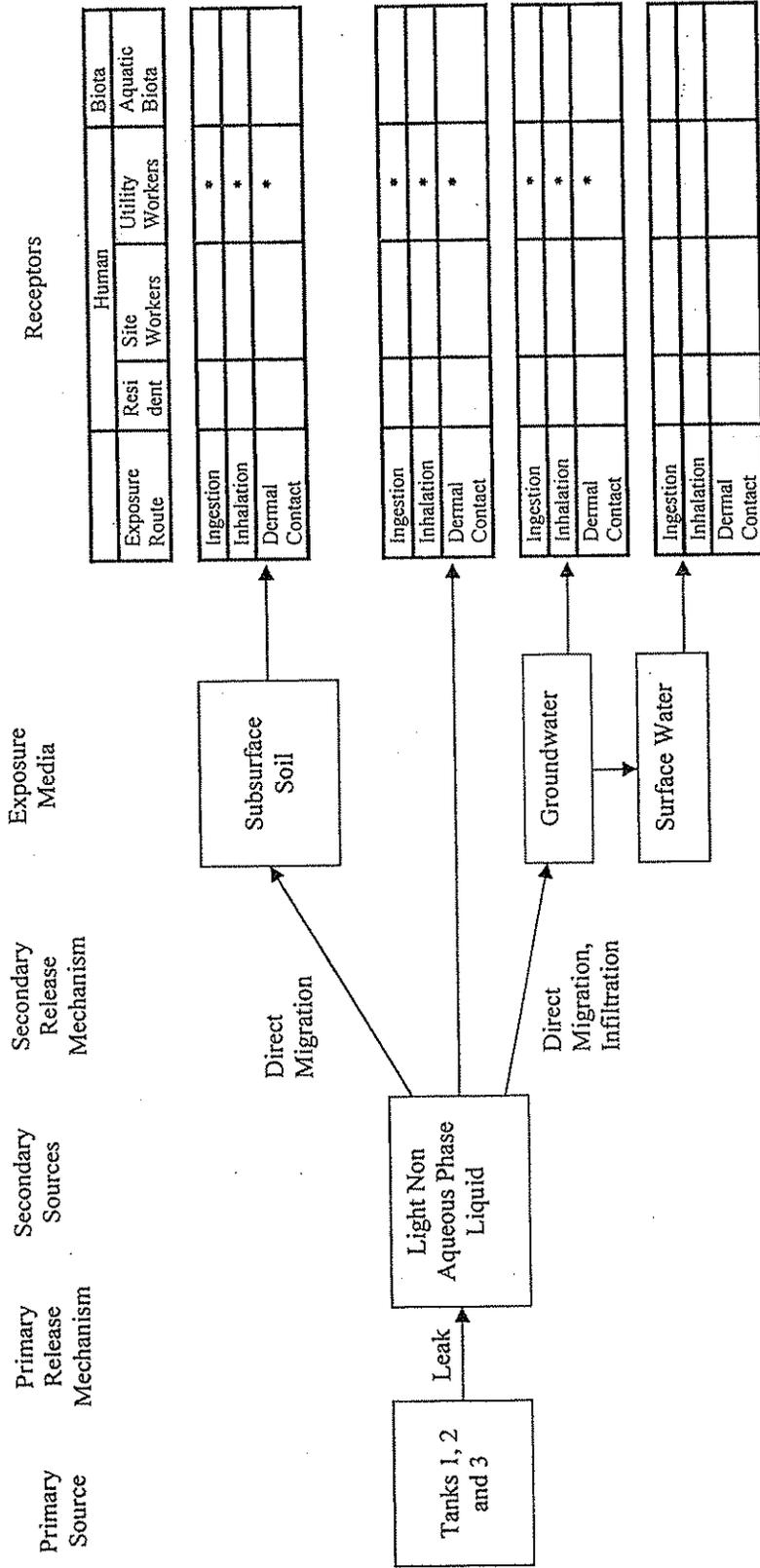
SCALE 1:15000

0 1/2 1/2 1 KILOMETERS

MILES

July 17, 20

Figure 5
Conceptual Site Model
Medfield State Hospital
Medfield, MA



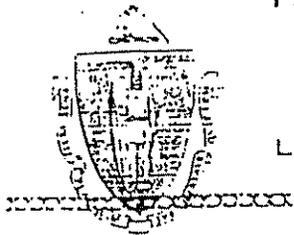
APPENDIX A

Copies of Official Correspondence

THE COMMONWEALTH OF MASSACHUSETTS
WATER RESOURCES COMMISSION

LEVERETT SALTONSTALL BUILDING, GOVERNMENT CENTER

100 CAMBRIDGE STREET, BOSTON 02202



Southwest Regional Office
Office of the Director
Division of Water
P.O. Box 537
Pembroke, MA 02558

August 14, 1978

Paul Lavote, Ph.D.
Superintendent
Medfield State Hospital
Hospital Road
P.O. Box 275
Medfield, Massachusetts 02052

Re: Medfield (CHL)
Charles River
Oil Spill

Dear Mr. Lavote:

A recent inspection of cleanup activity associated with your facility's oil spill reported March 27, 1978, has been conducted with the following observations:

1. In-house boiler room piping has been changed with the provision for visual monitoring of discharge from the oil preheaters to eliminate a recurrence of such a spill.
2. All spilled oil from the drain outlet source to the edge of uncontaminated lowland vegetation bordering the former landfill site had been removed to the satisfaction of this Division.
3. The large clay-lined excavation used for onsite disposal was nearly filled to capacity with oil contaminated soil and debris, and a second excavation was available for clay-lining to accommodate the remaining oil contaminated soil and debris stockpiled at the spill site.
4. The drainage swail had been rerouted to the Charles River away from the spill area and was to be maintained with absorbant to remove the slight oil residue associated with the cleanup activity.

This Division is satisfied that proper action has been taken by the Department of Mental Health in this matter and requires the following to be completed prior to final approval:

1. Prior to August 31, 1978 - place remaining oil contaminated material within excavation after clay-lining, and grade and reslope former landfill to original topography with respect to the lowland.

Paul Lavote, Ph.D.
August 14, 1978
Page 2

2. Prior to September 15, 1978 - compact and cover both disposal areas with polyethylene and notify this office for inspection. Polyethylene cover must extend a minimum of ten (10) feet beyond the edge of filled material. Immediately following inspection, cover the disposal areas with stockpiled fill material and top soil to return area to grade.
3. Have available for view during the inspection in Item 2, a revised plot plan of the hospital property, which is part of the Department's permanent file, indicating, with appropriate detail, the location of the onsite disposal area.

Your continued cooperation in this matter is appreciated.

Very truly yours,

Jeffrey E. Gould
Acting Southeast Regional Engineer

JEG:jd

cc: Arthur Hammer, Department of Mental Health, Engineering Section,
190 Portland St., Boston, MA 02114
John Marcell, Steward, Medfield State Hospital, Hospital Rd., P.O.
Box 276, Medfield, MA 02052
John Dolan, Chief Engineer, Medfield State Hospital, Hospital Rd.,
P.O. Box 276, Medfield, MA 02052
Steven Novik, U.S. Environmental Protection Agency, Oil and Hazardous
Materials Section, 60 Westview St., Lexington, MA 02173

APPENDIX B

Boring Logs

CORPORATE ENVIRONMENTAL ENGINEERING INC

Soil Boring Log

CLIENT: Medfield State Hospital	DRILLING CONTRACTOR: Technical Drilling Services		
SITE: Power Plant			
BORING: B1	START DATE: 3/17/97	END DATE: 3/18/97	
FOREMAN: Martin MacNamara	GEOLOGIST: Edward Giordano	PROJECT: W091-004-GS	
BORING TYPE: HSA	CASING SIZE: NA	AUGER SIZ 6.5"	INSTRUMENT: OVM

DEPTH	SAMPLE NO.	DEPTH (FEET)	BLOW COUNT PER 6 INCHES	RECOVERY (INCHES)	SAMPLE DESCRIPTION	TOV's (ppm)
5			Flight	NA	Black crs SAND and Cobble	
10	S-1	5 - 7	6 - 4 - 8 - 10	3	Black crs SAND and Cobble with yellow brick	2.8
15	S-2	10-12	4 - 2 - 3 - 3 Flight	3 NA	Black crs SAND and Cobble Pieces of pliable metal	2.2
20	S-3	15-17	22 - 30 - 32 - 55	15	3" Black crs SAND and Cobble 12" Tan crs - med SAND and Cobble, wet	2.1
25						
30					Boring refusal at 18 feet below grade	
35						
40						

Percent Proportion

Trace = 1 - 10%
 Little = 10 - 20%
 Some = 20 - 35%
 And = 35 - 50%

Blow Counts

Very Loose = 0 - 4
 Loose = 5 - 10
 Med. Dense = 11 - 30
 Dense 31 - 50
 Very Dense = 50+

Grain Size Description

vf = very fine peb = pebbly
 f = fine cob = cobbly
 med = medium org = organic
 crs = coarse
 vcrs = very coarse

CORPORATE ENVIRONMENTAL ENGINEERING INC

Soil Boring Log

CLIENT: Medfield State Hospital	DRILLING CONTRACTOR: Technical Drilling Services
SITE: Power Plant	
BORING: B2-MW1	START DATE: 3/17/97
FOREMAN: Martin MacNamara	GEOLOGIST: Edward Giordano
BORING TYPE: HSA	CASING SIZE: NA
AUGER SIZ: 4.25" & 6.5"	INSTRUMENT: OVM
PROJECT: W091-004-GS	

DEPTH	SAMPLE NO.	DEPTH (FEET)	BLOW COUNT PER 6 INCHES	RECOVERY (INCHES)	SAMPLE DESCRIPTION	TOV's (ppm)
		0 - 3	Flight	NA	Bituminous asphalt COBBLE and lt brown crs - med Sand	
5						
	S-1	5 - 7	65 - 96 - 30 - 49	18	1" COBBLE and black crs Sand 2" crushed stone 15" COBBLE and lt brown crs to med Sand	4.9
10						
	S-2	10 - 12	5 - 2 - 4 - 3	6	3" Tan crs - med SAND and Cobble 3" Black crs - med SAND and Cobble	4.6
15						
	S-3	14 - 16	2 - 3 - 14 - 15	4	2" stone 2" Tan med SAND and Silt	1.9
20						
	S-4	20 - 22	7 - 9 - 52 - 36	15	Tan f SAND and Silt some Clay, wet	1.8
25						
					Completed as monitoring well MW-1 Set well at 16' below grade	
30						
					utilized: 10', 0.020" slotted 4" PVC screen 6' solid 4" PVC riser well point with well cap Bolt down road box	
35						
					Initial depth to water 10'	
40						

Percent Proportion

Trace = 1 - 10%
 Little = 10 - 20%
 Some = 20 - 35%
 And = 35 - 50%

Blow Counts

Very Loose = 0 - 4
 Loose = 5 - 10
 Med. Dense = 11 - 30
 Dense = 31 - 50
 Very Dense = 50+

Grain Size Description

vf = very fine peb = pebbly
 f = fine cob = cobbly
 med = medium org = organic
 crs = coarse
 vcrs = very coarse

CORPORATE ENVIRONMENTAL ENGINEERING INC

Soil Boring Log

CLIENT: Medfield State Hospital	DRILLING CONTRACTOR: Technical Drilling Services	
SITE: Power Plant		
BORING: B3-MW2	START DATE: 3/17/97	END DATE: 3/18/97
FOREMAN: Martin MacNamara	GEOLOGIST: Edward Giordano	PROJECT: W091-004-GS
BORING TYPE: HSA	CASING SIZE: NA	AUGER SIZ 4.25" & 6.5"
		INSTRUMENT: OVM

DEPTH	SAMPLE NO.	DEPTH (FEET)	BLOW COUNT PER 6 INCHES	RECOVERY (INCHES)	SAMPLE DESCRIPTION	TOV's (ppm)
		0 - 3	Flight	NA	Bituminous asphalt	
5					Lt brown crs - med SAND and Cobble	
10	S-1	5 - 7	9 - 7 - 7 - 8	18	6" Black crs - med SAND and Cobble 12" Tan med - f SAND	1.9
15	S-2	10 - 12 13	26 - 23 - 22 - 22 NA	18 NA	Tan crs SAND and Cobble ? drilling through glacial till	1.8
20	S-3	14 - 16 17 - 18	27 - 40 - 29 - 19 NA	9 NA	3" Lt tan crs SAND and Cobble 6" Tan med - f SAND ? drilling through glacial till	2.6
25	S-4	19 - 21	18 - 20 - 25 - 41	12	COBBLE and grey crs Sand, wet product visible on spoon and sample	14.7
30					Completed as monitoring well MW-2 Set well at 19.6' below grade	
35					utilized: 10', 0.020" slotted 2" PVC screen 9.5' solid 2" PVC riser well point+G14 with well cap Bolt down road box	
40					Initial depth to water 16'	

Percent Proportion

Trace = 1 - 10%
 Little = 10 - 20%
 Some = 20 - 35%
 And = 35 - 50%

Blow Counts

Very Loose = 0 - 4
 Loose = 5 - 10
 Med. Dense = 11 - 30
 Dense = 31 - 50
 Very Dense = 50+

Grain Size Description

vf = very fine peb = pebbly
 f = fine cob = cobbly
 med = medium org = organic
 crs = coarse
 vcrs = very coarse

CORPORATE ENVIRONMENTAL ENGINEERING INC

Soil Boring Log

CLIENT: Medfield State Hospital	DRILLING CONTRACTOR: Technical Drilling Services	
SITE: Power Plant		
BORING: B4	START DATE: 3/17/97	END DATE: 3/18/97
FOREMAN: Martin MacNamara	GEOLOGIST: Edward Giordano	PROJECT: W091-004-GS
BORING TYPE: HSA	CASING SIZE: NA	AUGER SIZ 4.25"
		INSTRUMENT: OVM

DEPTH	SAMPLE NO.	DEPTH (FEET)	BLOW COUNT PER 6 INCHES	RECOVERY (INCHES)	SAMPLE DESCRIPTION	TOV's (ppm)
5					Black organic topsoil	
10	S-1	5 - 7	4 - 4 - 5 - 3 Flight	NA NA	Stone in spoon, no sample recovered Black COBBLE and crs Sand	8.2
15	S-2	10 - 12	7 - 8 - 24 - 12	18	Red-brown crs - med SAND and Cobble	1.7
20	S-3	15 - 17	7 - 5 - 6 - 7	18	Grey med - f SAND and Silt some Cobble, wet	1.6
25						
30					Boring terminated at 17 feet below grade	
35						
40						

Percent Proportion

Trace = 1 - 10%
 Little = 10 - 20%
 Some = 20 - 35%
 And = 35 - 50%

Blow Counts

Very Loose = 0 - 4
 Loose = 5 - 10
 Med. Dense = 11 - 30
 Dense 31 - 50
 Very Dense = 50+

Grain Size Description

vf = very fine peb = pebbly
 f = fine cob = cobbly
 med = medium org = organic
 crs = coarse
 vcrs = very coarse

CORPORATE ENVIRONMENTAL ENGINEERING INC

Soil Boring Log

CLIENT: Medfield State Hospital	DRILLING CONTRACTOR: Technical Drilling Services	
SITE: Power Plant		
BORING: B6	START DATE: 3/17/97	END DATE: 3/18/97
FOREMAN: Martin MacNamara	GEOLOGIST: Edward Giordano	PROJECT: W091-004-GS
BORING TYPE: HSA	CASING SIZE: NA	AUGER SIZ 4.25"
		INSTRUMENT: OVM

DEPTH	SAMPLE NO.	DEPTH (FEET)	BLOW COUNT PER 6 INCHES	RECOVERY (INCHES)	SAMPLE DESCRIPTION	TOV's (ppm)
5					Black organic topsoil	
10	S-1	5 - 7	22 - 11 - 7 - 6	6	Black crs SAND and Cobble	1.9
15	S-2	10 - 12 13 - 14	2 - 7 - 7 - 4 NA	8 NA	2" Black crs SAND and Cobble 6" Tan crs - med SAND and Cobble ? drilling through glacial till	1.9
20	S-3	15 - 17 18	22 - 31 - 37 - 55 NA	12 NA	6" Lt tan crs SAND and Cobble 6" Tan crs - med SAND ? drilling through glacial till	1.9
25	S-4	19	100 (0")	NA	Refusal, no sample recovered	NA
30					Boring refusal at 19 feet below grade	
35						
40						

Percent Proportion

Trace = 1 - 10%
 Little = 10 - 20%
 Some = 20 - 35%
 And = 35 - 50%

Blow Counts

Very Loose = 0 - 4
 Loose = 5 - 10
 Med. Dense = 11 - 30
 Dense 31 - 50
 Very Dense = 50+

Grain Size Description

vf = very fine peb = pebbly
 f = fine cob = cobbly
 med = medium org = organic
 crs = coarse
 vcrs = very coarse

CORPORATE ENVIRONMENTAL ENGINEERING INC

Soil Boring Log

CLIENT: Medfield State Hospital	DRILLING CONTRACTOR: Technical Drilling Services	
SITE: Power Plant		
BORING: B7	START DATE: 3/17/97	END DATE: 3/18/97
FOREMAN: Martin MacNamara	GEOLOGIST: Edward Giordano	PROJECT: W091-004-GS
BORING TYPE: HSA	CASING SIZE: NA	AUGER SIZ 4.25"
		INSTRUMENT: OVM

DEPTH	SAMPLE NO.	DEPTH (FEET)	BLOW COUNT PER 6 INCHES	RECOVERY (INCHES)	SAMPLE DESCRIPTION	TOV's (ppm)
5		0 - 3	Flight	NA	Bituminous asphalt Black crs SAND and Cobble Lt brown crs SAND and Cobble	
10	S-1	5 - 7	10 - 9 - 5 - 7	8	Lt brown crs SAND and Cobble	2.1
15	S-2	10 - 12	4 - 5 - 4 - 3	8	Lt brown crs SAND and Cobble	3.5
20	S-3	15 - 17	3 - 7 - 27 - 30	15	9" Brown crs SAND and Cobble 6" Grey med - f SAND and Silt some Cobble	3.8
25	S-4	20 - 22	15 - 16 - 36 - 64	24	12" Brown crs SAND and Silt 12" Grey-brown med - f SAND and Silt	5.2
30					Boring terminated at 22 feet below grade	
35						
40						

Percent Proportion

Trace = 1 - 10%
 Little = 10 - 20%
 Some = 20 - 35%
 And = 35 - 50%

Blow Counts

Very Loose = 0 - 4
 Loose = 5 - 10
 Med. Dense = 11 - 30
 Dense 31 - 50
 Very Dense = 50+

Grain Size Description

vf = very fine peb = pebbly
 f = fine cob = cobbly
 med = medium org = organic
 crs = coarse
 vcrs = very coarse

CORPORATE ENVIRONMENTAL ENGINEERING INC

Soil Boring Log

CLIENT: Medfield State Hospital	DRILLING CONTRACTOR: Technical Drilling Services	
SITE: Power Plant		
BORING: B8-MW4	START DATE: 3/17/97	END DATE: 3/18/97
FOREMAN: Martin MacNamara	GEOLOGIST: Edward Giordano	PROJECT: W091-004-GS
BORING TYPE: HSA	CASING SIZE: NA	AUGER SIZ 4.25"
		INSTRUMENT: OVM

DEPTH	SAMPLE NO.	DEPTH (FEET)	BLOW COUNT PER 6 INCHES	RECOVERY (INCHES)	SAMPLE DESCRIPTION	TOV's (ppm)
		0 - 3	Flight	NA	Bituminous asphalt Lt brown crs SAND and Cobble	
5						
	S-1	5 - 7	10 - 14 - 25 - 23	10	4" Black crs SAND and Cobble 6" Black crs SAND	1.4
10						
	S-2	9 - 11	10 - 13 - 11 - 6	13	8" Black crs SAND and Cobble, clinkers 2" Lt brown crs SAND and Cobble 3" Black crs SAND and Cobble	1.5
15						
	S-3	14 - 16	2 - 2 - 6 - 21	12	Tan med - f SAND and Silt	1.4
20						
	S-4	19 - 21	41 - 45 - 25 - 21	12	Lt tan crs - med SAND and Cobble some Silt	2.8
25						
					Completed as monitoring well MW-4 Set well at 20' below grade	
30						
					utilized: 10', 0.020" slotted 2" PVC screen 10' solid 2" PVC riser well point with well cap Bolt down road box	
35						
					Initial depth to water 15'	
40						

Percent Proportion

Trace = 1 - 10%
 Little = 10 - 20%
 Some = 20 - 35%
 And = 35 - 50%

Blow Counts

Very Loose = 0 - 4
 Loose = 5 - 10
 Med. Dense = 11 - 30
 Dense = 31 - 50
 Very Dense = 50+

Grain Size Description

vf = very fine peb = pebbly
 f = fine cob = cobbly
 med = medium org = organic
 crs = coarse
 vcrs = very coarse

CORPORATE ENVIRONMENTAL ENGINEERING INC

Soil Boring Log

CLIENT: Medfield State Hospital	DRILLING CONTRACTOR: Technical Drilling Services	
SITE: Power Plant		
BORING: B9	START DATE: 3/17/97	END DATE: 3/18/97
FOREMAN: Martin MacNamara	GEOLOGIST: Edward Giordano	PROJECT: W091-004-GS
BORING TYPE: HSA	CASING SIZE: NA	AUGER SIZ 4.25"
		INSTRUMENT: OVM

DEPTH	SAMPLE NO.	DEPTH (FEET)	BLOW COUNT PER 6 INCHES	RECOVERY (INCHES)	SAMPLE DESCRIPTION	TOV's (ppm)
5					Black organic topsoil	
10	S-1	5 - 7	3 - 5 - 7 - 10	4	Black crs SAND and Cobble	1.2
15	S-2	10 - 12	2 - 2 - 2 - 6	18	Red-brown crs - med SAND and Cobble some Silt, wet	1.1
20						
25						
30					Boring terminated at 12 feet below grade	
35						
40						

Percent Proportion

Trace = 1 - 10%
 Little = 10 - 20%
 Some = 20 - 35%
 And = 35 - 50%

Blow Counts

Very Loose = 0 - 4
 Loose = 5 - 10
 Med. Dense = 11 - 30
 Dense 31 - 50
 Very Dense = 50+

Grain Size Description

vf = very fine peb = pebbly
 f = fine cob = cobbly
 med = medium org = organic
 crs = coarse
 vcrs = very coarse

CORPORATE ENVIRONMENTAL ENGINEERING INC

Soil Boring Log

CLIENT: Medfield State Hospital	DRILLING CONTRACTOR: Technical Drilling Services	
SITE: Power Plant		
BORING: B10	START DATE: 4/29/97	END DATE: 4/29/97
FOREMAN: Toby Gray	GEOLOGIST: Edward Giordano	PROJECT: W091-004-GS
BORING TYPE: HSA	CASING SIZE: NA	AUGER SIZ 6.25"
		INSTRUMENT: OVM

DEPTH	SAMPLE NO.	DEPTH (FEET)	BLOW COUNT PER 6 INCHES	RECOVERY (INCHES)	SAMPLE DESCRIPTION	TOV's (ppm)
		0 - 2	NA	Flight	Black organic topsoil	
5					6" black med - f SAND, and Silt, some Cobble	
10	S-1	5 - 7	2 - 4 - 6 - 3	9	3" Tan med - f SAND, and Silt, some Cobble	2.2
15	S-2	10 - 12 13	4 - 17 - 33 - 75 NA	18 NA	Tan med - f SAND, and Silt, some Cobble ? drilling through glacial till	2.4
20	S-3	15 - 17 18	6 - 8 - 20 - 35 NA	12 NA	Tan med - f SAND, and Silt, some Cobble, ? drilling through glacial till	1.5
25	S-4	20 - 21	12 - 14 - 14 - 50	9	Tan med - f SAND, and Silt, some Cobble, wet Refusal 21.5'	2.5
30					Completed as monitoring well MW-5 Set well at 21' below grade	
35					utilized: 10', 0.020" slotted 4" PVC screen 11' solid 4" PVC riser well point with well cap Bolt down road box	
40						

Percent Proportion

Trace = 1 - 10%
 Little = 10 - 20%
 Some = 20 - 35%
 And = 35 - 50%

Blow Counts

Very Loose = 0 - 4
 Loose = 5 - 10
 Med. Dense = 11 - 30
 Dense 31 - 50
 Very Dense = 50+

Grain Size Description

vf = very fine peb = pebbly
 f = fine cob = cobbly
 med = medium org = organic
 crs = coarse
 vcrs = very coarse

CORPORATE ENVIRONMENTAL ENGINEERING INC

Soil Boring Log

CLIENT: Medfield State Hospital	DRILLING CONTRACTOR: Technical Drilling Services	
SITE: Power Plant		
BORING: B9	START DATE: 4/29/97	END DATE: 4/29/97
FOREMAN: Toby Gray	GEOLOGIST: Edward Giordano	PROJECT: W091-004-GS
BORING TYPE: HSA	CASING SIZE: NA	AUGER SIZ 4.25"
		INSTRUMENT: OVM

DEPTH	SAMPLE NO.	DEPTH (FEET)	BLOW COUNT PER 6 INCHES	RECOVERY (INCHES)	SAMPLE DESCRIPTION	TOV's (ppm)
		0 - 2	NA	Flight	Black organic topsoil	
5					4" black med - f SAND, and Silt, some Cobble	
10	S-1	5 - 7	2 - 3 - 2 - 2	12	8" Tan med - f SAND, and Silt, some Cobble	1.6
15	S-2	10 - 12	2 - 25 - 25 - 27	18	Tan med - f SAND, some Silt, some Cobble	2.1
		14	NA	NA	? drilling through glacial till	
20	S-3	15 - 17 17 - 18	17 - 13 - 30 - 33 NA	12 NA	Tan med - f SAND, some Silt, some Cobble ? drilling through glacial till	2.4
25	S-4	20 - 21	18 - 48 - 32 - 65	20	Tan med - f SAND, and Silt, some Cobble, wet Refusal 24'	2.1
30					Completed as monitoring well MW-6 Set well at 24' below grade	
35					utilized: 10', 0.010" slotted 2" PVC screen 14' solid 2" PVC riser well point with well cap Bolt down road box	
40						

Percent Proportion

Trace = 1 - 10%
 Little = 10 - 20%
 Some = 20 - 35%
 And = 35 - 50%

Blow Counts

Very Loose = 0 - 4
 Loose = 5 - 10
 Med. Dense = 11 - 30
 Dense = 31 - 50
 Very Dense = 50+

Grain Size Description

vf = very fine peb = pebbly
 f = fine cob = cobbly
 med = medium org = organic
 crs = coarse
 vcrs = very coarse

APPENDIX C

Laboratory Reports – Soil and Groundwater Sampling

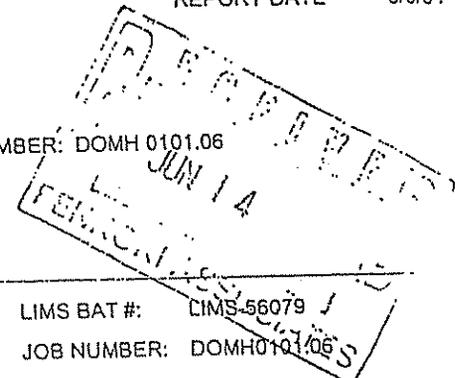


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REPORT DATE 6/6/01

PENNONI ASSOCIATES
THE CONCORD CTR, STE 311, 10 FERRY ST.#6
CONCORD, NH 03301
ATTN: JEFF MCCULLOUGH

CONTRACT NUMBER:
PURCHASE ORDER NUMBER: DOMH 0101.06
PROJECT NUMBER:



ANALYTICAL SUMMARY

LIMS BAT #: CIMS-56079
JOB NUMBER: DOMH0101.06S

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: MEDFIELD STATE HOSPITAL

FIELD SAMPLE #	LAB ID	MATRIX	SAMPLE DESCRIPTION	TEST
*T-2W	01B15119	SOIL	TANK 2 WEST END	eph - solid
*T-2W	01B15119	SOIL	TANK 2 WEST END	solids eph/vph
*T-2W	01B15119	SOIL	TANK 2 WEST END	vph - solid
T-3E	01B15120	SOIL	TANK 3 EAST	eph - solid
T-3E	01B15120	SOIL	TANK 3 EAST	solids eph/vph
T-3E	01B15120	SOIL	TANK 3 EAST	vph - solid
T-3W	01B15121	SOIL	TANK 3 WEST	eph - solid
T-3W	01B15121	SOIL	TANK 3 WEST	solids eph/vph
T-3W	01B15121	SOIL	TANK 3 WEST	vph - solid

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations :

- AIHA 100033
- MASSACHUSETTS MA0100
- CONNECTICUT PH-0567
- NEW YORK ELAP 10899
- AIHA ELLAP (LEAD) 100033
- NEW HAMPSHIRE 2516
- VERMONT DOH (LEAD) No. LL015036
- RHODE ISLAND (LIC. No. 112)

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Edward Denson 6/6/01
SIGNATURE DATE

Tod Kopyscinski
Director of Operations

Edward Denson
Technical Director

* See end of data tabulation for notes and comments pertaining to this sample



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 CONCORD, NH 03301

6/6/01
 Page 1 of 11

Purchase Order No.: DOMH 0101.06

LIMS-BAT #: LIMS-56079
 Job Number: DOMH0101.06

Project Location: MEDFIELD STATE HOSPITAL
 Date Received: 6/1/01
 Field Sample #: T-2W
 Sample ID: *01B15119
 Sampled: 6/1/01
 TANK 2 WEST END

Sample Matrix: SOIL

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P/F
						Lo	Hi	
C9-C18 Aliphatics	mg/kg dry wt.	467.	06/05/01	KKP	372.			
C19-C36 Aliphatics	mg/kg dry wt.	2180.	06/05/01	KKP	39.5			
C11-C22 Aromatics	mg/kg dry wt.	1800.	06/05/01	KKP	210.			
Acenaphthene	mg/kg dry wt.	ND	06/05/01	KKP	10.3			
Acenaphthylene	mg/kg dry wt.	ND	06/05/01	KKP	10.3			
Anthracene	mg/kg dry wt.	ND	06/05/01	KKP	10.3			
Benzo(a)anthracene	mg/kg dry wt.	ND	06/05/01	KKP	10.3			
Benzo(a)pyrene	mg/kg dry wt.	ND	06/05/01	KKP	10.3			
Benzo(b)fluoranthene	mg/kg dry wt.	ND	06/05/01	KKP	10.3			
Benzo(g,h,i)perylene	mg/kg dry wt.	ND	06/05/01	KKP	10.3			
Benzo(k)fluoranthene	mg/kg dry wt.	ND	06/05/01	KKP	10.3			
Chrysene	mg/kg dry wt.	ND	06/05/01	KKP	10.3			
Dibenzo(a,h)anthracene	mg/kg dry wt.	ND	06/05/01	KKP	10.3			
Fluoranthene	mg/kg dry wt.	ND	06/05/01	KKP	10.3			
Fluorene	mg/kg dry wt.	ND	06/05/01	KKP	10.3			
Indeno(1,2,3-cd)pyrene	mg/kg dry wt.	ND	06/05/01	KKP	10.3			
2-Methylnaphthalene	mg/kg dry wt.	ND	06/05/01	KKP	10.3			
Naphthalene	mg/kg dry wt.	ND	06/05/01	KKP	10.3			
Phenanthrene	mg/kg dry wt.	ND	06/05/01	KKP	10.3			
Pyrene	mg/kg dry wt.	ND	06/05/01	KKP	10.3			
Date Extracted EPH Solid			6/4/2001	06/05/01	KKP			

RL = Reporting Limit

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NM = Not Measured

* = See end of report for comments and notes applying to this sample

SPEC LIMIT = a client specified recommended or regulatory level for comparison with data to determine PASS (P) or FAIL (F) condition of results.



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CONCORD, NH 03301

6/6/01
Page 2 of 11

Purchase Order No.: DOMH 0101.06

LIMS-BAT #: LIMS-56079
Job Number: DOMH0101.06

Project Location: MEDFIELD STATE HOSPITAL
Date Received: 6/1/01
Field Sample #: T-2W

Analytical Method:
MADEP-EPH-98-1 REVISION 0

SAMPLES ARE EXTRACTED WITH METHYLENE CHLORIDE, EXCHANGED INTO HEXANE AND CONCENTRATED. ALIPHATIC AND AROMATIC FRACTIONS ARE SEPARATED. ANALYSIS IS BY GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION. PAH AND C10-C22 AROMATICS ARE DETERMINED IN THE METHYLENE CHLORIDE FRACTION. C9-C18 AND C19-C36 ALIPHATICS ARE DETERMINED IN THE HEXANE FRACTION. TARGET COMPOUND CONTRIBUTIONS ARE SUBTRACTED FROM THE SUMMED AROMATIC RANGE. SUMMED RANGES ARE CORRECTED FOR LABORATORY METHOD BLANK.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED ACCORDING TO THE METHOD.

SIGNIFICANT MODIFICATIONS ARE LIMITED TO THE SUBTRACTION OF METHOD BLANK CONTRIBUTION FROM THE SUMMED RANGES AND EXTRACTION BY PRESSURIZED FLUID EXTRACTION (SW846 3545) (ASE).

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES ACHIEVED?

YES NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR ACCEPTANCE CRITERIA ARE DETAILED IN THE NOTES SECTION OF THIS REPORT.

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6/6/01
 Page 3 of 11

Purchase Order No.: DOMH 0101.06

Project Location: MEDFIELD STATE HOSPITAL
 Date Received: 6/1/01
 Field Sample #: T-3E
 Sample ID: 01B15120

LIMS-BAT #: LIMS-56079
 Job Number: DOMH0101.06

Sampled: 6/1/01
 TANK 3 EAST

Sample Matrix: SOIL

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P/F
						Lo	Hi	
C9-C18 Aliphatics	mg/kg dry wt.	1680.	06/05/01	KKP	937.			
C19-C36 Aliphatics	mg/kg dry wt.	7150.	06/05/01	KKP	99.4			
C11-C22 Aromatics	mg/kg dry wt.	7250.	06/05/01	KKP	528.			
Acenaphthene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Acenaphthylene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Anthracene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Benzo(a)anthracene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Benzo(a)pyrene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Benzo(b)fluoranthene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Benzo(g,h,i)perylene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Benzo(k)fluoranthene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Chrysene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Dibenzo(a,h)anthracene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Fluoranthene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Fluorene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Indeno(1,2,3-cd)pyrene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
2-Methylnaphthalene	mg/kg dry wt.	74.6	06/05/01	KKP	25.9			
Naphthalene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Phenanthrene	mg/kg dry wt.	35.2	06/05/01	KKP	25.9			
Pyrene	mg/kg dry wt.	ND	06/05/01	KKP	25.9			
Date Extracted EPH Solid		6/4/2001	06/05/01	KKP				

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* = See end of report for comments and notes applying to this sample



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6/6/01
Page 4 of 11

Purchase Order No.: DOMH 0101.06

Project Location: MEDFIELD STATE HOSPITAL
Date Received: 6/1/01
Field Sample #: T-3E

LIMS-BAT #: LIMS-56079
Job Number: DOMH0101.06

Analytical Method:

MADEP-EPH-98-1 REVISION 0

SAMPLES ARE EXTRACTED WITH METHYLENE CHLORIDE, EXCHANGED INTO HEXANE AND CONCENTRATED. ALIPHATIC AND AROMATIC FRACTIONS ARE SEPARATED. ANALYSIS IS BY GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION. PAH AND C10-C22 AROMATICS ARE DETERMINED IN THE METHYLENE-CHLORIDE FRACTION. C9-C18 AND C19-C36 ALIPHATICS ARE DETERMINED IN THE HEXANE FRACTION. TARGET COMPOUND CONTRIBUTIONS ARE SUBTRACTED FROM THE SUMMED AROMATIC RANGE. SUMMED RANGES ARE CORRECTED FOR LABORATORY METHOD BLANK.

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SIGNIFICANT MODIFICATIONS ARE LIMITED TO THE SUBTRACTION OF METHOD BLANK CONTRIBUTION FROM THE SUMMED RANGES AND EXTRACTION BY PRESSURIZED FLUID EXTRACTION (SW846 3545) (ASE).

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES ACHIEVED?

YES NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR ACCEPTANCE CRITERIA ARE DETAILED IN THE NOTES SECTION OF THIS REPORT.

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6/6/01
Page 6 of 11

Purchase Order No.: DOMH 0101.06

Project Location: MEDFIELD STATE HOSPITAL
Date Received: 6/1/01
Field Sample #: T-3W

LIMS-BAT #: LIMS-56079
Job Number: DOMH0101.06

Analytical Method:

MADEP-EPH-98-1 REVISION 0

SAMPLES ARE EXTRACTED WITH METHYLENE CHLORIDE, EXCHANGED INTO HEXANE AND CONCENTRATED. ALIPHATIC AND AROMATIC FRACTIONS ARE SEPARATED. ANALYSIS IS BY GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION. PAH AND C10-C22 AROMATICS ARE DETERMINED IN THE METHYLENE-CHLORIDE FRACTION. C9-C18 AND C19-C36 ALIPHATICS ARE DETERMINED IN THE HEXANE FRACTION. TARGET COMPOUND CONTRIBUTIONS ARE SUBTRACTED FROM THE SUMMED AROMATIC RANGE. SUMMED RANGES ARE CORRECTED FOR LABORATORY METHOD BLANK.

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WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES ACHIEVED?

YES NO

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Purchase Order No.: DOMH 0101.06

6/6/01
 Page 7 of 11

Project Location: MEDFIELD STATE HOSPITAL
 Date Received: 6/1/01
 Field Sample #: T-2W

LIMS-BAT #: LIMS-56079
 Job Number: DOMH0101.06

Sample ID: 01B15119
 Sampled: 6/1/01
 TANK 2 WEST END
 Sample Matrix: SOIL

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit Lo Hi	P/F
Solids, total	%	97.2	06/05/01	MAS			

Field Sample #: T-3E

Sample ID: 01B15120
 Sampled: 6/1/01
 TANK 3 EAST

Sample Matrix: SOIL

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit Lo Hi	P/F
Solids, total	%	96.5	06/05/01	MAS			

Field Sample #: T-3W

Sample ID: 01B15121
 Sampled: 6/1/01
 TANK 3 WEST

Sample Matrix: SOIL

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit Lo Hi	P/F
Solids, total	%	98.1	06/05/01	MAS			

Analytical Method:
 SM 2540G
 PERCENT OF SAMPLE REMAINING AFTER DRYING OVERNIGHT AT 103-105 DEGREES
 CENTIGRADE.

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Purchase Order No.: DOMH 0101.06

6/6/01
 Page 8 of 11

Project Location: MEDFIELD STATE HOSPITAL
 Date Received: 6/1/01
 Field Sample #: T-2W
 Sample ID: 01B15119

Sampled: 6/1/01
 TANK 2 WEST END

LIMS-BAT #: LIMS-56079
 Job Number: DOMH0101.06

Sample Matrix: SOIL

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P/F
						Lo	Hi	
C5-C8 Aliphatics	ug/kg dry wt.	ND	06/05/01	KKP	61300.			
C9-C12 Aliphatics	ug/kg dry wt.	159000.	06/05/01	KKP	22000.			
C9-C10 Aromatics	ug/kg dry wt.	79700.	06/05/01	KKP	18700.			
Benzene	ug/kg dry wt.	ND	06/05/01	KKP	110.			
Ethylbenzene	ug/kg dry wt.	110.	06/05/01	KKP	110.			
MTBE	ug/kg dry wt.	ND	06/05/01	KKP	270.			
Naphthalene	ug/kg dry wt.	1250.	06/05/01	KKP	108.			
Toluene	ug/kg dry wt.	ND	06/05/01	KKP	330.			
m/p-Xylene	ug/kg dry wt.	650.	06/05/01	KKP	380.			
o-Xylene	ug/kg dry wt.	410.	06/05/01	KKP	220.			

Analytical Method:

MADEP-VPH-98-1 REVISION 0

SAMPLES ARE PRESERVED WITH METHANOL AND CONCENTRATED BY PURGE AND TRAP, FOLLOWED BY GAS CHROMATOGRAPHY ANALYSIS WITH PID/FID DETECTION. SUMMED RANGES ARE REPORTED WITH TARGET COMPOUND CONTRIBUTIONS SUBTRACTED AND CORRECTED FOR LABORATORY METHOD BLANK. C9-C12 ALIPHATIC HYDROCARBONS EXCLUDE THE CONCENTRATION OF C9-C10 AROMATIC HYDROCARBONS.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED ACCORDING TO THE METHOD.

NO SIGNIFICANT MODIFICATIONS WERE MADE TO THE METHOD.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES ACHIEVED?

YES NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR ACCEPTANCE CRITERIA ARE LISTED IN THE NOTES SECTION OF THIS REPORT.

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6/6/01
 Page 9 of 11

Purchase Order No.: DOMH 0101.06

Project Location: MEDFIELD STATE HOSPITAL
 Date Received: 6/1/01
 Field Sample #: T-3E
 Sample ID: 01B15120
 Sample Matrix: SOIL

LIMS-BAT #: LIMS-56079
 Job Number: DOMH0101.06

Sampled: 6/1/01
 TANK 3 EAST

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P/F
						Lo	Hi	
C5-C8 Aliphatics	ug/kg dry wt.	62000.	06/05/01	KKP	61000.			
C9-C12 Aliphatics	ug/kg dry wt.	334000.	06/05/01	KKP	21800.			
C9-C10 Aromatics	ug/kg dry wt.	240000.	06/05/01	KKP	18600.			
Benzene	ug/kg dry wt.	ND	06/05/01	KKP	110.			
Ethylbenzene	ug/kg dry wt.	1000.	06/05/01	KKP	110.			
MTBE	ug/kg dry wt.	ND	06/05/01	KKP	270.			
Naphthalene	ug/kg dry wt.	20800.	06/05/01	KKP	108.			
Toluene	ug/kg dry wt.	ND	06/05/01	KKP	320.			
m/p-Xylene	ug/kg dry wt.	5000.	06/05/01	KKP	380.			
o-Xylene	ug/kg dry wt.	3100.	06/05/01	KKP	220.			

Analytical Method:

MADEP-VPH-98-1 REVISION 0

SAMPLES ARE PRESERVED WITH METHANOL AND CONCENTRATED BY PURGE AND TRAP, FOLLOWED BY GAS CHROMATOGRAPHY ANALYSIS WITH PID/FID DETECTION. SUMMED RANGES ARE REPORTED WITH TARGET COMPOUND CONTRIBUTIONS SUBTRACTED AND CORRECTED FOR LABORATORY METHOD BLANK. C9-C12 ALIPHATIC HYDROCARBONS EXCLUDE THE CONCENTRATION OF C9-C10 AROMATIC HYDROCARBONS.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED ACCORDING TO THE METHOD.

NO SIGNIFICANT MODIFICATIONS WERE MADE TO THE METHOD.

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6/6/01
 Page 10 of 11

Purchase Order No.: DOMH 0101.06

Project Location: MEDFIELD STATE HOSPITAL
 Date Received: 6/1/01
 Field Sample #: T-3W
 Sample ID: 01B15121

LIMS-BAT #: LIMS-56079
 Job Number: DOMH0101.06

Sampled: 6/1/01
 TANK 3 WEST

Sample Matrix: SOIL

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P/F
						Lo	Hi	
C5-C8 Aliphatics	ug/kg dry wt.	ND	06/05/01	KKP	60800.			
C9-C12 Aliphatics	ug/kg dry wt.	160000.	06/05/01	KKP	21800.			
C9-C10 Aromatics	ug/kg dry wt.	106000.	06/05/01	KKP	18600.			
Benzene	ug/kg dry wt.	ND	06/05/01	KKP	110.			
Ethylbenzene	ug/kg dry wt.	310.	06/05/01	KKP	110.			
MTBE	ug/kg dry wt.	ND	06/05/01	KKP	270.			
Naphthalene	ug/kg dry wt.	6830.	06/05/01	KKP	108.			
Toluene	ug/kg dry wt.	ND	06/05/01	KKP	320.			
m/p-Xylene	ug/kg dry wt.	1600.	06/05/01	KKP	380.			
o-Xylene	ug/kg dry wt.	910.	06/05/01	KKP	220.			

Analytical Method:

MADEP-VPH-98-1 REVISION 0

SAMPLES ARE PRESERVED WITH METHANOL AND CONCENTRATED BY PURGE AND TRAP, FOLLOWED BY GAS CHROMATOGRAPHY ANALYSIS WITH PID/FID DETECTION. SUMMED RANGES ARE REPORTED WITH TARGET COMPOUND CONTRIBUTIONS SUBTRACTED AND CORRECTED FOR LABORATORY METHOD BLANK. C9-C12 ALIPHATIC HYDROCARBONS EXCLUDE THE CONCENTRATION OF C9-C10 AROMATIC HYDROCARBONS.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED ACCORDING TO THE METHOD.

NO SIGNIFICANT MODIFICATIONS WERE MADE TO THE METHOD.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES ACHIEVED?

YES NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR ACCEPTANCE CRITERIA ARE LISTED IN THE NOTES SECTION OF THIS REPORT.

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* = See end of report for comments and notes applying to this sample



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Purchase Order No.: DOMH 0101.06

6/6/01
Page 11 of 11

Project Location: MEDFIELD STATE HOSPITAL
Date Received: 6/1/01

LIMS-BAT #: LIMS-56079
Job Number: DOMH0101.06

The following notes were attached to the reported analysis :

Sample ID: * 01815119 - 01815121

Analysis: eph - solid

Required QC not performed for all EPH samples.

** END OF REPORT **

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QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates.
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates
Standard Reference Materials and Duplicates
Method Blanks

Report Date: 6/6/01 Lims Bat #: LIMS-56079 Page 1 of 4
QC Batch Number: GC/FID-5195

Sample Id	Analysis	QC Analysis	Values	Units	Limits
01B15119	2,5-Dibromotoluene (FID)	Sur. Recovery (FID)	97.9	%	70-130
01B15120	2,5-Dibromotoluene (FID)	Sur. Recovery (FID)	80.0	%	70-130
01B15121	2,5-Dibromotoluene (FID)	Sur. Recovery (FID)	110.0	%	70-130
BLANK-33864	C5-C8 Aliphatics	Blank	<6020.	ug/kg dry wt.	
	C9-C12 Aliphatics	Blank	<2160.	ug/kg dry wt.	



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QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates.
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates
Standard Reference Materials and Duplicates
Method Blanks

Report Date: 6/6/01 Lims Bat #: LIMS-56079 Page 2 of 4

QC Batch Number: GC/FID-5198

Sample Id	Analysis	QC Analysis	Values	Units	Limits
01B15119	2-Fluorobiphenyl	Surrogate Recovery	79.2	%	40-140
	2-Bromonaphthalene	Surrogate Recovery	80.4	%	40-140
	Chlorooctadecane	Sur. Recovery	72.0	%	40-140
	Terphenyl	Sur. Recovery	90.0	%	40-140
01B15120	2-Fluorobiphenyl	Surrogate Recovery	91.4	%	40-140
	2-Bromonaphthalene	Surrogate Recovery	92.2	%	40-140
	Chlorooctadecane	Sur. Recovery	80.0	%	40-140
	Terphenyl	Sur. Recovery	82.5	%	40-140
01B15121	2-Fluorobiphenyl	Surrogate Recovery	41.8	%	40-140
	2-Bromonaphthalene	Surrogate Recovery	90.0	%	40-140
	Chlorooctadecane	Sur. Recovery	100.0	%	40-140
	Terphenyl	Sur. Recovery	100.0	%	40-140
BLANK-33876	Naphthalene	Blank	<0.5	mg/kg dry wt.	
	Acenaphthene	Blank	<0.5	mg/kg dry wt.	
	Acenaphthylene	Blank	<0.5	mg/kg dry wt.	
	Anthracene	Blank	<0.5	mg/kg dry wt.	
	Benzo(a)anthracene	Blank	<0.5	mg/kg dry wt.	
	Benzo(a)pyrene	Blank	<0.5	mg/kg dry wt.	
	Benzo(b)fluoranthene	Blank	<0.5	mg/kg dry wt.	
	Benzo(g,h,i)perylene	Blank	<0.5	mg/kg dry wt.	
	Chrysene	Blank	<0.5	mg/kg dry wt.	
	Dibenzo(a,h)anthracene	Blank	<0.5	mg/kg dry wt.	
	Fluoranthene	Blank	<0.5	mg/kg dry wt.	
	Fluorene	Blank	<0.5	mg/kg dry wt.	
	Indeno(1,2,3-cd)pyrene	Blank	<0.5	mg/kg dry wt.	
	2-Methylnaphthalene	Blank	<0.5	mg/kg dry wt.	
	Phenanthrene	Blank	<0.5	mg/kg dry wt.	
	Pyrene	Blank	<0.5	mg/kg dry wt.	
	Benzo(k)fluoranthene	Blank	<0.5	mg/kg dry wt.	
	C9-C18 Aliphatics	Blank	<18.1	mg/kg dry wt.	
	C19-C36 Aliphatics	Blank	6.9	mg/kg dry wt.	
	C11-C22 Aromatics	Blank	<10.2	mg/kg dry wt.	



QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates.
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates
Standard Reference Materials and Duplicates
Method Blanks

Report Date: 6/6/01 Lims Bat #: LIMS-56079 Page 3 of 4
QC Batch Number: GC/PID-4379

Sample Id	Analysis	QC Analysis	Values	Units	Limits
01B15119	2,5-Dibromotoluene (PID)	Sur. Recovery (PID)	113.3	%	70-130
01B15120	2,5-Dibromotoluene (PID)	Sur. Recovery (PID)	90.0	%	70-130
01B15121	2,5-Dibromotoluene (PID)	Sur. Recovery (PID)	104.2	%	70-130
BLANK-33863	Benzene	Blank	<11.	ug/kg dry wt.	
	Ethylbenzene	Blank	<11.	ug/kg dry wt.	
	Naphthalene	Blank	<10.7	ug/kg dry wt.	
	Toluene	Blank	<32.	ug/kg dry wt.	
	o-Xylene	Blank	<21.	ug/kg dry wt.	
	m/p-Xylene	Blank	<37.	ug/kg dry wt.	
	C9-C10 Aromatics	Blank	<1840.	ug/kg dry wt.	
	MTBE	Blank	<27.	ug/kg dry wt.	
LFBLANK-16298	Benzene	Lab Fort Blank Amt.	3333.3	ug/kg dry wt.	
		Lab Fort Blk. Found	3707.5	ug/kg dry wt.	
		Lab Fort Blk. % Rec.	111.2	%	70-130
	Ethylbenzene	Lab Fort Blank Amt.	3333.3	ug/kg dry wt.	
		Lab Fort Blk. Found	3259.6	ug/kg dry wt.	
		Lab Fort Blk. % Rec.	97.8	%	70-130
	Naphthalene	Lab Fort Blank Amt.	3333.3	ug/kg dry wt.	
		Lab Fort Blk. Found	3106.6	ug/kg dry wt.	
		Lab Fort Blk. % Rec.	93.2	%	70-130
	Toluene	Lab Fort Blank Amt.	3333.3	ug/kg dry wt.	
		Lab Fort Blk. Found	3588.4	ug/kg dry wt.	
		Lab Fort Blk. % Rec.	107.7	%	70-130
	o-Xylene	Lab Fort Blank Amt.	3333.3	ug/kg dry wt.	
		Lab Fort Blk. Found	3509.1	ug/kg dry wt.	
		Lab Fort Blk. % Rec.	105.3	%	70-130
	m/p-Xylene	Lab Fort Blank Amt.	6689.3	ug/kg dry wt.	
		Lab Fort Blk. Found	6519.3	ug/kg dry wt.	
		Lab Fort Blk. % Rec.	97.5	%	70-130
	MTBE	Lab Fort Blank Amt.	3333.3	ug/kg dry wt.	
		Lab Fort Blk. Found	3713.2	ug/kg dry wt.	
		Lab Fort Blk. % Rec.	111.4	%	70-130



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QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates.
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates
Standard Reference Materials and Duplicates
Method Blanks

Report Date:

6/6/01

Lims Bat #: LIMS-56079

Page 4 of 4

QUALITY CONTROL DEFINITIONS AND ABBREVIATIONS

QC BATCH NUMBER	This is the number assigned to all samples analyzed together that would be subject to comparison with a particular set of Quality Control Data.
LIMITS	Upper and Lower Control Limits for the QC ANALYSIS Reported. All values normally would fall within these statistically determined limits, unless there is an unusual circumstance that would be documented in a NOTE appearing on the last page of the QC SUMMARY REPORT. Not all QC results will have Limits defined.
Sample Amount	Amount of analyte found in a sample.
Blank	Method Blank that has been taken through all the steps of the analysis.
LFBLANK	Laboratory Fortified Blank (a control sample)
STDADD	Standard Added (a laboratory control sample)
Matrix Spk Amt Added	Amount of analyte spiked into a sample
MS Amt Measured	Amount of analyte found including amount that was spiked
Matrix Spike % Rec.	% Recovery of spiked amount in sample.
Duplicate Value	The result from the Duplicate analysis of the sample.
Duplicate RPD	The Relative Percent Difference between two Duplicate Analyses.
Surrogate Recovery	The % Recovery for non-environmental compounds (surrogates) spiked into samples to determine the performance of the analytical methods.
Sur. Recovery (ELCD)	Surrogate Recovery on the Electrolytic Conductivity Detector.
Sur. Recovery (PID)	Surrogate Recovery on the Photoionization Detector.
Standard Measured	Amount measured for a laboratory control sample
Standard Amt Added	Known value for a laboratory control sample
Standard % Recovery	% recovered for a laboratory control sample with a known value.
Lab Fort Blank Amt	Laboratory Fortified Blank Amount Added
Lab Fort Blk. Found	Laboratory Fortified Blank Amount Found
Lab Fort Blk % Rec	Laboratory Fortified Blank % Recovered
Dup Lab Fort Bl Amt	Duplicate Laboratory Fortified Blank Amount Added
Dup Lab Fort Bl Fnd	Duplicate Laboratory Fortified Blank Amount Found
Dup Lab Fort Bl % Rec	Duplicate Laboratory Fortified Blank % Recovery
Lab Fort Blank Range	Laboratory Fortified Blank Range (Absolute value of difference between recoveries for Lab Fortified Blank and Lab Fortified Blank Duplicate).
Lab Fort Bl. Av. Rec.	Laboratory Fortified Blank Average Recovery
Duplicate Sample Amt	Sample Value for Duplicate used with Matrix Spike Duplicate
MSD Amount Added	Matrix Spike Duplicate Amount Added (Spiked)
MSD Amt Measured	Matrix Spike Duplicate Amount Measured
MSD % Recovery	Matrix Spike Duplicate % Recovery
MSD Range	Absolute difference between Matrix Spike and Matrix Spike Duplicate Recoveries



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6/15/01
Page 2 of 7

Purchase Order No.: DOMH 0101.06

Project Location: MEDFIELD STATE HOSPITAL
Date Received: 6/6/01
Field Sample #: T-2W

LIMS-BAT #: LIMS-56155
Job Number: DOMH 0101.06

Analytical Method:

MADEP-EPH-98-1 REVISION 0

SAMPLES ARE EXTRACTED WITH METHYLENE CHLORIDE, EXCHANGED INTO HEXANE AND CONCENTRATED. ALIPHATIC AND AROMATIC FRACTIONS ARE SEPARATED. ANALYSIS IS BY GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION. PAH AND C10-C22 AROMATICS ARE DETERMINED IN THE METHYLENE-CHLORIDE FRACTION. C9-C18 AND C19-C36 ALIPHATICS ARE DETERMINED IN THE HEXANE FRACTION. TARGET COMPOUND CONTRIBUTIONS ARE SUBTRACTED FROM THE SUMMED AROMATIC RANGE. SUMMED RANGES ARE CORRECTED FOR LABORATORY METHOD BLANK.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED ACCORDING TO THE METHOD.

SIGNIFICANT MODIFICATIONS ARE LIMITED TO THE SUBTRACTION OF METHOD BLANK CONTRIBUTION FROM THE SUMMED RANGES AND EXTRACTION BY PRESSURIZED FLUID EXTRACTION (SW846 3545) (ASE).

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES ACHIEVED?

YES NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR ACCEPTANCE CRITERIA ARE DETAILED IN THE NOTES SECTION OF THIS REPORT.

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6/15/01
 Page 3 of 7

Purchase Order No.: DOMH 0101.06

Project Location: MEDFIELD STATE HOSPITAL
 Date Received: 6/6/01
 Field Sample #: T-3E
 Sample ID: 01B15514
 Sample Matrix: SOIL

LIMS-BAT #: LIMS-56155
 Job Number: DOMH 0101.06

Sampled: 6/1/01
 TANK 3 EAST

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P/F
						Lo	Hi	
C9-C18 Aliphatics	mg/kg dry wt.	1370.	06/14/01	KKP	937.			
C19-C36 Aliphatics	mg/kg dry wt.	5490.	06/14/01	KKP	99.4			
C11-C22 Aromatics	mg/kg dry wt.	5790.	06/14/01	KKP	528.			
Acenaphthene	mg/kg dry wt.	ND	06/14/01	KKP	25.9			
Acenaphthylene	mg/kg dry wt.	ND	06/14/01	KKP	25.9			
Anthracene	mg/kg dry wt.	ND	06/14/01	KKP	25.9			
Benzo(a)anthracene	mg/kg dry wt.	ND	06/14/01	KKP	25.9			
Benzo(a)pyrene	mg/kg dry wt.	ND	06/14/01	KKP	25.9			
Benzo(b)fluoranthene	mg/kg dry wt.	ND	06/14/01	KKP	25.9			
Benzo(g,h,i)perylene	mg/kg dry wt.	ND	06/14/01	KKP	25.9			
Benzo(k)fluoranthene	mg/kg dry wt.	ND	06/14/01	KKP	25.9			
Chrysene	mg/kg dry wt.	ND	06/14/01	KKP	25.9			
Dibenzo(a,h)anthracene	mg/kg dry wt.	ND	06/14/01	KKP	25.9			
Fluoranthene	mg/kg dry wt.	ND	06/14/01	KKP	25.9			
Fluorene	mg/kg dry wt.	ND	06/14/01	KKP	25.9			
Indeno(1,2,3-cd)pyrene	mg/kg dry wt.	ND	06/14/01	KKP	25.9			
2-Methylnaphthalene	mg/kg dry wt.	53.3	06/14/01	KKP	25.9			
Naphthalene	mg/kg dry wt.	ND	06/14/01	KKP	25.9			
Phenanthrene	mg/kg dry wt.	30.6	06/14/01	KKP	25.9			
Pyrene	mg/kg dry wt.	ND	06/14/01	KKP	25.9			
Date Extracted EPH Solid		6/7/2001	06/14/01	KKP				

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6/15/01
Page 4 of 7

Purchase Order No.: DOMH 0101.06

Project Location: MEDFIELD STATE HOSPITAL
Date Received: 6/6/01
Field Sample #: T-3E

LIMS-BAT #: LIMS-56155
Job Number: DOMH 0101.06

Analytical Method:

MADEP-EPH-98-1 REVISION 0

SAMPLES ARE EXTRACTED WITH METHYLENE CHLORIDE, EXCHANGED INTO HEXANE AND CONCENTRATED. ALIPHATIC AND AROMATIC FRACTIONS ARE SEPARATED. ANALYSIS IS BY GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION. PAH AND C10-C22 AROMATICS ARE DETERMINED IN THE METHYLENE-CHLORIDE FRACTION. C9-C18 AND C19-C36 ALIPHATICS ARE DETERMINED IN THE HEXANE FRACTION. TARGET COMPOUND CONTRIBUTIONS ARE SUBTRACTED FROM THE SUMMED AROMATIC RANGE. SUMMED RANGES ARE CORRECTED FOR LABORATORY METHOD BLANK.

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WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES ACHIEVED?

YES NO

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6/15/01
 Page 5 of 7

Purchase Order No.: DOMH 0101.06

Project Location: MEDFIELD STATE HOSPITAL
 Date Received: 6/6/01
 Field Sample #: T-3W
 Sample ID: 01B15515
 Sample Matrix: SOIL

LIMS-BAT #: LIMS-56155
 Job Number: DOMH 0101.06

Sampled: 6/1/01
 TANK 3 WEST

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P/F
						Lo	Hi	
C9-C18 Aliphatics	mg/kg dry wt.	428.	06/14/01	KKP	369.			
C19-C36 Aliphatics	mg/kg dry wt.	1990.	06/14/01	KKP	39.1			
C11-C22 Aromatics	mg/kg dry wt.	2220.	06/14/01	KKP	208.			
Acenaphthene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Acenaphthylene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Anthracene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Benzo(a)anthracene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Benzo(a)pyrene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Benzo(b)fluoranthene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Benzo(g,h,i)perylene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Benzo(k)fluoranthene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Chrysene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Dibenzo(a,h)anthracene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Fluoranthene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Fluorene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Indeno(1,2,3-cd)pyrene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
2-Methylnaphthalene	mg/kg dry wt.	17.1	06/14/01	KKP	10.2			
Naphthalene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Phenanthrene	mg/kg dry wt.	10.6	06/14/01	KKP	10.2			
Pyrene	mg/kg dry wt.	ND	06/14/01	KKP	10.2			
Date Extracted EPH Solid		6/7/2001	06/14/01	KKP				

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6/15/01
Page 6 of 7

Purchase Order No.: DOMH 0101.06

Project Location: MEDFIELD STATE HOSPITAL
Date Received: 6/6/01
Field Sample #: T-3W

LIMS-BAT #: LIMS-56155
Job Number: DOMH 0101.06

Analytical Method:

MADEP-EPH-98-1 REVISION 0

SAMPLES ARE EXTRACTED WITH METHYLENE CHLORIDE, EXCHANGED INTO HEXANE AND CONCENTRATED. ALIPHATIC AND AROMATIC FRACTIONS ARE SEPARATED. ANALYSIS IS BY GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION. PAH AND C10-C22 AROMATICS ARE DETERMINED IN THE METHYLENE CHLORIDE FRACTION. C9-C18 AND C19-C36 ALIPHATICS ARE DETERMINED IN THE HEXANE FRACTION. TARGET COMPOUND CONTRIBUTIONS ARE SUBTRACTED FROM THE SUMMED AROMATIC RANGE. SUMMED RANGES ARE CORRECTED FOR LABORATORY METHOD BLANK.

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WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES ACHIEVED?

YES NO

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6/15/01
Page 7 of 7

Purchase Order No.: DOMH 0101.06

Project Location: MEDFIELD STATE HOSPITAL
Date Received: 6/6/01

LIMS-BAT #: LIMS-56155
Job Number: DOMH 0101.06

** END OF REPORT **

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QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates.
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates
Standard Reference Materials and Duplicates
Method Blanks

Report Date: 6/15/01 Lims Bat #: LIMS-56155 Page 1 of 4
QC Batch Number: GC/FID-5248

Sample Id	Analysis	QC Analysis	Values	Units	Limits
01B15513	2-Fluorobiphenyl	Surrogate Recovery	100.0	%	40-140
	2-Bromonaphthalene	Surrogate Recovery	81.6	%	40-140
	Chlorooctadecane	Sur. Recovery	78.0	%	40-140
	Terphenyl	Sur. Recovery	100.0	%	40-140
01B15514	2-Fluorobiphenyl	Surrogate Recovery	99.6	%	40-140
	2-Bromonaphthalene	Surrogate Recovery	72.0	%	40-140
	Chlorooctadecane	Sur. Recovery	0.0	%	40-140
	Terphenyl	Sur. Recovery	0.0	%	40-140
01B15515	2-Fluorobiphenyl	Surrogate Recovery	99.6	%	40-140
	2-Bromonaphthalene	Surrogate Recovery	81.6	%	40-140
	Chlorooctadecane	Sur. Recovery	64.0	%	40-140
	Terphenyl	Sur. Recovery	99.0	%	40-140
BLANK-34071	Naphthalene	Blank	<0.5	mg/kg dry wt.	
	Acenaphthene	Blank	<0.5	mg/kg dry wt.	
	Acenaphthylene	Blank	<0.5	mg/kg dry wt.	
	Anthracene	Blank	<0.5	mg/kg dry wt.	
	Benzo(a)anthracene	Blank	<0.5	mg/kg dry wt.	
	Benzo(a)pyrene	Blank	<0.5	mg/kg dry wt.	
	Benzo(b)fluoranthene	Blank	<0.5	mg/kg dry wt.	
	Benzo(g,h,i)perylene	Blank	<0.5	mg/kg dry wt.	
	Chrysene	Blank	<0.5	mg/kg dry wt.	
	Dibenzo(a,h)anthracene	Blank	<0.5	mg/kg dry wt.	
	Fluoranthene	Blank	<0.5	mg/kg dry wt.	
	Fluorene	Blank	<0.5	mg/kg dry wt.	
	Indeno(1,2,3-cd)pyrene	Blank	<0.5	mg/kg dry wt.	
	2-Methylnaphthalene	Blank	<0.5	mg/kg dry wt.	
	Phenanthrene	Blank	<0.5	mg/kg dry wt.	
	Pyrene	Blank	<0.5	mg/kg dry wt.	
	Benzo(k)fluoranthene	Blank	<0.5	mg/kg dry wt.	
C9-C18 Aliphatics	Blank	<18.1	mg/kg dry wt.		
C19-C36 Aliphatics	Blank	7.0	mg/kg dry wt.		
C11-C22 Aromatics	Blank	<10.2	mg/kg dry wt.		
LFBLANK-16429	Naphthalene	Lab Fort Blank Amt.	2.5	mg/kg dry wt.	
		Lab Fort Blk. Found	1.8	mg/kg dry wt.	
		Lab Fort Blk. % Rec.	70.8	%	40-140
	Acenaphthene	Lab Fort Blank Amt.	2.5	mg/kg dry wt.	
		Lab Fort Blk. Found	2.1	mg/kg dry wt.	
		Lab Fort Blk. % Rec.	84.8	%	40-140
	Anthracene	Lab Fort Blank Amt.	2.5	mg/kg dry wt.	



QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates.
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates
Standard Reference Materials and Duplicates
Method Blanks

Report Date: 6/15/01

Lims Bat #: LIMS-56155

Page 2 of 4

QC Batch Number: GC/FID-5248

Sample Id	Analysis	QC Analysis	Values	Units	Limits
LFBLANK-16429	Anthracene	Lab Fort Blk. Found	2.5	mg/kg dry wt.	
		Lab Fort Blk. % Rec.	101.6	%	40-140
	Chrysene	Lab Fort Blank Amt.	2.5	mg/kg dry wt.	
		Lab Fort Blk. Found	2.4	mg/kg dry wt.	
	Pyrene	Lab Fort Blk. % Rec.	97.2	%	40-140
		Lab Fort Blank Amt.	2.5	mg/kg dry wt.	
		Lab Fort Blk. Found	2.5	mg/kg dry wt.	
		Lab Fort Blk. % Rec.	98.4	%	40-140



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ANALYTICAL LABORATORY

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QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates.
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates
Standard Reference Materials and Duplicates
Method Blanks

Report Date: 6/15/01

Lims Bat #: LIMS-56155

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NOTES:

QC Batch No. : GC/FID-5248
Sample ID : 01B15514
Analysis : Chlorooctadecane

SURROGATE CONCENTRATION BELOW DETECTION LIMIT DUE TO DILUTION REQUIRED
FOR SAMPLE ANALYSIS.

QC Batch No. : GC/FID-5248
Sample ID : 01B15514
Analysis : Terphenyl

SURROGATE CONCENTRATION BELOW DETECTION LIMIT DUE TO DILUTION REQUIRED
FOR SAMPLE ANALYSIS.



QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates.
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates
Standard Reference Materials and Duplicates
Method Blanks

Report Date:

6/15/01

Lims Bat #: LIMS-56155

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QUALITY CONTROL DEFINITIONS AND ABBREVIATIONS

QC BATCH NUMBER	This is the number assigned to all samples analyzed together that would be subject to comparison with a particular set of Quality Control Data.
LIMITS	Upper and Lower Control Limits for the QC ANALYSIS Reported. All values normally would fall within these statistically determined limits, unless there is an unusual circumstance that would be documented in a NOTE appearing on the last page of the QC SUMMARY REPORT. Not all QC results will have Limits defined.
Sample Amount	Amount of analyte found in a sample.
Blank	Method Blank that has been taken though all the steps of the analysis.
LFBLANK	Laboratory Fortified Blank (a control sample)
STDADD	Standard Added (a laboratory control sample)
Matrix Spk Amt Added	Amount of analyte spiked into a sample
MS Amt Measured	Amount of analyte found including amount that was spiked
Matrix Spike % Rec.	% Recovery of spiked amount in sample.
Duplicate Value	The result from the Duplicate analysis of the sample.
Duplicate RPD	The Relative Percent Difference between two Duplicate Analyses.
Surrogate Recovery	The % Recovery for non-environmental compounds (surrogates) spiked into samples to determine the performance of the analytical methods.
Sur. Recovery (ELCD)	Surrogate Recovery on the Electrolytic Conductivity Detector.
Sur. Recovery (PID)	Surrogate Recovery on the Photoionization Detector.
Standard Measured	Amount measured for a laboratory control sample
Standard Amt Added	Known value for a laboratory control sample
Standard % Recovery	% recovered for a laboratory control sample with a known value.
Lab Fort Blank Amt	Laboratory Fortified Blank Amount Added
Lab Fort Blk. Found	Laboratory Fortified Blank Amount Found
Lab Fort Blk % Rec	Laboratory Fortified Blank % Recovered
Dup Lab Fort Bl Amt	Duplicate Laboratory Fortified Blank Amount Added
Dup Lab Fort Bl Fnd	Duplicate Laboratory Fortified Blank Amount Found
Dup Lab Fort Bl % Rec	Duplicate Laboratory Fortified Blank % Recovery
Lab Fort Blank Range	Laboratory Fortified Blank Range (Absolute value of difference between recoveries for Lab Fortified Blank and Lab Fortified Blank Duplicate).
Lab Fort Bl. Av. Rec.	Laboratory Fortified Blank Average Recovery
Duplicate Sample Amt	Sample Value for Duplicate used with Matrix Spike Duplicate
MSD Amount Added	Matrix Spike Duplicate Amount Added (Spiked)
MSD Amt Measured	Matrix Spike Duplicate Amount Measured
MSD % Recovery	Matrix Spike Duplicate % Recovery
MSD Range	Absolute difference between Matrix Spike and Matrix Spike Duplicate Recoveries



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FAX (413) 525-6405

CHAIN OF CUSTODY RECORD

39 SPRUCE ST. • 2ND FLOOR • EAST LONGMEADOW, MA 01028

CA LIMS-56155

Client Name: Penning Associates Inc
 Attn: Jeff McCullough
 Address: Le Concord Center, Suite 434
10 Ferry St. Unit 6 03301
 Site Location: Medfield State Hospital
 Sampled By: Philip LeMoreaux
 Call Results: Yes No
 Fax Results: Yes No

Telephone: 603 226 1950

Batch #:

Project #: DOMH 0101.06

Client P.O. #: DOMH 0101.06

Fax #: 603 226 3235

LIMS # 56155

Field Sample I.D.	Sample Description	Lab #	DATE SAMPLED		Grab	MATRIX					Preservative (Use Code)	Container (Use Code)	Analysis Required	
			Date	Time		WASTE WATER	GROUND WATER	DKG WATER	Soil	Air				Other
F-2W	Tank-2 West End	01B15113	6/11/01	10:10	X			X				X	VPH	EPH
T-3E	Tank-3 East	15514	6/11/01	14:15	X			X				X	VPH	X
T-3W	Tank-3 West	15515	6/11/01	14:15	X			X				X	VPH	X

CONTAINER CODE
 P: PLASTIC (___ Size) V = 40 ml vial G = Glass (___ size) A = 1000 ml Amber 0 = Other ___
 Received by: (Signature) Philip LeMoreaux
 Date Time: 6/11/01 17:30
 Relinquished by: (Signature) Philip LeMoreaux
 Date Time: 6-11-01 17:45

PRESERVATIVE CODE: I = ICED N = HNO₃ H = HCl S = NaOH T = Na₂S₂O₃ O = OTHER Met/Lead
 Turnaround Requested: ___ 24-Hour ___ 48-Hour ___ Normal ___
 Other: 6/6/01 Date Required: ___
 Remarks/Comments: Please call for results ASAP.
Lab. submittal client (PHIL) that pit on EPH was not met

* * *



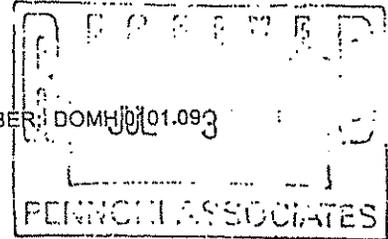
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REPORT DATE 6/28/01

PENNONI ASSOCIATES
THE CONCORD CTR, STE 311, 10 FERRY ST.#6
CONCORD, NH 03301
ATTN: JEFF MCCULLOUGH

CONTRACT NUMBER:
PURCHASE ORDER NUMBER: DOMH0101.093

PROJECT NUMBER:



ANALYTICAL SUMMARY

LIMS BAT #: LIMS-56545
JOB NUMBER: DOMH 0101.09

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: MEDFIELD STATE HOSPITAL POWER PLANT

FIELD SAMPLE #	LAB ID	MATRIX	SAMPLE DESCRIPTION	TEST
MW-01	01B17120	GRND WATER	NOT SPECIFIED	eph - water
MW-01	01B17120	GRND WATER	NOT SPECIFIED	vph - water
MW-02	01B17121	GRND WATER	NOT SPECIFIED	eph - water
MW-02	01B17121	GRND WATER	NOT SPECIFIED	vph - water
MW-03	01B17122	GRND WATER	NOT SPECIFIED	eph - water
MW-03	01B17122	GRND WATER	NOT SPECIFIED	vph - water
MW-04	01B17123	GRND WATER	NOT SPECIFIED	eph - water
MW-04	01B17123	GRND WATER	NOT SPECIFIED	vph - water
MW-05	01B17124	GRND WATER	NOT SPECIFIED	eph - water
MW-05	01B17124	GRND WATER	NOT SPECIFIED	vph - water
MW-06	01B17125	GRND WATER	NOT SPECIFIED	eph - water
MW-06	01B17125	GRND WATER	NOT SPECIFIED	vph - water

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations :

AIHA 100033	AIHA ELLAP (LEAD) 100033
MASSACHUSETTS MA0100	NEW HAMPSHIRE 2516
CONNECTICUT PH-0567	VERMONT DOH (LEAD) No. LL015036
NEW YORK ELAP 10899	RHODE ISLAND (LIC. No. 112)

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Edward Denson 6/28/01

SIGNATURE

DATE

Tod Kopyscinski
Director of Operations

Edward Denson
Technical Director



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JEFF MCCULLOUGH
PENNONI ASSOCIATES
THE CONCORD CTR, STE 311, 10 FERRY ST.#6
CONCORD, NH 03301

Purchase Order No.: DOMH 0101.09

6/28/01
Page 2 of 19

Project Location: MEDFIELD STATE HOSPITAL POWER PLANT
Date Received: 6/21/01
Field Sample #: MW-01

LIMS-BAT #: LIMS-56545
Job Number: DOMH 0101.09

Analytical Method:

MADEP-EPH-98-1 REVISION 0

SAMPLES ARE PRESERVED TO pH < 2.0 WITH HYDROCHLORIC ACID (HCL).
SAMPLES ARE EXTRACTED WITH METHYLENE CHLORIDE, EXCHANGED INTO HEXANE AND
CONCENTRATED. ALIPHATIC AND AROMATIC FRACTIONS ARE SEPARATED. ANALYSIS IS
BY GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION. PAH AND C10-C22
AROMATICS ARE DETERMINED IN THE METHYLENE CHLORIDE FRACTION. C9-C18 AND
C19-C36 ALIPHATICS ARE DETERMINED IN THE HEXANE FRACTION. TARGET COMPOUND
CONTRIBUTIONS ARE SUBTRACTED FROM THE SUMMED AROMATIC RANGE. SUMMED RANGES
ARE CORRECTED FOR LABORATORY METHOD BLANK.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED
ACCORDING TO THE METHOD.

SIGNIFICANT MODIFICATIONS ARE LIMITED TO THE SUBTRACTION OF METHOD BLANK
FROM THE SUMMED RANGES.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES
ACHIEVED?

YES NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR
ACCEPTANCE CRITERIA ARE DETAILED IN THE NOTES SECTION OF THIS REPORT.

RL = Reporting Limit

ND = Not Detected

NM = Not Measured

SPEC LIMIT = a client specified recommended or
regulatory level for comparison with data to
determine PASS (P) or FAIL (F) condition of results.

* = See end of report for comments and notes applying to this sample



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JEFF MCCULLOUGH
 PENNONI ASSOCIATES
 THE CONCORD CTR, STE 311, 10 FERRY ST.#6
 CONCORD, NH 03301

Purchase Order No.: DOMH 0101.09

6/28/01
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Project Location: MEDFIELD STATE HOSPITAL POWER PLANT
 Date Received: 6/21/01
 Field Sample #: MW-02
 Sample ID: 01B17121
 Sample Matrix: GRND WATER

LIMS-BAT #: LIMS-56545
 Job Number: DOMH 0101.09

Sampled: 6/21/01
 NOT SPECIFIED

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P/ F
						Lo	Hi	
C9-C18 Aliphatics	ug/l	154.	06/27/01	KKP	144.			
C19-C36 Aliphatics	ug/l	548.	06/27/01	KKP	84.0			
C11-C22 Aromatics	ug/l	574.	06/27/01	KKP	48.0			
Acenaphthene	ug/l	ND	06/27/01	KKP	5.0			
Acenaphthylene	ug/l	ND	06/27/01	KKP	5.0			
Anthracene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(a)anthracene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(a)pyrene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(b)fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(g,h,i)perylene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(k)fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Chrysene	ug/l	ND	06/27/01	KKP	10.8			
Dibenzo(a,h)anthracene	ug/l	ND	06/27/01	KKP	5.0			
Fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Fluorene	ug/l	ND	06/27/01	KKP	5.0			
Indeno(1,2,3-cd)pyrene	ug/l	ND	06/27/01	KKP	5.0			
2-Methylnaphthalene	ug/l	ND	06/27/01	KKP	5.0			
Naphthalene	ug/l	ND	06/27/01	KKP	5.0			
Phenanthrene	ug/l	ND	06/27/01	KKP	5.0			
Pyrene	ug/l	ND	06/27/01	KKP	5.0			
Date Extracted EPH Water		6/25/2001	06/27/01	KKP				

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CONCORD, NH 03301

Purchase Order No.: DOMH 0101.09

6/28/01
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Project Location: MEDFIELD STATE HOSPITAL POWER PLANT
Date Received: 6/21/01
Field Sample #: MW-02

LIMS-BAT #: LIMS-56545
Job Number: DOMH 0101.09

Analytical Method:

MADEP-EPH-98-1 REVISION 0

SAMPLES ARE PRESERVED TO pH < 2.0 WITH HYDROCHLORIC ACID (HCL).
SAMPLES ARE EXTRACTED WITH METHYLENE CHLORIDE, EXCHANGED INTO HEXANE AND
CONCENTRATED. ALIPHATIC AND AROMATIC FRACTIONS ARE SEPARATED. ANALYSIS IS
BY GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION. PAH AND C10-C22
AROMATICS ARE DETERMINED IN THE METHYLENE CHLORIDE FRACTION. C9-C18 AND
C19-C36 ALIPHATICS ARE DETERMINED IN THE HEXANE FRACTION. TARGET COMPOUND
CONTRIBUTIONS ARE SUBTRACTED FROM THE SUMMED AROMATIC RANGE. SUMMED RANGES
ARE CORRECTED FOR LABORATORY METHOD BLANK.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED
ACCORDING TO THE METHOD.

SIGNIFICANT MODIFICATIONS ARE LIMITED TO THE SUBTRACTION OF METHOD BLANK
FROM THE SUMMED RANGES.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES
ACHIEVED?

YES NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR
ACCEPTANCE CRITERIA ARE DETAILED IN THE NOTES SECTION OF THIS REPORT.

RL = Reporting Limit

ND = Not Detected

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SPEC LIMIT = a client specified recommended or
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 CONCORD, NH 03301

Purchase Order No.: DOMH 0101.09

6/28/01
 Page 5 of 19

Project Location: MEDFIELD STATE HOSPITAL POWER PLANT
 Date Received: 6/21/01
 Field Sample #: MW-03
 Sample ID: 01B17122
 Sample Matrix: GRND WATER

LIMS-BAT #: LIMS-56545
 Job Number: DOMH 0101.09

Sampled: 6/21/01
 NOT SPECIFIED

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P/ F
						Lo	Hi	
C9-C18 Aliphatics	ug/l	ND	06/27/01	KKP	144.			
C19-C36 Aliphatics	ug/l	99.0	06/27/01	KKP	84.0			
C11-C22 Aromatics	ug/l	86.4	06/27/01	KKP	48.0			
Acenaphthene	ug/l	ND	06/27/01	KKP	5.0			
Acenaphthylene	ug/l	ND	06/27/01	KKP	5.0			
Anthracene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(a)anthracene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(a)pyrene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(b)fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(g,h,i)perylene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(k)fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Chrysene	ug/l	ND	06/27/01	KKP	10.8			
Dibenzo(a,h)anthracene	ug/l	ND	06/27/01	KKP	5.0			
Fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Fluorene	ug/l	ND	06/27/01	KKP	5.0			
Indeno(1,2,3-cd)pyrene	ug/l	ND	06/27/01	KKP	5.0			
2-Methylnaphthalene	ug/l	ND	06/27/01	KKP	5.0			
Naphthalene	ug/l	ND	06/27/01	KKP	5.0			
Phenanthrene	ug/l	ND	06/27/01	KKP	5.0			
Pyrene	ug/l	ND	06/27/01	KKP	5.0			
Date Extracted EPH Water		6/25/2001	06/27/01	KKP				

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CONCORD, NH 03301

Purchase Order No.: DOMH 0101.09

6/28/01
Page 6 of 19

Project Location: MEDFIELD STATE HOSPITAL POWER PLANT
Date Received: 6/21/01
Field Sample #: MW-03

LIMS-BAT #: LIMS-56545
Job Number: DOMH 0101.09

Analytical Method:

MADEP-EPH-98-1 REVISION 0

SAMPLES ARE PRESERVED TO pH < 2.0 WITH HYDROCHLORIC ACID (HCL).
SAMPLES ARE EXTRACTED WITH METHYLENE CHLORIDE, EXCHANGED INTO HEXANE AND
CONCENTRATED. ALIPHATIC AND AROMATIC FRACTIONS ARE SEPARATED. ANALYSIS IS
BY GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION. PAH AND C10-C22
AROMATICS ARE DETERMINED IN THE METHYLENE CHLORIDE FRACTION. C9-C18 AND
C19-C36 ALIPHATICS ARE DETERMINED IN THE HEXANE FRACTION. TARGET COMPOUND
CONTRIBUTIONS ARE SUBTRACTED FROM THE SUMMED AROMATIC RANGE. SUMMED RANGES
ARE CORRECTED FOR LABORATORY METHOD BLANK.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED
ACCORDING TO THE METHOD.

SIGNIFICANT MODIFICATIONS ARE LIMITED TO THE SUBTRACTION OF METHOD BLANK
FROM THE SUMMED RANGES.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES
ACHIEVED?

YES NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR
ACCEPTANCE CRITERIA ARE DETAILED IN THE NOTES SECTION OF THIS REPORT.

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ND = Not Detected

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 CONCORD, NH 03301

Purchase Order No.: DOMH 0101.09

6/28/01
 Page 7 of 19

Project Location: MEDFIELD STATE HOSPITAL POWER PLANT
 Date Received: 6/21/01
 Field Sample #: MW-04

LIMS-BAT #: LIMS-56545
 Job Number: DOMH 0101.09

Sample ID: 01B17123
 Sampled: 6/21/01
 NOT SPECIFIED

Sample Matrix: GRND WATER

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P/ F
						Lo	Hi	
C9-C18 Aliphatics	ug/l	ND	06/27/01	KKP	144.			
C19-C36 Aliphatics	ug/l	128.	06/27/01	KKP	84.0			
C11-C22 Aromatics	ug/l	61.4	06/27/01	KKP	48.0			
Acenaphthene	ug/l	ND	06/27/01	KKP	5.0			
Acenaphthylene	ug/l	ND	06/27/01	KKP	5.0			
Anthracene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(a)anthracene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(a)pyrene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(b)fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(g,h,i)perylene	ug/l	ND	06/27/01	KKP	5.0			
Benzo(k)fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Chrysene	ug/l	ND	06/27/01	KKP	10.8			
Dibenzo(a,h)anthracene	ug/l	ND	06/27/01	KKP	5.0			
Fluoranthene	ug/l	ND	06/27/01	KKP	5.0			
Fluorene	ug/l	ND	06/27/01	KKP	5.0			
Indeno(1,2,3-cd)pyrene	ug/l	ND	06/27/01	KKP	5.0			
2-Methylnaphthalene	ug/l	ND	06/27/01	KKP	5.0			
Naphthalene	ug/l	ND	06/27/01	KKP	5.0			
Phenanthrene	ug/l	ND	06/27/01	KKP	5.0			
Pyrene	ug/l	ND	06/27/01	KKP	5.0			
Date Extracted EPH Water		6/25/2001	06/27/01	KKP				

RL = Reporting Limit

ND = Not Detected

NM = Not Measured

* = See end of report for comments and notes applying to this sample

SPEC LIMIT = a client specified recommended or regulatory level for comparison with data to determine PASS (P) or FAIL (F) condition of results.



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PENNONI ASSOCIATES
THE CONCORD CTR, STE 311, 10 FERRY ST.#6
CONCORD, NH 03301

Purchase Order No.: DOMH 0101.09

6/28/01
Page 8 of 19

Project Location: MEDFIELD STATE HOSPITAL POWER PLANT
Date Received: 6/21/01
Field Sample #: MW-04

LIMS-BAT #: LIMS-56545
Job Number: DOMH 0101.09

Analytical Method:
MADEP-EPH-98-1 REVISION 0

SAMPLES ARE PRESERVED TO pH < 2.0 WITH HYDROCHLORIC ACID (HCL).
SAMPLES ARE EXTRACTED WITH METHYLENE CHLORIDE, EXCHANGED INTO HEXANE AND
CONCENTRATED. ALIPHATIC AND AROMATIC FRACTIONS ARE SEPARATED. ANALYSIS IS
BY GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION. PAH AND C10-C22
AROMATICS ARE DETERMINED IN THE METHYLENE CHLORIDE FRACTION. C9-C18 AND
C19-C36 ALIPHATICS ARE DETERMINED IN THE HEXANE FRACTION. TARGET COMPOUND
CONTRIBUTIONS ARE SUBTRACTED FROM THE SUMMED AROMATIC RANGE. SUMMED RANGES
ARE CORRECTED FOR LABORATORY METHOD BLANK.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED
ACCORDING TO THE METHOD.

SIGNIFICANT MODIFICATIONS ARE LIMITED TO THE SUBTRACTION OF METHOD BLANK
FROM THE SUMMED RANGES.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES
ACHIEVED?

YES NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR
ACCEPTANCE CRITERIA ARE DETAILED IN THE NOTES SECTION OF THIS REPORT.

RL = Reporting Limit

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* = See end of report for comments and notes applying to this sample



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Purchase Order No.: DOMH 0101.09

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Project Location: MEDFIELD STATE HOSPITAL POWER PLANT
 Date Received: 6/21/01
 Field Sample #: MW-05
 Sample ID: 01B17124
 Sample Matrix: GRND WATER

LIMS-BAT #: LIMS-56545
 Job Number: DOMH 0101.09

Sampled: 6/21/01
 NOT SPECIFIED

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit Lo Hi	P/ F
C9-C18 Aliphatics	ug/l	ND	06/27/01	KKP	144.		
C19-C36 Aliphatics	ug/l	ND	06/27/01	KKP	84.0		
C11-C22 Aromatics	ug/l	ND	06/27/01	KKP	48.0		
Acenaphthene	ug/l	ND	06/27/01	KKP	5.0		
Acenaphthylene	ug/l	ND	06/27/01	KKP	5.0		
Anthracene	ug/l	ND	06/27/01	KKP	5.0		
Benzo(a)anthracene	ug/l	ND	06/27/01	KKP	5.0		
Benzo(a)pyrene	ug/l	ND	06/27/01	KKP	5.0		
Benzo(b)fluoranthene	ug/l	ND	06/27/01	KKP	5.0		
Benzo(g,h,i)perylene	ug/l	ND	06/27/01	KKP	5.0		
Benzo(k)fluoranthene	ug/l	ND	06/27/01	KKP	5.0		
Chrysene	ug/l	ND	06/27/01	KKP	10.8		
Dibenzo(a,h)anthracene	ug/l	ND	06/27/01	KKP	5.0		
Fluoranthene	ug/l	ND	06/27/01	KKP	5.0		
Fluorene	ug/l	ND	06/27/01	KKP	5.0		
Indeno(1,2,3-cd)pyrene	ug/l	ND	06/27/01	KKP	5.0		
2-Methylnaphthalene	ug/l	ND	06/27/01	KKP	5.0		
Naphthalene	ug/l	ND	06/27/01	KKP	5.0		
Phenanthrene	ug/l	ND	06/27/01	KKP	5.0		
Pyrene	ug/l	ND	06/27/01	KKP	5.0		
Date Extracted EPH Water		6/25/2001	06/27/01	KKP			

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Purchase Order No.: DOMH 0101.09

6/28/01
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Project Location: MEDFIELD STATE HOSPITAL POWER PLANT
Date Received: 6/21/01
Field Sample #: MW-05

LIMS-BAT #: LIMS-56545
Job Number: DOMH 0101.09

Analytical Method:

MADEP-EPH-98-1 REVISION 0

SAMPLES ARE PRESERVED TO pH < 2.0 WITH HYDROCHLORIC ACID (HCL).
SAMPLES ARE EXTRACTED WITH METHYLENE CHLORIDE, EXCHANGED INTO HEXANE AND
CONCENTRATED. ALIPHATIC AND AROMATIC FRACTIONS ARE SEPARATED. ANALYSIS IS
BY GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION. PAH AND C10-C22
AROMATICS ARE DETERMINED IN THE METHYLENE CHLORIDE FRACTION. C9-C18 AND
C19-C36 ALIPHATICS ARE DETERMINED IN THE HEXANE FRACTION. TARGET COMPOUND
CONTRIBUTIONS ARE SUBTRACTED FROM THE SUMMED AROMATIC RANGE. SUMMED RANGES
ARE CORRECTED FOR LABORATORY METHOD BLANK.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED
ACCORDING TO THE METHOD.

SIGNIFICANT MODIFICATIONS ARE LIMITED TO THE SUBTRACTION OF METHOD BLANK
FROM THE SUMMED RANGES.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES
ACHIEVED?

YES NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR
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Purchase Order No.: DOMH 0101.09

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Project Location: MEDFIELD STATE HOSPITAL POWER PLANT
 Date Received: 6/21/01
 Field Sample #: MW-06
 Sample ID: 01B17125
 Sample Matrix: GRND WATER

LIMS-BAT #: LIMS-56545
 Job Number: DOMH 0101.09

Sampled: 6/21/01
 NOT SPECIFIED

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit Lo Hi	P/F
C9-C18 Aliphatics	ug/l	ND	06/27/01	KKP	144.		
C19-C36 Aliphatics	ug/l	ND	06/27/01	KKP	84.0		
C11-C22 Aromatics	ug/l	ND	06/27/01	KKP	48.0		
Acenaphthene	ug/l	ND	06/27/01	KKP	5.0		
Acenaphthylene	ug/l	ND	06/27/01	KKP	5.0		
Anthracene	ug/l	ND	06/27/01	KKP	5.0		
Benzo(a)anthracene	ug/l	ND	06/27/01	KKP	5.0		
Benzo(a)pyrene	ug/l	ND	06/27/01	KKP	5.0		
Benzo(b)fluoranthene	ug/l	ND	06/27/01	KKP	5.0		
Benzo(g,h,i)perylene	ug/l	ND	06/27/01	KKP	5.0		
Benzo(k)fluoranthene	ug/l	ND	06/27/01	KKP	5.0		
Chrysene	ug/l	ND	06/27/01	KKP	10.8		
Dibenzo(a,h)anthracene	ug/l	ND	06/27/01	KKP	5.0		
Fluoranthene	ug/l	ND	06/27/01	KKP	5.0		
Fluorene	ug/l	ND	06/27/01	KKP	5.0		
Indeno(1,2,3-cd)pyrene	ug/l	ND	06/27/01	KKP	5.0		
2-Methylnaphthalene	ug/l	ND	06/27/01	KKP	5.0		
Naphthalene	ug/l	ND	06/27/01	KKP	5.0		
Phenanthrene	ug/l	ND	06/27/01	KKP	5.0		
Pyrene	ug/l	ND	06/27/01	KKP	5.0		
Date Extracted EPH Water		6/25/2001	06/27/01	KKP			

RL = Reporting Limit
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Purchase Order No.: DOMH 0101.09

LIMS-BAT #: LIMS-56545
Job Number: DOMH 0101.09

Project Location: MEDFIELD STATE HOSPITAL POWER PLANT
Date Received: 6/21/01
Field Sample #: MW-06

Analytical Method:
MADEP-EPH-98-1 REVISION 0

SAMPLES ARE PRESERVED TO pH < 2.0 WITH HYDROCHLORIC ACID (HCL).
SAMPLES ARE EXTRACTED WITH METHYLENE CHLORIDE, EXCHANGED INTO HEXANE AND
CONCENTRATED. ALIPHATIC AND AROMATIC FRACTIONS ARE SEPARATED. ANALYSIS IS
BY GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION. PAH AND C10-C22
AROMATICS ARE DETERMINED IN THE METHYLENE CHLORIDE FRACTION. C9-C18 AND
C19-C36 ALIPHATICS ARE DETERMINED IN THE HEXANE FRACTION. TARGET COMPOUND
CONTRIBUTIONS ARE SUBTRACTED FROM THE SUMMED AROMATIC RANGE. SUMMED RANGES
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REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED
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SIGNIFICANT MODIFICATIONS ARE LIMITED TO THE SUBTRACTION OF METHOD BLANK
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WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES
ACHIEVED?

YES NO

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Purchase Order No.: DOMH 0101.09

LIMS-BAT #: LIMS-56545
Job Number: DOMH 0101.09

Project Location: MEDFIELD STATE HOSPITAL POWER PLANT
Date Received: 6/21/01
Field Sample #: MW-01
Sample ID: 01B17120

Sampled: 6/21/01
NOT SPECIFIED

Sample Matrix: GRND WATER

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit Lo Hi	P/F
C5-C8 Aliphatics	ug/l	ND	06/27/01	KKP	69.0		
C9-C12 Aliphatics	ug/l	ND	06/27/01	KKP	34.0		
C9-C10 Aromatics	ug/l	ND	06/27/01	KKP	20.0		
Benzene	ug/l	ND	06/27/01	KKP	0.3		
Ethyl Benzene	ug/l	ND	06/27/01	KKP	0.4		
MTBE	ug/l	ND	06/27/01	KKP	2.1		
Naphthalene	ug/l	ND	06/27/01	KKP	3.2		
Toluene	ug/l	ND	06/27/01	KKP	1.9		
m/p-Xylene	ug/l	ND	06/27/01	KKP	2.7		
o-Xylene	ug/l	ND	06/27/01	KKP	1.0		

Analytical Method:

MADEP-VPH-98-1 REVISION 0

SAMPLES ARE CONCENTRATED BY PURGE AND TRAP, FOLLOWED BY GAS CHROMATOGRAPHY ANALYSIS WITH PID/FID DETECTION. SUMMED RANGES ARE REPORTED WITH TARGET COMPOUND CONTRIBUTIONS SUBTRACTED AND CORRECTED FOR LABORATORY METHOD BLANK. C9-C12 ALIPHATIC HYDROCARBONS EXCLUDE THE CONCENTRATION OF C9-C10 AROMATIC HYDROCARBONS.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED ACCORDING TO THE METHOD.

NO SIGNIFICANT MODIFICATIONS WERE MADE TO THE METHOD.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES ACHIEVED?

YES NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR ACCEPTANCE CRITERIA ARE LISTED IN THE NOTES SECTION OF THIS REPORT.

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Project Location: MEDFIELD STATE HOSPITAL POWER PLANT
Date Received: 6/21/01
Field Sample #: MW-02
Sample ID: 01B17121
Sample Matrix: GRND WATER

LIMS-BAT #: LIMS-56545
Job Number: DOMH 0101.09

Sampled: 6/21/01
NOT SPECIFIED

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P / F
						Lo	Hi	
C5-C8 Aliphatics	ug/l	ND	06/27/01	KKP	69.0			
C9-C12 Aliphatics	ug/l	ND	06/27/01	KKP	34.0			
C9-C10 Aromatics	ug/l	ND	06/27/01	KKP	20.0			
Benzene	ug/l	ND	06/27/01	KKP	0.3			
Ethyl Benzene	ug/l	3.8	06/27/01	KKP	0.4			
MTBE	ug/l	ND	06/27/01	KKP	2.1			
Naphthalene	ug/l	ND	06/27/01	KKP	3.2			
Toluene	ug/l	ND	06/27/01	KKP	1.9			
m/p-Xylene	ug/l	ND	06/27/01	KKP	2.7			
o-Xylene	ug/l	ND	06/27/01	KKP	1.0			

Analytical Method:
MADEP-VPH-98-1 REVISION 0

SAMPLES ARE CONCENTRATED BY PURGE AND TRAP, FOLLOWED BY GAS CHROMATOGRAPHY ANALYSIS WITH PID/FID DETECTION. SUMMED RANGES ARE REPORTED WITH TARGET COMPOUND CONTRIBUTIONS SUBTRACTED AND CORRECTED FOR LABORATORY METHOD BLANK. C9-C12 ALIPHATIC HYDROCARBONS EXCLUDE THE CONCENTRATION OF C9-C10 AROMATIC HYDROCARBONS.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED ACCORDING TO THE METHOD.

NO SIGNIFICANT MODIFICATIONS WERE MADE TO THE METHOD.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES ACHIEVED?

YES NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR ACCEPTANCE CRITERIA ARE LISTED IN THE NOTES SECTION OF THIS REPORT.

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Project Location: MEDFIELD STATE HOSPITAL POWER PLANT
Date Received: 6/21/01
Field Sample #: MW-03
Sample ID: 01B17122
Sample Matrix: GRND WATER

LIMS-BAT #: LIMS-56545
Job Number: DOMH 0101.09

Sampled: 6/21/01
NOT SPECIFIED

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P/F
						Lo	Hi	
C5-C8 Aliphatics	ug/l	ND	06/27/01	KKP	69.0			
C9-C12 Aliphatics	ug/l	ND	06/27/01	KKP	34.0			
C9-C10 Aromatics	ug/l	ND	06/27/01	KKP	20.0			
Benzene	ug/l	ND	06/27/01	KKP	0.3			
Ethyl Benzene	ug/l	ND	06/27/01	KKP	0.4			
MTBE	ug/l	ND	06/27/01	KKP	2.1			
Naphthalene	ug/l	ND	06/27/01	KKP	3.2			
Toluene	ug/l	ND	06/27/01	KKP	1.9			
m/p-Xylene	ug/l	ND	06/27/01	KKP	2.7			
o-Xylene	ug/l	ND	06/27/01	KKP	1.0			

Analytical Method:

MADEP-VPH-98-1 REVISION 0

SAMPLES ARE CONCENTRATED BY PURGE AND TRAP, FOLLOWED BY GAS CHROMATOGRAPHY ANALYSIS WITH PID/FID DETECTION. SUMMED RANGES ARE REPORTED WITH TARGET COMPOUND CONTRIBUTIONS SUBTRACTED AND CORRECTED FOR LABORATORY METHOD BLANK. C9-C12 ALIPHATIC HYDROCARBONS EXCLUDE THE CONCENTRATION OF C9-C10 AROMATIC HYDROCARBONS.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED ACCORDING TO THE METHOD.

NO SIGNIFICANT MODIFICATIONS WERE MADE TO THE METHOD.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES ACHIEVED?

YES NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR ACCEPTANCE CRITERIA ARE LISTED IN THE NOTES SECTION OF THIS REPORT.

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Purchase Order No.: DOMH 0101.09

Project Location: MEDFIELD STATE HOSPITAL POWER PLANT
Date Received: 6/21/01
Field Sample #: MW-04
Sample ID: 01B17123
Sample Matrix: GRND WATER

LIMS-BAT #: LIMS-56545
Job Number: DOMH 0101.09

Sampled: 6/21/01
NOT SPECIFIED

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P/ F
						Lo	Hi	
C5-C8 Aliphatics	ug/l	ND	06/27/01	KKP	69.0			
C9-C12 Aliphatics	ug/l	ND	06/27/01	KKP	34.0			
C9-C10 Aromatics	ug/l	ND	06/27/01	KKP	20.0			
Benzene	ug/l	ND	06/27/01	KKP	0.3			
Ethyl Benzene	ug/l	ND	06/27/01	KKP	0.4			
MTBE	ug/l	ND	06/27/01	KKP	2.1			
Naphthalene	ug/l	ND	06/27/01	KKP	3.2			
Toluene	ug/l	ND	06/27/01	KKP	1.9			
m/p-Xylene	ug/l	ND	06/27/01	KKP	2.7			
o-Xylene	ug/l	ND	06/27/01	KKP	1.0			

Analytical Method:

MADEP-VPH-98-1 REVISION 0

SAMPLES ARE CONCENTRATED BY PURGE AND TRAP, FOLLOWED BY GAS CHROMATOGRAPHY ANALYSIS WITH PID/FID DETECTION. SUMMED RANGES ARE REPORTED WITH TARGET COMPOUND CONTRIBUTIONS SUBTRACTED AND CORRECTED FOR LABORATORY METHOD BLANK. C9-C12 ALIPHATIC HYDROCARBONS EXCLUDE THE CONCENTRATION OF C9-C10 AROMATIC HYDROCARBONS.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED ACCORDING TO THE METHOD.

NO SIGNIFICANT MODIFICATIONS WERE MADE TO THE METHOD.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES ACHIEVED?

YES NO

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Purchase Order No.: DOMH 0101.09

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Project Location: MEDFIELD STATE HOSPITAL POWER PLANT
Date Received: 6/21/01
Field Sample #: MW-05
Sample ID: 01B17124
Sample Matrix: GRND WATER

Sampled: 6/21/01
NOT SPECIFIED

LIMS-BAT #: LIMS-56545
Job Number: DOMH 0101.09

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P/F
						Lo	Hi	
C5-C8 Aliphatics	ug/l	ND	06/27/01	KKP	69.0			
C9-C12 Aliphatics	ug/l	ND	06/27/01	KKP	34.0			
C9-C10 Aromatics	ug/l	ND	06/27/01	KKP	20.0			
Benzene	ug/l	ND	06/27/01	KKP	0.3			
Ethyl Benzene	ug/l	ND	06/27/01	KKP	0.4			
MTBE	ug/l	ND	06/27/01	KKP	2.1			
Naphthalene	ug/l	ND	06/27/01	KKP	3.2			
Toluene	ug/l	ND	06/27/01	KKP	1.9			
m/p-Xylene	ug/l	ND	06/27/01	KKP	2.7			
o-Xylene	ug/l	ND	06/27/01	KKP	1.0			

Analytical Method:

MADEP-VPH-98-1 REVISION 0

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REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED ACCORDING TO THE METHOD.

NO SIGNIFICANT MODIFICATIONS WERE MADE TO THE METHOD.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES ACHIEVED?

YES NO

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Purchase Order No.: DOMH 0101.09

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Project Location: MEDFIELD STATE HOSPITAL POWER PLANT
Date Received: 6/21/01
Field Sample #: MW-06
Sample ID: 01B17125
Sample Matrix: GRND WATER

Sampled: 6/21/01
NOT SPECIFIED

LIMS-BAT #: LIMS-56545
Job Number: DOMH 0101.09

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit Lo Hi	P/F
C5-C8 Aliphatics	ug/l	ND	06/27/01	KKP	69.0		
C9-C12 Aliphatics	ug/l	ND	06/27/01	KKP	34.0		
C9-C10 Aromatics	ug/l	ND	06/27/01	KKP	20.0		
Benzene	ug/l	ND	06/27/01	KKP	0.3		
Ethyl Benzene	ug/l	ND	06/27/01	KKP	0.4		
MTBE	ug/l	ND	06/27/01	KKP	2.1		
Naphthalene	ug/l	ND	06/27/01	KKP	3.2		
Toluene	ug/l	ND	06/27/01	KKP	1.9		
m/p-Xylene	ug/l	ND	06/27/01	KKP	2.7		
o-Xylene	ug/l	ND	06/27/01	KKP	1.0		

Analytical Method:

MADEP-VPH-98-1 REVISION 0

SAMPLES ARE CONCENTRATED BY PURGE AND TRAP, FOLLOWED BY GAS CHROMATOGRAPHY ANALYSIS WITH PID/FID DETECTION. SUMMED RANGES ARE REPORTED WITH TARGET COMPOUND CONTRIBUTIONS SUBTRACTED AND CORRECTED FOR LABORATORY METHOD BLANK. C9-C12 ALIPHATIC HYDROCARBONS EXCLUDE THE CONCENTRATION OF C9-C10 AROMATIC HYDROCARBONS.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED ACCORDING TO THE METHOD.

NO SIGNIFICANT MODIFICATIONS WERE MADE TO THE METHOD.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES ACHIEVED?

YES NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR ACCEPTANCE CRITERIA ARE LISTED IN THE NOTES SECTION OF THIS REPORT.

RL = Reporting Limit

ND = Not Detected

NM = Not Measured

SPEC LIMIT = a client specified recommended or regulatory level for comparison with data to determine PASS (P) or FAIL (F) condition of results.

* = See end of report for comments and notes applying to this sample



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JEFF MCCULLOUGH
PENNONI ASSOCIATES
THE CONCORD CTR, STE 311, 10 FERRY ST.#6
CONCORD, NH 03301

Purchase Order No.: DOMH 0101.09

6/28/01
Page 19 of 19

Project Location: MEDFIELD STATE HOSPITAL POWER PLANT
Date Received: 6/21/01

LIMS-BAT #: LIMS-56545
Job Number: DOMH 0101.09

** END OF REPORT **

RL = Reporting Limit

ND = Not Detected

NM = Not Measured

* = See end of report for comments and notes applying to this sample

SPEC LIMIT = a client specified recommended or regulatory level for comparison with data to determine PASS (P) or FAIL (F) condition of results.



QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates.
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates
Standard Reference Materials and Duplicates
Method Blanks

Report Date: 6/28/01 Lims Bat #: LIMS-56545 Page 1 of 6
QC Batch Number: GC/FID-5322

Sample Id	Analysis	QC Analysis	Values	Units	Limits
01B17120	2-Fluorobiphenyl	Surrogate Recovery	85.4	%	40-140
	2-Bromonaphthalene	Surrogate Recovery	85.8	%	40-140
	Chlorooctadecane	Sur. Recovery	71.0	%	40-140
	Terphenyl	Sur. Recovery	84.5	%	40-140
01B17121	2-Fluorobiphenyl	Surrogate Recovery	83.0	%	40-140
	2-Bromonaphthalene	Surrogate Recovery	99.8	%	40-140
	Chlorooctadecane	Sur. Recovery	79.5	%	40-140
	Terphenyl	Sur. Recovery	91.5	%	40-140
01B17122	2-Fluorobiphenyl	Surrogate Recovery	84.8	%	40-140
	2-Bromonaphthalene	Surrogate Recovery	90.6	%	40-140
	Chlorooctadecane	Sur. Recovery	82.0	%	40-140
	Terphenyl	Sur. Recovery	83.5	%	40-140
01B17123	2-Fluorobiphenyl	Surrogate Recovery	83.8	%	40-140
	2-Bromonaphthalene	Surrogate Recovery	86.4	%	40-140
	Chlorooctadecane	Sur. Recovery	78.5	%	40-140
	Terphenyl	Sur. Recovery	79.5	%	40-140
01B17124	2-Fluorobiphenyl	Surrogate Recovery	80.8	%	40-140
	2-Bromonaphthalene	Surrogate Recovery	82.4	%	40-140
	Chlorooctadecane	Sur. Recovery	87.5	%	40-140
	Terphenyl	Sur. Recovery	79.5	%	40-140
01B17125	2-Fluorobiphenyl	Surrogate Recovery	88.8	%	40-140
	2-Bromonaphthalene	Surrogate Recovery	91.0	%	40-140
	Chlorooctadecane	Sur. Recovery	84.5	%	40-140
	Terphenyl	Sur. Recovery	87.0	%	40-140
BLANK-34374	Naphthalene	Blank	<5.0	ug/l	
	Acenaphthene	Blank	<5.0	ug/l	
	Acenaphthylene	Blank	<5.0	ug/l	
	Anthracene	Blank	<5.0	ug/l	
	Benzo(a)anthracene	Blank	<5.0	ug/l	
	Benzo(a)pyrene	Blank	<5.0	ug/l	
	Benzo(b)fluoranthene	Blank	<5.0	ug/l	
	Benzo(g,h,i)perylene	Blank	<5.0	ug/l	
	Chrysene	Blank	<10.8	ug/l	
	Dibenzo(a,h)anthracene	Blank	<5.0	ug/l	
	Fluoranthene	Blank	<5.0	ug/l	
	Fluorene	Blank	<5.0	ug/l	
	Indeno(1,2,3-cd)pyrene	Blank	<5.0	ug/l	



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QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates.
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates
Standard Reference Materials and Duplicates
Method Blanks

Report Date: 6/28/01 Lims Bat #: LIMS-56545 Page 2 of 6
QC Batch Number: GC/FID-5322

Sample Id	Analysis	QC Analysis	Values	Units	Limits
BLANK-34374	2-Methylnaphthalene	Blank	<5.0	ug/l	
	Phenanthrene	Blank	<5.0	ug/l	
	Pyrene	Blank	<5.0	ug/l	
	Benzo(k)fluoranthene	Blank	<5.0	ug/l	
	C9-C18 Aliphatics	Blank	<144.	ug/l	
	C19-C36 Aliphatics	Blank	<84.0	ug/l	
	C11-C22 Aromatics	Blank	151.4	ug/l	
	ortho Terphenyl	Blank	26.4	ug/l	
LFBLANK-16589	Naphthalene	Lab Fort Blank Amt.	50.0	ug/l	
		Lab Fort Blk. Found	26.2	ug/l	
		Lab Fort Blk. % Rec.	52.4	%	40-140
	Acenaphthene	Lab Fort Blank Amt.	50.0	ug/l	
		Lab Fort Blk. Found	49.4	ug/l	
		Lab Fort Blk. % Rec.	98.8	%	40-140
	Anthracene	Lab Fort Blank Amt.	50.0	ug/l	
		Lab Fort Blk. Found	50.0	ug/l	
		Lab Fort Blk. % Rec.	100.0	%	40-140
	Chrysene	Lab Fort Blank Amt.	50.0	ug/l	
		Lab Fort Blk. Found	46.6	ug/l	
		Lab Fort Blk. % Rec.	93.2	%	40-140
	Pyrene	Lab Fort Blank Amt.	50.0	ug/l	
		Lab Fort Blk. Found	44.8	ug/l	
		Lab Fort Blk. % Rec.	89.6	%	40-140



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QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates.
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates
Standard Reference Materials and Duplicates
Method Blanks

Report Date: 6/28/01 Lims Bat #: LIMS-56545 Page 3 of 6
QC Batch Number: GC/FID-5324

Sample Id	Analysis	QC Analysis	Values	Units	Limits
01B17120	2,5-Dibromotoluene (FID)	Sur. Recovery (FID)	111.0	%	70-130
01B17121	2,5-Dibromotoluene (FID)	Sur. Recovery (FID)	119.2	%	70-130
01B17122	2,5-Dibromotoluene (FID)	Sur. Recovery (FID)	126.8	%	70-130
01B17123	2,5-Dibromotoluene (FID)	Sur. Recovery (FID)	125.5	%	70-130
01B17124	2,5-Dibromotoluene (FID)	Sur. Recovery (FID)	127.5	%	70-130
01B17125	2,5-Dibromotoluene (FID)	Sur. Recovery (FID)	117.8	%	70-130
BLANK-34379	C5-C8 Aliphatics	Blank	182.0	ug/l	
	C9-C12 Aliphatics	Blank	<34.0	ug/l	



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QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates.
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates
Standard Reference Materials and Duplicates
Method Blanks

Report Date: 6/28/01 Lims Bat #: LIMS-56545 Page 4 of 6

QC Batch Number: GC/PID-4429

Sample Id	Analysis	QC Analysis	Values	Units	Limits
01B17120	2,5-Dibromotoluene (PID)	Sur. Recovery (PID)	83.5	%	70-130
01B17121	2,5-Dibromotoluene (PID)	Sur. Recovery (PID)	114.2	%	70-130
01B17122	2,5-Dibromotoluene (PID)	Sur. Recovery (PID)	99.8	%	70-130
01B17123	2,5-Dibromotoluene (PID)	Sur. Recovery (PID)	96.5	%	70-130
01B17124	2,5-Dibromotoluene (PID)	Sur. Recovery (PID)	98.8	%	70-130
01B17125	2,5-Dibromotoluene (PID)	Sur. Recovery (PID)	91.5	%	70-130
BLANK-34376	Benzene	Blank	<0.3	ug/l	
	Ethyl Benzene	Blank	<0.4	ug/l	
	Naphthalene	Blank	<3.2	ug/l	
	Toluene	Blank	<1.9	ug/l	
	o-Xylene	Blank	<1.0	ug/l	
	m/p-Xylene	Blank	<2.7	ug/l	
	C9-C10 Aromatics	Blank	<20.0	ug/l	
	MTBE	Blank	<2.1	ug/l	
LFBLANK-16590	Benzene	Lab Fort Blank Amt.	40.0	ug/l	
		Lab Fort Blk. Found	35.2	ug/l	
		Lab Fort Blk. % Rec.	88.0	%	70-130
	Ethyl Benzene	Lab Fort Blank Amt.	40.0	ug/l	
		Lab Fort Blk. Found	37.3	ug/l	
		Lab Fort Blk. % Rec.	93.2	%	70-130
	Naphthalene	Lab Fort Blank Amt.	40.0	ug/l	
		Lab Fort Blk. Found	39.7	ug/l	
		Lab Fort Blk. % Rec.	99.2	%	70-130
	Toluene	Lab Fort Blank Amt.	40.0	ug/l	
		Lab Fort Blk. Found	38.8	ug/l	
		Lab Fort Blk. % Rec.	97.0	%	70-130
	o-Xylene	Lab Fort Blank Amt.	40.0	ug/l	
		Lab Fort Blk. Found	41.0	ug/l	
		Lab Fort Blk. % Rec.	102.5	%	70-130
	m/p-Xylene	Lab Fort Blank Amt.	80.0	ug/l	
		Lab Fort Blk. Found	74.7	ug/l	
		Lab Fort Blk. % Rec.	93.4	%	70-130
	MTBE	Lab Fort Blank Amt.	40.0	ug/l	
		Lab Fort Blk. Found	38.0	ug/l	
		Lab Fort Blk. % Rec.	95.0	%	70-130



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QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates.
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates
Standard Reference Materials and Duplicates
Method Blanks

Report Date: 6/28/01

Lims Bat #: LIMS-56545

Page 5 of 6

NOTES:

QC Batch No. : GC/FID-5324
Sample ID : BLANK-34379
Analysis : C5-C8 Aliphatics

ELEVATED BLANK LEVEL DUE TO LABORATORY BACKGROUND METHYLENE CHLORIDE CONTAMINATION.



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QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates.
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BATCH QC: Lab fortified Blanks and Duplicates
Standard Reference Materials, and Duplicates
Method Blanks

Report Date: 6/28/01 Lims Bat #: LIMS-56545 Page 6 of 6

QUALITY CONTROL DEFINITIONS AND ABBREVIATIONS

QC BATCH NUMBER This is the number assigned to all samples analyzed together that would be subject to comparison with a particular set of Quality Control Data.

LIMITS Upper and Lower Control Limits for the QC ANALYSIS Reported. All values normally would fall within these statistically determined limits, unless there is an unusual circumstance that would be documented in a NOTE appearing on the last page of the QC SUMMARY REPORT. Not all QC results will have Limits defined.

Sample Amount Amount of analyte found in a sample.

Blank Method Blank that has been taken though all the steps of the analysis.

LFBLANK Laboratory Fortified Blank (a control sample)

STDADD Standard Added (a laboratory control sample)

Matrix Spk Amt Added Amount of analyte spiked into a sample
MS Amt Measured Amount of analyte found including amount that was spiked
Matrix Spike % Rec. % Recovery of spiked amount in sample.

Duplicate Value The result from the Duplicate analysis of the sample.
Duplicate RPD The Relative Percent Difference between two Duplicate Analyses.

Surrogate Recovery The % Recovery for non-environmental compounds (surrogates) spiked into samples to determine the performance of the analytical methods.

Sur. Recovery (ELCD) Surrogate Recovery on the Electrolytic Conductivity Detector.
Sur. Recovery (PID) Surrogate Recovery on the Photoionization Detector.

Standard Measured Amount measured for a laboratory control sample
Standard Amt Added Known value for a laboratory control sample
Standard % Recovery % recovered for a laboratory control sample with a known value.

Lab Fort Blank Amt Laboratory Fortified Blank Amount Added
Lab Fort Blk. Found Laboratory Fortified Blank Amount Found
Lab Fort Blk % Rec Laboratory Fortified Blank % Recovered
Dup Lab Fort Bl Amt Duplicate Laboratory Fortified Blank Amount Added
Dup Lab Fort Bl Fnd Duplicate Laboratory Fortified Blank Amount Found
Dup Lab Fort Bl % Rec Duplicate Laboratory Fortified Blank % Recovery
Lab Fort Blank Range Laboratory Fortified Blank Range (Absolute value of difference between recoveries for Lab Fortified Blank and Lab Fortified Blank Duplicate).

Lab Fort Bl. Av. Rec. Laboratory Fortified Blank Average Recovery

Duplicate Sample Amt Sample Value for Duplicate used with Matrix Spike Duplicate
MSD Amount Added Matrix Spike Duplicate Amount Added (Spiked)
MSD Amt Measured Matrix Spike Duplicate Amount Measured
MSD % Recovery Matrix Spike Duplicate % Recovery
MSD Range Absolute difference between Matrix Spike and Matrix Spike Duplicate Recoveries



(413) 525-2332
FAX (413) 525-6405

CHAIN OF CUSTODY RECORD

39 SUDBURY ST. • 2ND FLOOR • EAST LONGMEADOW, MA 01028

Client Name: Pennoni Associates Inc
 Attn: Jeff McCullough
 Address: The Concord Center, Suite 434
10 Ferry St. Unit 6, Concord, NH, 03301
 Site Location: Medfield State Hospital Power Plant
 Sampled By: Philip Laddereux / Robin Bellanca
*Email: rps@smccollough.com
 Call Results: Yes No
 Fax Results: Yes No

Telephone: 603-226-1950
 Batch #: _____
 Project #: DOMH 0101.09
 Client P.O. #: DOMH 0101.09
 Fax #: (603) 226-5235

LIMS # 56545
 Analysis Required

Field Sample I.D.	Sample Description	Lab #	DATE SAMPLED		Composite	Grab	MATRIX					Preservative (Use Code)	Container (Use Code)	VPH	EPH
			Date / Time	Date / Time			WASTE WATER	GROUND WATER	DKG WATER	Soil	Air				
MW-1		01817120	6/21/01	045	X	X	X	X	X	X	H	1A	X	X	
MW-2		17121		1040	X	X	X	X	X	X	H	2V	X	X	
MW-3		17122		1017	X	X	X	X	X	X	H	2V	X	X	
MW-4		17123		1005	X	X	X	X	X	X	H	2V	X	X	
MW-5		17124		1137	X	X	X	X	X	X	H	2V	X	X	
MW-6		17125		1135	X	X	X	X	X	X	H	2V	X	X	

CONTAINER CODE: _____
 P: PLASTIC (___ Size) V = 40 ml vial G = Glass (___ size) A = 1000 ml Amber 0 = Other _____
 PRESERVATIVE CODE: _____
 I = ICED N = HNO₃ H = HCl S = NaOH T = Na₂S₂O₃ O = OTHER _____
 Turnaround Requested: _____ 24-Hour _____ 48-Hour Normal
 Other _____ Date Required _____
 Remarks/Comments:
 MW-1 only 1L for EPH
 MW-1 Notified client 7/14/01 for UPH17 Project, 1 with headspace, 1 with headspace
 We found anyway per 5/15 6/27/01/17C
 *MATRIX OTHER

Relinquished by: (Signature) [Signature] Date Time 6/21/01
 Relinquished by: (Signature) [Signature] Date Time 6/21/01
 Relinquished by: (Signature) [Signature] Date Time 6/21/01



con-test
ANALYTICAL LABORATORY

39 Spruce Street * 2nd Floor * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

REPORT DATE 11/16/01

PENNONI ASSOCIATES
THE CONCORD CTR. STE 434, 10 FERRY ST.#6
CONCORD, NH 03301
ATTN: JEFF MCCULLOUGH

CONTRACT NUMBER:
PURCHASE ORDER NUMBER: DOMH 0101.12

PROJECT NUMBER:

ANALYTICAL SUMMARY

LIMS BAT #: LIMS-59692
JOB NUMBER: DOMH 0101.12

The results of analyses performed on the following samples submitted to the CON-TEST Analytical Laboratory are found in this report.

PROJECT LOCATION: MEDFIELD STATE HOSPITAL

FIELD SAMPLE #	LAB ID	MATRIX	SAMPLE DESCRIPTION	TEST
MW-2	01B30883	GRND WATER	NOT SPECIFIED	eph - water
MW-2	01B30883	GRND WATER	NOT SPECIFIED	vph - water

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations:

- AIHA 100033
- MASSACHUSETTS MA0100
- CONNECTICUT PH-0567
- NEW YORK ELAP 10899
- AIHA ELLAP (LEAD) 100033
- NEW HAMPSHIRE 2516
- VERMONT DOH (LEAD) No. LL015036
- RHODE ISLAND (IJC, No. 112)

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Edward Denson 11/16/01
SIGNATURE DATE

Tod Kopyscinski
Director of Operations

Edward Denson
Technical Director



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JEFF MCCULLOUGH
 PENNONI ASSOCIATES
 THE CONCORD CTR. STE 434, 10 FERRY ST.#6
 CONCORD, NH 03301

11/16/01
 Page 1 of 4

Purchase Order No.: DOMH 0101.12

LIMS-BAT #: LIMS-59692
 Job Number: DOMH 0101.12

Project Location: MEDFIELD STATE HOSPITAL

Date Received: 11/9/01

Field Sample #: MW-2

Sample ID: 01B30886

Sampled: 11/8/01
 NOT SPECIFIED

Sample Matrix: GRND WATER

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P/F
						Lo	Hi	
C9-C18 Aliphatics	ug/l	ND	11/15/01	KKP	144.			
C19-C36 Aliphatics	ug/l	550.	11/15/01	KKP	84.0			
C11-C22 Aromatics	ug/l	416.	11/15/01	KKP	48.0			
Acenaphthene	ug/l	ND	11/15/01	KKP	5.0			
Acenaphthylene	ug/l	ND	11/15/01	KKP	5.0			
Anthracene	ug/l	ND	11/15/01	KKP	5.0			
Benzo(a)anthracene	ug/l	ND	11/15/01	KKP	5.0			
Benzo(a)pyrene	ug/l	ND	11/15/01	KKP	5.0			
Benzo(b)fluoranthene	ug/l	ND	11/15/01	KKP	5.0			
Benzo(g,h,i)perylene	ug/l	ND	11/15/01	KKP	5.0			
Benzo(k)fluoranthene	ug/l	ND	11/15/01	KKP	5.0			
Chrysene	ug/l	ND	11/15/01	KKP	10.8			
Dibenzo(a,h)anthracene	ug/l	ND	11/15/01	KKP	5.0			
Fluoranthene	ug/l	ND	11/15/01	KKP	5.0			
Fluorene	ug/l	ND	11/15/01	KKP	5.0			
Indeno(1,2,3-cd)pyrene	ug/l	ND	11/15/01	KKP	5.0			
2-Methylnaphthalene	ug/l	ND	11/15/01	KKP	5.0			
Naphthalene	ug/l	ND	11/15/01	KKP	5.0			
Phenanthrene	ug/l	ND	11/15/01	KKP	5.0			
Pyrene	ug/l	ND	11/15/01	KKP	5.0			
Data Excluded LPH Water			11/14/2001	11/15/01	KKP			

RL = Reporting Limit

ND = Not Detected

NM = Not Measured

* = See end of report for comments and notes applying to this sample

SPEC LIMIT = a client specified recommended or regulatory level for comparison with data to determine PASS (P) or FAIL (F) condition of results.



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JEFF MCCULLOUGH
PENNONI ASSOCIATES
THE CONCORD CTR, STE 434, 10 FERRY ST.#6
CONCORD, NH 03301

11/16/01
Page 2 of 4

Purchase Order No.: DOMH 0101.12

Project Location: MEDFIELD STATE HOSPITAL
Date Received: 11/9/01
Field Sample #: MW-2

LIMS-BAT #: LIMS-59692
Job Number: DOMH 0101.12

Analytical Method:
MADEP-EPH-98-1 REVISION 0

SAMPLES ARE PRESERVED TO pH < 2.0 WITH HYDROCHLORIC ACID (HCL).
SAMPLES ARE EXTRACTED WITH METHYLENE CHLORIDE, EXCHANGED INTO HEXANE AND
CONCENTRATED. ALIPHATIC AND AROMATIC FRACTIONS ARE SEPARATED. ANALYSIS IS
BY GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION. PAH AND C10-C22
AROMATICS ARE DETERMINED IN THE METHYLENE CHLORIDE FRACTION. C9-C18 AND
C19-C36 ALIPHATICS ARE DETERMINED IN THE HEXANE FRACTION. TARGET COMPOUND
CONTRIBUTIONS ARE SUBTRACTED FROM THE SUMMED AROMATIC RANGE. SUMMED RANGES
ARE CORRECTED FOR LABORATORY METHOD BLANK.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED
ACCORDING TO THE METHOD.

SIGNIFICANT MODIFICATIONS ARE LIMITED TO THE SUBTRACTION OF METHOD BLANK
FROM THE SUMMED RANGES.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES
ACHIEVED?

YES NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR
ACCEPTANCE CRITERIA ARE DETAILED IN THE NOTES SECTION OF THIS REPORT.

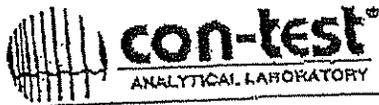
RL = Reporting Limit

ND = Not Detected

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* = See end of report for comments and notes applying to this sample

SPEC LIMIT = a client specified recommended or
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determine PASS (P) or FAIL (F) condition of results.



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CONCORD, NH 03301

11/16/01
Page 3 of 4

Purchase Order No.: DOMH 0101.12

LIMS-BAT #: LIMS-59592
Job Number: DOMH 0101.12

Project Location: MEDFIELD STATE HOSPITAL
Date Received: 11/9/01
Field Sample #: MW-2
Sample ID: 01B30888

Sampled: 11/8/01
NOT SPECIFIED

Sample Matrix: GRND WATER

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit		P/F
						Lo	Hi	
C5-C8 Aliphatics	ug/l	ND	11/12/01	KKP	69.0			
C9-C12 Aliphatics	ug/l	ND	11/12/01	KKP	34.0			
C9-C10 Aromatics	ug/l	ND	11/12/01	KKP	20.0			
Benzene	ug/l	ND	11/12/01	KKP	0.3			
Ethyl Benzene	ug/l	1.6	11/12/01	KKP	0.4			
MTBE	ug/l	ND	11/12/01	KKP	2.1			
Naphthalene	ug/l	ND	11/12/01	KKP	3.2			
Toluene	ug/l	ND	11/12/01	KKP	1.9			
m/p-Xylene	ug/l	ND	11/12/01	KKP	2.7			
o-Xylene	ug/l	ND	11/12/01	KKP	1.0			

Analytical Method:

MADEP-VPH-98-1 REVISION 0

SAMPLES ARE CONCENTRATED BY PURGE AND TRAP, FOLLOWED BY GAS CHROMATOGRAPHY ANALYSIS WITH PID/FID DETECTION. SUMMED RANGES ARE REPORTED WITH TARGET COMPOUND CONTRIBUTIONS SUBTRACTED AND CORRECTED FOR LABORATORY METHOD BLANK. C9-C12 ALIPHATIC HYDROCARBONS EXCLUDE THE CONCENTRATION OF C9-C10 AROMATIC HYDROCARBONS.

REPORTED DETECTION LIMITS (MDL) ARE THE REPORTING LIMITS (RL) CALCULATED ACCORDING TO THE METHOD.

NO SIGNIFICANT MODIFICATIONS WERE MADE TO THE METHOD.

WERE ALL QA/QC PROCEDURES REQUIRED BY THE METHOD FOLLOWED?

YES NO

WERE ALL PERFORMANCE/ACCEPTANCE STANDARDS FOR REQUIRED QA/QC PROCEDURES ACHIEVED?

YES NO

DETAILS OF ANY NON-CONFORMANCE WITH QA/QC REQUIREMENTS, PERFORMANCE, OR ACCEPTANCE CRITERIA ARE LISTED IN THE NOTES SECTION OF THIS REPORT.

RL = Reporting Limit

ND = Not Detected

NM = Not Measured

* = See end of report for comments and notes applying to this sample

SPEC LIMIT = a client specified recommended or regulatory level for comparison with data to determine PASS (P) or FAIL (F) condition of results.



con-test
ANALYTICAL LABORATORY

39 Spruce Street * 2nd Floor * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

JEFF MCCULLOUGH
PENNONI ASSOCIATES
THE CONCORD CTR, STE 434, 10 FERRY ST.#8
CONCORD, NH 03301
Project Location: MEDFIELD STATE HOSPITAL
Date Received: 11/9/01

Purchase Order No.: DOMH 0101.12

11/16/01
Page 4 of 4

LIMS-BAT #1: LIMS-59592
Job Number: DOMH 0101.12

-- END OF REPORT --

RL = Reporting Limit

ND = Not Detected

NM = Not Measured

* = See end of report for comments and notes applying to this sample

SPEC LIMIT = a client specified recommended or regulatory level for comparison with data to determine PASS (P) or FAIL (F) condition of results.

APPENDIX D

Numerical Ranking System Scoresheet

MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Waste Site Cleanup

NUMERICAL RANKING SYSTEM SCORESHEET
(310 CMR 40.1511)

CLASSIFICATION SUBMITTAL		DISPOSAL SITE SCORE					
Initial Submittal ✓	Re-Classification	II 35	III 53	IV 40	V 40	VI 0	TOTAL 168

Disposal Site Tier Classification	I			II
Permit Category (Tier I Only)	A	B	C	

I. DISPOSAL SITE INFORMATION

DEP Release Tracking Number(s)	3-20799, 3-20984, 3-21162	UTM Coordinates	N: 4,675,883
DEP Disposal Site Number(s)			E: 306,925

Disposal Site Name	Release of #6 fuel oil		
Disposal Site Address	45 Hospital Road		
	City: Medfield	Zip: 02052	

Is the Disposal Site classified Tier I because it is located within the boundaries of a Zone II or Interim Wellhead Protection Area and groundwater concentrations equal or exceed RCGW-1 at the time of Tier Classification pursuant to 310 CMR 40.0520(2)(a)1.?	Yes	No ✓
Is the Disposal Site classified Tier I because an Imminent Hazard is present at the time of Tier Classification pursuant to 310 CMR 40.0520(2)(a)2.?	Yes	No ✓

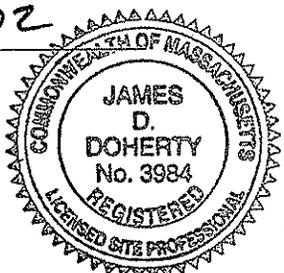
I attest under the pains and penalties of perjury that I have personally completed this Numerical Ranking System Scoresheet, and have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this submittal, and in my professional opinion and judgment based upon: (i) the standard of care in 309 CMR 4.02(1), (ii) the applicable provisions of 309 CMR 4.02(2) and (3), and (iii) the provisions of 309 CMR 4.03(5), to the best of my knowledge, information and belief, this Scoresheet was developed in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000. I am aware that significant penalties may result, including, but not limited to, possible fines and imprisonment, if I submit information which I know to be false, inaccurate or materially incomplete.


Licensed Site Professional Signature

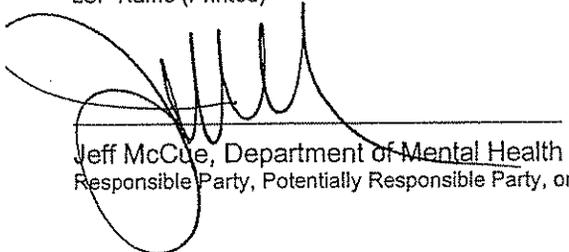
3984
LSP Registration Number
Pennoni Associates, Inc.
Company Name

6/5/02
Date

508/435-8080
Telephone Number



James D. Doherty
LSP Name (Printed)


Jeff McCue, Department of Mental Health
Responsible Party, Potentially Responsible Party, or Other Person who will provide certification in accordance with 310 CMR 40.0009.

40.1511 (Continued)

II. EXPOSURE PATHWAYS

II. EXPOSURE PATHWAYS				
Score according to 40.1512 - Exposure Pathway Designation Criteria				
MEDIA	DESIGNATION			
	NONE or NOT APPLICABLE	EVIDENCE OF CONTAMINATION	POTENTIAL EXPOSURE PATHWAY	LIKELY OR CONFIRMED EXPOSURE PATHWAY
A. SOIL (Includes Sediment)	0	15	100	150
B. GROUNDWATER	0	20	100	150
C. SURFACE WATER (Includes Wetlands)	0	20	100	150
D. AIR	0	15	100	200

Note: Score only the highest value for each media, i.e., score None or Not Applicable or Evidence of Contamination or Potential Exposure Pathway or Likely or Confirmed Exposure Pathway.

II. (A - D) Summary Rationale for Section II A - D Values and Phase I Report References	
A) Soil Sample Results, Table 2, Release at depth, no surface soil contamination.	
B) Groundwater Sample Results, Table 3 - No receptors identified for groundwater exposure.	
C) Groundwater Sample Results, Table 3 - Clean groundwater sample results between site and surface water	
D) Release at depth, paved surface, exterior location of release	

II.E. OHM SOURCES			
Number of OHM Sources	1	2	≥ 3
	0	25	50

SECTION II SCORE (A. + B. + C. + D. + E.)					
A. 15	B. 20	C. 0	D. 0	E. 0	TOTAL: (15 - 700) 35

Check here if Section VI has been used to amend the score for this Section of the NRS.	<input type="checkbox"/>
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40.1511 (Continued)

III. DISPOSAL SITE CHARACTERISTICS

III.A. OHM TOXICITY SCORE	
<i>Highest OHM Toxicity Score From Table III.A. or Worksheet III.A.1. on Following Pages.</i>	
OHM Scored: <u>C11 – C22 Aromatics</u>	Toxicity Score (1 - 80)
Concentration and Media: <u>5,790 mg/kg in Soil</u>	<u>25</u>

III.B. MULTIPLE OHMs		
More Than One OHM With an OHM Toxicity Score of \geq 30	No <u>0</u>	Yes 30

III.C. OHM MOBILITY and PERSISTENCE	
<i>Score according to 40.1514 - OHM Mobility and Persistence</i>	
OHM Scored: <u>C11 – C22 Aromatics (as fuel oil)</u>	Score (0 - 50) <u>20</u>

III.D. DISPOSAL SITE HYDROGEOLOGY			
<i>Score according to 40.1515 - Soil Permeability</i>			
DEPTH TO GROUNDWATER (in feet)	SOIL PERMEABILITY		
	Low	Medium	High
> 25	2	4	8
10.1 - 25	4	<u>8</u>	12
5.1 - 10	8	12	16
0 - 5	12	16	20

SECTION III SCORE (A + B + C + D)				
A. <u>25</u>	B. <u>0</u>	C. <u>20</u>	D. <u>8</u>	TOTAL: (3 - 180) <u>53</u>

Check here if Section VI has been used to amend the score for this Section of the NRS.	<input type="checkbox"/>
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310 CMR: DEPARTMENT OF ENVIRONMENTAL PROTECTION

40.1511 (Continued)

Table III.A.		OHM TOXICITY SCORE						
OHM	CONCENTRATION (soil/sediment: µg/g; surface/groundwater µg/l)							
	≤ 99	100 - 999	1,000 - 9,999	10,000 - 100,000	> 100,000 NAPL < 0.5"	NAPL 0.5" - 12"	NAPL > 12"	
Aliphatics C5-C8	5	15	25	35	45	55	65	
C9-C12	1	10	20	30	40	50	60	
C9-C18	1	10	20	30	40	50	60	
C19-C36	1	10	20	30	40	50	60	
Arsenic	20	30	40	50	60			
Aromatics C9-C10	5	15	25	35	45	55	65	
C11-C22	5	15	25	35	45	55	64	
Benzene	15	25	35	45	55	65	75	
Bis(2-ethylhexyl)phthalate	10	20	30	40	50	60	70	
Cadmium	20	30	40	50	60			
Carbon Tetrachloride	20	30	40	50	60	70	80	
Chlorobenzene	5	15	25	35	45	55	65	
Chromium III	1	10	20	30	40			
Chromium VI	10	20	30	40	50			
Coal Tar	10	20	30	40	50	60	70	
Cyanide	5	15	25	35	45			
1,1 Dichloroethane	10	20	30	40	50	60	70	
1,2 Dichloroethane	10	20	30	40	50	60	70	
Ethylbenzene	5	15	25	35	45	55	65	
Ethylene Dibromide	20	30	40	50	60	70	80	
#2 Fuel Oil (virgin product)	5	15	25	35	45	55	65	
Gasoline (virgin product)	10	20	30	40	50	60	70	
Lead	20	30	40	50	60			
Mercury	20	30	40	50	60	70	80	
Methylene Chloride	10	20	30	40	50	60	70	
Methyl Ethyl Ketone	1	10	20	30	40	50	60	
Methyl Tert Butyl Ether	5	15	25	35	45	55	65	
Nickel	5	15	25	35	45			
Phenol	1	10	20	30	40	50	60	
PAHs	10 ⁽¹⁾	20	30	40	50	60	70	
PCBs	20	30	40	50	60	70	80	
Tetrachloroethylene	10	20	30	40	50	60	70	

Table III.A.		OHM TOXICITY SCORE					
OHM	CONCENTRATION (soil/sediment: µg/g; surface/groundwater µg/l)						
	≤ 99	100 - 999	1,000 - 9,999	10,000 - 100,000	> 100,000 NAPL < 0.5"	NAPL 0.5" - 12"	NAPL > 12"
Toluene	1	10	20	30	40	50	60
1,1,1 Trichloroethane	5	15	25	35	45	55	65
Trichloroethylene	15	25	35	45	55	65	75
Vinyl Chloride	15	25	35	45	55	65	75
Xylenes	1	10	20	30	40	50	60
Zinc	1	10	20	30	40		

= Soil Data

= Groundwater Data

(1) Based upon a total PAH concentration (see Table 2, Phase I Report)

310 CMR: DEPARTMENT OF ENVIRONMENTAL PROTECTION

40.1511 (Continued)

Use Worksheet III.A.1. to determine the OHM Toxicity Score for OHM not listed in Table III.A.
See 40.1513 for Human Health-Based Toxicity Values for each OHM.

Worksheet III.A.1		OHM TOXICITY SCORE					
HUMAN HEALTH-BASED TOXICITY VALUE	CONCENTRATION						
	Use µg/g for Soil and µg/l for Surface Water and Groundwater						
	≤ 99	100-999	1,000 - 9,999	10,000 - 100,000	>100,000 NAPL<0.5"	NAPL 0.5"-12"	NAPL >12"
< 5	1	10	20	30	40	50	60
5 - 19	5	15	25	35	45	55	65
20 - 29	10	20	30	40	50	60	70
30 - 39	15	25	35	45	55	65	75
40 - 50	20	30	40	50	60	70	80

III.A.1. OHM and Concentrations Used in Section III.A.1.				
OHM	Human Health-Based Toxicity Value	Concentration (Soil - µg/g)	Concentration (Water - µg/l)	OHM Toxicity Score
C9 - C18 Aliphatics	4	1370	154	20
C19 - C36 Aliphatics	4	5490	550	20
C11- C22 Aromatics	18	5790	574	25
C5- C8 Aliphatics	8	62	-	5
C9 - C12 Aliphatics	4	334	-	10
C9 - C10 Aromatics	18	240	-	15
Napthalene	25	20.8	-	10
2 - Methylnapthalene	-		-	
Phenanthrene	25	30.6	-	10

40.1511 (Continued)

IV. HUMAN POPULATION AND LAND USES

IV.A. HUMAN POPULATION				
Residential Population Within ½ Mile (Section 2.1, Phase I Report)	None 0	1 - 99 5	100 - 999 10	≥ 1,000 15
Institutions Within 500 feet (Section 2.1, Phase I Report)	None 0		One or More 10	
On-Site Workers (Section 2.1, Phase I Report)	None 0	1 - 99 5	100 - 999 10	≥ 1,000 15

IV.B. AQUIFERS		
Sole Source Aquifer (see Figure 4, Phase I Report) Name: _____	No 0	Yes 25
Potentially Productive Aquifer (see Section 2.1 and Figure 4, Phase I Report)	No 0	Medium or High 15

IV.C. WATER USE						
Proximity of Disposal Site to Public Drinking Water Supply Source	Not Applicable (NA) 0			Zone A 20	Zone II, IWPA, or SW Intake ≤ 400' 50	
Persons Served by Public Drinking Water Supply	NA 0	25 - 999 5	1,000 - 4,999 10	5,000 - 49,999 20	≥ 50,000 25	
Private Water Supplies Within 500 Feet (see Section 2.1, Phase I Report)	None 0		Commercial Industrial 10	Agriculture Residential (Not Ingested) 15	Drinking Food Processing 25	
Alternative Public Water Supply Available (Viable Public Water Supply in Disposal Site Community and Public Water Connection ≤ 500 Feet from Site) (see Section 2.1, Phase I Report)	Yes 0			No 25		

SECTION IV SCORE (A + B + C)				
A. 25	B. 15	C. 0	TOTAL: (0 - 205) 40	

Check here if Section VI has been used to amend the score for this Section of the NRS.	<input type="checkbox"/>
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40.1511 (Continued)

V. ECOLOGICAL POPULATION

V.A. ENVIRONMENTAL RESOURCE AREAS			
RESOURCE	LOCATION		
Area of Critical Environmental Concern	> 500' from Site 0	≤ 500' from Site 20	On-Site 30
Species of Special Concern, Threatened or Endangered Species Habitat	> 500' from Site 0	On-Site or ≤ 500' from Habitat 30	
Wetlands, Certified Vernal Pool, or Outstanding Resource Water	> 100' from Site 0	≤ 100' from Site 20	On-Site 30
Fish Habitat	> 500' from Site 0	≤ 500' from Site 20	On-Site 30
Protected Open Space (Local/State/Federal/Trustee)	> 500' from Site 0	≤ 500' from Site 20	On-Site 30

SCORE SECTION V.B. ONLY IF SECTION V.A. SCORE IS ≥ 30.

V.B. ENVIRONMENTAL TOXICITY SCORE	
<i>Highest Environmental Toxicity Score From Table V.B. or Worksheet V.B.1. on Following Pages.</i>	
OHM Scored: <u>C11 – C22 Aromatics (as PAH's)</u> Concentration and Media: <u>5790 mg/kg in Soil</u>	Toxicity Score (1 - 35) <u>20</u>

SECTION V. SCORE (A. + B.)		
A. <u>20</u>	B. <u>20</u>	TOTAL: (0 - 185) <u>40</u>

Check here if Section VI has been used to amend the score for this Section of the NRS.	<input type="checkbox"/>
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310 CMR: DEPARTMENT OF ENVIRONMENTAL PROTECTION

40.1511 (Continued)

Table V.B.		ENVIRONMENTAL TOXICITY SCORE				
OHM	CONCENTRATION (soil/sediment µg/g; surface/groundwater µg/l)					
	< 1	1 - 99	100 - 999	1,000 - 9,999	≥ 10,000	
Arsenic	5	10	15	20	25	
Benzene	0	1	5	10	15	
Bis(2-ethylhexyl)phthalate *	5	10	15	20	25	
Cadmium	10	15	20	25	30	
Carbon Tetrachloride	0	1	5	10	15	
Chlorobenzene *	5	10	15	20	25	
Chromium III	1	5	10	15	20	
Chromium VI	5	10	15	20	25	
Coal Tar *	5	10	15	20	25	
Cyanide	5	10	15	20	25	
1,1 Dichloroethane *	5	10	15	20	25	
1,2 Dichloroethane	0	1	5	10	15	
Ethylbenzene	0	1	5	10	15	
Ethylene Dibromide *	5	10	15	20	25	
#2 Fuel Oil (virgin product) *	1	5	10	15	20	
Gasoline (virgin product) *	5	10	15	20	25	
Lead	5	10	15	20	25	
Mercury	15	20	25	30	35	
Methylene Chloride *	5	10	15	20	25	
Methyl Ethyl Ketone *	5	10	15	20	25	
Methyl Tert Butyl Ether *	1	5	10	15	20	
Nickel	1	5	10	15	20	
Phenol	0	1	5	10	15	
PAHs *	5	10	15	20	25	
PCBs	15	20	25	30	35	
Tetrachloroethylene	0	1	5	10	15	
Toluene	0	1	5	10	15	
1,1,1 Trichloroethane	0	1	5	10	15	
Trichloroethylene	0	1	5	10	15	
Vinyl Chloride *	5	10	15	20	25	
Xylenes *	5	10	15	20	25	
Zinc	1	5	10	15	20	

* Scores derived by default methods 40.1516(2).

310 CMR: DEPARTMENT OF ENVIRONMENTAL PROTECTION

40.1512 Exposure Pathway Designation Criteria

40.1512(1) Soil

II.A. SOIL EXPOSURE CRITERIA		
DEFINITION	Soil includes sediments.	
DESIGNATION	CRITERIA	POINTS
NONE or NOT APPLICABLE	<p><i>Either of the Following</i></p> <ul style="list-style-type: none"> ➤ OHM likely attributable to the disposal site has not been identified in, and is not anticipated to be identified in, soil. <li style="text-align: center;"><i>or</i> ➤ OHM has not been identified in soils at concentrations > applicable soil Reportable Concentrations (RCs). This criteria may be met by conducting a response action in accordance with these regulations to reduce soil concentrations. 	0
<p style="text-align: center;">✓</p> <p>EVIDENCE OF CONTAMINATION (Assumes No Exposure Pathway)</p>	<p><i>Any of the Following</i></p> <ul style="list-style-type: none"> ➤ A release of OHM to soil has been identified but no laboratory analysis has been conducted. <li style="text-align: center;"><i>or</i> ➤ Qualitative evidence of a release. <ul style="list-style-type: none"> • OHM stained soils <i>or</i> • Distressed vegetation <i>or</i> • OHM-attributable odors <i>or</i> <li style="text-align: center;"><i>or</i> ➤ OHM has been identified in soils at concentrations ≥ applicable RCs. 	15
POTENTIAL EXPOSURE PATHWAY	<p><i>All of the Following</i></p> <ul style="list-style-type: none"> ➤ OHM has been identified at concentrations ≥ applicable soil RCs ≤ 6" from the accessible soil surface. OHM located beneath unbroken paved surfaces/concrete slabs may be considered inaccessible. <li style="text-align: center;"><i>and</i> ➤ Efforts to restrict access to the area where a release of OHM has been identified have been unsuccessful, have not been taken, or are infeasible. Fencing may be sufficient to show restriction of access unless there has been evidence of repeated access to areas of OHM-contaminated surficial soils. <li style="text-align: center;"><i>and</i> ➤ The area of OHM contamination is not used for active recreation. 	100
LIKELY or CONFIRMED EXPOSURE PATHWAY	<p><i>All of the Following</i></p> <ul style="list-style-type: none"> ➤ OHM has been identified at concentrations ≥ applicable soil RCs ≤ 6" from the accessible soil surface. <li style="text-align: center;"><i>and</i> ➤ Efforts to restrict access to the area where a release of OHM has been identified have been unsuccessful, have not been taken, or are infeasible. <li style="text-align: center;"><i>and</i> ➤ The area of contamination is used for active recreation (e.g., bicycling, dirt-biking, playground, or ballfield) or gardening. 	150

40.1512(2) Groundwater

310 CMR: DEPARTMENT OF ENVIRONMENTAL PROTECTION

II.B. GROUNDWATER EXPOSURE CRITERIA		
DEFINITION	Score source area and extent of plume(s) as defined by most recent field studies.	
DESIGNATION	CRITERIA	POINTS
NONE or NOT APPLICABLE	<p><i>Either of the Following</i></p> <ul style="list-style-type: none"> ➤ OHM likely attributable to the disposal site has not been identified in, and is not anticipated to be identified in, groundwater. <li style="text-align: center;"><i>or</i> ➤ OHM has not been identified in groundwater at concentrations \geq applicable groundwater RCs. This criteria may be met by conducting a response action, in accordance with these regulations, to reduce groundwater concentrations. 	0
<p style="text-align: center;">✓</p> <p>EVIDENCE OF CONTAMINATION (Assumes No Exposure Pathway)</p>	<p><i>Any of the Following</i></p> <ul style="list-style-type: none"> ➤ A release of OHM to groundwater has been identified but no laboratory analysis has been conducted. <li style="text-align: center;"><i>or</i> ➤ A non-aqueous phase liquid (NAPL) has been identified in or on the groundwater. <li style="text-align: center;"><i>or</i> ➤ OHM has been identified in groundwater at concentrations \geq applicable groundwater RCs. 	20
POTENTIAL EXPOSURE PATHWAY	<p><i>Either of the Following</i></p> <ul style="list-style-type: none"> ➤ A private drinking water well is located within 500' of any portion of a disposal site where OHM has been identified in groundwater at concentrations \geq 310 CMR 40.0974(2). <li style="text-align: center;"><i>or</i> ➤ The disposal site is located within a Zone II or upgradient of a public well within an Interim Wellhead Protection Area <i>and</i> OHM has been identified in groundwater at concentrations \geq 310 CMR 40.0974(2). 	100
LIKELY or CONFIRMED EXPOSURE PATHWAY	<p><i>Either of the Following</i></p> <ul style="list-style-type: none"> ➤ OHM, possibly attributable to the disposal site, has been identified in a public or private drinking water supply well. Drinking water samples shall be taken prior to treatment or blending. <li style="text-align: center;"><i>or</i> ➤ A reasonable likelihood exists that a public or private drinking water supply well has been or is likely to be impacted by OHM from the disposal site. 	150

310 CMR: DEPARTMENT OF ENVIRONMENTAL PROTECTION

40.1512(3) Surface Water

II.C. SURFACE WATER EXPOSURE CRITERIA		
DEFINITION	As defined by 310 CMR 40.0006, including rivers, streams, lakes, ponds, springs, impoundments, estuaries, wetlands, coastal waters and vernal pools.	
DESIGNATION	CRITERIA	POINTS
<p style="text-align: center;">✓ NONE or NOT APPLICABLE</p>	<p>➤ OHM likely attributable to the disposal site has not been identified in, and is not anticipated to be identified in, surface waters.</p>	0
<p style="text-align: center;">EVIDENCE OF CONTAMINATION (Assumes No Exposure Pathway)</p>	<p style="text-align: center;"><i>Any of the Following</i></p> <p>➤ A release (past or on-going) of OHM to surface water has been identified. <i>or</i></p> <p>➤ Qualitative evidence of a release.</p> <ul style="list-style-type: none"> • OHM-attributable visible sheen or discoloration; or • OHM entering surface water; or • OHM-attributable stained soils in contact with surface water; or • There is a reasonable likelihood that OHM <i>will</i> be identified in surface water as a result of OHM migration. <p style="text-align: center;"><i>or</i></p> <p>➤ OHM, likely attributable to the disposal site, has been identified in groundwater at concentrations that are likely to result in detectable concentrations in surface water.</p>	20
<p style="text-align: center;">POTENTIAL EXPOSURE PATHWAY</p>	<p style="text-align: center;"><i>Either of the Following</i></p> <p>➤ OHM, likely to be attributable to the disposal site, has been identified in a surface water known to be used for drinking, swimming, boating or fishing. <i>or</i></p> <p>➤ OHM, likely to be attributable to the disposal site, has been identified at concentrations ≥ Ambient Water Quality Criteria (AWQC) pursuant to 40.1505(2) and 40.1516(1).</p>	100
<p style="text-align: center;">LIKELY or CONFIRMED EXPOSURE PATHWAY</p>	<p style="text-align: center;"><i>Any of the Following</i></p> <p>➤ There is a reasonable likelihood that a surface public drinking water supply has been or may be impacted by OHM from the disposal site. <i>or</i></p> <p>➤ OHM, possibly attributable to the disposal site, has been identified at the entry point to a public drinking water supply distribution system. <i>or</i></p> <p>➤ A fish advisory likely attributable to the disposal site is in effect. <i>or</i></p> <p>➤ OHM likely attributable to the disposal site present has been identified at concentrations ≥ Ambient Water Quality Criteria (AWQC) pursuant to 40.1505(2) and 40.1516(1), and the disposal site is located in or contains: an Area of Critical Environmental Concern (ACEC); a mapped habitat of a Species of Special Concern, Endangered or Threatened Species; a Certified Vernal Pool; a Restricted Wetland; an Outstanding Resource Water; a fish habitat; or a Protected Open Space.</p>	150

310 CMR: DEPARTMENT OF ENVIRONMENTAL PROTECTION

40.1512(4) Air

II.D. AIR EXPOSURE CRITERIA		
DEFINITION	Air contamination includes both vapors, particularly focusing on indoor air, and particulates. Score only releases regulated under C. 21E; do not score permitted releases associated with on-going commercial or industrial processes.	
DESIGNATION	CRITERIA	POINTS
<p style="text-align: center;">✓ NONE or NOT APPLICABLE</p>	<ul style="list-style-type: none"> ➤ OHM likely attributable to the disposal site has not been identified in, and is not anticipated to be identified in, air. 	0
<p style="text-align: center;">EVIDENCE OF CONTAMINATION (Assumes No Exposure Pathway)</p>	<p style="text-align: center;"><i>Any of the following</i></p> <ul style="list-style-type: none"> ➤ A release, or potential release, of OHM to air has been identified. <i>or</i> ➤ OHM that may be released to air as particulate material has been identified in the top 6" of the ground surface. Unbroken paved/concrete slab surfaces <i>may</i> be interpreted as preventing release of particulates to air. <i>or</i> ➤ OHM that may be released to air as a vapor has been identified in an open container or surface impoundment that is part of the disposal site. <i>or</i> ➤ An odor that is reasonably attributable to a release of OHM at the disposal site has been identified. 	15
<p style="text-align: center;">POTENTIAL EXPOSURE PATHWAY</p>	<p style="text-align: center;"><i>Any of the Following</i></p> <ul style="list-style-type: none"> ➤ OHM releases, likely attributable the disposal site, have been repeatedly identified in ambient air within 100' of a residence, school, hospital, nursing home, or playground when such releases are above ambient background concentrations and are not related to permitted releases. <i>or</i> ➤ Total volatile organic compounds have been identified in groundwater at concentrations ≥ 5 mg/l within 30 feet of a school or occupied residence where the depth to groundwater is ≤ 15 feet. Soil gas surveys or indoor air sampling may be conducted to demonstrate no exposure to OHM. <i>or</i> ➤ A reasonable likelihood exists that the indoor air quality of an occupied building <i>will be</i> impacted by OHM likely attributable to the disposal site. 	100
<p style="text-align: center;">LIKELY or CONFIRMED EXPOSURE PATHWAY</p>	<p style="text-align: center;"><i>Either of the Following</i></p> <ul style="list-style-type: none"> ➤ OHM has been identified in indoor air in an occupied building, above background concentrations, when the OHM is likely attributable to a non-permitted release at the disposal site. <i>or</i> ➤ A reasonable likelihood exists that OHM likely attributable to the disposal site <i>is</i> affecting air quality in an occupied building. 	200

APPENDIX E

Conceptual Scope of Work

INTRODUCTION

Pennoni Associates Inc. (Pennoni) was retained by the Department of Mental Health to conduct a Phase I Initial Site Investigation (Phase I ISI) relative to a release of #6 fuel oil in the vicinity of the Power Plant facility at the Medfield State Hospital (MSH) facility in Medfield, Massachusetts (the Facility). The Massachusetts Department of Environmental Protection (DEP) has issued Release Tracking Numbers 3-20799, 3-20984, and 3-21162 to track reportable conditions at the Facility. Pennoni has developed this Conceptual Scope of Work for a Phase II Investigation as an attachment to the Phase I ISI to provide details of subsequent investigations anticipated at the Facility.

This Conceptual Scope of Work is intended to provide a general plan for assessing contaminants of concern, potential receptors and potential exposure pathways. It will identify the likely technical approach to be used and estimate an overall schedule and estimate overall costs. The results of the Phase II Investigation will be used to evaluate the risk of harm posed to health, safety, public welfare and the environment.

SCOPE OF WORK

The contaminants of concern at the site are petroleum hydrocarbons originating from the release of Light Nonaqueous Phase Liquids (LNAPL), primarily #6 fuel oil, although it is possible that some #2 fuel oil was released. The migration pathways of concern have been identified in the Phase I Site Conceptual Model (Figure 5) and include groundwater, and LNAPL migration. Contaminated media include LNAPL, subsurface soils and groundwater.

It is very unlikely that surface water or sediments have been impacted by the release. However, if the Phase II investigations identify the need for surface water or wetlands sampling, these activities will be included in the Phase II investigations.

If future groundwater petroleum concentrations remain relatively constant and do not appear to be increasing over the monitoring period, it is possible that a Class C Response Action Outcome (RAO) will be pursued.

Soil Sampling

Additional soil sampling will be performed in the vicinity of the USTs. The objective of the additional sampling is to determine if LNAPL observed in the vicinity of the tank pad has migrated vertically downward towards the water table. Based on the observations made during tank closure, the nature of the LNAPL, the results of the monitoring well observations and pea stone sampling, the LNAPL contamination appears to be primarily associated with releases originating from Tanks 2 and 3. Thus, the boring program will be focused on investigating soils to the west and north side of the tank pad. It is anticipated that approximately 5 to 7 soil borings will be installed around the tank pad.

The borings will be installed using hollow stem augers. For borings near the tank pad, soil samples will be collected using split spoons continuously between 5 and 18 feet below ground surface. Below 18 feet split spoon samples will be collected every 5 feet to a depth 5 feet below the water table. A minimum of one soil sample will be selected from each boring and be analyzed for EPH and VPH (DEP, 1998) at an off-site analytical laboratory. Three additional Quality Assurance/Quality Control (QA/QC) samples will be collected during the boring program to assure the analytical results generated during these investigations are of known quality.

Groundwater Investigations

Currently there are 14 monitoring/observation wells at the Site. It is likely that approximately two of the borings installed during the soil monitoring program will be completed as monitoring wells.

In order to evaluate the seasonal variability of groundwater concentrations as required by the MCP, one year of quarterly groundwater samples will be collected at the site. After the soil borings/monitoring well installation discussed above is completed, an initial, comprehensive, round of groundwater sampling will be conducted. If this event confirms the present conditions (i.e. groundwater contamination is limited in extent), it is likely that only a subset of the wells will be sampled in subsequent rounds. Two additional QA/QC samples will be collected during each round of groundwater sampling to assure the analytical results generated are of known quality.

Risk Assessment

A method for the risk assessment will be selected once the results of the Phase II sampling have been evaluated. Whatever Risk Assessment approach is selected, adequate site characterization data will be collected to assess risks at the site.

Phase II/Phase III Report

A Phase II report will be developed to present the results of the above identified investigations. The need for additional assessments required to support a RAO will be evaluated after the one year monitoring period and the cost estimate presented below does not necessarily reflect these additional costs. If necessary, a Phase III report will be submitted per the requirements of the MCP.

LICENSED SITE PROFESSIONAL ENGAGED

The Licensed Site Professional directing the Phase II activities will be:

James Doherty
Pennoni Associates, Inc.
82 South Street
Hopkinton, MA 01748-2205
Telephone 508/435-8080
License Number 3984

SCHEDULE

It is anticipated that the Phase II activities will be initiated within the next 6 months. The Phase II Report or RAO will be submitted to the DEP prior to the deadline of 2 years after Tier Classification.

COST ESTIMATE

It is anticipated that the above identified tasks can be completed for a budget of approximately \$40,000.

APPENDIX F

Public Involvement

NOTICE OF AN INITIAL SITE INVESTIGATION AND TIER II CLASSIFICATION

MEDFIELD STATE HOSPITAL POWER PLANT
45 HOSPITAL ROAD
MEDFIELD, MASSACHUSETTS
RELEASE TRACKING NUMBERS 3-20799, 3-20984, 3-21162

Pursuant to the Massachusetts Contingency Plan (310 CMR 40.0480), an Initial Site Investigation has been performed at the above referenced location.

A release of oil and /or hazardous materials has occurred at this location which is a disposal site (defined by M.G.L. c. 21E, Section 2). This site has been classified as Tier II, pursuant to 310 CMR 40.0500. Response actions at this site will be conducted by the Massachusetts Department of Mental Health who has employed Pennoni Associates Inc. to manage response actions in accordance with the Massachusetts Contingency Plan (310 CMR 40.0000).

M.G.L. c. 21E and the Massachusetts Contingency Plan provide additional opportunities for public notice of and involvement in decisions regarding response actions at disposal sites: 1) The Chief Municipal Official and Board of Health of the community in which the site is located will be notified of major milestones and events, pursuant to 310 CMR 40.1403; and 2) Upon receipt of a petition from ten or more residents of the municipality in which the disposal site is located, or of a municipality potentially affected by the disposal site, a plan for involving the public in decisions regarding response actions at the site will be prepared and implemented, pursuant to 310 CMR 40.1405.

To obtain more information on this disposal site and the opportunities for public involvement during its remediation, please contact James Doherty, LSP of Pennoni Associates, Inc. 82 South Street, Hopkinton, MA at 508/435-8080.



PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS

82 South Street
Hopkinton, MA 01748-2205
Tel: 508•435•8080
Fax: 508•435•4351

June 13, 2002

via Certified Mail

Ms. Sherri Sacchetine
Board of Health
Town House
459 Main Street
Medfield, MA 02052

Re: Public Notification Phase I Report and
Tier Classification
Medfield State Hospital
45 Hospital Road, Medfield, MA
Release Tracking Numbers 3-20799, 3-20984, 3-21162

Dear Ms. Sacchetine:

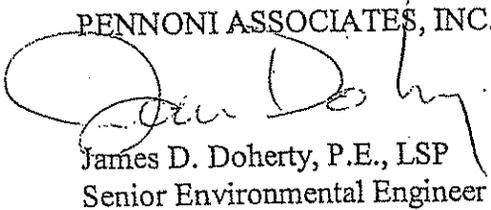
Pursuant to 310 CMR 40.1403 of the Massachusetts Contingency Plan (MCP), this letter is notification to the Town of Medfield that a Phase I Report/Tier Classification form has been submitted to the Department of Environmental Protection (DEP) for the above identified releases. These documents relate to a release of Fuel Oil from underground storage tanks (USTs) located adjacent to the Boiler Building for the Medfield State Hospital.

The release occurred onto subsurface soils and groundwater adjacent to the three USTs. No critical exposure pathways or imminent hazards as defined by the MCP have been identified during site investigations. The level of fuel oil in the environment is above applicable Reportable Concentrations and requires additional investigations. The Phase I Report includes a Conceptual Scope of Work for these additional investigations.

The documents can be reviewed at the Massachusetts Department of Environmental Protection Northeast Regional Office, 205 Lowell St., Wilmington, MA. If you have any questions please call me at (508) 435-8080.

Sincerely,

PENNONI ASSOCIATES, INC.



James D. Doherty, P.E., LSP
Senior Environmental Engineer

cc: DEP, Wilmington



PENNONI ASSOCIATES INC.
CONSULTING ENGINEERS

82 South Street
Hopkinton, MA 01748-2205
Tel: 508•435•8080
Fax: 508•435•4351

June 13, 2002

via Certified Mail

Mr. Osler Petersen
Chairman, Board of Selectman
Town House
459 Main Street
Medfield, MA 02052

Re: Public Notification Phase I Report and
Tier Classification
Medfield State Hospital
45 Hospital Road, Medfield, MA
Release Tracking Numbers 3-20799, 3-20984, 3-21162

Dear Mr. Petersen:

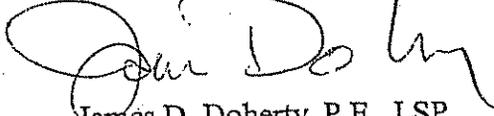
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Sincerely,

PENNONI ASSOCIATES, INC.



James D. Doherty, P.E., LSP
Senior Environmental Engineer

cc: DEP, Wilmington